

# ENHANCING RIPARIAN FUNCTIONS THROUGH LANDSCAPE-SCALE IPM

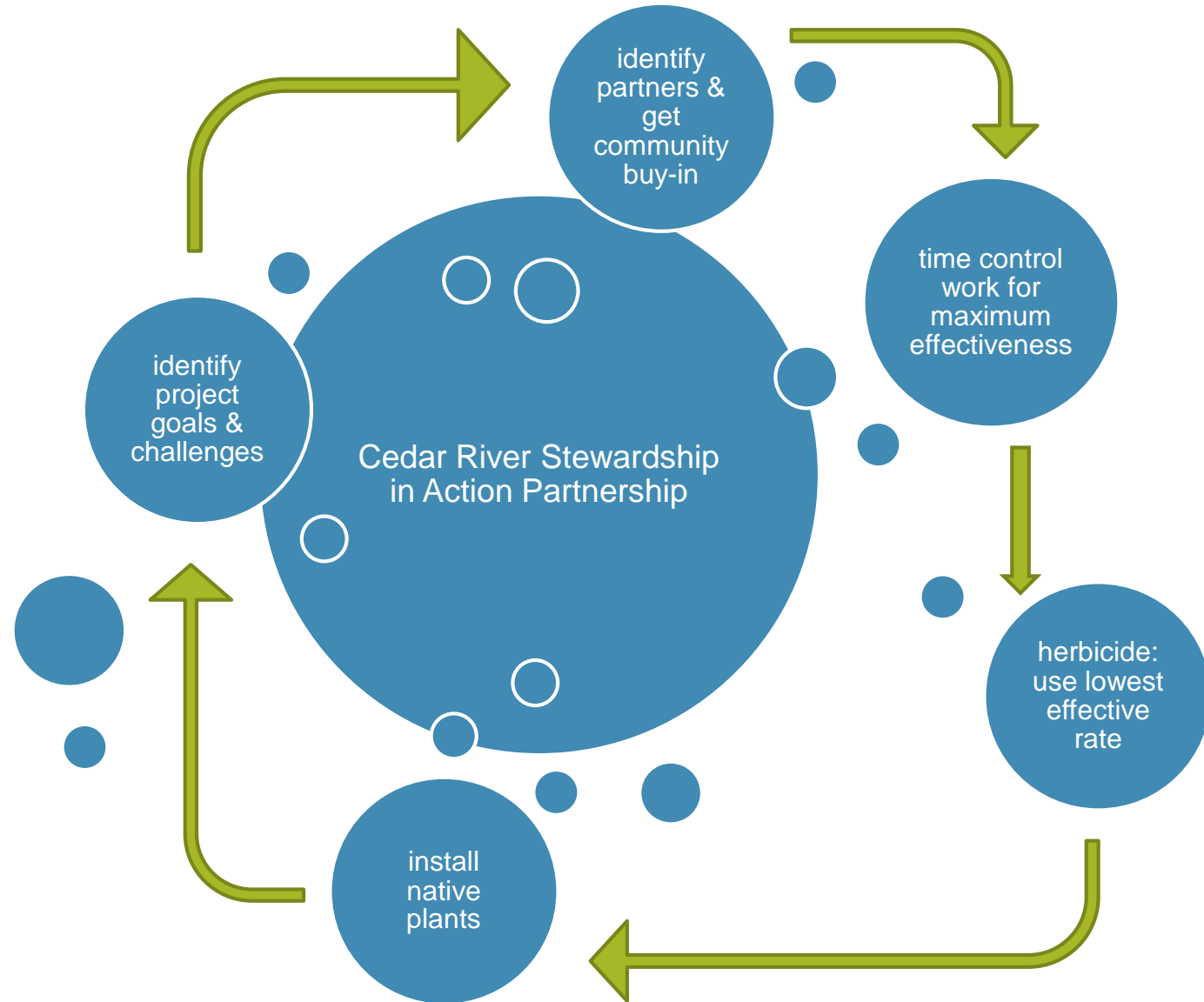
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WITH LOCAL GOVERNMENTS, NON-PROFITS & PRIVATE LANDOWNERS





at a glance:







2007: Landowner CONCERN about  
knotweed on the river







**KNOTWEED: what is it & where did it come from?**







# 2008 – 2009: Treatment Begins



Cedar River at Dorre Don Natural Area  
Before treatment 2008



Cedar River at Dorre Don Natural Area  
After treatment 2009



# 2010: Cedar River Stewardship in Action (SiA) partnership is formed



- CONTROL knotweed



- IMPROVE water quality



- RESTORE river habitat

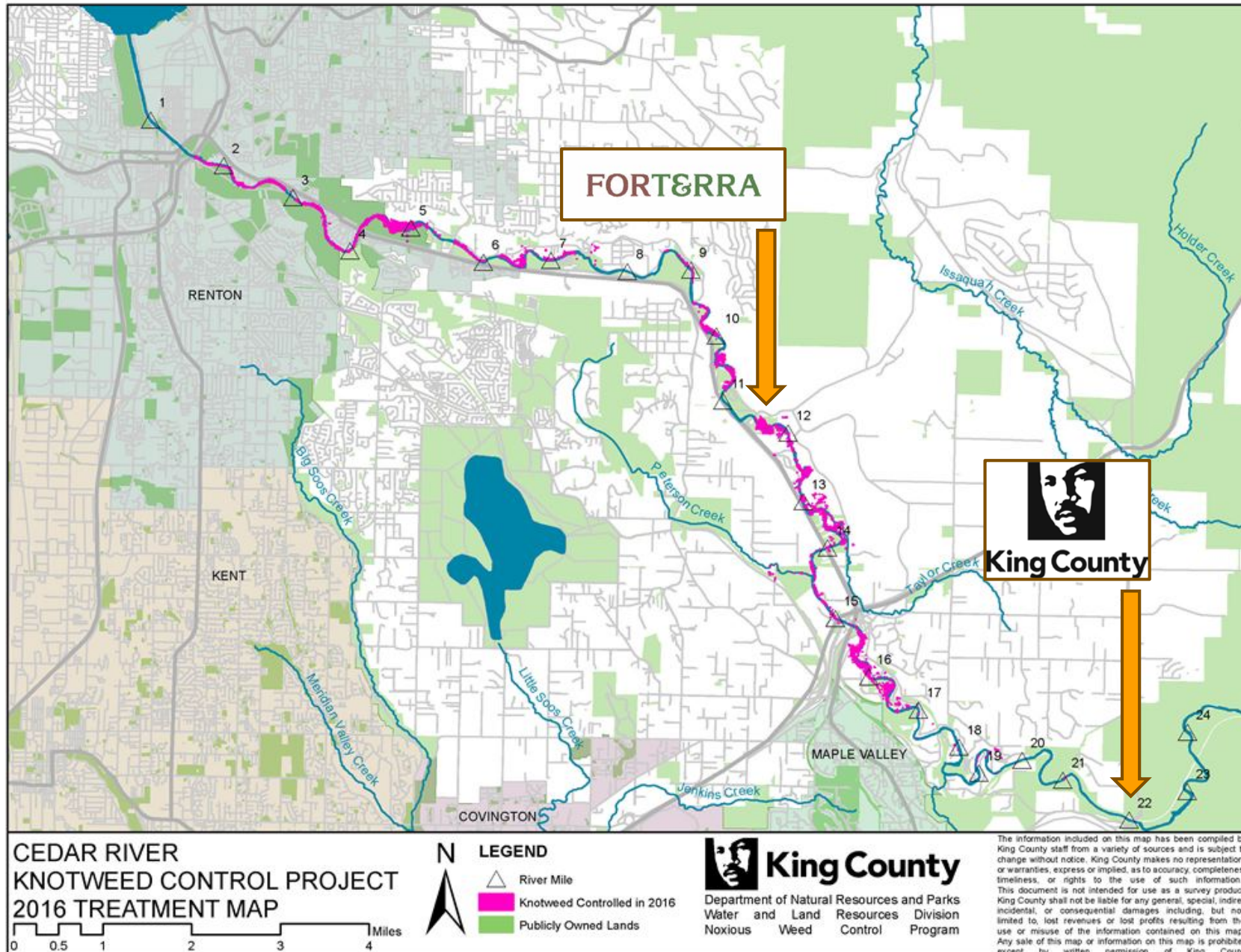


# Partners & Coordinating Entities



# Project Areas

- Forterra project:  
Cedar Grove Road  
to Lake Washington
- KCNWCP project:  
Landsburg Bridge to  
Cedar Grove Road





A photograph showing a group of people, mostly wearing dark clothing and boots, walking away from the camera on a dirt path. The path is covered with fallen leaves. To the right of the path is a dense thicket of green plants, identified as knotweed. In the background, there are tall, thin trees, identified as cedar. The scene is outdoors and appears to be a field or a wooded area. A semi-transparent white box with green text is overlaid on the right side of the image.

## 2013: Regulation of Knotweed on the Cedar



# Cedar River SiA: Knotweed Control

- Knotweed footprint reduced by **90%**
- **800+** landowners assisted with knotweed control yearly
- **1,500+** acres of floodplain surveyed yearly



Survey/treatment of Peterson Creek, a tributary of the Cedar River



# CHEMICAL CONTROL: a retrospective



- HOLLOW STEM INJECTION



- BEND & FOLIAR SPRAY



- FOLIAR SPRAY



But why don't you just dig it up?



# INJECTION

- Targeted
- Effective
- Rainy Day Control
- **Slow**
- **Expensive**
- **Max Label Rate**



Maria injecting knotweed



## BEND & SPRAY

- Use less mix
- No overhead work
- **More time**
- **Less effective?**
- **Combo mix of glyphosate & imazapyr**



Bending knotweed to prep for treatment



# FOLIAR SPRAY

- Minimal herbicide
- Fast
- Effective
- Drift potential
- Weather restrictions
- Potential pollinator interaction



Erin getting ready to climb up riverbank to spray knotweed



# Science & Best Management Practices

## Knotweed Treatment In the Cedar River Municipal Watershed 2013 - 2015

Annual Report  
Seattle Public Utilities and Neighborhoods Committee  
Seattle City Council



## Knotweed Treatment Update - or - "The Swimming Pool Studies"

Tim Miller  
WSU NWREC



Washington  
State Department of  
Agriculture

Washington State Department of Agriculture  
Pesticide Management Division  
Registration and Licensing Services Program  
PO Box 42560 • Olympia WA 98504-2560  
Telephone (360) 902-2030 • FAX (360) 902-2093

### Spray Adjuvants Registered for Use on Aquatic Sites in Washington (Revised May 15, 2017)

These spray adjuvants are registered for use on aquatic sites in Washington, as of May 15, 2017. Before distributing or using an adjuvant, please verify that it is currently registered in Washington.

Spray adjuvants are listed in alphabetical order. No discrimination or endorsement is intended. The aquatic acute toxicity data are from studies that were submitted by the registrants.

Product Name / State Registration Number	Registrant	Principal Functioning Agents	Acute Toxicity - Rainbow Trout	Acute Toxicity - Daphnids
Agri-Dex / 5905-50094	Helena Chemical Company	Petroleum oil, polyoxyethylene sorbitan fatty acid ester, sorbitan fatty acid ester	LC50 (96 hour) >1000 mg/l, Practically non-toxic	LC50 (48 hour) >1000 mg/l, Practically non-toxic
AgriSolutions Inergy / 1381-13001	Winfield Solutions	Modified vegetable (seed) oil, polysiloxane polyether copolymer, alkyl phenol ethoxylate	LC50 (96 hour) 37.5 mg/l, Slightly toxic	EC50 (48 hour) 127.27 mg/l, Practically non-toxic
Atmos / 1381-13006	Winfield Solutions	Modified vegetable (seed) oil, saccharides, sorbitan fatty acid ester	LC50 (96 hour) 21.71 mg/L, Slightly toxic	EC50 (48 hour) 28.63 mg/L, Slightly toxic

Lots of studies & information (much of it from here in WA)!



# Forterra Style

- July – September
- 0.75% aquatic imazapyr
- 1% aquatic surfactant



Forterra crew member treating at Ron Regis Park in Renton



# KCNWCP Style

- August - October
- 1% aquatic imazapyr
- 1% aquatic surfactant (Agri-Dex preferred)
- **Tried 4% glyphosate (didn't like results)**



Erin treating a patch of surprise-landslide knotweed on the Cedar



# KCNWCP: 2017 Season Glyphosate Treatment

4% Aqua Neat, 1% Agri-Dex

## WHY SWITCH?

- Used imazapyr 6+ seasons
- Lingering, stunted plants
- Try a new mode of action
- Maybe imazapyr more effective 2018?

## WHAT HAPPENED in 2018?

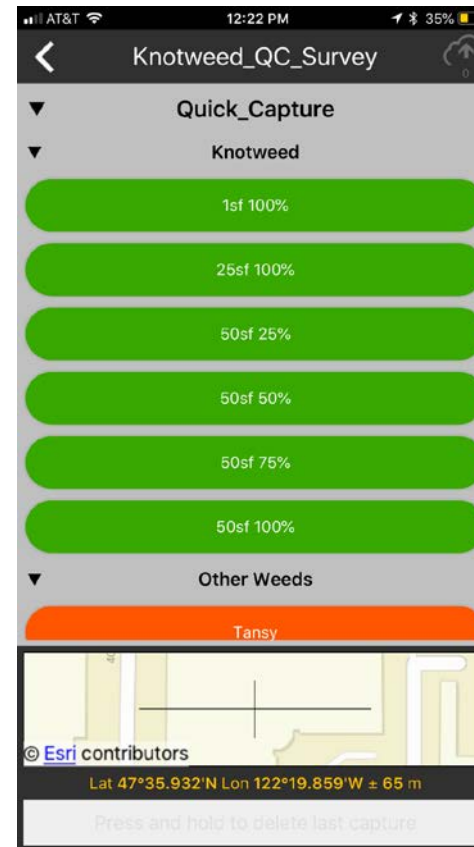
- Above ground biomass larger
- Knotweed flowering!
- Landowners freaking out
- Resumed spraying 1% imazapyr, 1% Agri-Dex

If using glyphosate should rate be 5%?



# 2018 TECH

- Quick Capture + Collector
- Easy
- Fast
- Almost Live
- Team tracks visible
- Multi-agency potential
- Less post-processing

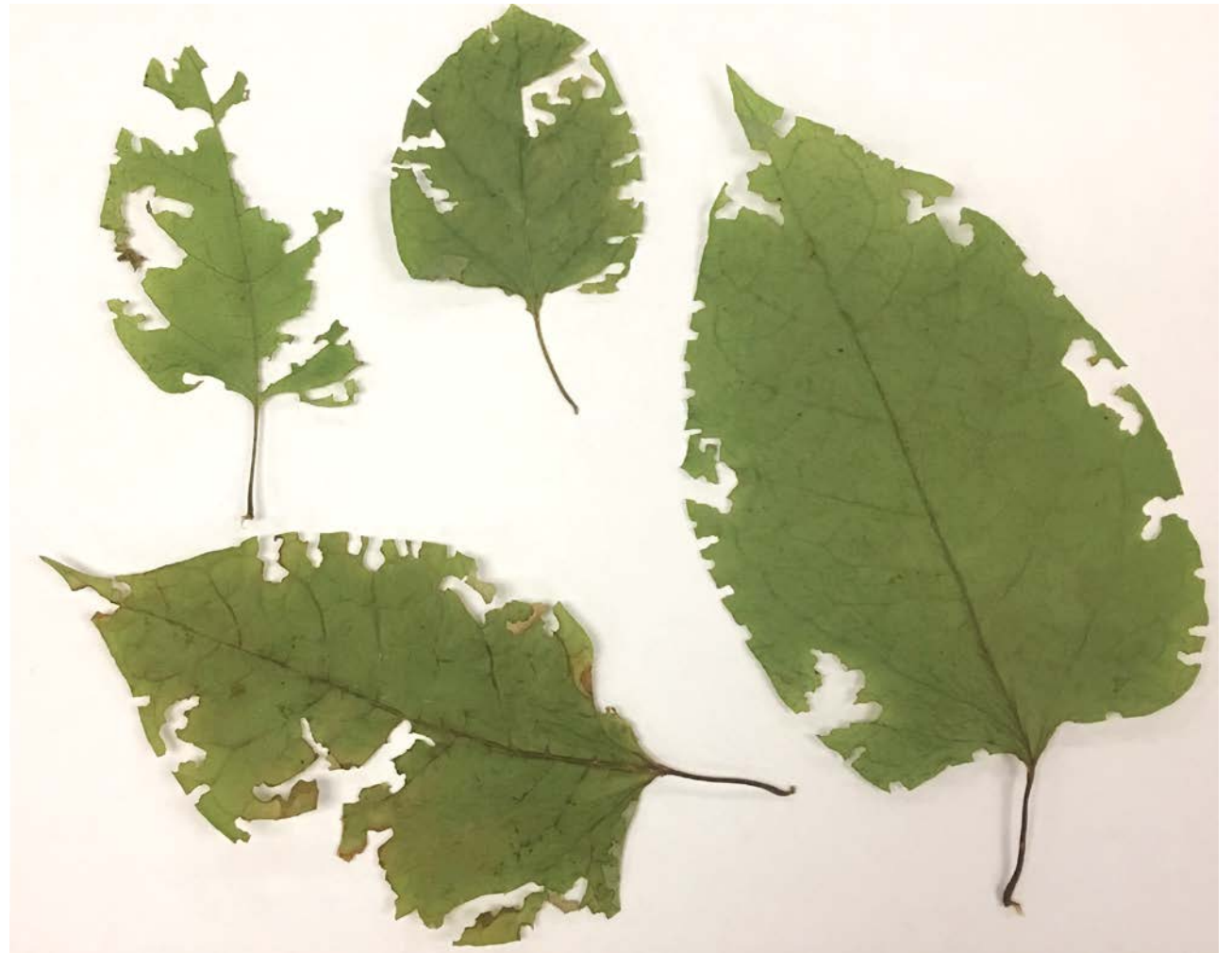


Upload points & tracks from Quick Capture to Collector in field!



# 2018 Season Observations

- Deer & elk browsing
- Leaf chew
- Dormancy
- Smoke/ air quality
- Blackberry takeover



What is chewing this knotweed?







# PLANTING



Boating people, tools and plugs to plant a hard-to-reach area



Bucket brigade to get plants across the side channel



# PLANTING



2016



2018



# PLANTING: Urban Areas





# Cedar River SiA: Native Plant Installation

- **50+** landowners signed up to receive native plants
- **96,000+** native trees and shrubs planted
- **100%** planting projects co-designed by landowners



Washington Conservation Corps member planting a western hemlock





NEW!

2018: ALL of  
the Cedar is in  
Restoration!!



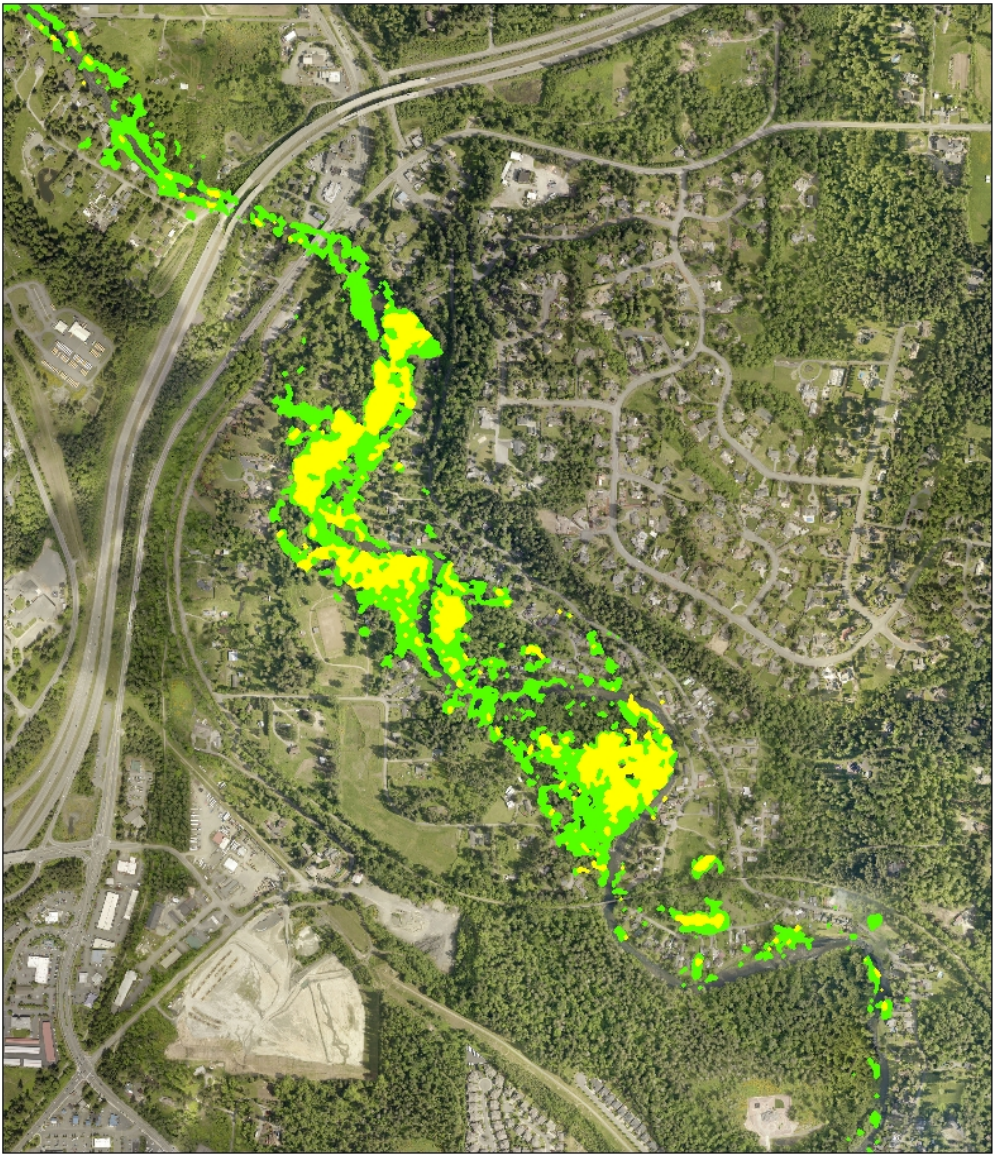
• Knotweed treated in 2018



# There is still work to be done...

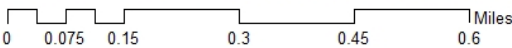


	Acres surveyed/ controlled	Approx \$	Cost per acre
2015 Renton	116	\$ 22,898.44	\$ 197.40
2016 Renton	234	\$ 26,587.60	\$113.62
2017 Renton	196	\$ 17,370.35	\$ 88.62



Knotweed Gross Area Footprint Comparison Map

Cedar River - Saddle Club Reach



- 2017 Knotweed Not Seen
- 2017 Knotweed Treated





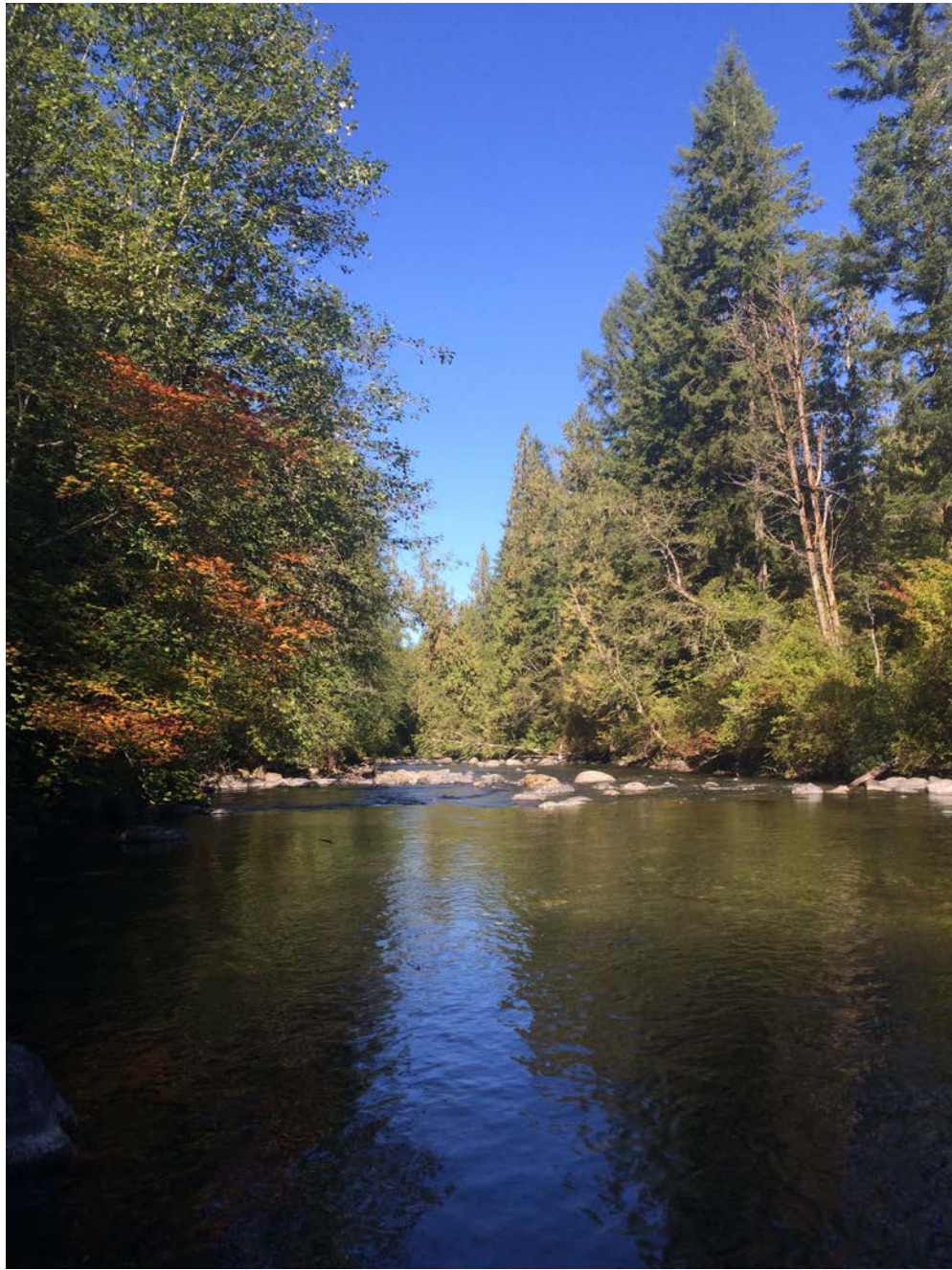


# Stewardship in Action: the Long View



SiA seeks to educate, engage, and empower our community to take part in stewardship for long term health of riparian systems





QUESTIONS?





# Slide References & Helpful Links

- **King County Noxious Weed List:** <https://kingcounty.gov/services/environment/animals-and-plants/noxious-weeds/laws/list.aspx>
- **Spray Adjuvants Registered for Use on Aquatic Sites in Washington:** list circulated by WSDA
- **"Swimming Pool Studies"** <http://www.clallam.net/weed/doc/MillerSwimPool.pdf>
- **"Knotweed Control in the Cedar River Municipal Watershed"**  
[http://www.seattle.gov/util/cs/groups/public/@spu/@ssw/documents/webcontent/1\\_047691.pdf](http://www.seattle.gov/util/cs/groups/public/@spu/@ssw/documents/webcontent/1_047691.pdf)
- **King County Best Management Practices Invasive Knotweeds**  
<http://your.kingcounty.gov/dnrp/library/water-and-land/weeds/BMPs/Knotweed-Control.pdf>
- **Knotweed Control Videos** <https://www.kingcounty.gov/services/environment/animals-and-plants/noxious-weeds/weed-identification/invasive-knotweeds/knotweed-control-video.aspx>
- **"How do Herbicides Actually Kill Plants"** <http://www.clallam.net/weed/doc/MillerMOA.pdf>