

East Fork Lewis River  
**Partnership**  
for clean water





# Welcome!

Devan Rostorfer, TMDL Lead

Shawn Ultican, Nonpoint Source Specialist

Jennifer Riedmayer, Nonpoint Source Specialist

Brett Raunig, Water Quality Program





**Thank You!**

**Washington Department of Fish and Wildlife  
Kessina Lee – Region 5 Director**

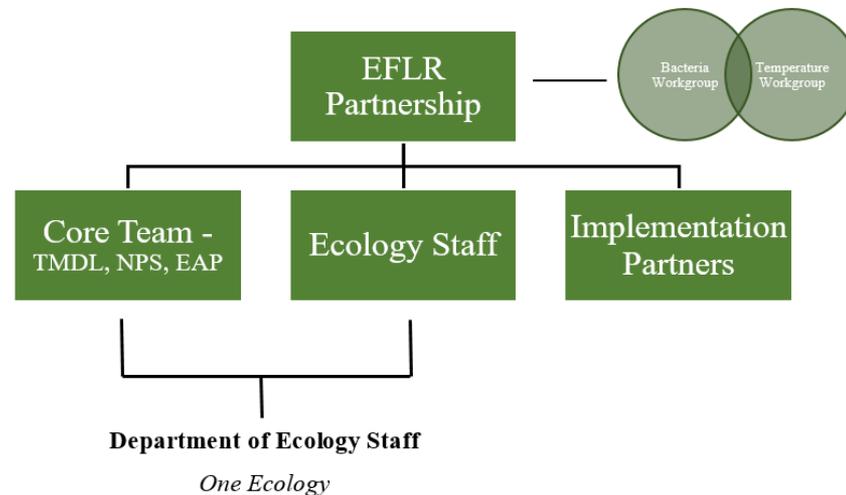
# Agenda

- 1. Welcome and Introductions - Housekeeping**
- 2. Water Quality in the East Fork Lewis River**
- 3. Ongoing Efforts to Improve Water Quality**
- 4. Work Session – Building the TMDL Alternative**
  - Facilitated Discussion (15 Minutes)
  - Opportunities Analysis (25 Minutes)
  - Needs Assessment (15 Minutes)
- 5. Report Out & Next Steps**
  - Feedback

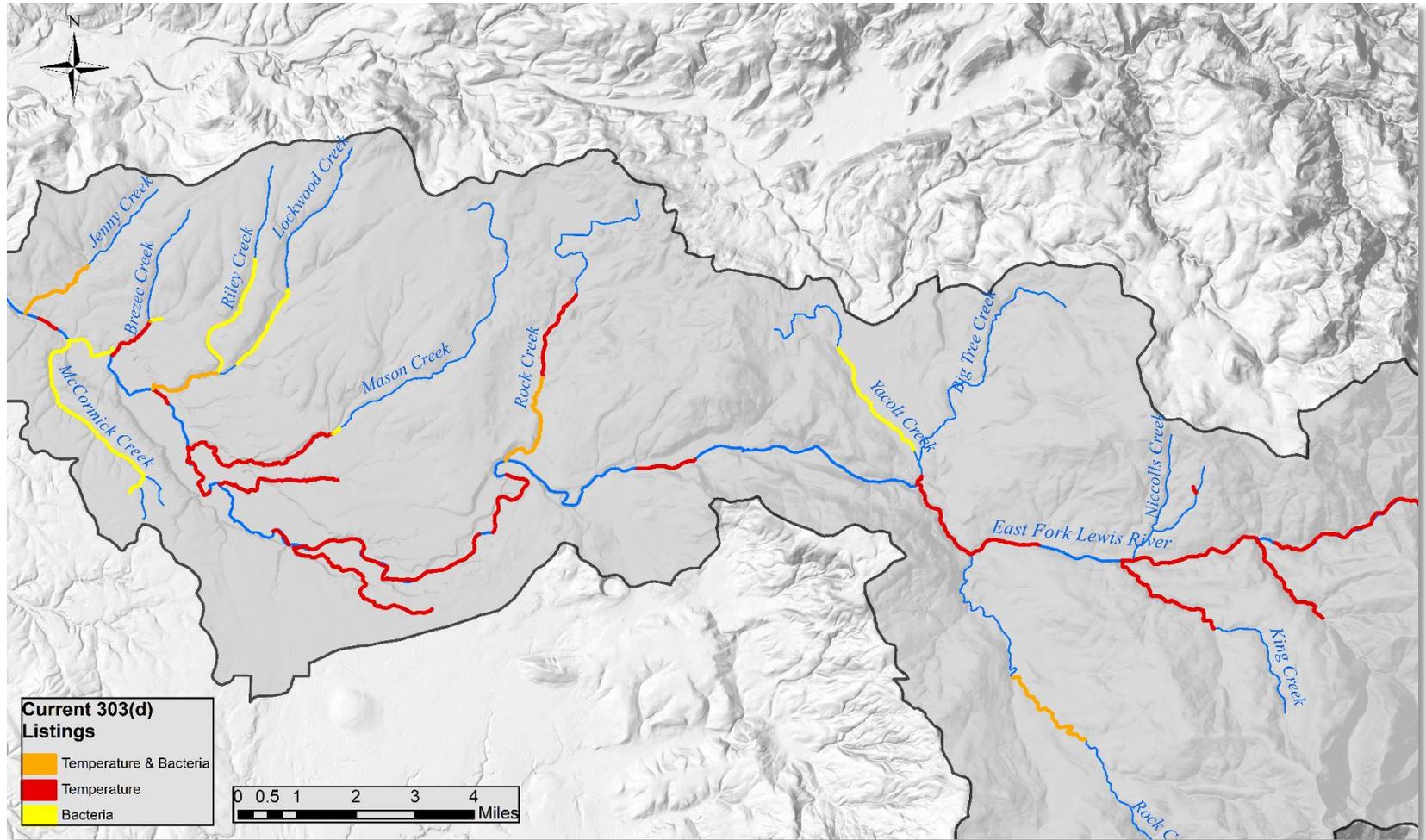


# Kickoff Meeting Recap

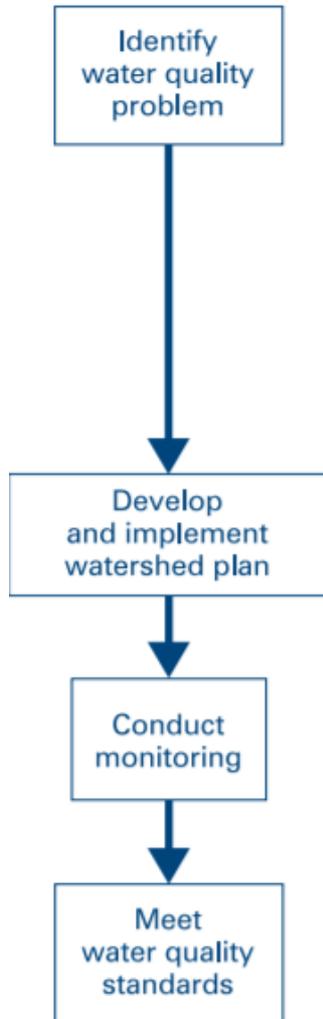
- **What is the East Fork Lewis River Partnership?**
  - *Collaboration of local, state, tribal, and federal governments; non-profits, private industry, and landowners*



# Impairments



Watershed plan is developed in the absence of a completed TMDL. If monitoring indicates WQS attainment, there is no need for a TMDL.



# What is a Water Cleanup Plan?

- Watersheds with non-point sources - TMDL Alternative
  - Non-regulatory
  - Voluntary
  - Implementation dependent
- TMDL Required for Polluted Waters on 303(d) list

# East Fork Lewis River TMDL Alternative 9 Element Watershed Plan



1. Build Partnerships
2. Characterize the Watershed
3. Finalize Goals and Identify Solutions
4. Design an Implementation Program
5. Implement Watershed Plan
6. Measure Progress and Make Adjustments

**\*\*Education & Monitoring\*\***



# Goals

- 1. Develop project list to address bacteria and temperature impairments by Summer 2019**
- 2. Meet water quality standards (WQS) and support all beneficial uses in watershed - in the absence of a traditional TMDL**
- 3. Solidify watershed eligibility for 319 funding**
- 4. Strengthen partnerships**
- 5. Support existing projects and plans**



# Kickoff Meeting Recap

**47** Partners from  
**28** organizations  
came to the first  
meeting!



# Kickoff Meeting Recap

- **Source Assessment Report**
- **Partner Presentations**
  - Clark County Legacy Lands Program & Columbia Land Trust
  - Clark County Public Works
  - Lower Columbia Estuary Partnership
  - Washington State University Extension
  - Department of Ecology Grant Program
- **Facilitated Discussion: Getting to Clean Water in the East Fork**



# Kickoff Meeting Recap

## Getting to Clean Water in the East Fork

- **What are some historical challenges?**
  - Industrial issues – turbidity, erosion, debris
  - Surface Gravel Mining
  - Compliance and enforcement
  - Changes in forested areas
  - Funding availability
  - Funding projects on private land
  - Landowner engagement and willingness
  - Development and expanding urban growth boundaries
  - Political environment
  - Maintaining momentum



# Kickoff Meeting Recap

## Getting to Clean Water in the East Fork

- **What are some ongoing challenges?**
  - Diverse population and land use
  - Making contact with private landowners
  - Climate change – impacts on hydrologic regimes, snow pack, baseflow
  - Differing value systems – private property rights vs. public impact; turf wars



# Kickoff Meeting Recap

## Getting to Clean Water in the East Fork

- What are some **next steps**?
  - Develop common strategy & shared vision for East Fork Lewis River
  - Collaboration between agencies, non-profits, private landowners
  - Outreach and community building
  - Develop strategies to balance water quality with urban growth & development
  - Connecting ecological restoration to economy



# Kickoff Meeting Recap

## Getting to Clean Water in the East Fork

- What are some **next steps**?
  - Investigating sources of bacteria
  - Establish metrics for new E. coli bacteria standard
  - More monitoring and long-term data collection
  - Identifying opportunities to utilize volunteer data



# Kickoff Meeting Recap

## Getting to Clean Water in the East Fork

- What are some **next steps**?
  - Understanding temperature in tributaries - shade deficits
  - Width to depth ratio of the river
  - Culverts and removing fish barriers
  - Identifying endpoint or goal for monitoring and accomplishing clean water



# Kickoff Meeting Recap

## Getting to Clean Water in the East Fork

- What are the **next steps**?
  - Collaborative partnerships with landowners
  - Education for developers and private land owners
  - Incentives for implementation and behavior change
  - Early partnerships for mining reclamation
  - Support for Conservation District



# Temperature Workgroup

- **Goal**
  - Learn about implementation efforts
  - Identify critical areas
  - Identify priority implementation actions
  - Discuss opportunities
  - Build relationships
  - Exchange information
  - Start building the TMDL Alternative



# Introductions

- **Who are you?**
  - Name & organization you're representing
- **What is one thing you have done recently to protect, restore, or enhance water quality?**



# Water Quality in the East Fork Lewis River

## Temperature



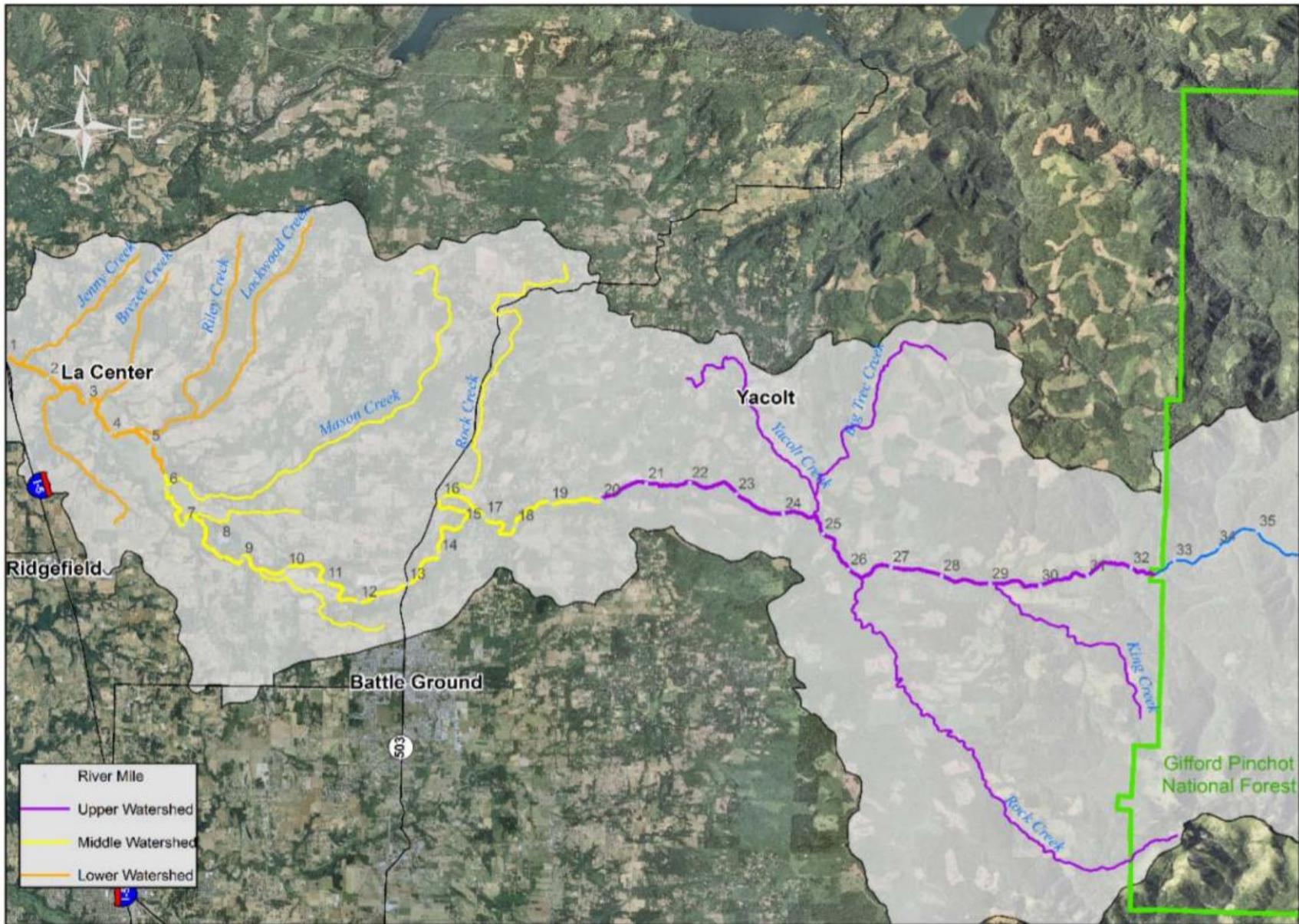
# Water Quality Standards & Beneficial Uses

- Aquatic Life Uses – Temperature

Waterbody Reach	Aquatic Life Uses	Temperature Standard Highest 7-DADMax
EF Lewis River	Core Summer Habitat	16.0°C (60.8°F)

- Water Quality for Environmental Health - High water temperatures create poor conditions for fish and wildlife.





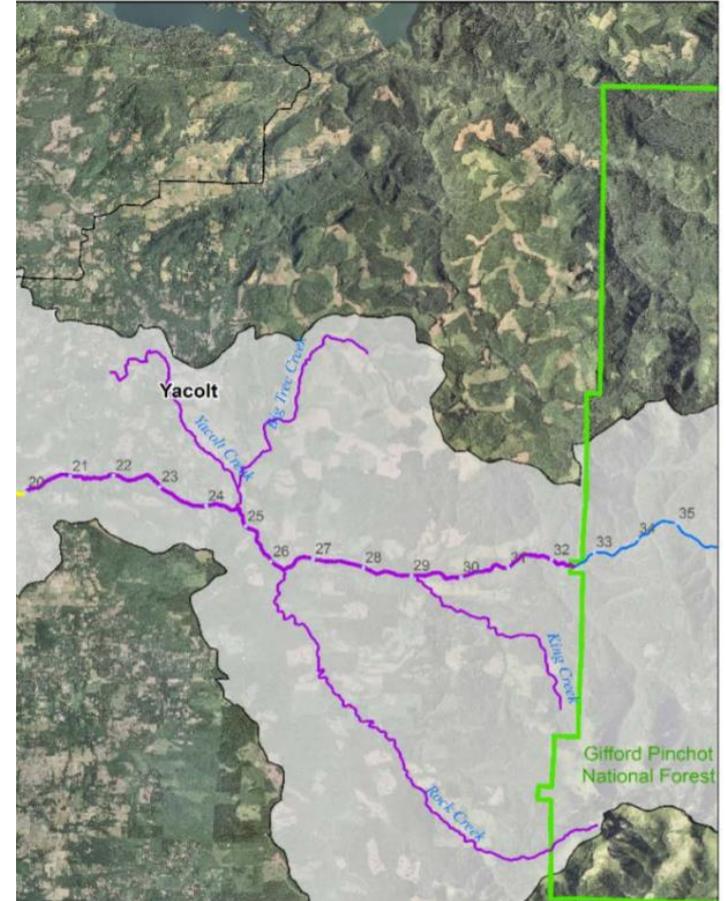
**Lower**  
**Mouth to RM 5.7**

**Middle**  
**RM 5.7 – 20.3**

**Upper**  
**RM 20.3 – 32.3**

# Upper Watershed

- **River Miles: 20 - 32.3**
  - **Land use**
    - Forested – public and private
      - Active timber management
      - Forestry practices
    - Residential and commercial
  - **Municipalities**
    - Yacolt



# Upper Watershed (RM 20-32.3)

- **Mainstem**

- **4 monitoring sites**

- RM 20.3, 24.6, 26.9, and 29.0
- All exceeded 7-DADMax Temperature criteria
  - **Max** = 17-20 degrees
  - **Average** = 14-16 degrees



# Upper Watershed (RM 20-32.3)

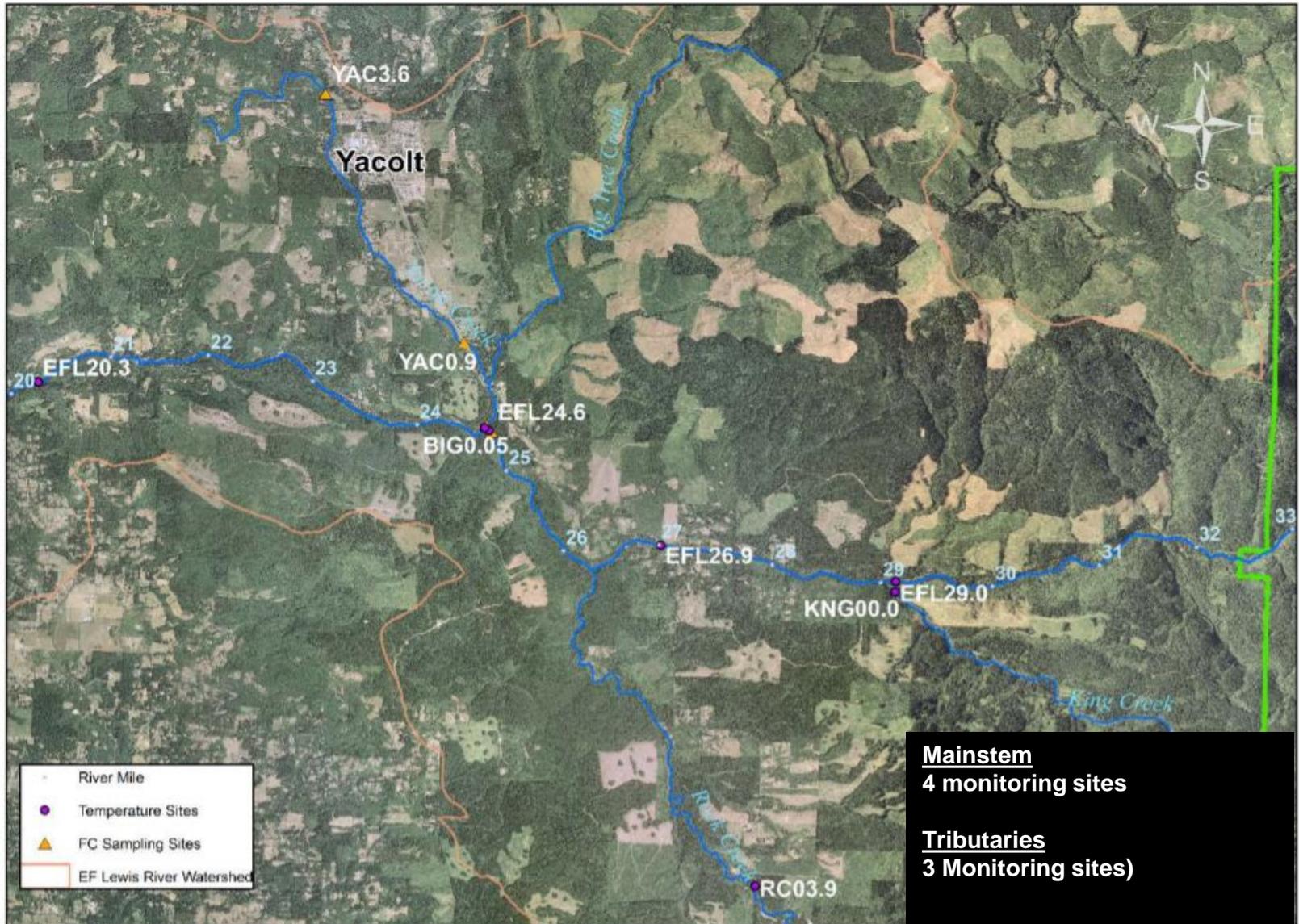
- **Tributaries**

- **3 monitoring sites**

- King RM 0, Rock Creek County RM 0, and Big Tree Creek RM 0
- All exceeded 7-DADMax Temperature criteria
  - **Max** = 17-18 degrees
  - **Average** = 14-15 degrees
- Big Tree Creek had 32% of days exceeding criteria



# Upper Watershed (RM 20-32.3)



Creeks - Yacolt, Big Tree, King, Rock Creek South

# Upper Watershed (RM 20-32.3)

- **Mainstem**

- **75%** Annual Average Canopy

- **RM 24.6 highest**

- **82%** Potential Shade

- *Areas suitable for vegetation growth that are not already paved or developed*

- **56%** Average Effective Shade

- *Fraction of total possible solar radiation blocked from water surface*

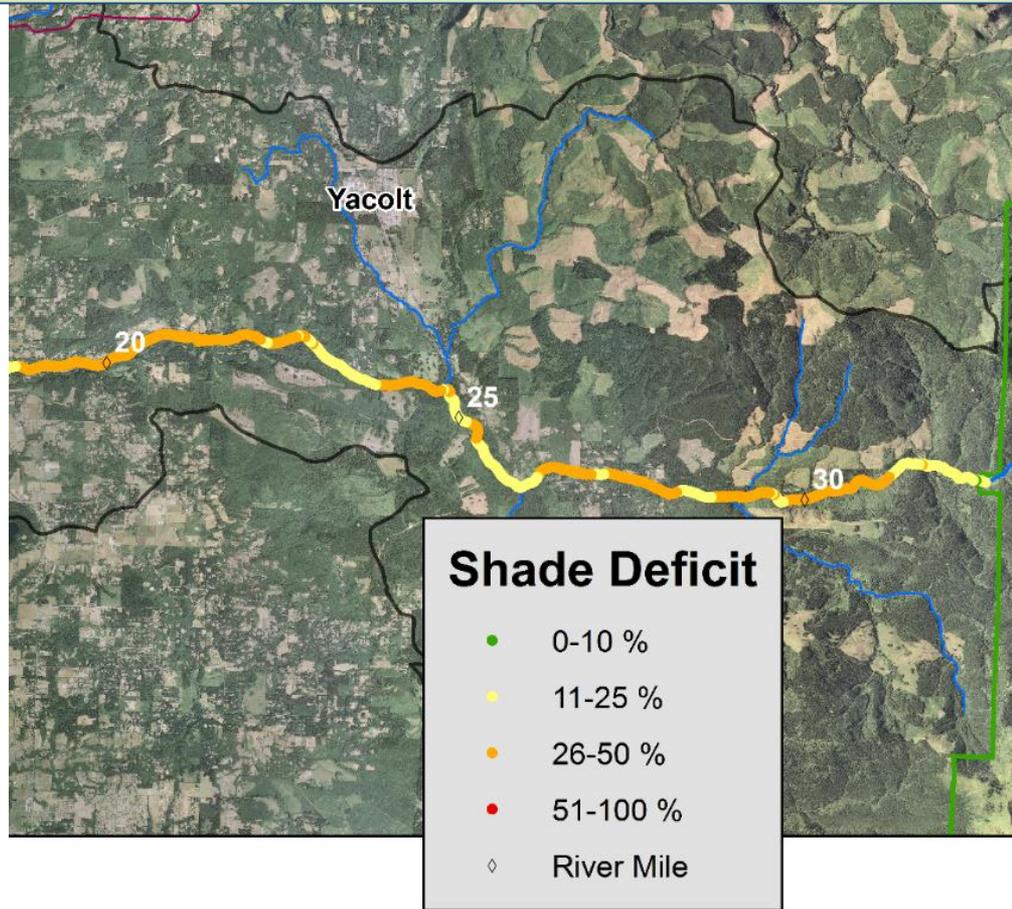
- **26%** Shade Deficit

- *Potential Shade – Effective Shade = Deficit*



# Shade Analysis Results

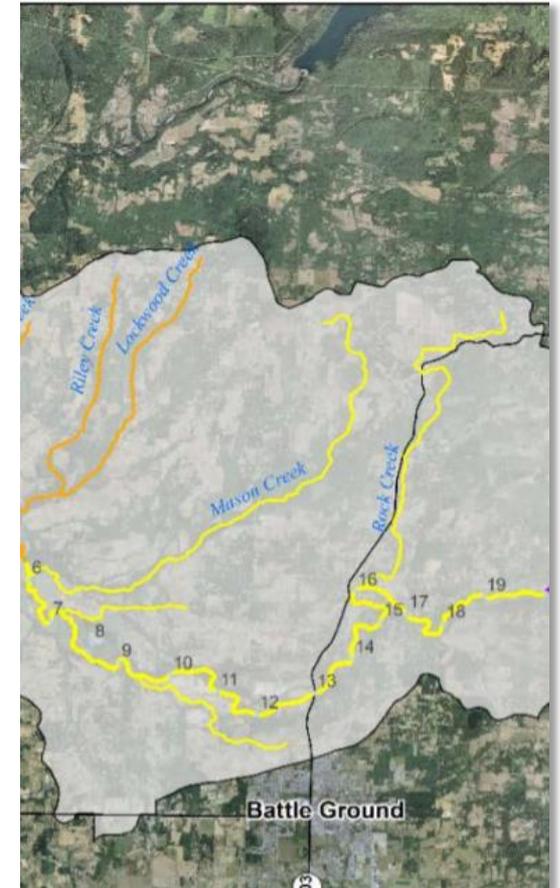
Shade Deficit (%) = Potential Shade (%) – Current Effective Shade (%)



Detailed methodology in QAPP (Raunig and McCarthy, 2017) and Report (McCarthy, 2018)

# Middle Watershed (RM 5.7-20.3)

- **River Miles: 5.7 – 20.3**
  - **Land use**
    - Forest dominated
    - Mixed-use
      - Agriculture, residential and commercial
  - **Multiple parks**
    - Lewisville, Daybreak, County Legacy Lands
  - **Municipalities**
    - City of Battle Ground
  - **Surface Gravel Mining**
    - Ridgefield Gravel pits – RM 8.0



# Middle Watershed (RM 5.7 -20.3)

- **Mainstem**
  - **5 monitoring sites**
    - RM 7.3, 8.1, 10.1, 13.2, and 14.7
      - All exceeded 7-DADMax for temperature
        - **Max** = 23-24 degrees
        - **Average** = 19-20 degrees
    - RM 14.7 exceeded 83% days sampled
    - RM 8.1 exceeded 85% days sampled

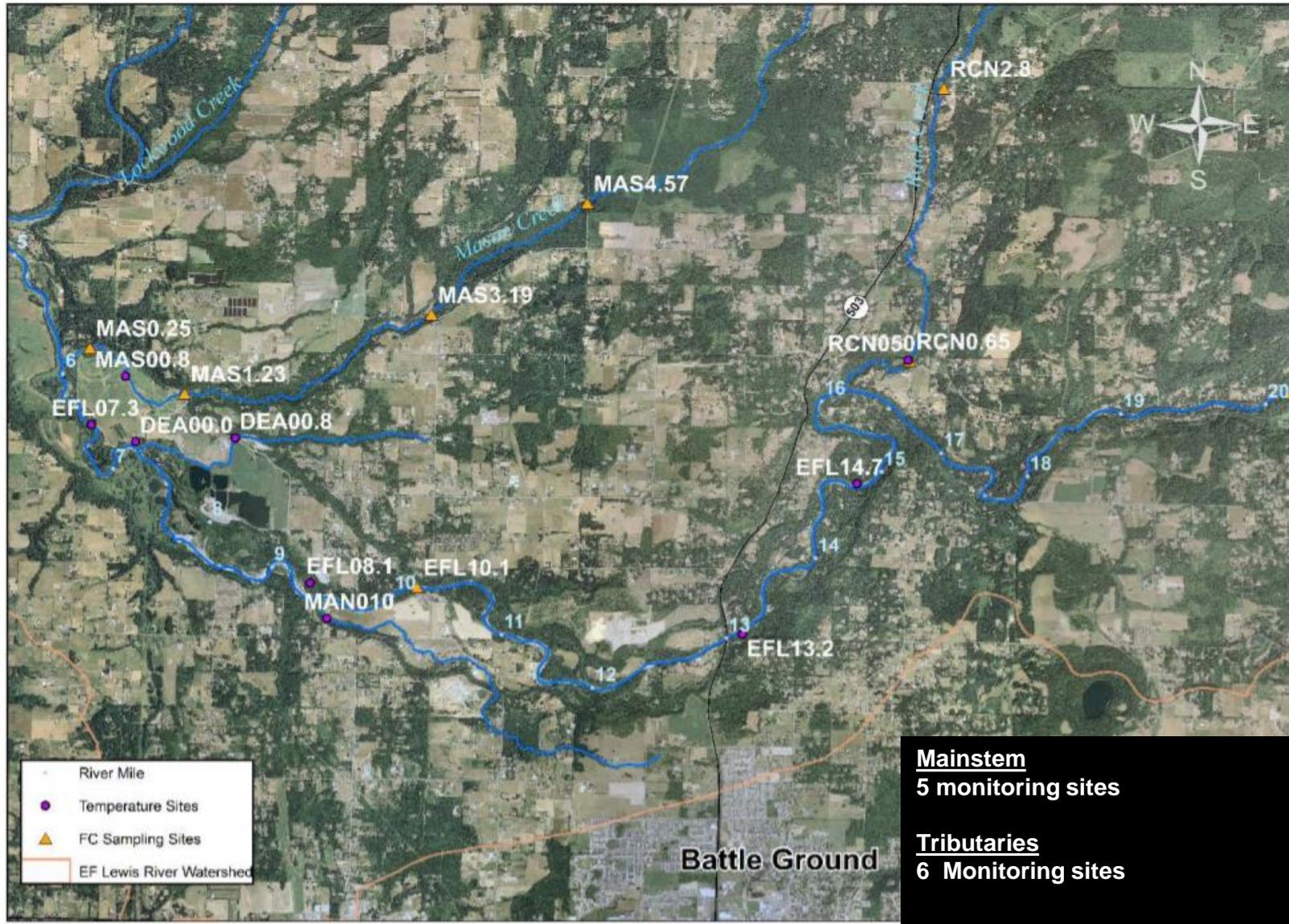


# Middle Watershed (RM 5.7 -20.3)

- **Tributaries**
  - **6 monitoring sites**
    - Rock Creek North RM 0.5, 0.65, Manley RM 0.1, Dean RM 0, 0.8; and Mason RM 0.8
      - All exceeded 7-DADMax for temperature
        - **Max** = 26 degrees at Dean Creek
        - **Lowest Average** = 15 degrees in Mason Creek
        - **Highest Average** = Manley and Dean Creek – 19 to 24 degrees
    - Manley and Dean exceeded 80% days sampled



# Middle Watershed (RM 5.7 -20.3)



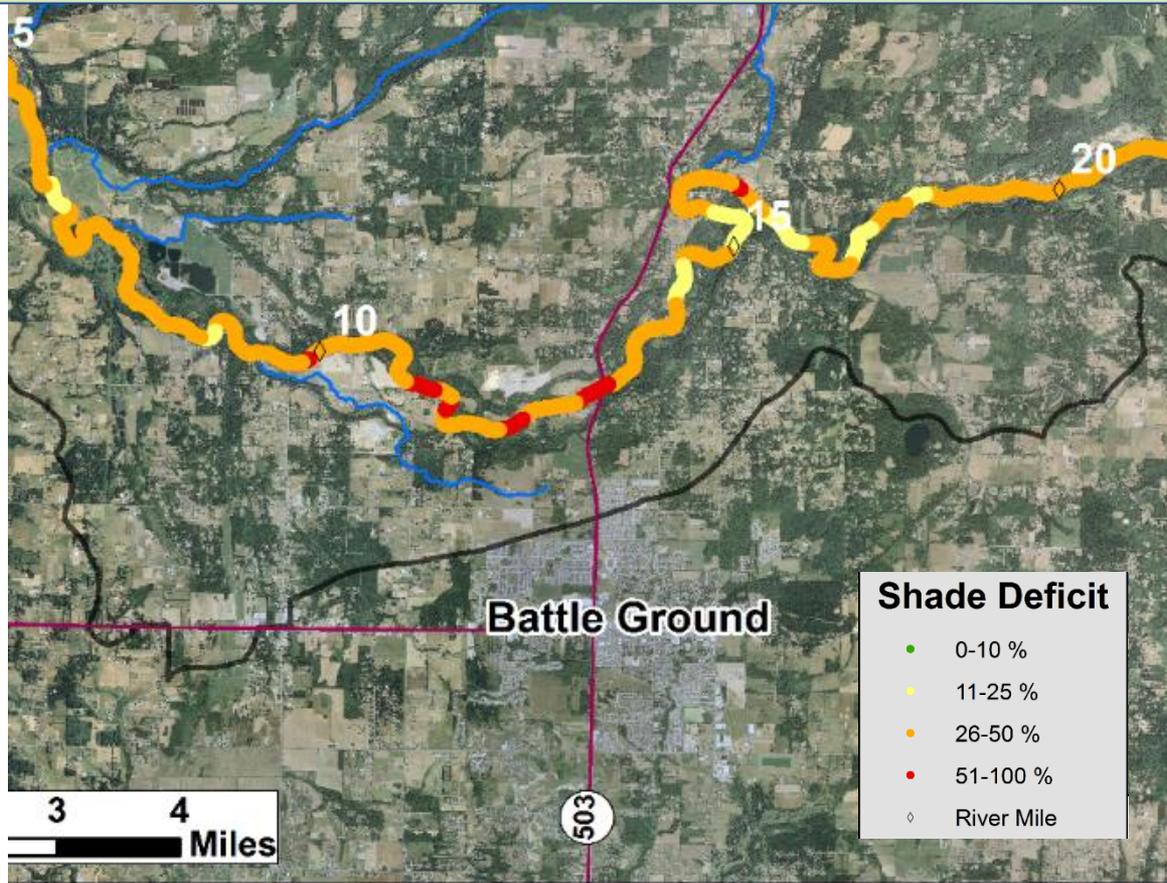
# Middle Watershed (RM5.7-20.3)

- **Mainstem**
  - **50%** Annual Average Canopy
  - **63%** Potential Shade
  - **28%** Effective Shade Average
  - **35%** Shade Deficit
- **Middle Watershed (RM 9-13) = Highest Shade Deficit Overall**



# Shade Analysis Results

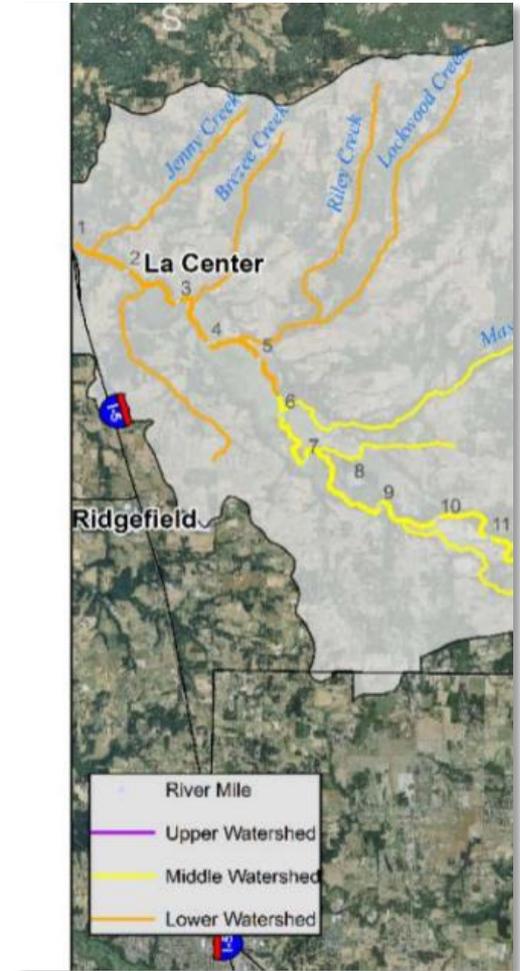
Shade Deficit (%) = Potential Shade (%) – Current Effective Shade (%)



Detailed methodology in QAPP (Raunig and McCarthy, 2017) and Report (McCarthy, 2018)

# Lower Watershed (RM 0-5.7)

- **River Miles – Mouth to 5.7**
  - **Land Use**
    - More agricultural use
    - Mixed use - Forest land, developed and residential areas
  - **Municipality**
    - City of La Center
  - **Legacy Lands**
    - Significant riparian connectivity and public ownership

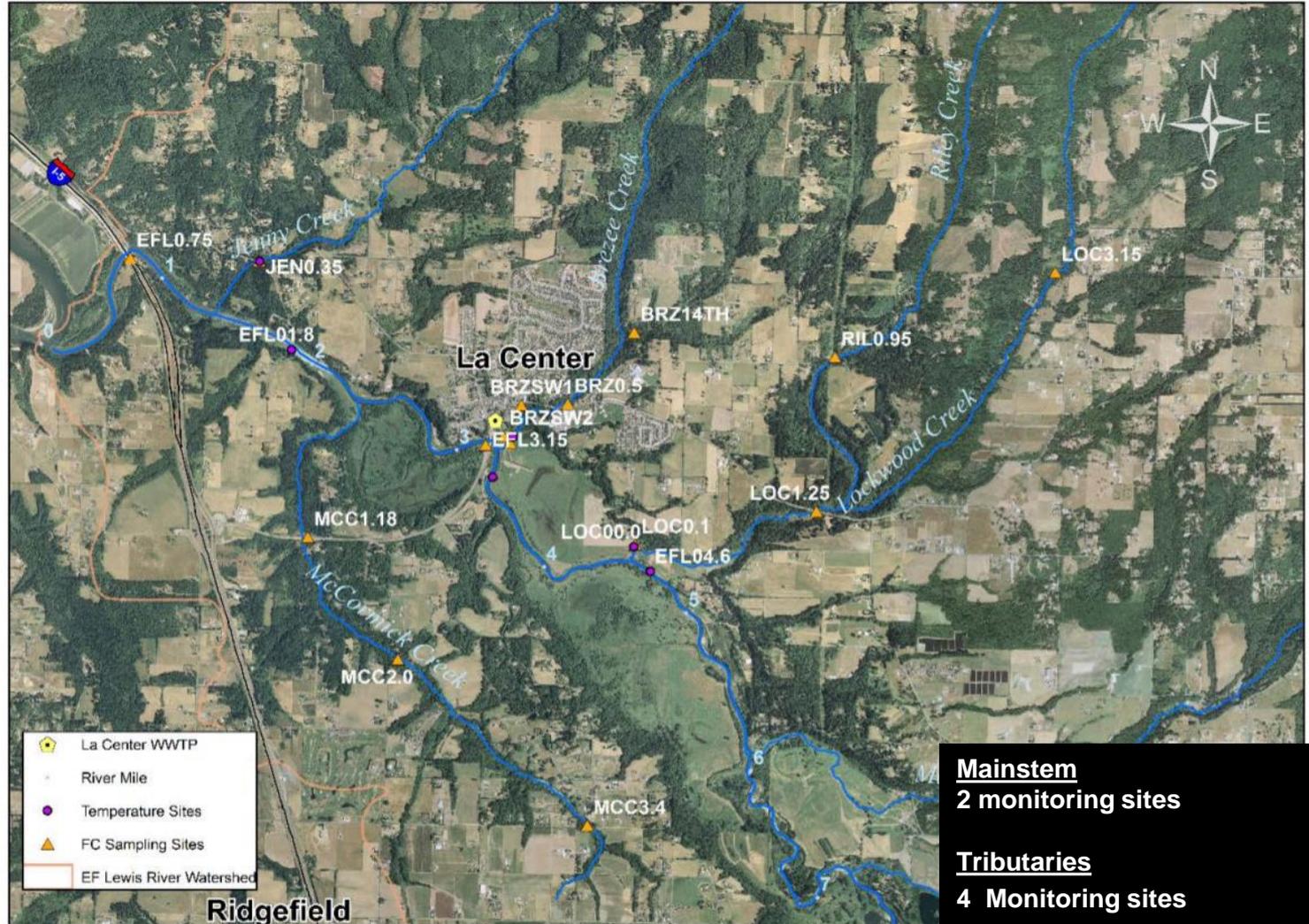


# Lower Watershed (RM 0-5.7)

- **Mainstem**
  - **2 monitoring sites**
    - RM 1.8 and 4.6
    - Influenced by tidal water → Not included in analysis
- **Tributaries**
  - **4 monitoring sites**
    - Lockwood RM 0, Brezee RM 0.1, Jenny RM 0.3
    - All exceeded WQS
      - **Average** = 16-18 degrees
      - **Max** = 22 degrees at Lockwood Creek
        - \*PUD implemented project since monitoring



# Lower Watershed (RM 0-5.7)



# Lower Watershed (RM 0-5.7)

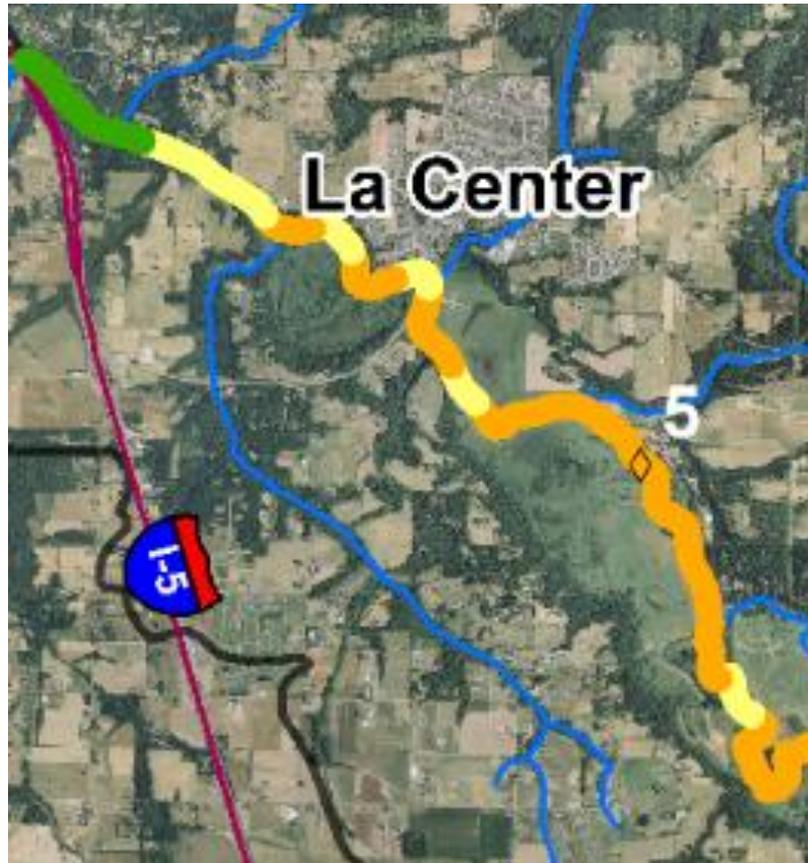
- **29%** Annual Average Canopy at RM 1.5
- **35%** Potential Shade
- **8%** Current Effective Shade
- **27%** Shade Deficit

**Lower Watershed (RM 1-8) = Lowest Effective shade**



# Shade Analysis Results

$$\text{Shade Deficit (\%)} = \text{Potential Shade (\%)} - \text{Current Effective Shade (\%)}$$

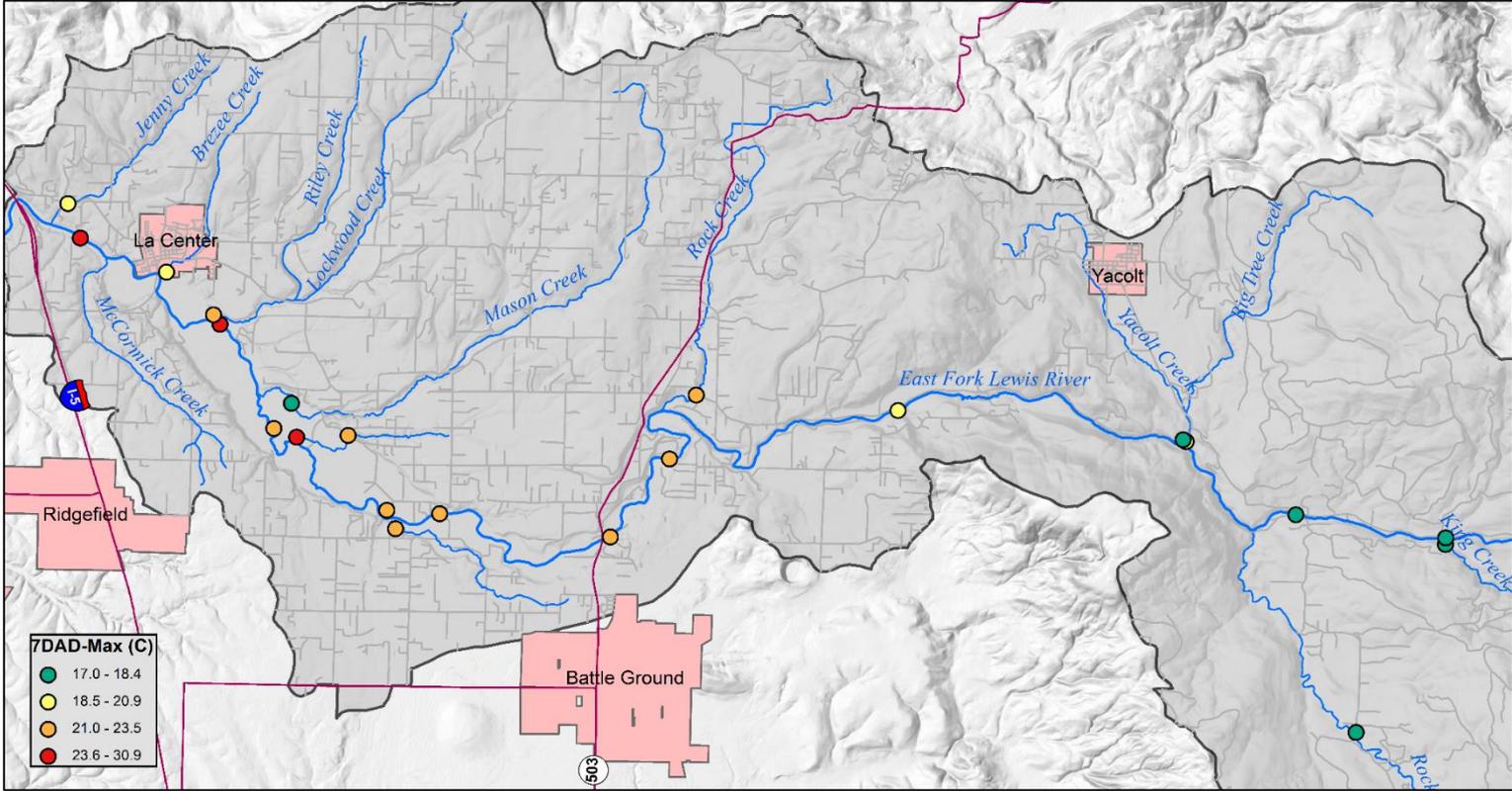


## Shade Deficit

- 0-10 %
- 11-25 %
- 26-50 %
- 51-100 %
- ◇ River Mile

Detailed methodology in QAPP (Raunig and McCarthy, 2017) and Report (McCarthy, 2018)

# Summary: Temperature Results



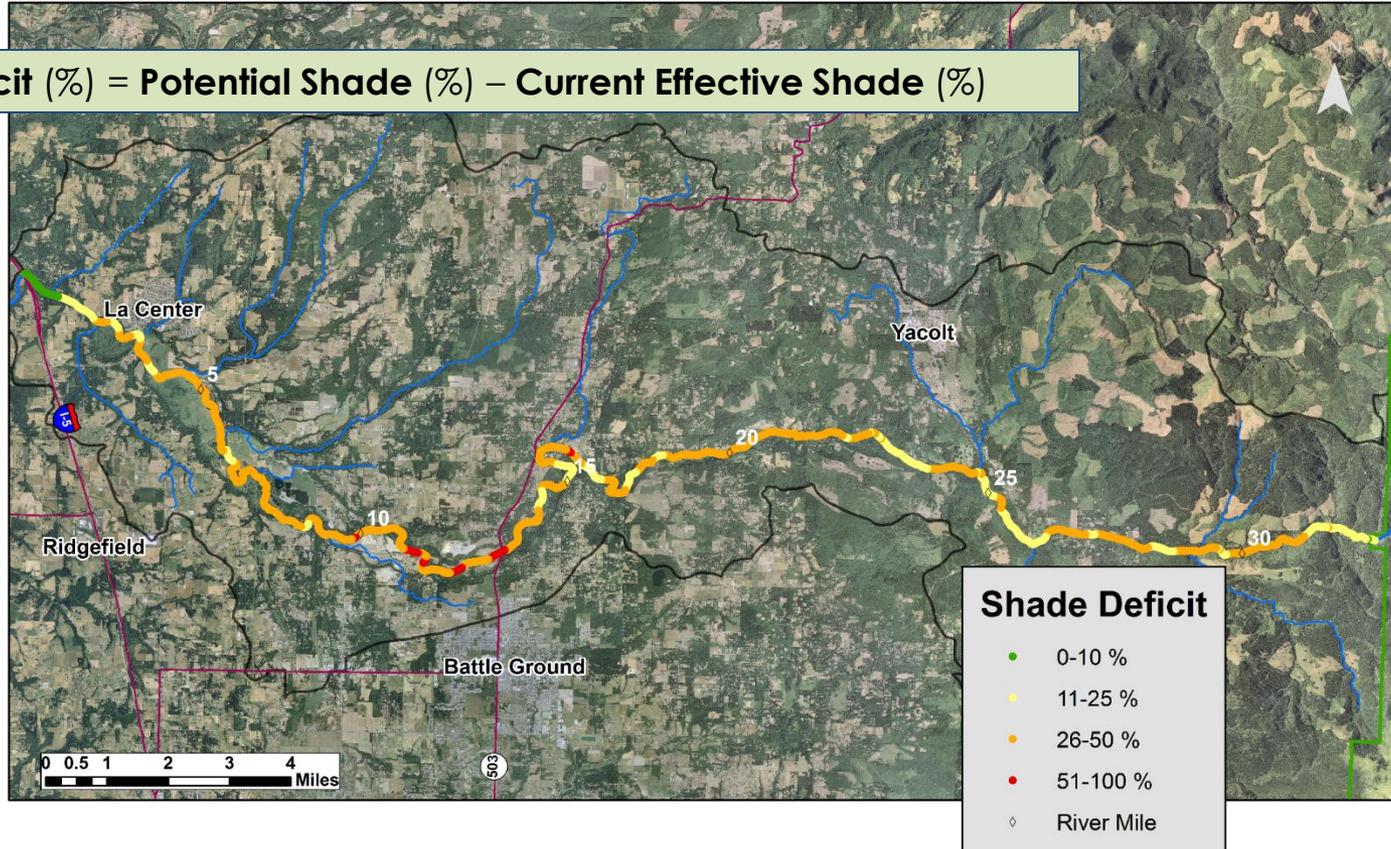
7-DADMax is the 7-day average of the daily maximum temperatures

**Temperatures Increase Downstream**



# Summary: Shade Analysis Results

$$\text{Shade Deficit (\%)} = \text{Potential Shade (\%)} - \text{Current Effective Shade (\%)}$$



Detailed methodology in QAPP (Raunig and McCarthy, 2017) and Report (McCarthy, 2018)

**Lower**  
**Mouth to RM 5.7**  
**Deficit = 27%**

**Middle**  
**RM 5.7 – 20.3**  
**Deficit = 35%**

**Upper**  
**RM 20.3 – 32.3**  
**Deficit = 26%**

# Temperature Summary

- **All monitoring sites exceeded temperature criteria**
- **Temperatures increased from**
  - Upper → Lower Watershed
- **Lowest average canopy cover**
  - East Fork Lewis River Mile 1.5 & 7.3
- **Middle Watershed (RM 9-13) = Highest Shade Deficits**
  - Greater than 50%
- **Lower Watershed = Lowest Effective shade**
  - RM1-8 all below 25% effective shade
  - Reaches 0% at RM 4.2



# Recommendations - Temperature

## Restore Riparian and Stream Habitat

- **Natural Resources** – Increase, enhance, protect, and restore.....
  - Wetlands
  - Native Planting
  - Streambanks
  - Channel Complexity
  - Riparian Habitats
  - Natural Flood Plains
  - Cold Water Refugia
  - Instream Habitat Quality
  - Trees Planting
- **Other** - Consider effects of current and future water withdrawals
- **Priority Area** - Large shade deficits in the middle watershed



# Other Planning Considerations

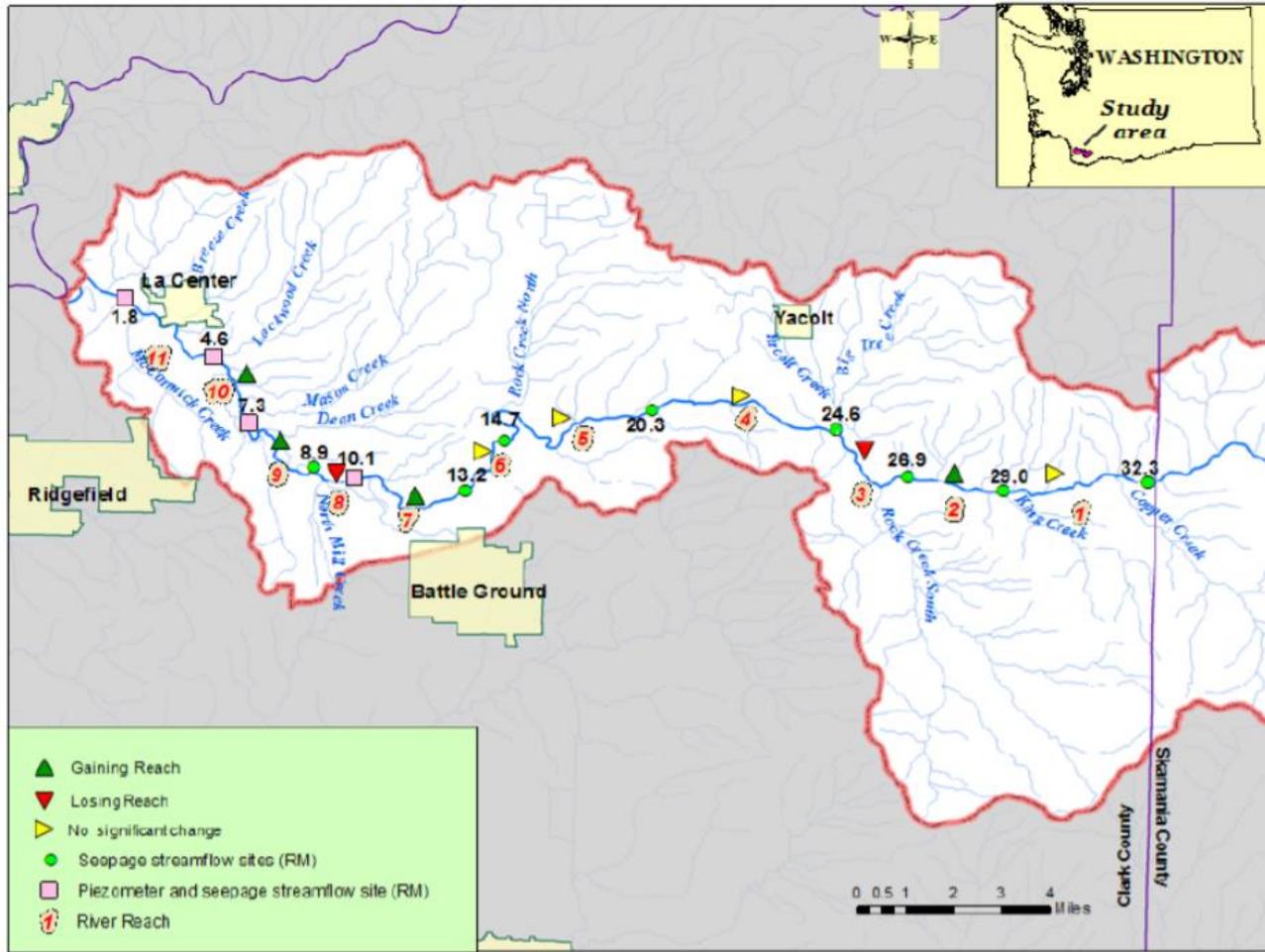


Figure 12. Results of seepage survey showing reaches of gain and loss estimates on the EF Lewis River, August 2005 (Carey and Bilhimer, 2009).

# Other Planning Considerations

## Subwatershed Landcover

Subwatershed	Forest %	Hard Surface %
Big Tree Creek	51	9
Breeze Creek	38	16
Cedar Creek (East Fork)	88	5
Dean Creek	37	13
East Fork Lewis (r.m. 00.00)	28	18
East Fork Lewis (r.m. 03.19)	23	15
East Fork Lewis (r.m. 07.25)	36	19
East Fork Lewis (r.m. 15.75)	89	9
East Fork Lewis (r.m. 21.40)	76	6
East Fork Lewis (r.m. 26.30)	84	5

Subwatershed	Forest %	Hard Surface %
Jenny Creek	40	12
King Creek	90	4
Lockwood Creek	45	10
Lower Rock Creek (South)	85	5
Mason Creek	41	11
McCormick Creek	20	19
Mill Creek (East Fork)	29	20
Rock Creek (North)	54	10
Upper Rock Creek (South)	85	5
Yacolt Creek	52	8

Information Source: Clark County Stream Health Report – 2010

**General Rule of Thumb** – Address areas with <40% tree canopy or >10% imperviousness

# **Work Session: Building the TMDL Alternative**



# Partnership Principles

## *SOPs for Success*



- **Relationship Building**
- **Mutual Respect**
- **Focus on Future Solutions**
- **Keep Water Quality Central**



# Facilitated Discussion (15 Minutes)

1. **What's working well?**
2. **What's not working well?**
3. **What's needed?**
  - Short-term opportunities (low-hanging fruit)
  - Long-term opportunities
  - Additional analyses?
  - Public Education and outreach
  - Monitoring



# Opportunities Analysis (25 Minutes)

**Using the map, identify priority areas for implementation and take note of:**

- 1. Critical Areas**
- 2. Priority Implementation Actions**
- 3. Opportunities**
  - Implementation
  - Partnerships
  - Monitoring
  - Public Education etc.

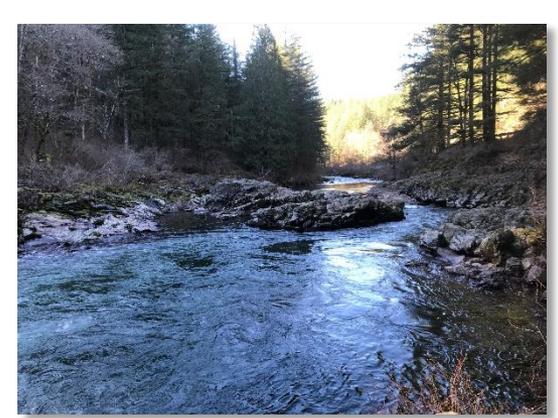


# Needs Assessment (15 Minutes)

**What is needed to achieve clean water?**

- 1. Information gaps**
- 2. Presentations/speakers**
- 3. Resources**
  - Technical assistance
  - Funding
  - New Partnerships
- 4. How can Ecology support you?**



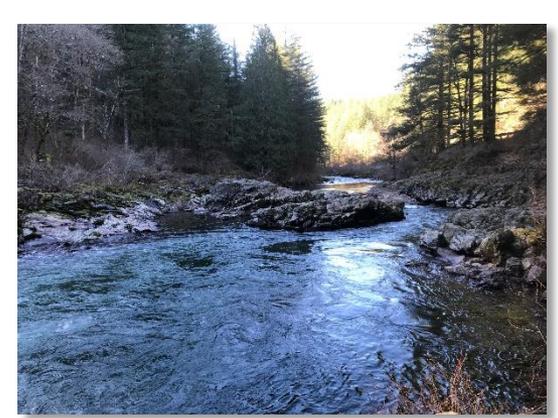


# Break – 10 Minutes



# Report Out & Next Steps



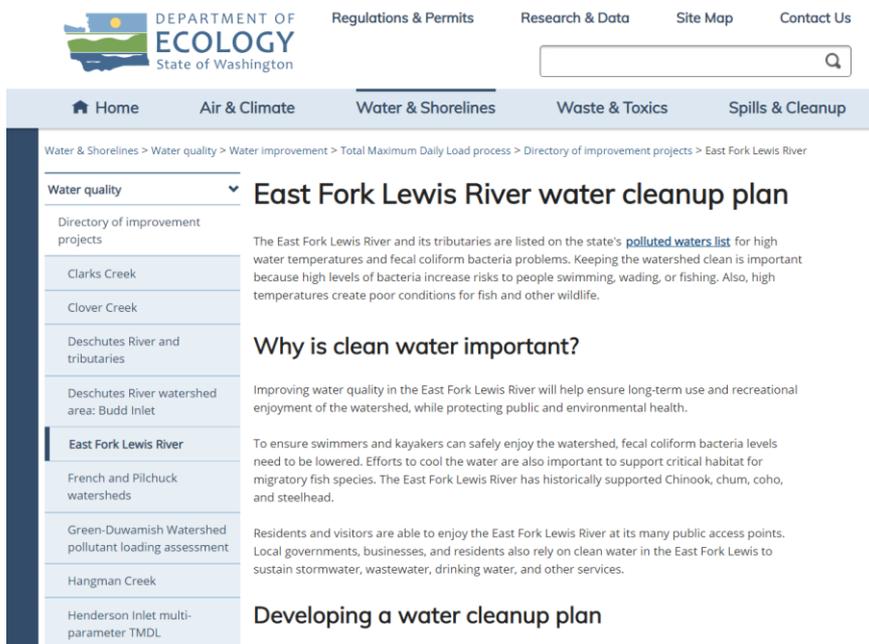


# Next Steps



# East Fork Lewis River Website

## Stay up to date!



DEPARTMENT OF ECOLOGY  
State of Washington

Regulations & Permits   Research & Data   Site Map   Contact Us

Home   Air & Climate   Water & Shorelines   Waste & Toxics   Spills & Cleanup

Water & Shorelines > Water quality > Water improvement > Total Maximum Daily Load process > Directory of improvement projects > East Fork Lewis River

**Water quality**   **East Fork Lewis River water cleanup plan**

Directory of improvement projects

- Clarks Creek
- Clover Creek
- Deschutes River and tributaries
- Deschutes River watershed area: Budd Inlet
- East Fork Lewis River**
- French and Pilchuck watersheds
- Green-Duwamish Watershed pollutant loading assessment
- Hangman Creek
- Henderson Inlet multi-parameter TMDL

The East Fork Lewis River and its tributaries are listed on the state's [polluted waters list](#) for high water temperatures and fecal coliform bacteria problems. Keeping the watershed clean is important because high levels of bacteria increase risks to people swimming, wading, or fishing. Also, high temperatures create poor conditions for fish and other wildlife.

### Why is clean water important?

Improving water quality in the East Fork Lewis River will help ensure long-term use and recreational enjoyment of the watershed, while protecting public and environmental health.

To ensure swimmers and kayakers can safely enjoy the watershed, fecal coliform bacteria levels need to be lowered. Efforts to cool the water are also important to support critical habitat for migratory fish species. The East Fork Lewis River has historically supported Chinook, chum, coho, and steelhead.

Residents and visitors are able to enjoy the East Fork Lewis River at its many public access points. Local governments, businesses, and residents also rely on clean water in the East Fork Lewis to sustain stormwater, wastewater, drinking water, and other services.

### Developing a water cleanup plan



Department of Ecology  
Committees, Boards, and Workgroups

Overview   View our committees

## East Fork Lewis River Partnership

# East Fork Lewis River Partnership

## for clean water



[Return to Department of Ecology website](#) | [East Fork Lewis River webpage](#) | [East Fork Lewis River Watershed Bacteria and Temperature Source Assessment Report](#) | [Learn more about the East Fork Lewis River Partnership today!](#)



# Water Quality Combined Funding Update

- **FY2020 Applications**
  - **December 2018** - Screening and evaluating
  - **January 2019** - Draft funding list expected
  - 30 day public comment period
  - Draft funding to legislature for approval
  - **July 2019** - Final funding list and letters expected
    - Following budget approval
  - **Prepare to apply next year!**
    - Guidelines and application don't often change much!

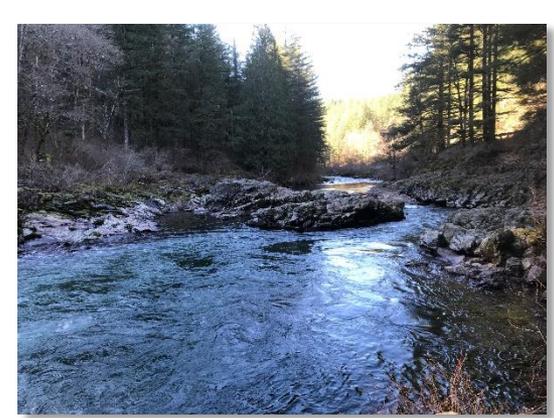


# Call for Projects

## Creating a project pipeline

- **More information TBA in 2019**
- **Goals**
  - Project pipeline
  - Grant pre-proposal
  - Early planning and coordination
  - Support from Ecology – TMDL, NPS, Grants staff





# Thank You!

Devan Rostorfer, TMDL Lead

Shawn Ultican, Nonpoint Source Specialist

Jennifer Riedmayer, Nonpoint Source Specialist

Brett Raunig, Water Quality Program

