
Fluorometer Aids in Spill Response and Damage Assessment



WASHINGTON STATE
DEPARTMENT OF
E C O L O G Y

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Outline

- Fluorometry basics
 - Advantages of fluorometry
 - 2 case studies
 - Complicating factors
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Fluorometry – what it is

Fluorescence is the phenomena of some compounds to absorb wavelengths of light and instantaneously emit longer wavelengths of light. Polycyclic aromatic hydrocarbons (PAHs) do just this.

The Tool Ecology Uses



Beneficial Attributes

- Portable
 - Field capable, shock and water resistant
 - Real time data
 - Less expensive than lab analysis
 - Uses flow through or discrete modes
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Freshwater Uses

■ Rivers

- ❑ How far downstream
- ❑ Impacts to higher order streams
- ❑ Concentration increase/decrease over time
- ❑ Water intake protection

■ Wetlands

- ❑ Movement within the wetland
 - ❑ Discharge identification
 - ❑ Concentration increase/decrease over time
-

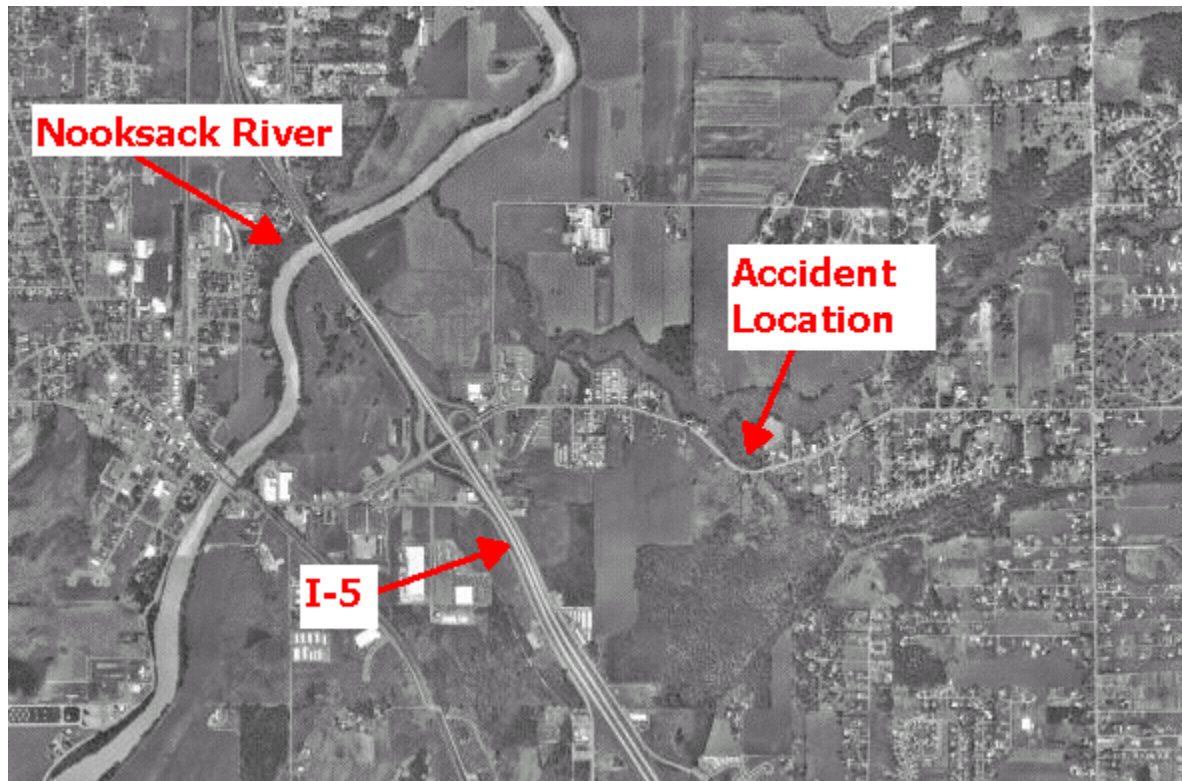
Rivers – Mid Mac Enterprises



Deer Creek



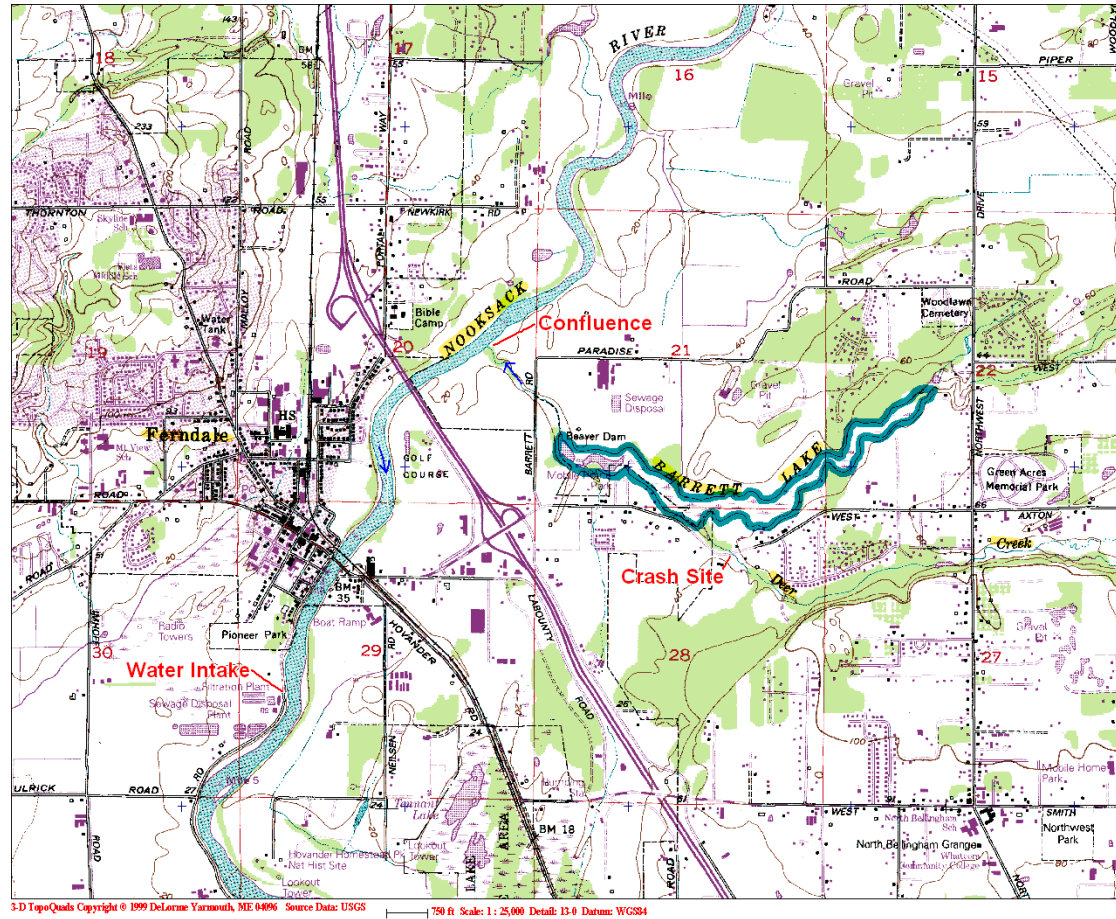
Did it go to the Nooksack River?
At what concentrations?



Sampling Results

Location	Sample date	10-AU ppm 5/17/02	Lab ppm 5/22/02
Lake Barrett	5/16/02	2.36	1.30
Nooksack River	5/16/02	2.20	2.10
Deer Creek Siphon Dam	5/17/02	1.26	1.8

Situation Map



Wetlands – McEvoy Trucking



Down the ditch and through a culvert



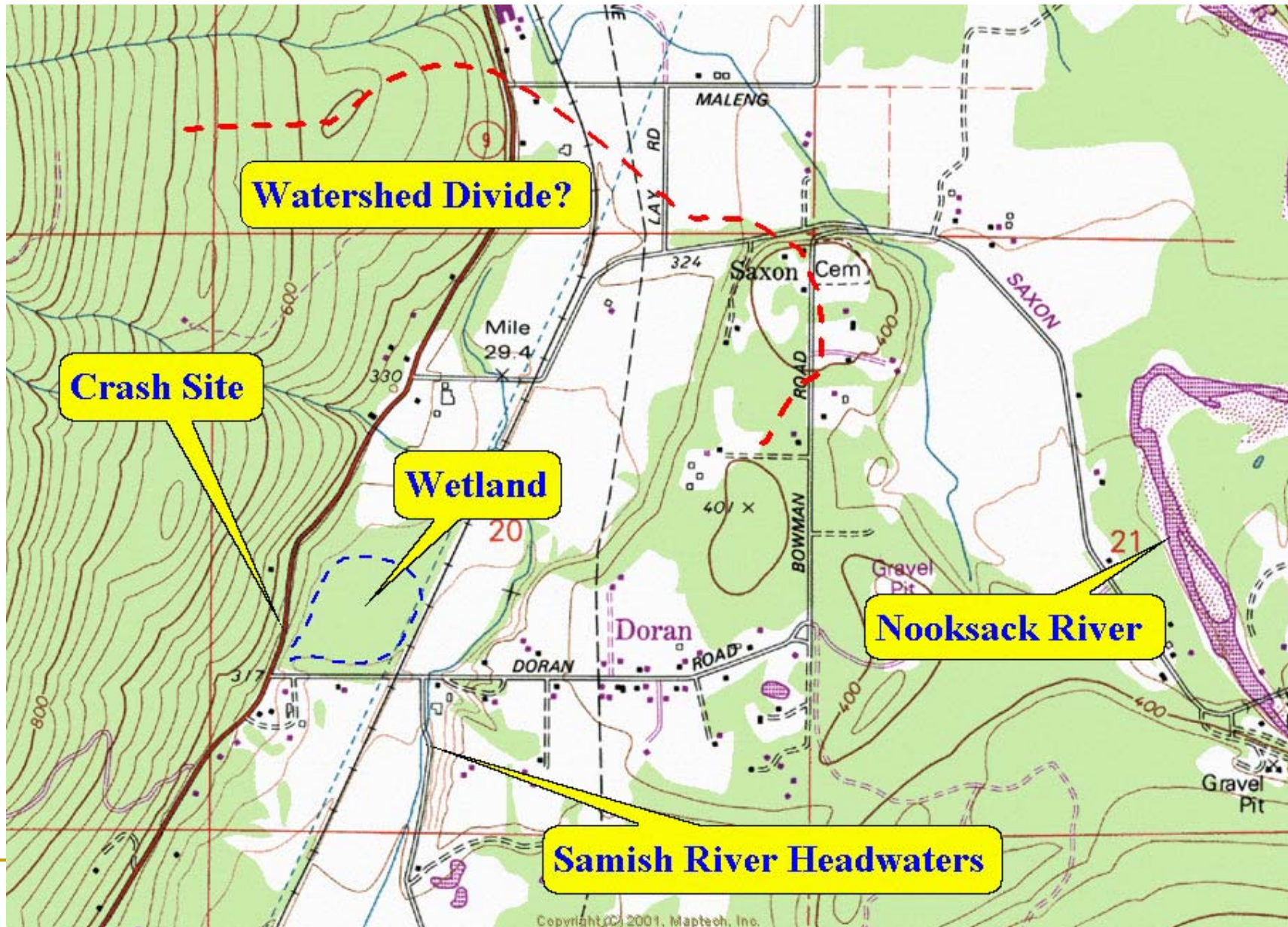
Into the wetland

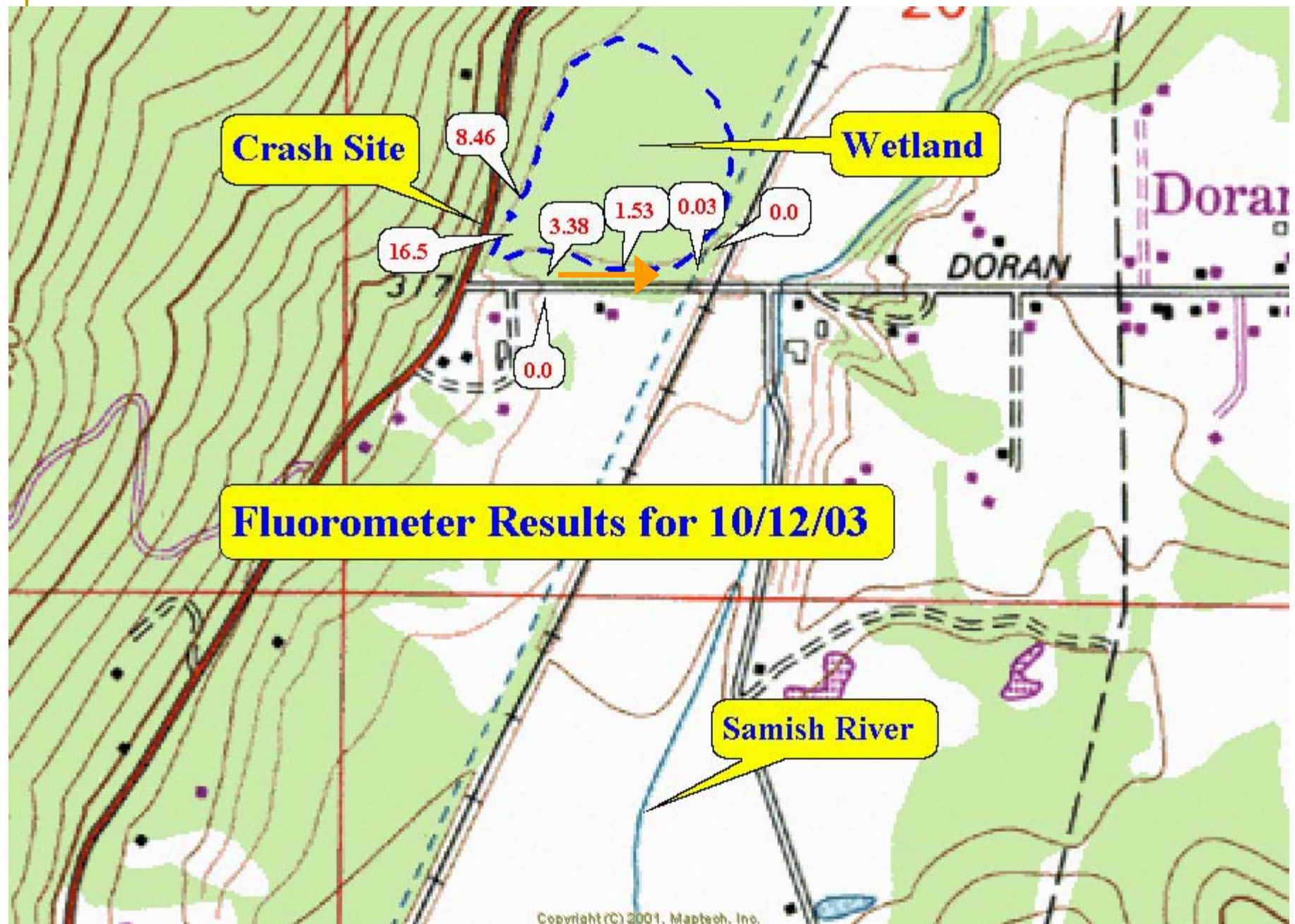


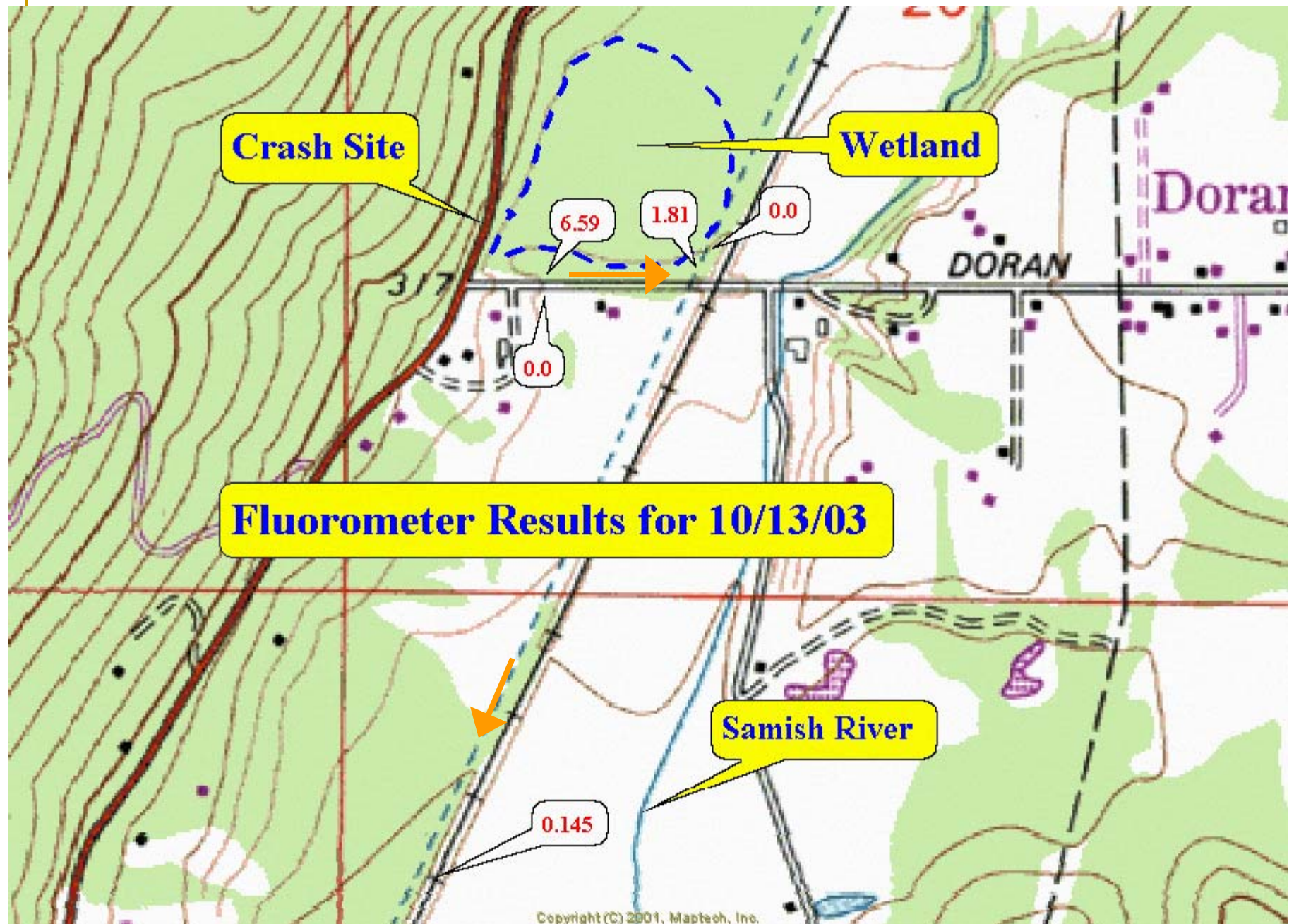
Green dyed diesel



McEvoy Trucking Situation Map







Sampling Results

	10-AU Results ppm		Lab Results ppm	
			GX	DX
Date Taken	10/12/03	10/13/03	10/13/03	10/13/03
Date Analyzed	10/12/03	10/13/03	10/15/03	10/16/03
Thick Product	16.5			
Wetland Outlet	3.38	6.59	1.80	20.00
Culvert @ RR Xing	0.03	1.81		
Ditch outlet		0.14	0.28	0.91

Screening Tool

- Spill Response – where to boom, how far has the plume moved downstream?
 - Human Health – implications for water intake protection, wellhead protection
 - Resource Damage Assessment – which water bodies have been affected?
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Potential Complications

- AFFF – Firefighting foam
 - High organic content of background water
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Other 2002 Cases

Event	Waterbody	Oil Type
Swift Power Canal	Yale Reservior	Transformer Oil
Lee & Eastes	Tibbetts Creek, Lake Sammamish	Gasoline
ConocoPhillips 66	Springbrook Creek, Wetland	Gasoline

Other 2003 Cases

Event	Waterbody	Oil Type
Wilcox & Flagel	Schoolhouse Crk, Col. Rvr	Diesel
Harris Transportation	Scriber Creek	Gasoline
Reinhard Petroleum	Cloquallum Crk, Mudminnow Wetland	Gasoline
48 th Place South	Southgate Crk, Green Rvr	Home Heating Oil

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