PUBLIC MEETING

DEPARTMENT OF ECOLOGY
State of Washington

Let's Talk About Bacteria in the Bear-Evans Watershed

DouGlas Palenshus
Sinang Lee
Dave Garland
WA Dept. of Ecology

Matt Dunnahoe
Gayle Hoffman
King Conservation District

May 27, 2008
6:30 – 8:00 pm

Woodinville Water District

Co-hosted by Upper Bear Creek Community Council & Water Tenders

6:00 – 6:30 OPEN HOUSE

7:00 – 7:45 PRESENTATIONS

Ecology's Total Maximum Daily Load (TMDL) Study of the bacteria problem

Conservation Districts' plans and technical resources to help reduce the bacteria pollution

7:45 – 8:00 QUESTIONS & DISCUSSION

Ecology's Presentation

TALK OUTLINE

What is a TMDL? Fecal coliform?

Watershed: Study Area

Past & Current Bacteria Conditions

Potential Bacteria Pollution Sources

Recommended Actions

Finding Pollution Sources

What is a TMDL?

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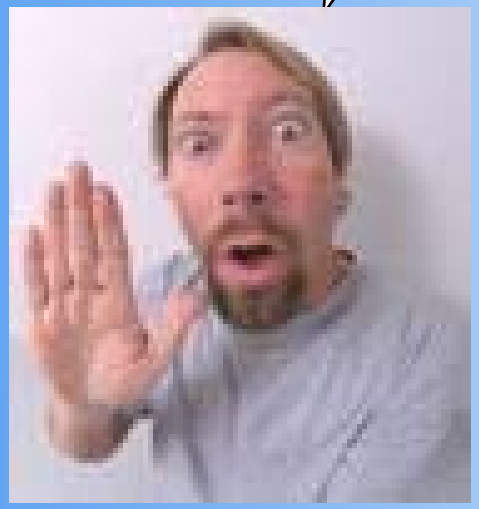
Total **M**aximum **D**aily **L**oad =



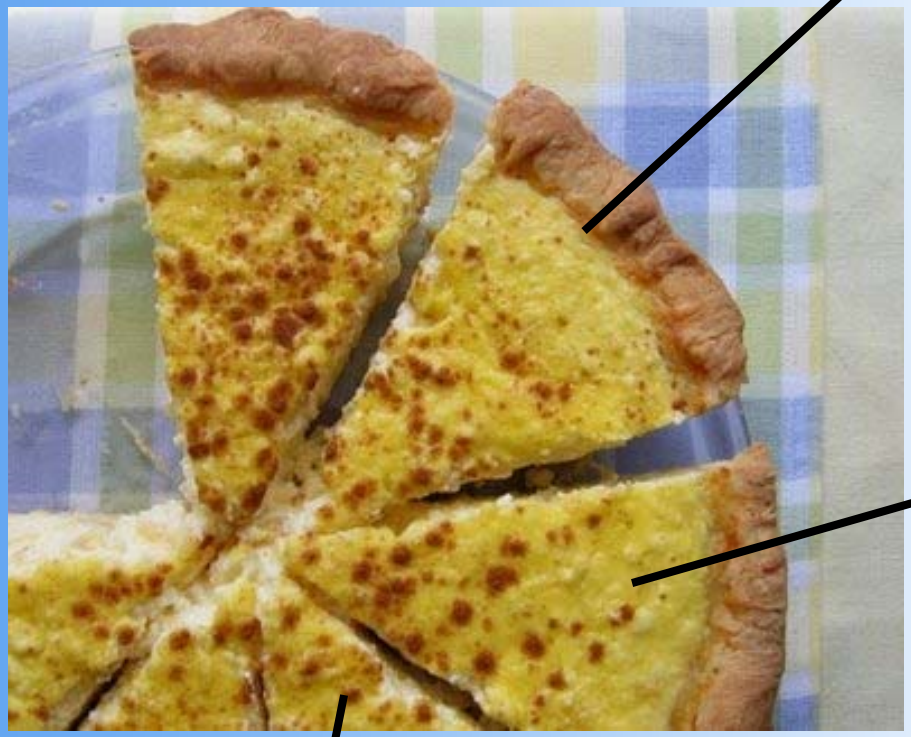
Effort to improve water quality

How much pollutant the creek can handle & still be considered "clean" or "in good health"

Water Quality Improvement Report & Plan

TMDL is like a Pie

Each bacteria source gets a piece of the "TMDL Pie".



Point Sources

Nonpoint Sources

Margin of Safety

What does this TMDL address?

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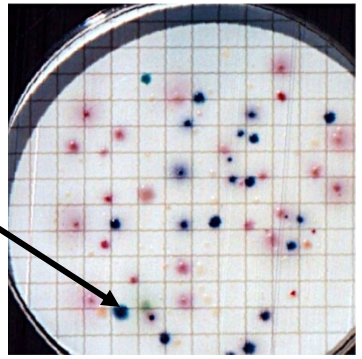
Bear, Evans, and Cottage Lake Creeks have too much **fecal coliform bacteria**

WA State Bacteria Standards	
Geometric Mean Value (GMV) **"Average"**	**90th Percentile Value (90th %)** **"No more than 1 out of 10 samples can exceed this amount"**
50 **bacteria colonies per 100 mL**	**100** **bacteria colonies per 100 mL**

bacteria colony incubated in a petri dish



Other TMDLs underway

Bear Creek, Evans Creek, and Cottage Lake Creek also have water quality problems of:

- **Low dissolved oxygen**
  - lowest 1-day minimum standard = **9.5 mg/L**

- **Warm stream temperatures**
  - 7-day average of daily max temps standard = **16°C (60.8°F)**

Other TMDLs underway

Bear Creek, Evans Creek, and Cottage Lake Creek also have water quality problems of:

Public meeting planned for late summer

.....stay tuned.

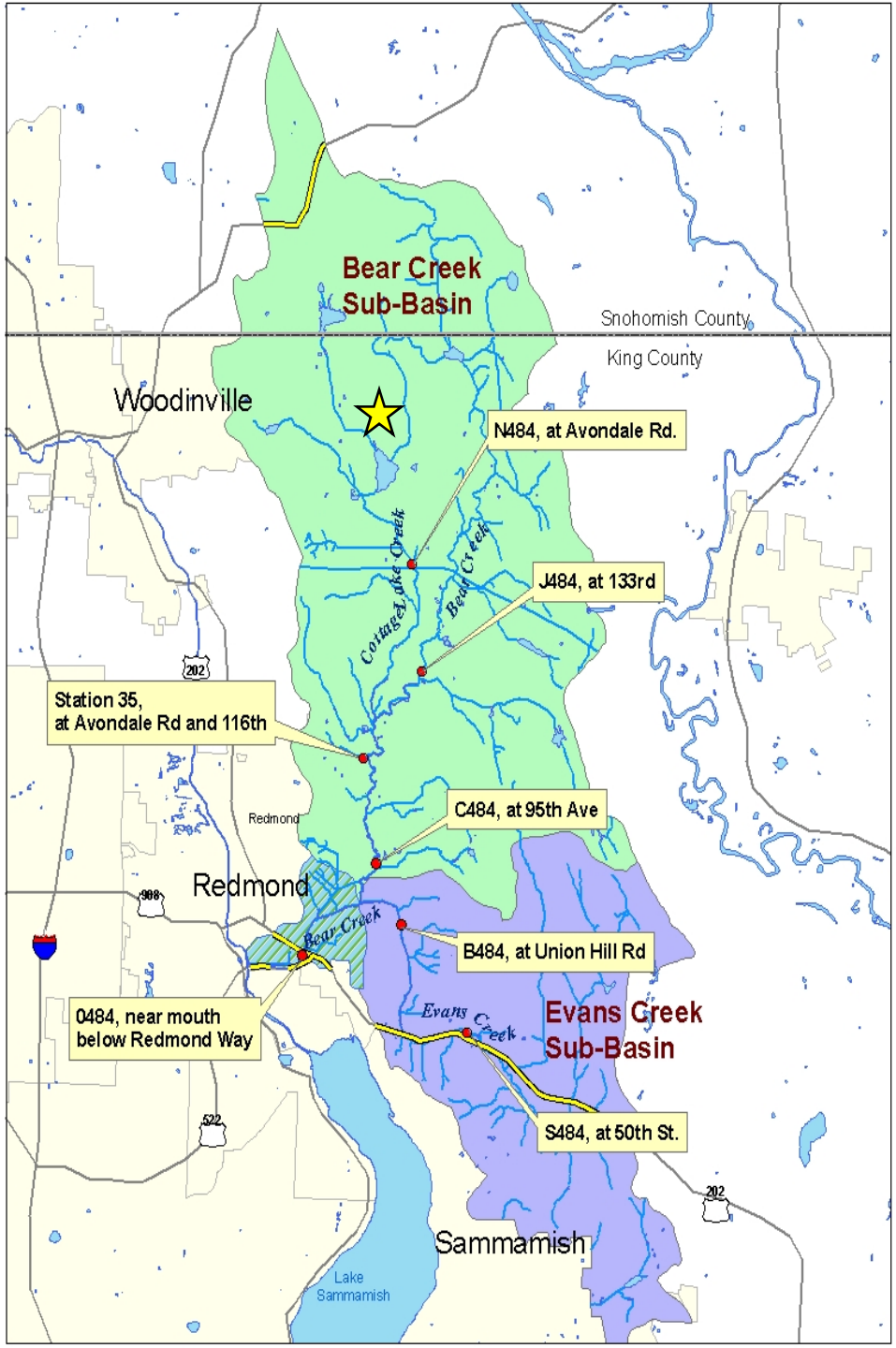
- **Warm stream temperatures**
  - 7-day average of daily max temps standard = **16°C (60.8°F)**

Our watershed, our backyard

Bear Creek

Evans Creek

Bear Creek and Sammamish River confluence



Over 30 years of data show…

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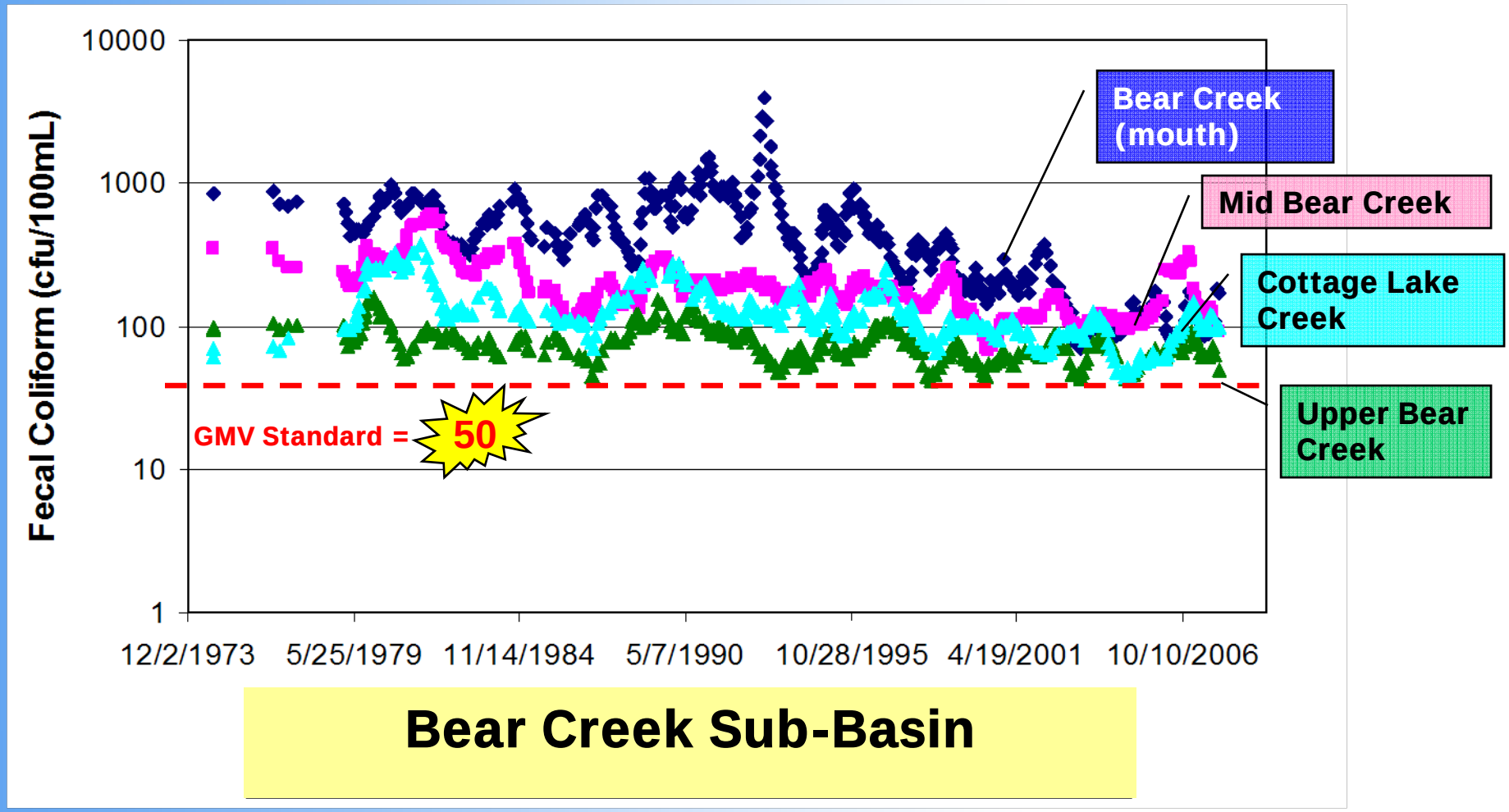
Bacteria concentrations have generally declined, particularly near the mouth of Bear Creek.



Bear Creek Sub-Basin

Looking over 30 years of data

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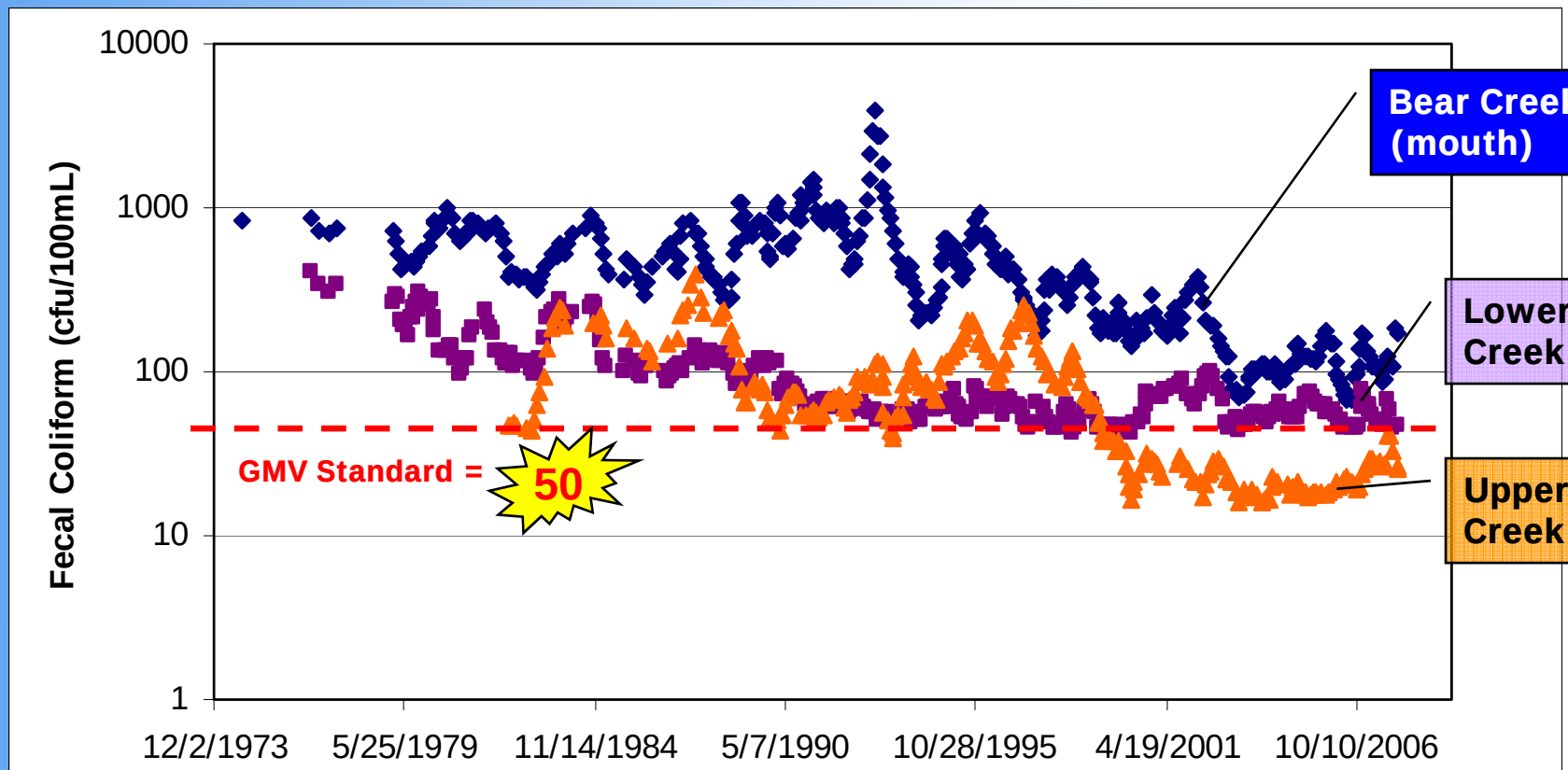
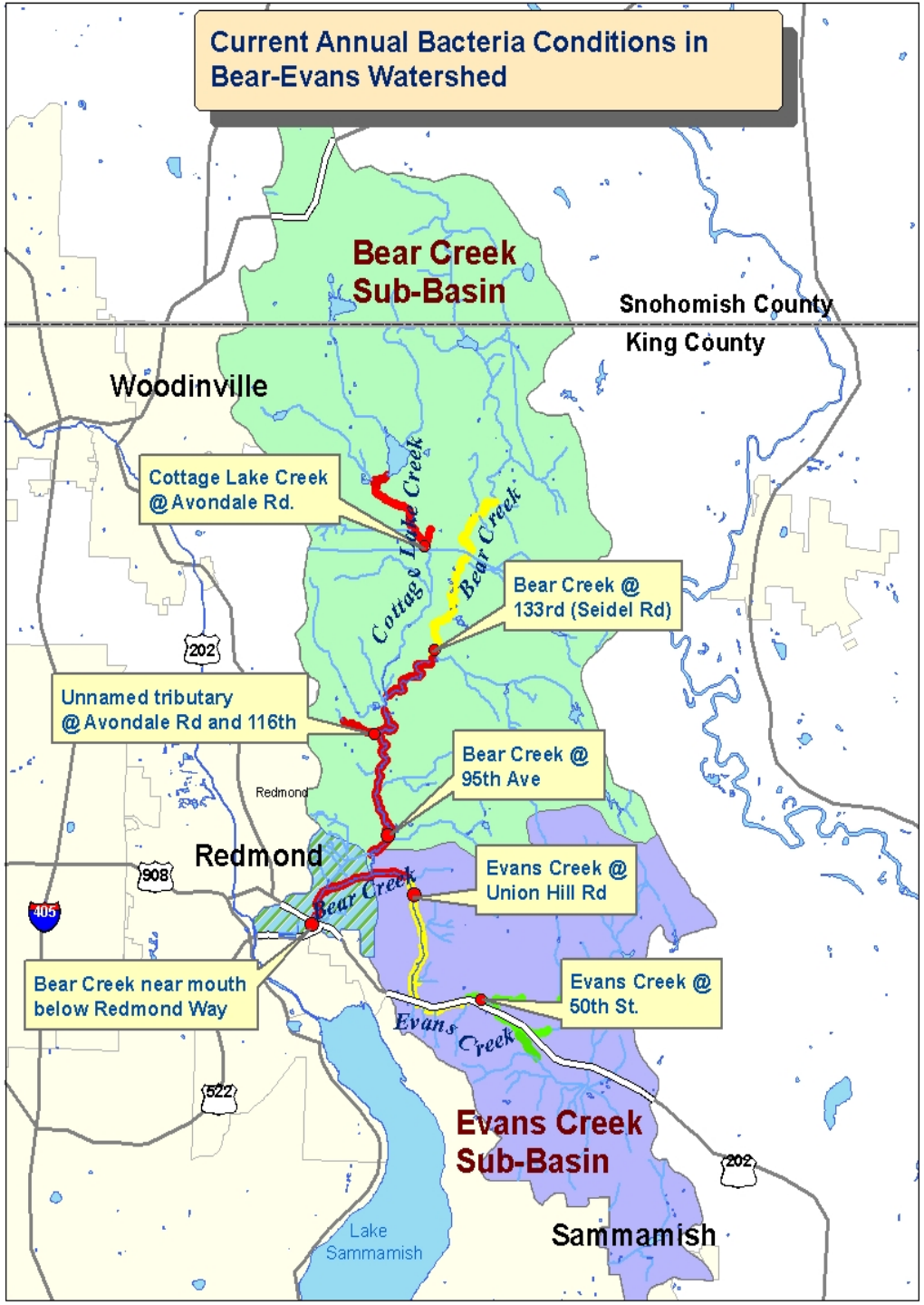
Evans Creek has shown bacteria improvements, particularly in upper Evans Creek at 50th St.



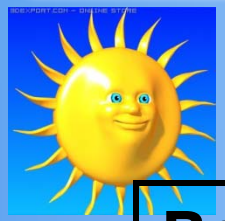
Evans Creek Sub-Basin

What are the recent annual bacteria conditions?

- HIGH bacteria levels beyond state standards
- MODERATE bacteria levels beyond state standards
- Meets state standards for bacteria

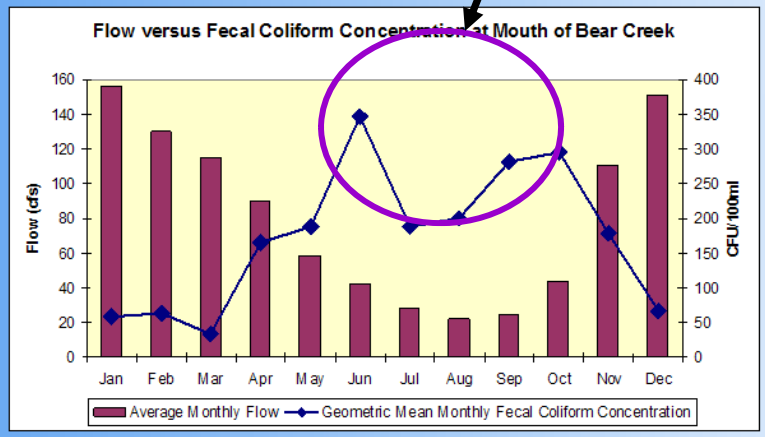


What are the bacteria conditions seasonally?

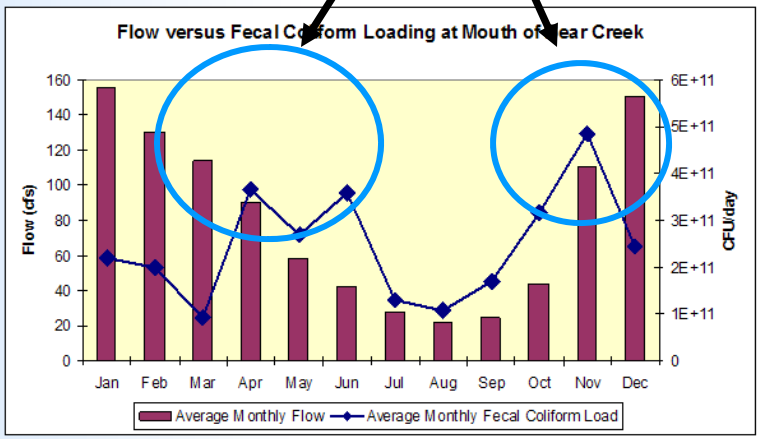


Based on STREAM FLOWS

Bacteria concentrations (colonies per mL of water)	**Bacteria loadings** (colonies per day)
Higher in the Dry Season (May-Sept)	Higher in the Wet Season (Oct-Apr)



Jan → Dec



Jan → Dec

How much bacteria loading can the creek handle?

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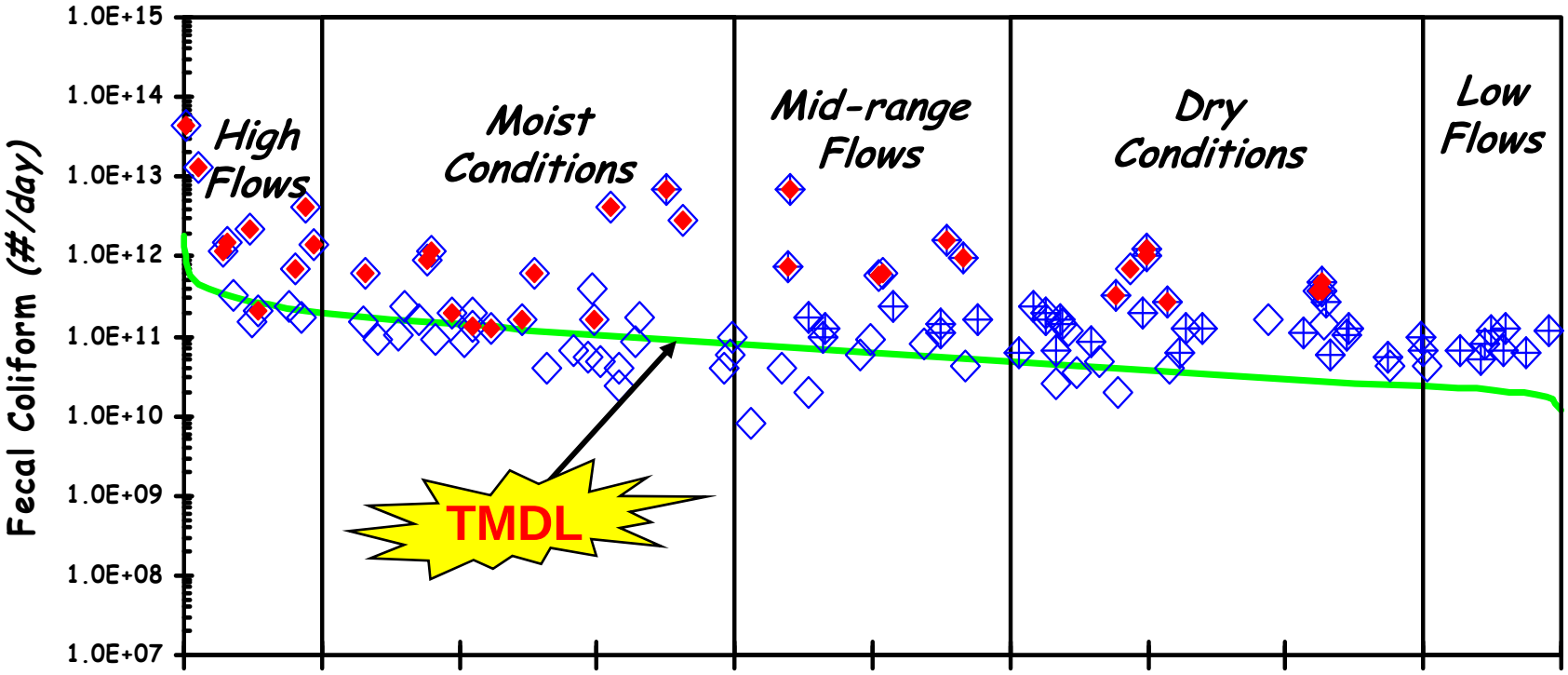
TMDL depends on the flows in the stream…



Bear Creek near mouth
2000-2007

...the higher the flows, the more bacteria the creek can handle.

How much bacteria loading can the creek handle?

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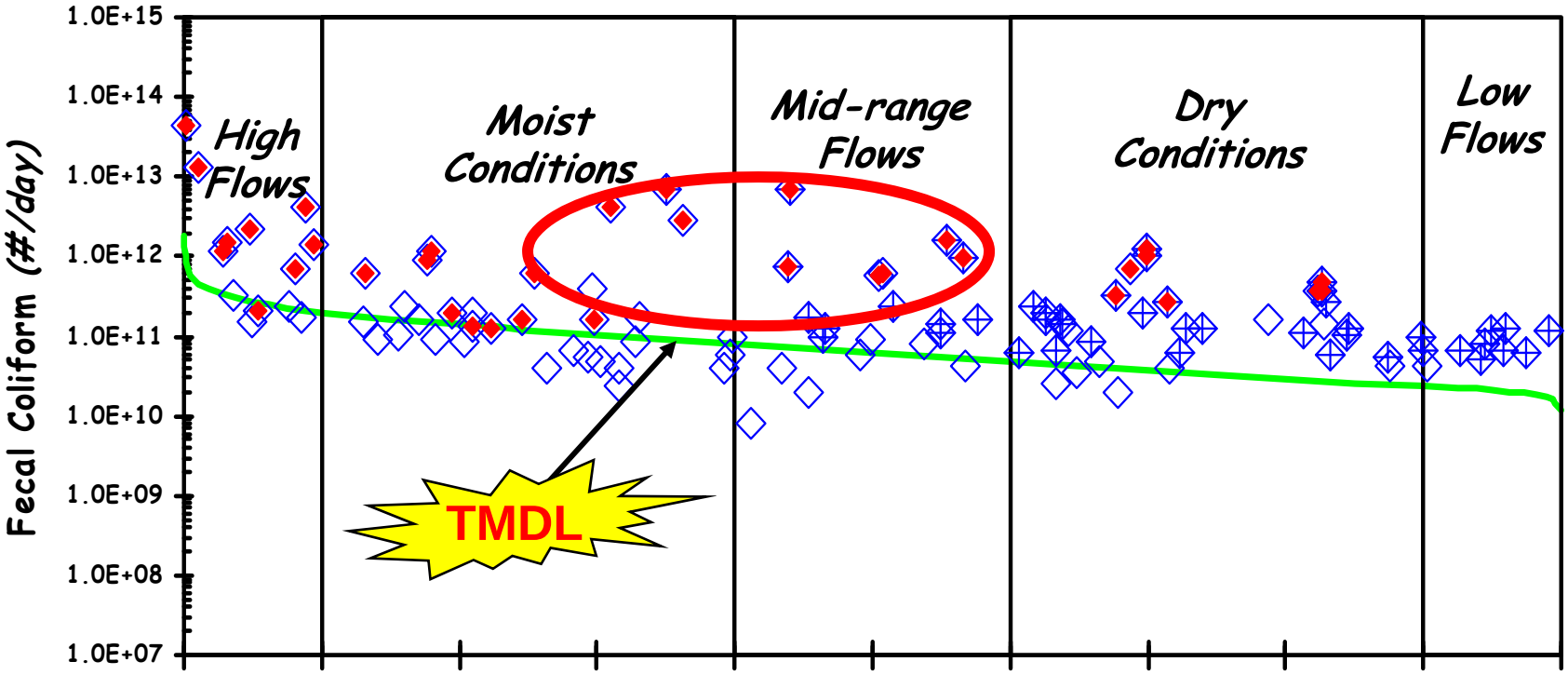
Bacteria loads plotted above the green line...



Bear Creek near mouth
2000-2007

...exceed the Total Maximum Daily Load.

What are the potential bacteria sources?

Potential Sources:

- Domestic pet wastes
- Urban stormwater
- Livestock operations
- Residential equestrian facilities
- Animal handling businesses
- Domestic wastewater/sewage
- Wildlife (including rodents)
- Others?

Domestic pet waste

YOU CAN!
Scoop the Poop, Bag It & Put it in the Trash

YOU CAN!
Keep dogs on leash if on park trails

- A dog drops an average of ¾ pound of waste per day
- Improper disposal of pet waste

Urban stormwater

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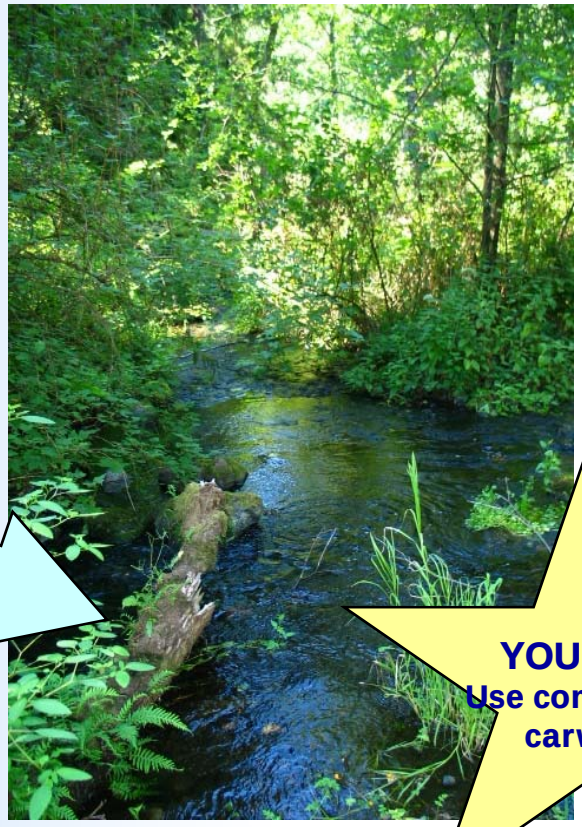
Stormwater drainage system is a conveyor of pollutants

Flows to stream



YOU CAN!
No dumping in storm drains

YOU CAN!
Use commercial carwash

Livestock, Equestrian Facilities, Animal Handling Businesses

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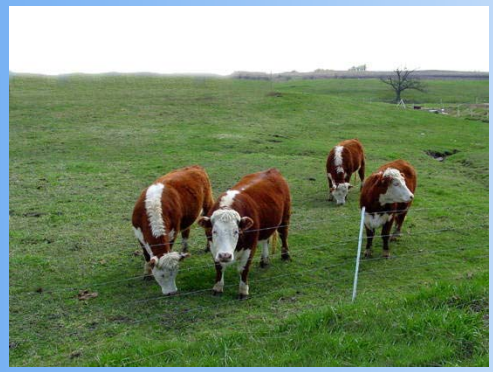
Conservation Districts can teach you about **B**est **M**anagement **P**ractices (BMPs) for livestock & manure management

YOU CAN!
Properly manage livestock & their waste



Domestic Wastewater, On-Site Septics

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- Failing on-site septics
- Leaky sanitary sewer lines

YOU CAN!
Report
problems

Wildlife (including rodents & birds)

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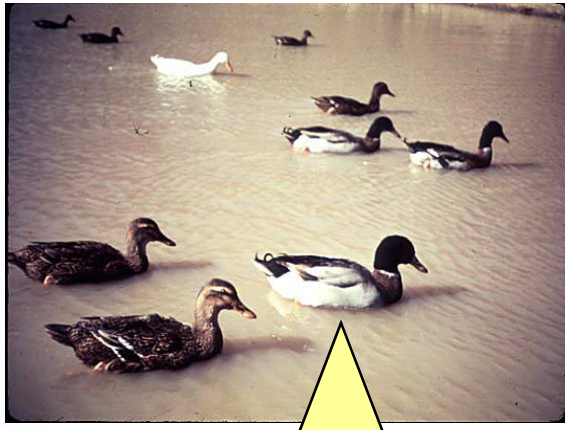
YOU CAN!
Properly dispose of food wastes.

Unkempt dumpsters attract rodents

Feeding waterfowl



YOU CAN!
Don't feed waterfowl

What are the recommended actions?

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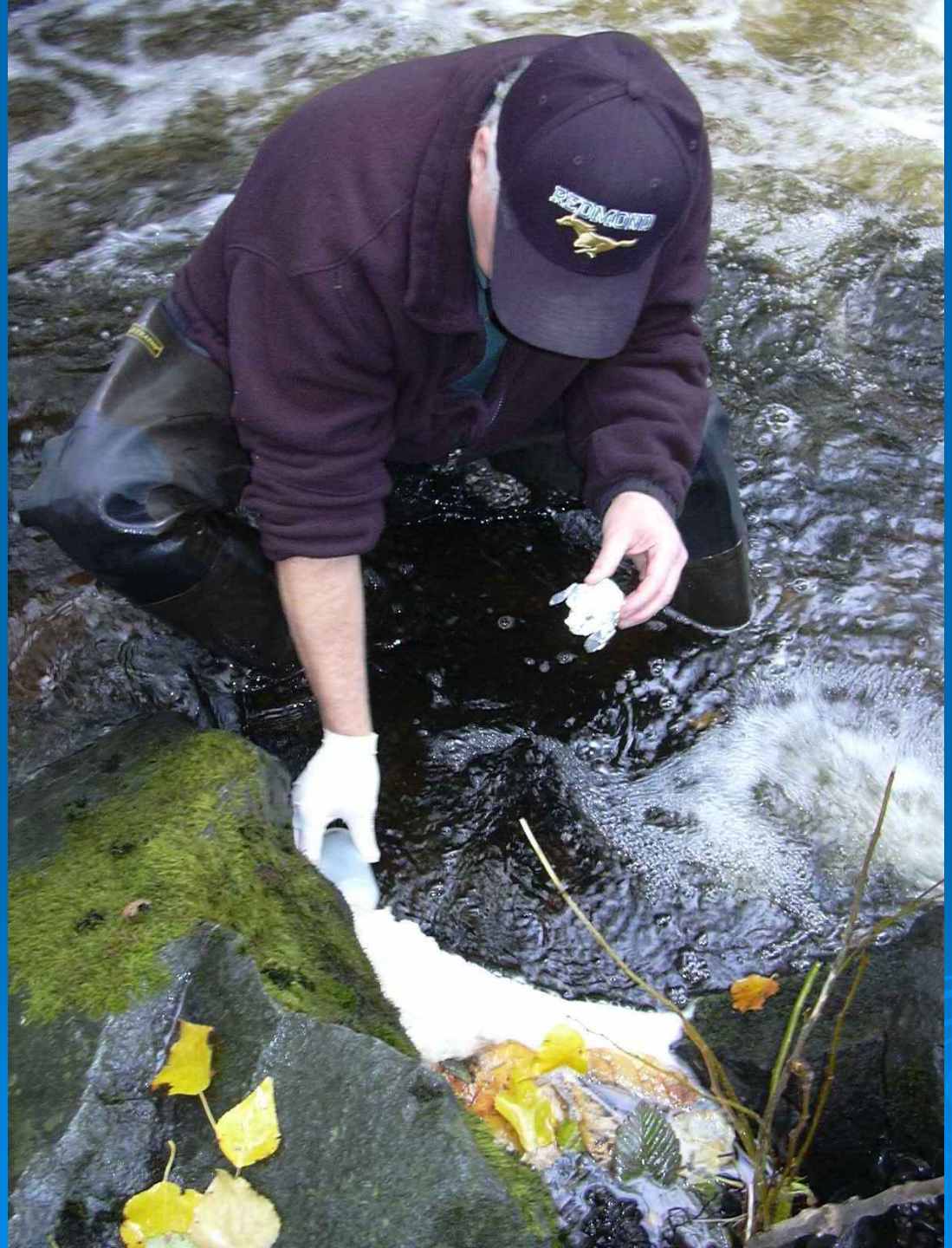
Identifying bacteria sources

Controlling bacteria sources

Increasing public awareness

Long-term monitoring the water quality

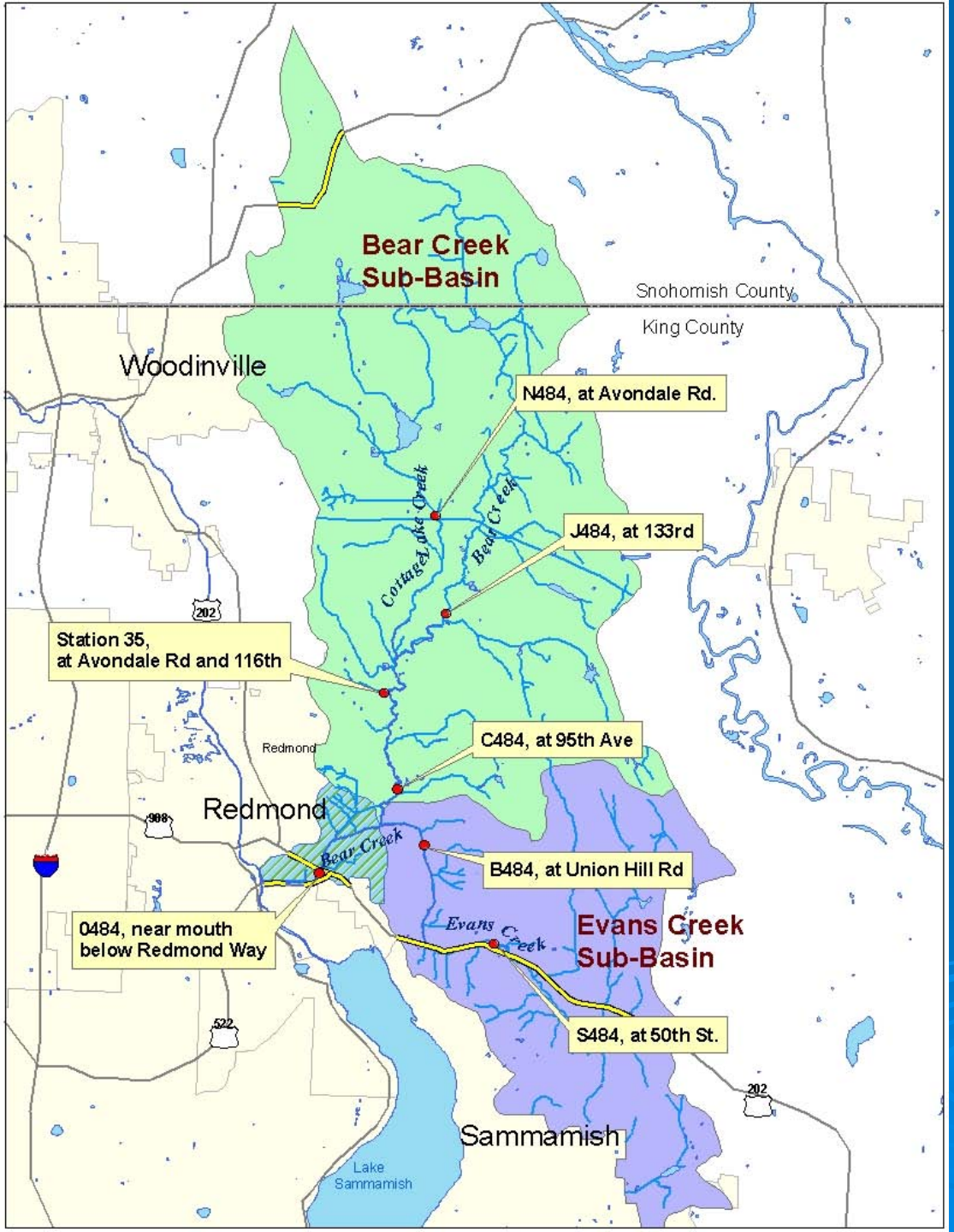
Sampling for Fecal Coliform



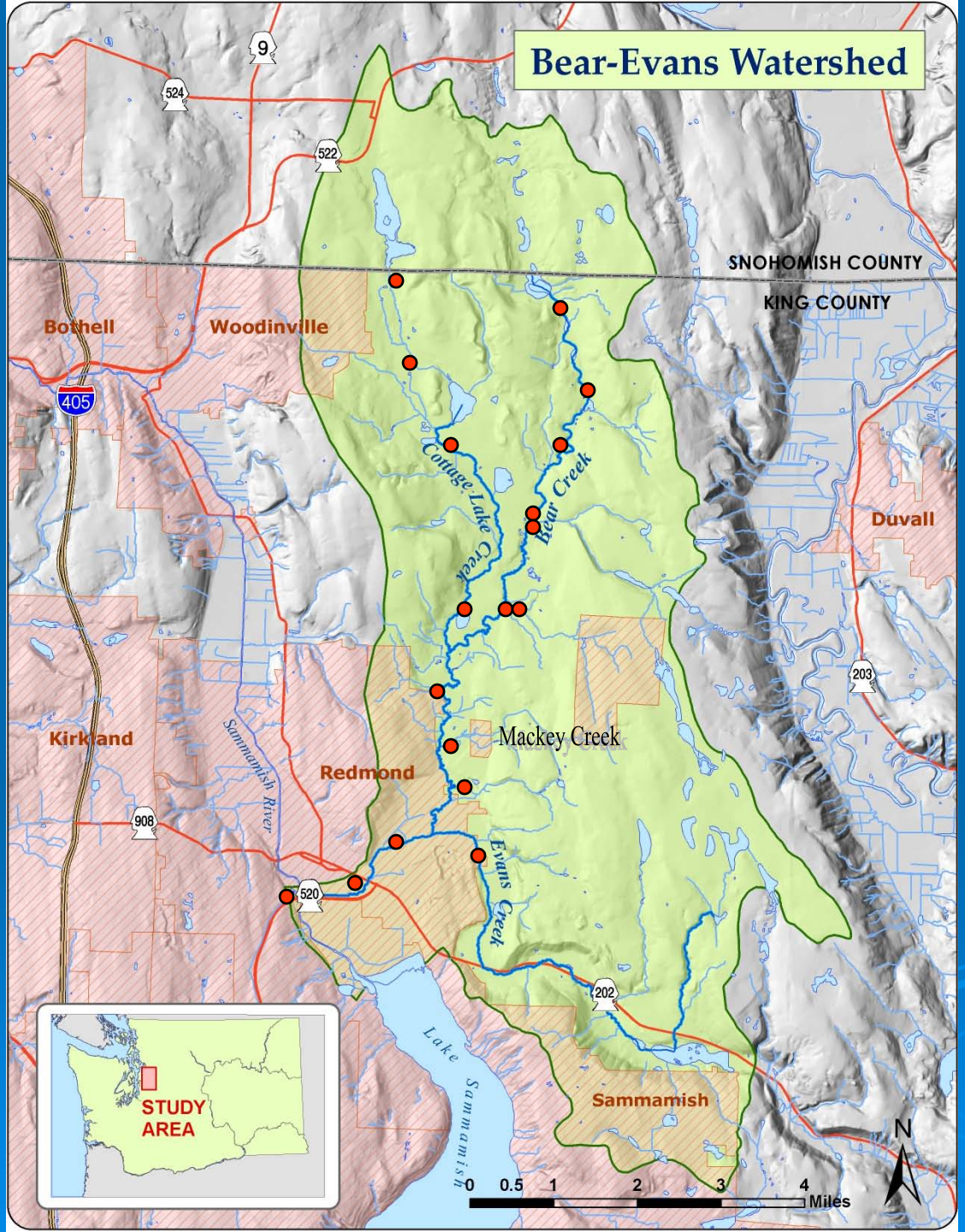
Evans Creek above confluence with Bear Creek

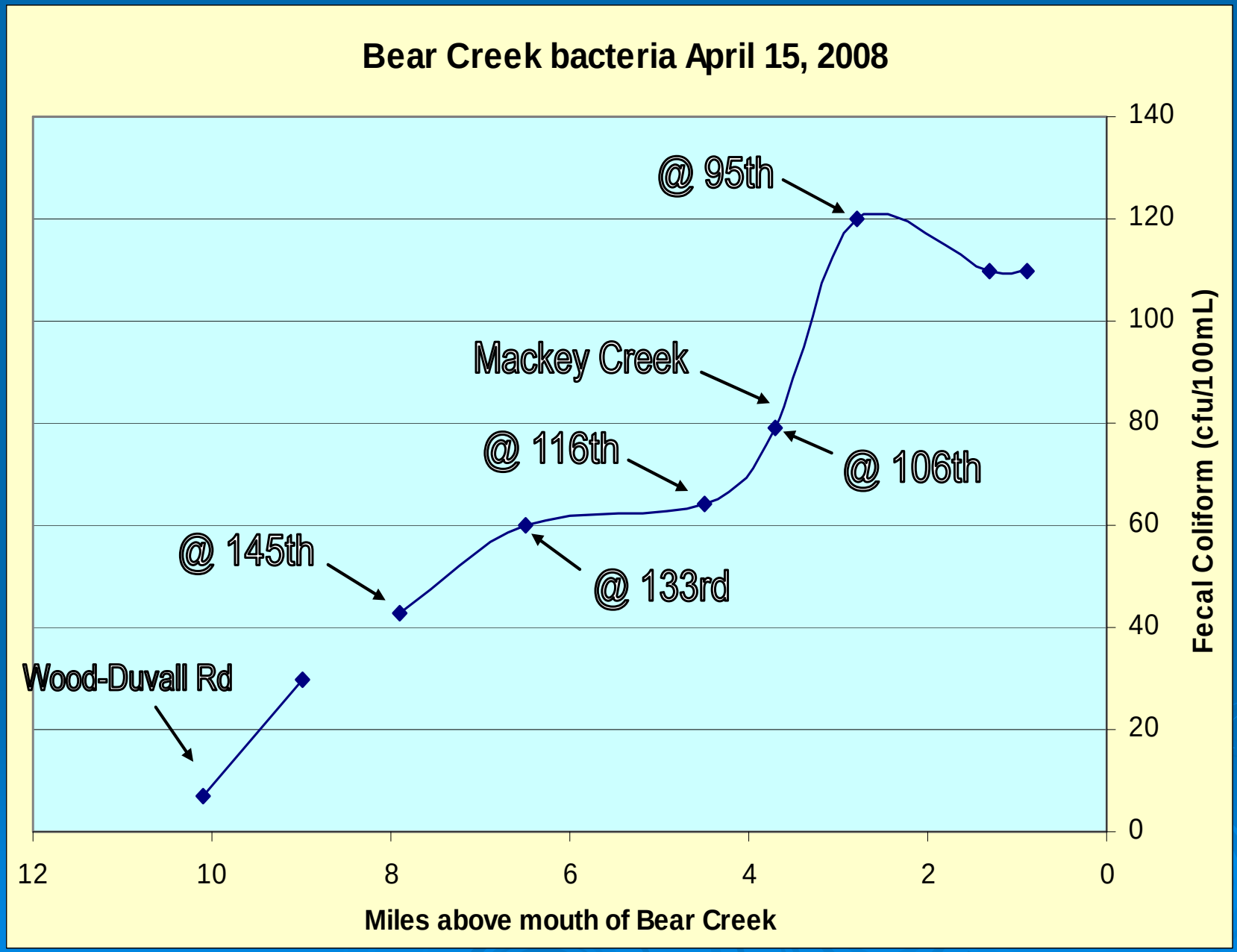
confluence of Bear Creek and Sammamish River

Sampling stations used for Bear-Evans TMDL

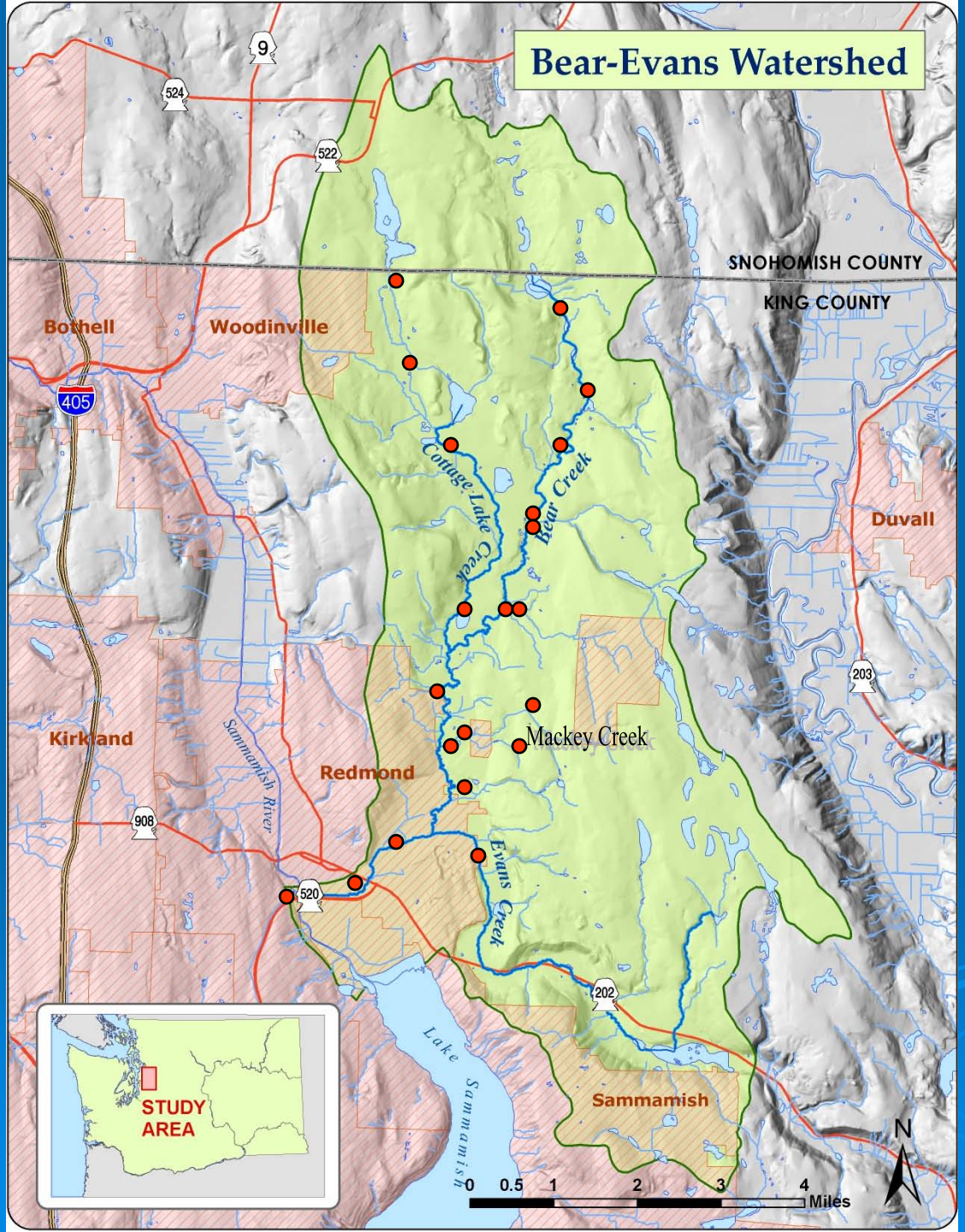


Ecology sampling sites

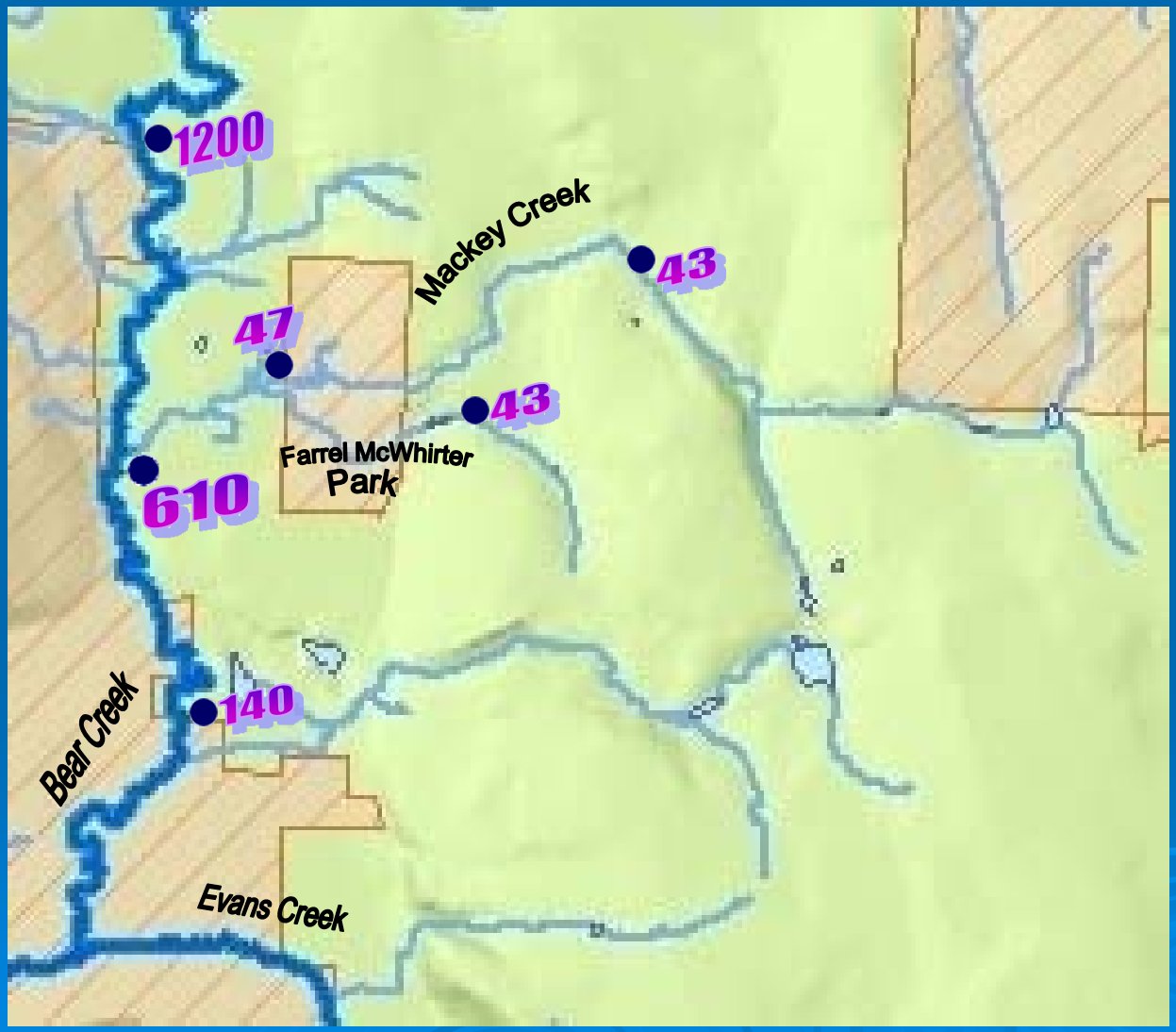



Bear Creek bacteria April 15, 2008
@ 95th
Mackey Creek
@ 116th
@ 106th
@ 145th
@ 133rd
Wood-Duvall Rd
140
120
100
80
60
40
20
0
Fecal Coliform (cfu/100mL)
12
10
8
6
4
2
0
Miles above mouth of Bear Creek

Ecology sampling sites



Mackey Creek sampling survey – May 2008



Horse stables in Mackey Creek watershed

Horse stables in Mackey Creek watershed

King Conservation District
And
Snohomish Conservation District

Who We Are

- Local, corporation of state government, under Washington Conservation Commission
- Work closely with US Dept of Ag - Natural Resource Conservation Service
- Over 50 years of experience in King and Snohomish Counties
- CDs - Local leadership for conservation action

What We Do

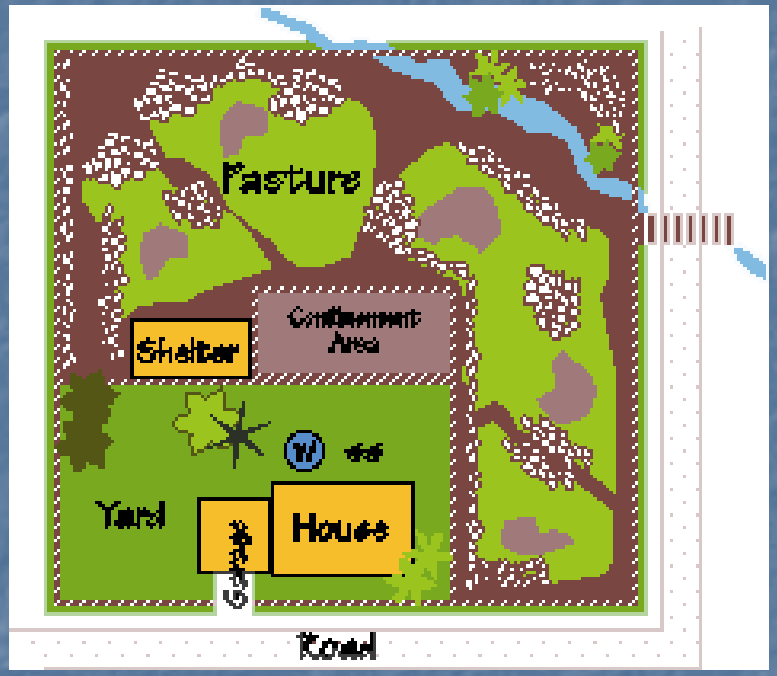
- Non - regulatory approach
- Focus on agricultural and rural lands
- Work on soil erosion and water quality
- Work directly with landowners to develop local solutions
- Follow Best Management Practices - NRCS technical standards

Why the CD is involved

- Provide Technical Assistance Services
- Expertise in Ag Best Management Practices
- Aware of water quality concerns
- Opportunity to refocus efforts in the Bear Creek Watershed

Technical Assistance

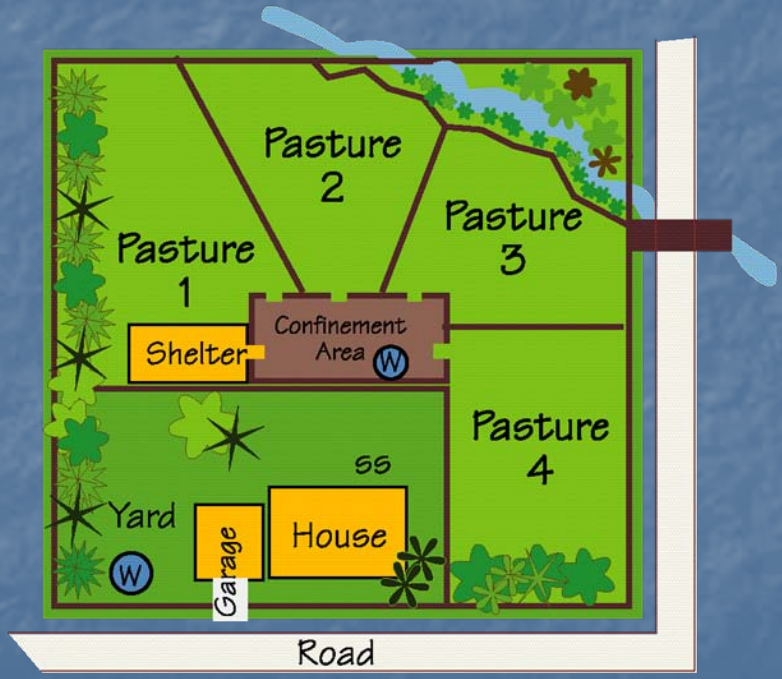
- Farm planning
- BMP design
- Soil sampling
- Buffer design
- Manure share
- Manure spreader loan program



Farm Plan

Natural Resource Management

- Mud
- Manure
- Pasture
- Wetlands/ Creeks
- Wildlife



Implementation of BMP Projects

Confinement Area Before

Confinement Area Improvement

Confinement Area Before

Confinement Area Improvement

Covered Manure Storage

Wood Manure Storage Bins

Buffer Fencing

Buffer Planting Project

Off Stream Watering Option

Outreach and Education

- Livestock Workshop Series of Classes
- Farm Tours
- Model Farms
- Publications
- Volunteer stream and wetland projects
- Native Plant Sale

Financial Assistance

- King County Cost Share for BMPs
  - Reimbursement of costs to install Ag BMPs
  - Farm plan is currently required
  - $5000 lifetime maximum per property
- KCD Landowner Incentive Program
  - Ag and Non-Ag BMPs are eligible
  - Must work closely with KCD
  - Single practice per application - No lifetime maximum

Collaborative Watershed Education in Little Bear Creek and Bear Creek Basins

Snohomish Conservation District

In Partnership with
King Conservation District

Centennial Grant Project

To improve water quality in Little Bear Creek & Bear Creek,

Develop a targeted, collaborative watershed education program

Provide technical assistance and farm planning related to agricultural activities, pet waste, septics, wells, stormwater, and lawncare

Centennial Grant Project Objectives

Develop outreach strategies and materials

Identify priority areas based on farm survey and inventory

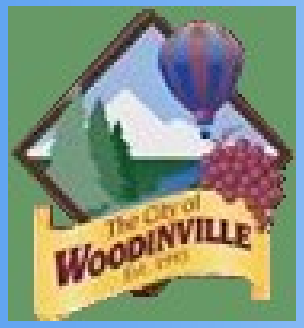
Delivery of farm planning services

Implement BMPs

Monitor water quality

Follow-up and monitoring

Who can help with these actions?



LOCAL CITIZENS!!

Conclusion

- Clean water is everyone's responsibility.
- Let's work together to find and fix pollution sources.
- Please be the eyes and ears for water quality problems; report them to Ecology at 1-800-258-5990.
- Please comment on Ecology's Draft Report by June 9.

Questions? Ideas? Comments?

Sinang Lee sile461@ecy.wa.gov

Dave Garland dgar461@ecy.wa.gov

Matt Dunnahoe Matt.Dunnahoe@kingcd.org

Gayle Hoffman Gayle.Hoffman@kingcd.org

Thank you!

http://www.ecy.wa.gov/programs/wq/tmdl/BearEvans/BearEvansFCTMDLSummary.html

Together, we can help improve water quality in the Bear-Evans watershed