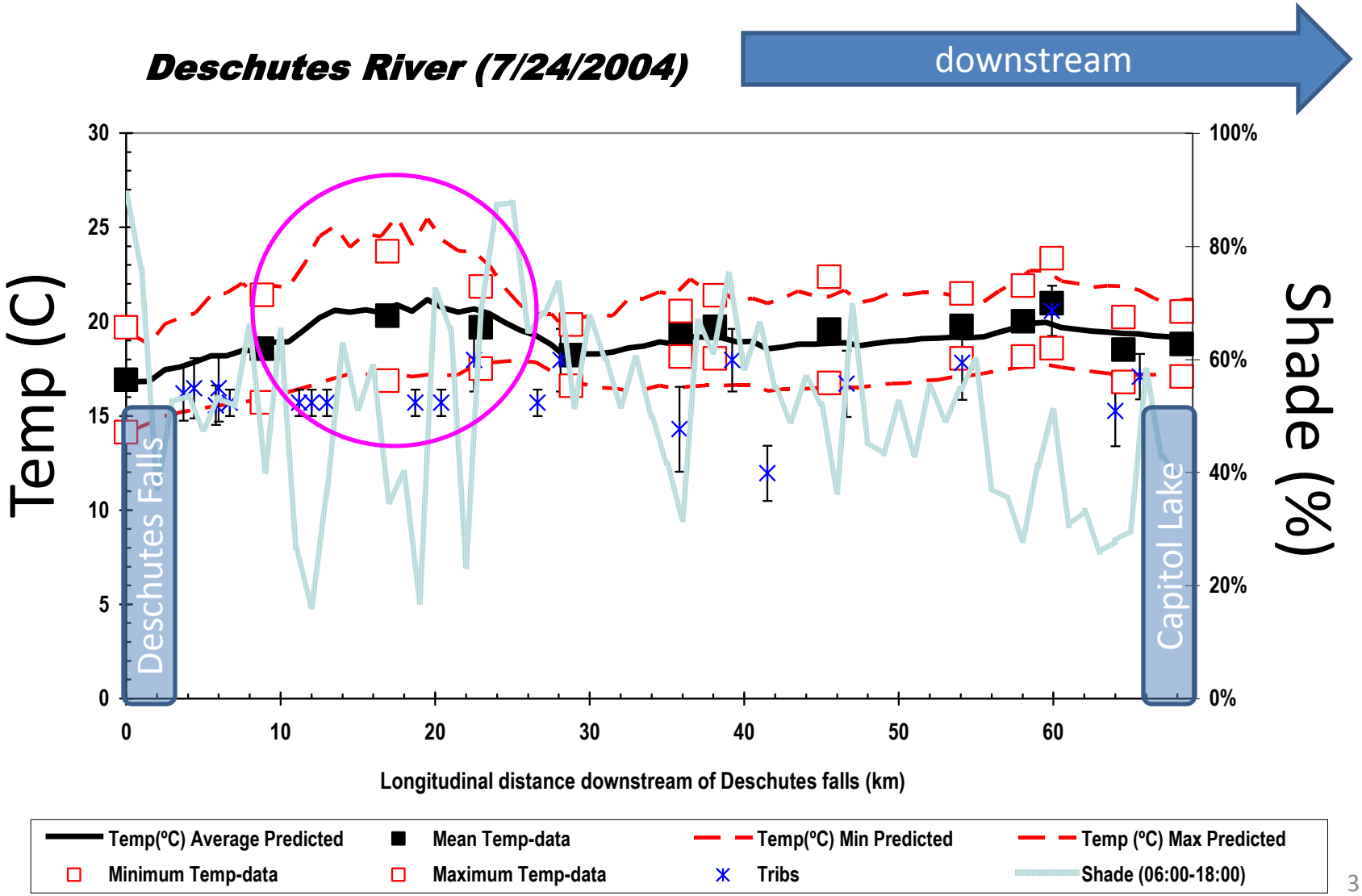
Deschutes TMDL Advisory Group
Focus on the
Upper Watershed

April 15, 2010

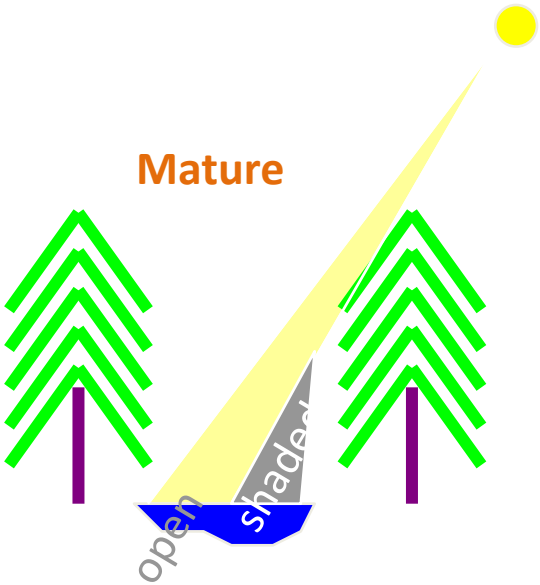
Pollutants of Concern

- Temperature
- Dissolved Oxygen
- pH
- Fine Sediments
- Fecal Coliform

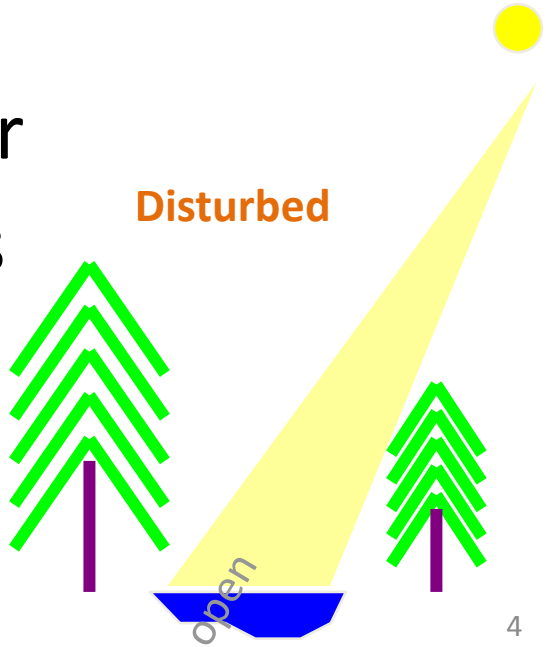
Temperature profile



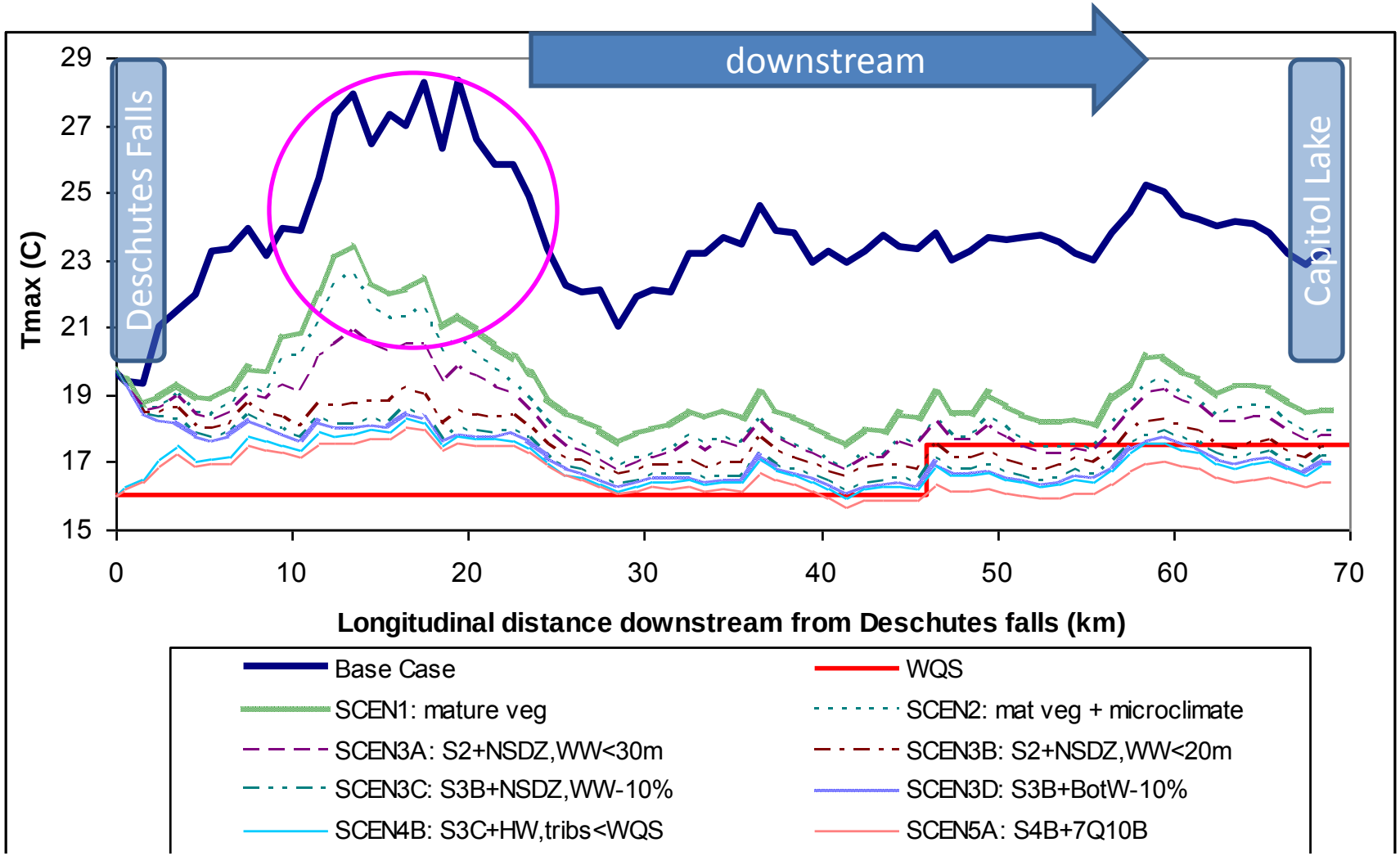
What affects stream temperature?



- Solar radiation
- Shade
  - Vegetation/Topography
  - Stream width
- Hot discharges
- Cool groundwater
- Cooling in gravels
- Air temperature



Temperature benefits of management actions



Partners & Presenters

Forestry

Washington FARM FORESTRY ASSOCIATION

WFPA

SOCIETY OF AMERICAN FORESTERS 1900

Weyerhaeuser

Local Government

THURSTON COUNTY WASHINGTON SINCE 1852

Thurston Conservation District

Tribe

Squaxin Island Tribe

State Government

DEPARTMENT OF ECOLOGY State of Washington

WASHINGTON STATE DEPARTMENT OF Natural Resources

The 4 Forest & Fish Goals

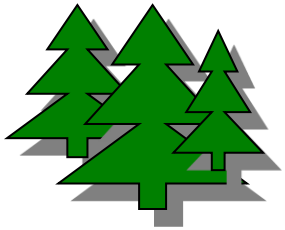
Clean Water Act Compliance

Endangered Species Act Compliance

Harvestable Runs of Fish

Viable Timber Industry

WA State Regulatory Authority



RCW 76.09 - Forest Practices
Department of Natural Resources

RCW 90.48 – Water Pollution Control
Department of Ecology

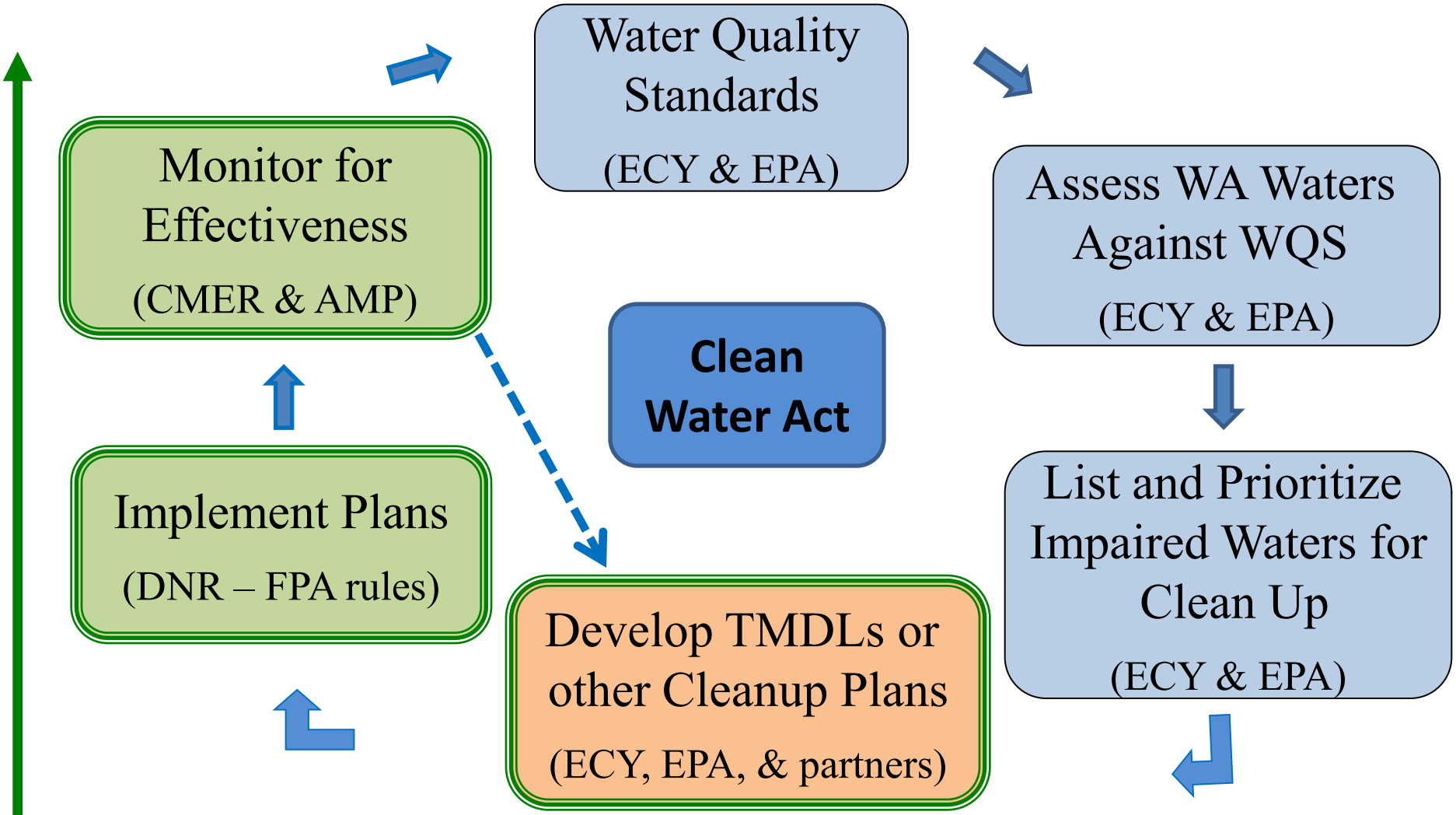
Clean Water Act Assurances

Primarily forest lands – Ecology generally doesn't develop a TMDL.

Mixed Use Watershed – implementation is through the Forest & Fish rules.

No more stringent CWA requirements – unless through a formal Adaptive Management Plan.

Water Quality Based Approach



Application of CWA Assurances and the adaptive management program

Forest and Fish Riparian Rules

Goals

- Protect covered resources
- Achieve restoration of high levels of riparian function
- Maintain those levels

Covered Resources

- Water Quality
- Fish
- Six specific stream-associated amphibian species

Riparian Functions

- Bank Stability
- Woody Debris Recruitment
- Leaf Litter Fall
- Nutrients
- Sediment Filtering
- Shade

Riparian Protection

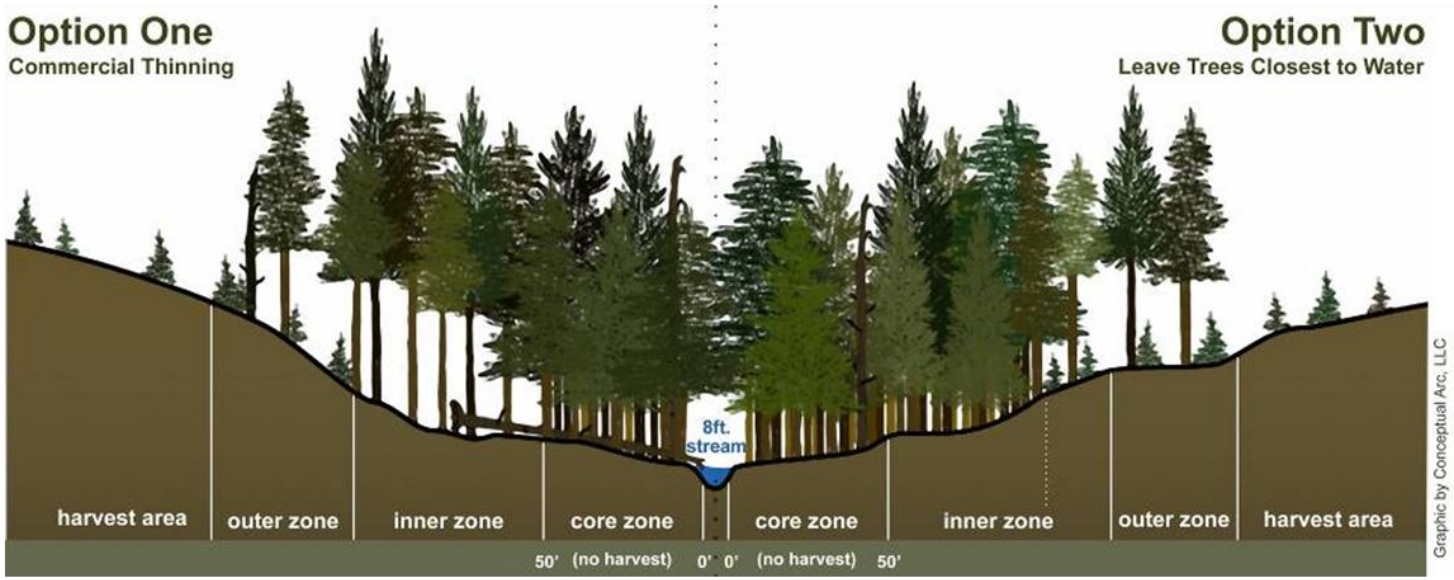
Modified stream typing based on habitat

Wider buffers for fish streams

Additional protection for non-fish streams (perennial & seasonal)

Temperature (Shade, LWD)

- Tripled width of streamside buffers
- 60,000 miles of streams on 9.3 million ac.
- $2.1 billion investment in road improvements



Issues for Foresters

- Responsibility to use appropriate BMPs
- Awareness of water quality impacts
- Practices have need to change

Photo credit: John Walkowiak, WSSAF.

Fine Sediments

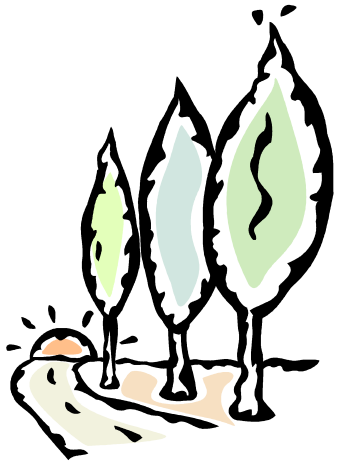
Natural

- Landslides
- Bank erosion
- Stormwater runoff

Human

- Landslides associated with roads
- Unpaved roads
- Forestry activities

Forest Roads

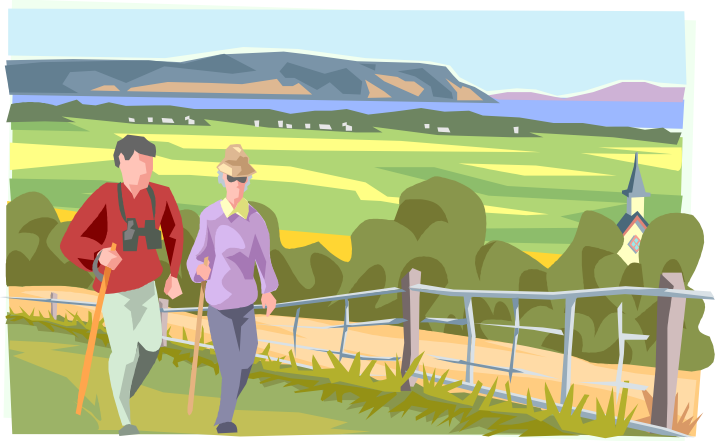


Existing Roads

- Road Maintenance and Abandonment Plans (RMAP)
- Meet water quality standards

New Roads

- Control sediments
- Restore vegetation
- Fish passage
- Large Woody Debris



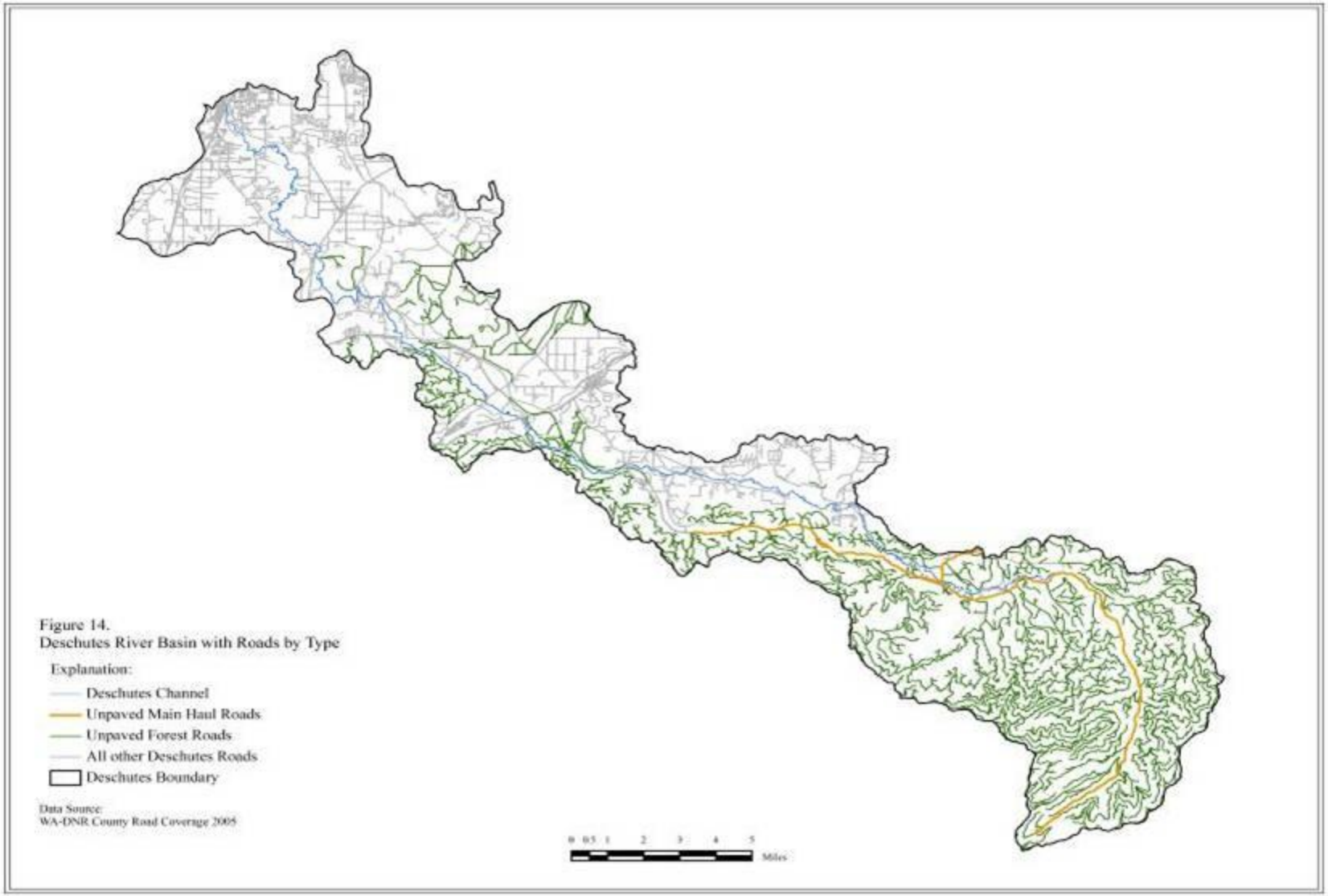


Figure 14.
Deschutes River Basin with Roads by Type
Explanation:
Deschutes Channel
Unpaved Main Haul Roads
Unpaved Forest Roads
All other Deschutes Roads
Deschutes Boundary
Data Source:
WA-DNR County Road Coverage 2005
0 0.5 1 2 3 4 5
Miles

Examples of a Problem

When a stream culvert fails…

… the force can scour and bury stream habitat in sediment.

Examples of Road Improvements

Photo credit: Weyerhaeuser.

Goals

- Protect existing resources
- Improved water quality
- Sustainable forestry
- Increased shade
- Decreased fine sediments
- Decreased temperature

Fecal Coliform Bacteria Loads
Growing Season (May-September)

Station	Count	Water Quality Standards Part 1				Water Quality Standards Part 2					Overall	
		Geomean	WQS Part 1	Meets?	% Reduction	% > WQS Part 2	WQS Part 2	Meets?	90%ile	% Reduction	Meets?	% Reduction
Deschutes River												
13-DES-28.6	12	56.1	100	meets		8.3%	200	meets	213		meets	
13-DES-20.5	10	89.2	100	meets		20.0%	200	**fails**	544	63%	**fails Part 2**	63%
Tributaries to Deschutes River												
13-HUC-00.3	10	10.0	100	meets		0.0%	200	meets	73		meets	
13-REI-00.9	16	102.4	100	**fails**	2%	18.8%	200	**fails**	620	68%	**fails both**	68%

Modified from Table 19.

Fecal Coliform Bacteria Loads
Non-Growing Season (October-April)

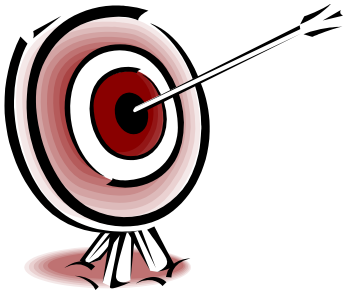
Station	Count	Water Quality Standards Part 1				Water Quality Standards Part 2					Overall	
		Geomean	WQS Part 1	Meets?	% Reduction	% > WQS Part 2	WQS Part 2	Meets?	90%ile	% Reduction	Meets?	% Reduction
Deschutes River												
13-DES-28.6	18	8.1	100	meets		0.0%	200	meets	50		meets	
13-DES-20.5	14	6.5	100	meets		0.0%	200	meets	22		meets	
Tributaries to Deschutes River												
13-HUC-00.3	14	1.3	100	meets		0.0%	200	meets	3		meets	
13-REI-00.9	18	24.8	100	meets		5.6%	200	meets	160		meets	

Modified from Table 20.

Fecal Coliform Bacteria

Wasteload Targets

None recommended



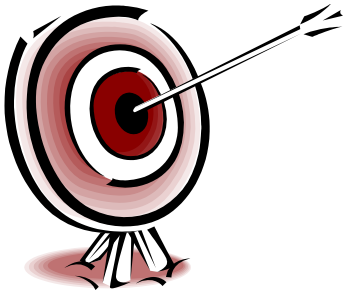
Temperature Load Targets

Deschutes River km	Station	Description	7DADmax		WQS	Meets WQS?	Target (ºC)	Load target
			2003 (ºC)	2004 (ºC)				
3.7	13-THU-00.1	Thurston Creek at 3000 Rd.	16.72		16.0	**no**	16.0	Full mature riparian shade
4.4	13-JOH-00.1	Johnson Creek at 3000 Rd.	17.14		16.0	**no**	16.0	Full mature riparian shade
5.8	13-HUC-00.3	Huckleberry Creek at 3000 Rd.	15.62		16.0	yes		*
6	13-MIT-00.2	Mitchell Creek at 3000 Rd.	17.34		16.0	**no**	16.0	Full mature riparian shade
11.2	13-FAL-00.3	Fall Creek at 1000 Rd.	15.13		16.0	yes		
28.1	13-REI-00.9	Reichel Creek at Vail Loop Rd.	19.01		16.0	**no**	16.0	Full mature riparian shade
31.5	13-DES-22.7spr	Spring near Deschutes River 860 Rd.		11.81	16.0	yes		
35.8	13-SP1-00.1	Spring outlet at Highway 507	15.65		16.0	yes		

Modified from Table 24.

Temperature
Wasteload Targets

None recommended



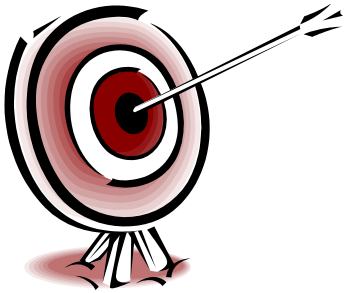
Dissolved Oxygen & pH
Load Targets

Tributary	Target	
	DO min (mg/L)	**pH** min (SU)
Reichel Creek	8.0	6.5

Modified from Table 29.

Dissolved Oxygen & pH
Wasteload Targets

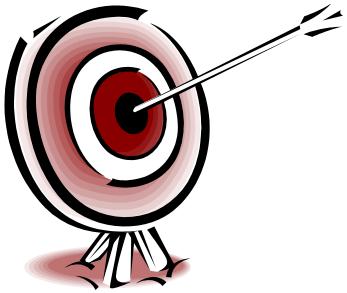
None recommended



Fine Sediment
Load Targets

Reach (River Kilometer)	Reach (Konovsky & Puhn, 2005)	1995 Levels	Current Levels (2004)	12% Target % Reduction	17% Target % Reduction
RK 12.2 to 18.7	19/WeyCo	15.4%	17.3%	-44%	-2%
RK 20.3 to 23.0	22/Lake Lawrence	22.5%	17.0%	-42%	0%

Modified from Table 31.



Fine Sediments
Wasteload Targets

The **Construction Stormwater General Permit** requires that facilities discharging to waterbodies listed as impaired for fine sediment *must* conduct water quality sampling for turbidity.

The **Sand and Gravel General Permit** requires that facilities discharging to a 303(d)-listed waterbody *cannot* increase the loading of the listed pollutant, such as turbidity or fine sediment.

Potential Solutions

Channel Restoration

- Wider streamside buffers
- Protects river banks from erosion
- Increase large woody debris
- Control fine sediments

Traditional

Riparian Restoration

- Increase Shade
- Cooler water
- Increase dissolved oxygen

Potential Solutions

Technical Assistance

Community Involvement

Non-traditional

Public Relations

Tree Stock

Others?

Additional Ideas

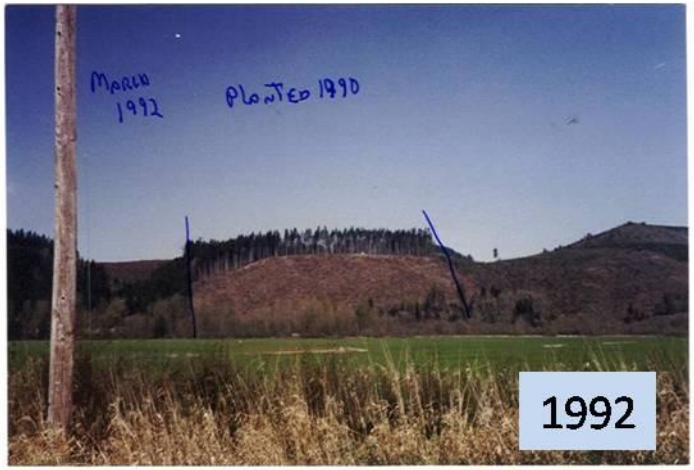
Increase Forest Stewardship

Update Thurston County Critical Areas Ordinance

Increase landowner education & awareness

Support funding for conservation easements

Trees need time to grow…



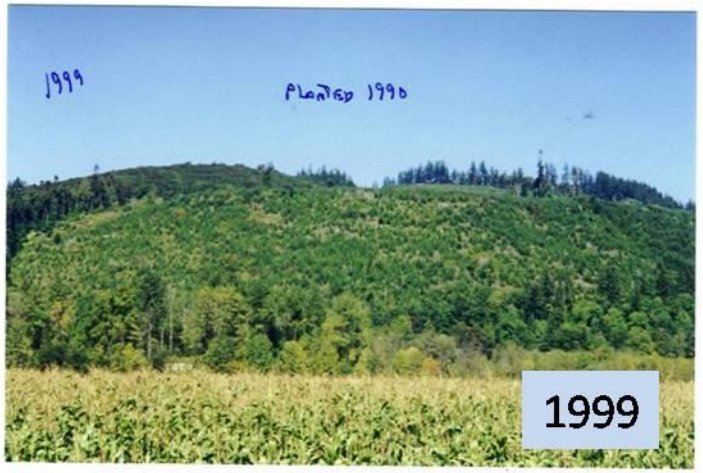


Photo credit: Ken Miller, WA Farm Forestry Association (WFFA)

Let's ask ourselves…

Who is working in this area?

What have they done?

What else is needed?

DEPARTMENT OF ECOLOGY
State of Washington

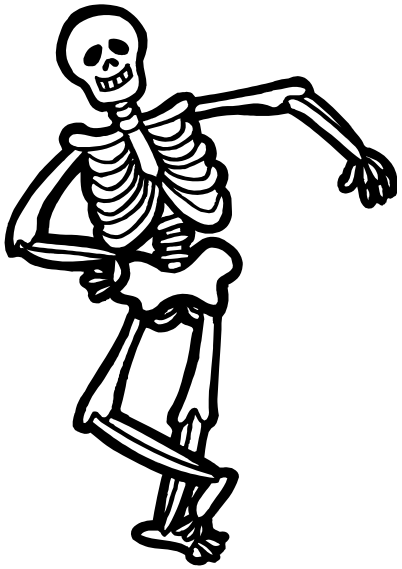
Thurston Conservation District

THURSTON COUNTY
WASHINGTON
SINCE 1852

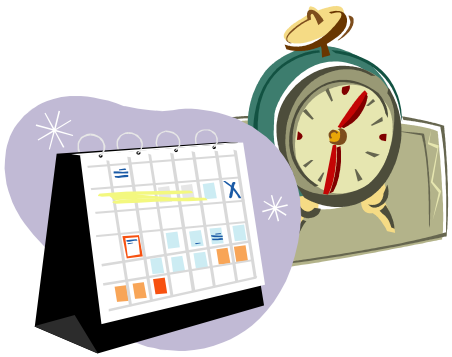
Weyerhaeuser

What next?

- Load allocations
- Wasteload allocations
- Identify activities needed
- Identify who needs to do them
- Identify possible resources
- Draft timeline



Challenges



Forest Carbon

- Presentations from the March 31, 2010, **Forest Carbon Landowner Workshop** are available at www.ecy.wa.gov/climatechange/forestcarbon.htm.
- For questions or comments about the **Forest Carbon Project**, contact Ecology at forestryoffsets@ecy.wa.gov.
- If you're interested in what's going on with **Climate Change** issues, go to www.ecy.wa.gov/climatechange/
- To get on a **ListServe** to receive updates, go to www.ecy.wa.gov/climatechange/contacts.htm

Next Meeting

Date: May 20, 2010

Time: 9:00 a.m. – 12 noon

Place: Tumwater Fire Department

311 Israel Rd. SW

Thanks for coming.
See you in May.

Lydia Wagner
Department of Ecology
Water Cleanup Plan Coordinator
360-407-6329

Lydia.Wagner@ecy.wa.gov

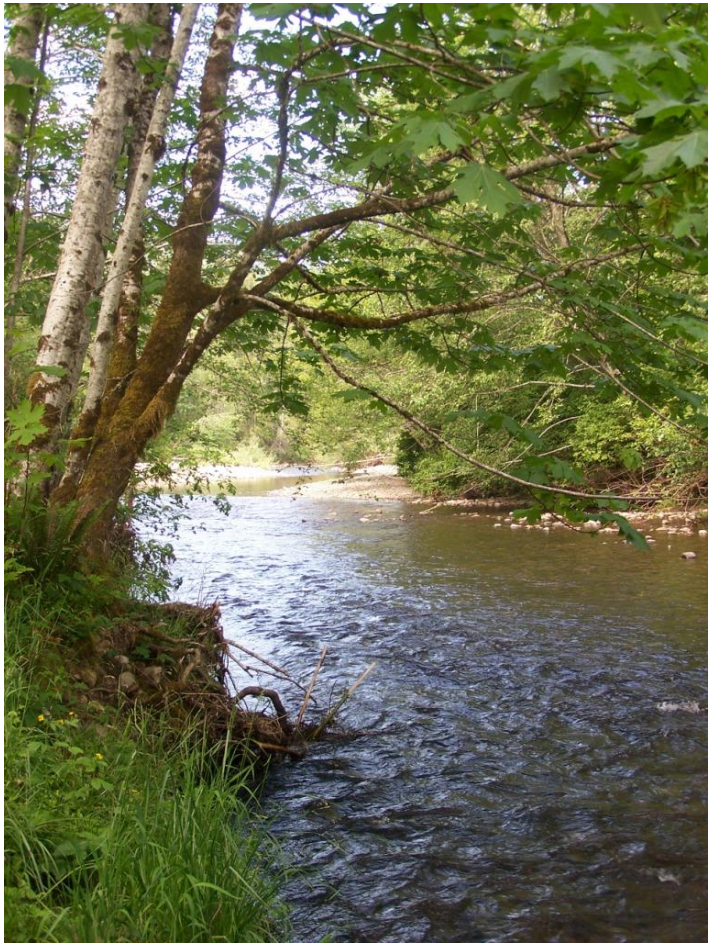


Photo credit: Karla Fowler.