

Guideline Monitoring



**Timber Harvesting and
Forest Management
Guidelines on Public and
Private Forest Land in
Minnesota:**

**Monitoring for
Implementation**

2011



2011 Monitoring Process

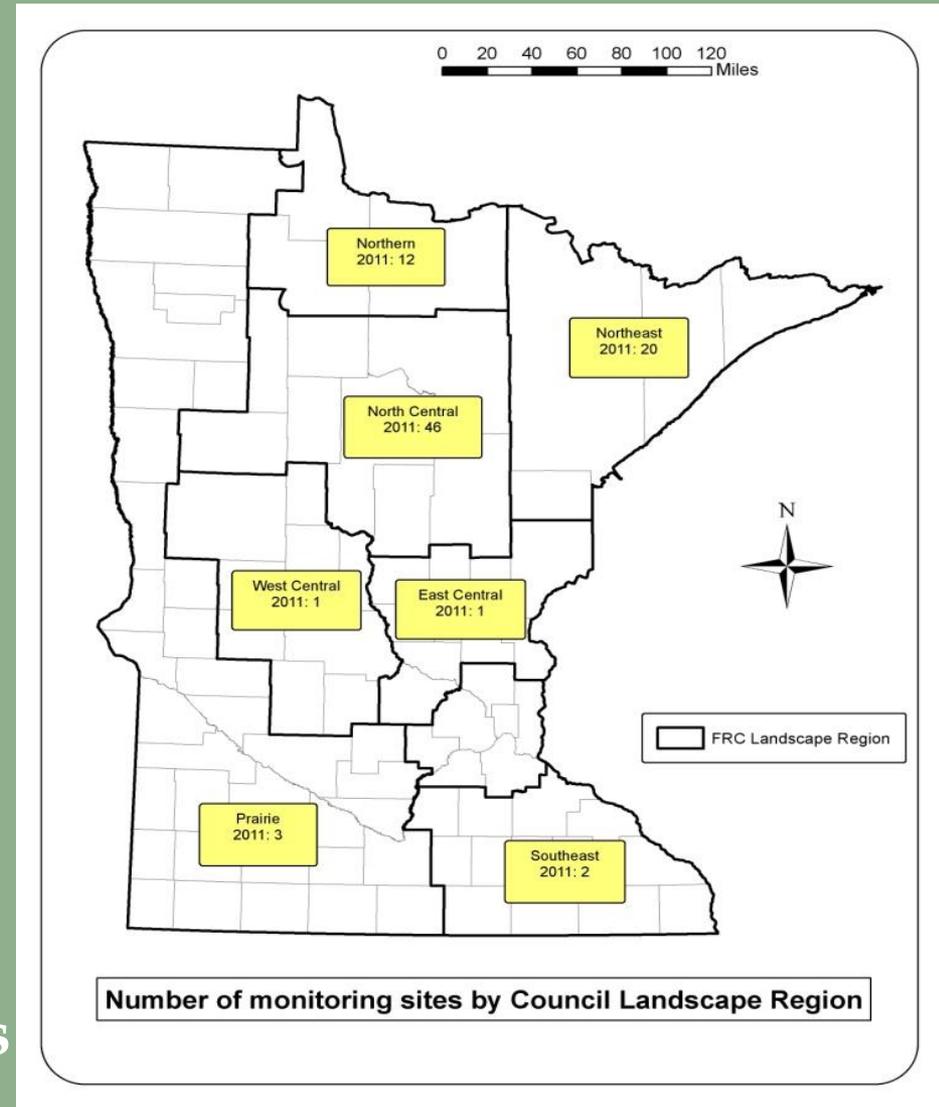
- ▣ Site selection process – same as previous
- ▣ Sites harvested summer 09 - Winter 2011
- ▣ 3rd party contractor – Scotford & Assoc.
- ▣ Modified pre-site questionnaire
- ▣ Streamlined on-site data protocols
- ▣ Added erosion data
- ▣ Added biomass

Site Distribution

- 27 State
- 20 County
- 20 NIPF & Tribal
- 6 USFS
- 11 Forest Industry

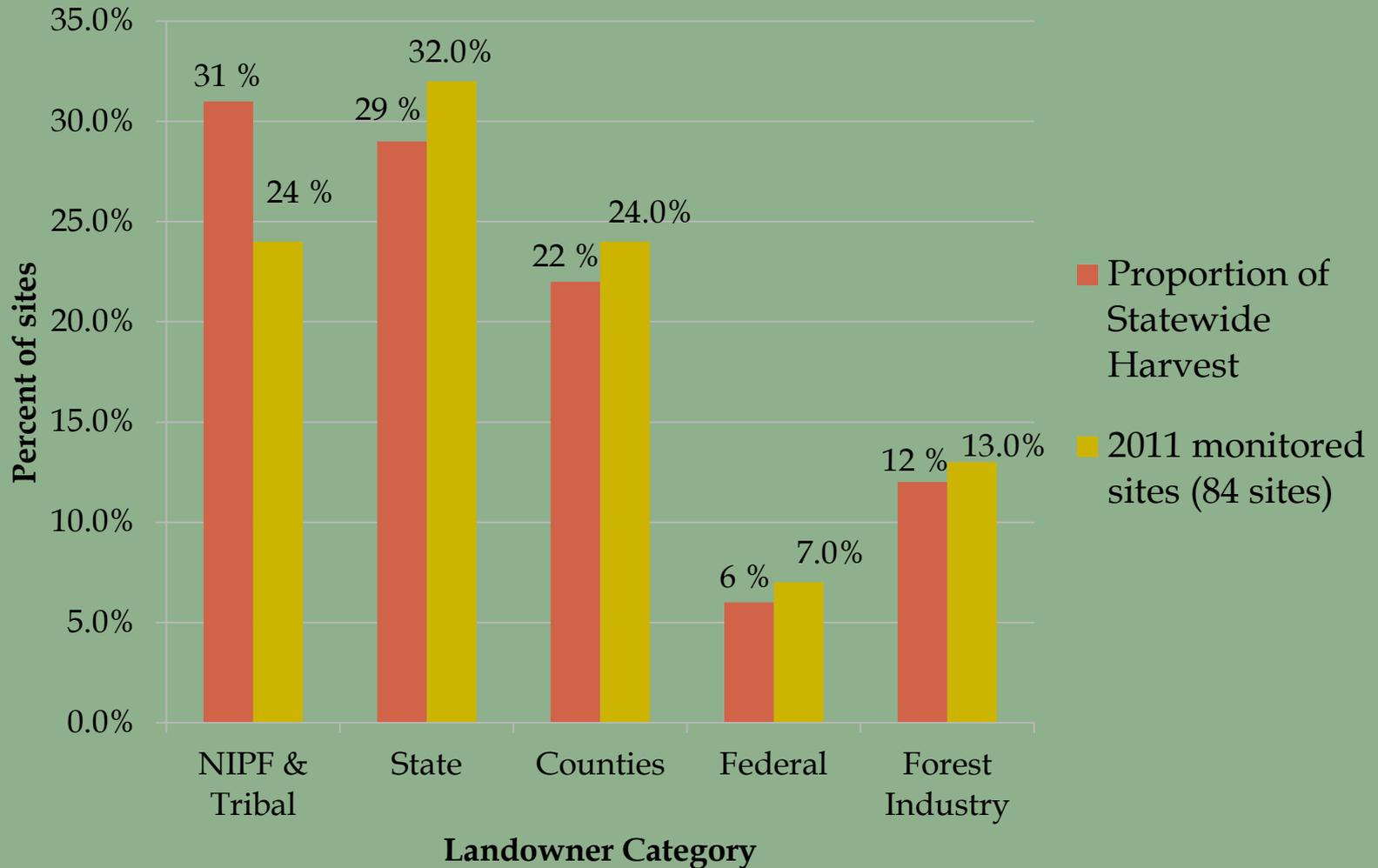
- 84 total sites

- Mean site size 34 acres



Site Distribution

Proportioned to Timber Harvest Estimates



Results

Guidelines Implemented Well

- Filter strip guidelines for width and limiting soil disturbance
- CWD retention
- Snag retention
- Cultural resource protection
- Visual quality guidelines for several categories
- Access Control
- Checking public records for Cultural resources and ETS
(For public agency and forest industry sites)

Results

Substantial Improvement

- ▣ Leave tree retention
 - 80%, up from ~ 60%
- ▣ RMZ implementation
 - 71%, up from ~ 50%
- ▣ CWD within harvested portion of RMZs
 - 85%, up from ~ 30%

Implemented Well Filter Strips

- ▣ Condition of Filter Strips
 - Overall compliance – 85%,
 - ▣ Down from 90%
 - Majority of departures from roads, skid trails or landings located within filter strips

- ▣ Effectiveness
 - 94% no evidence of erosion
 - 98% no evidence of sediment to water body

Substantial Improvement

Leave Tree Retention

Table 43. Percent of sites that meet or exceed leave tree guidelines

	Number of Sites for Which Guidelines Apply	≥ 6 Scattered Leave Trees / Acre	$\geq 5\%$ Leave Tree Clumps (at least $\frac{1}{4}$ acre size)	Sites with ≥ 6 Scattered Leave Trees/ Acre or $\geq 5\%$ in Leave tree Clumps or both	Sites with Scattered and clumped Leave trees <u>that in combination</u> met guidelines
2000–02	293	48.8%	31.4%	61.3%	-
2004–06	266	40.9%	12.5%	47.3%	-
2009	74	50.0%	21.6%	60.8%	0
2011	71	54.9%	32.4%	71.8%	8
2011 Total	71			71.8%	83.1%

Substantial Improvement

RMZ

Table 25: RMZs that Met Guidelines for Width and Basal Area (including trout waters)

		Total RMZs That Met Guidelines	Total RMZs	On-site RMZs That Met Guidelines	Total On-site RMZs	Adjacent RMZs That Met Guidelines	Total Adjacent RMZs (#)
Lakes & OWW	2000-02	47.6%	84	31.3%	32	57.7%	52
	2004-06	54.5%	22	25.0%	4	61.1%	18
	2009	57.1%	7	50.0%	2	60.0%	5
	2011	87.5%	8	50%	2	100%	6
Streams	2000-02	56.5%	69	30.8%	26	72.1%	43
	2004-06	43.1%	65	37.9%	29	47.2%	36
	2009	50.0%	14	25.0%	4	60.0	10
	2011	62.5%	16	100%	2	57.1%	14
Total	2000-02	51.6%	153	31.0%	58	64.2%	95
	2004-06	46.0%	87	36.4%	33	51.9%	54
	2009	52.4%	21	33.4%	6	60.0%	15
	2011	70.8%	24	75%	4	70.0%	20

Substantial Improvement RMZ

Table 26 RMZs Not Meeting Guidelines for Width and Basal Area, 2011

RMZ setting	Recommended RMZ	Composition of actual RMZ				% of recommended RMZ
		Width Non-forested (ft)	Width Forested no-harvest (ft)	Width and BA Forested Partial Harvest (ft / BA)	Width Clearcut (<25BA) (ft)	Width
On-site streams	-	-	-	-	-	-
Adjacent trout stream	150	54	60/47	0	46/0	76%
	150	24	61/197	0	65/0	57%
On-site streams	-	-	-	-	-	-
On-site OWW	50	27	15/30	0	8/0	84%
Adjacent streams	50'	0	23/133	0	27/7	46%
	100'	0	27/110	0	89/0	27%
	50'	0	30/100	0	20/7	60%
	50'	0	20/80	16/60	14/0	72%
Adjacent OWW	-	-	-	-	-	-

Substantial Improvement

Retaining Coarse Woody Debris

Table 42. CWD - general harvest area and RMZs

	General Harvest Area			
	Number of Sites	<2/Ac	2 to 5/Ac	>5/Ac
2000–02	204	20.6%	40.7%	38.7%
2004–06	279	24.7%	35.1%	40.1%
2009	74	5.4%	7.1%	86.4%
2011	84	6.0%	10.7%	83.3%
	RMZ			
	Number of RMZs	RMZs with Harvest Activity	Of column B <4/Ac	Of column B >4/Ac
2000–02	93	64	31.3%	68.7%
2004–06	85	54	70.4%	29.6%
2009	21	19	68.4%	31.6%
2011	24	14	14.2%	85.7%

Results

Improvements are needed for:

- **Infrastructure**
- **Wetland crossings – avoidance & rutting**
- **Water diversion and erosion control practices**
 - **On approaches, segments & roads in filter strips**
- **Landing location**
- **Biomass – FWD retention**
- **Visual Quality**
 - **Landings in ROW, slash & checking VQ sensitivity maps**
- **NIPF pre-harvest planning**

Infrastructure

- 41% of sites met the infrastructure guideline
 - 47% & 52% previous
- Mean infrastructure/site dropped to 3.8%



Infrastructure

Table ____: Percent On-Site Roads and Landings by Site Size, 2011

Site Size Categories	Number of sites	Mean % Roads infrastructure	Mean % Landing infrastructure	Mean % infrastructure	% sites with $\leq 3\%$ infrastructure
0-10	9	0.3%	4.4%	4.7%	22.2%
10 \leq 20	25	0.9%	3.3%	4.3%	36.0%
20 \leq 30	17	0.7%	3.3%	4.0%	41.2%
30 \leq 40	8	0.6%	1.6%	2.2%	75.0%
40 \leq 50	4	0.2%	4.3%	4.5%	25.0%
50 \leq 80	14	0.6%	2.5%	3.1%	57.1%
80+	3	0.9%	3.5%	4.4%	33.3%
All sites	84	0.7%	3.1%	3.8%	40.5%

Wetland Crossings

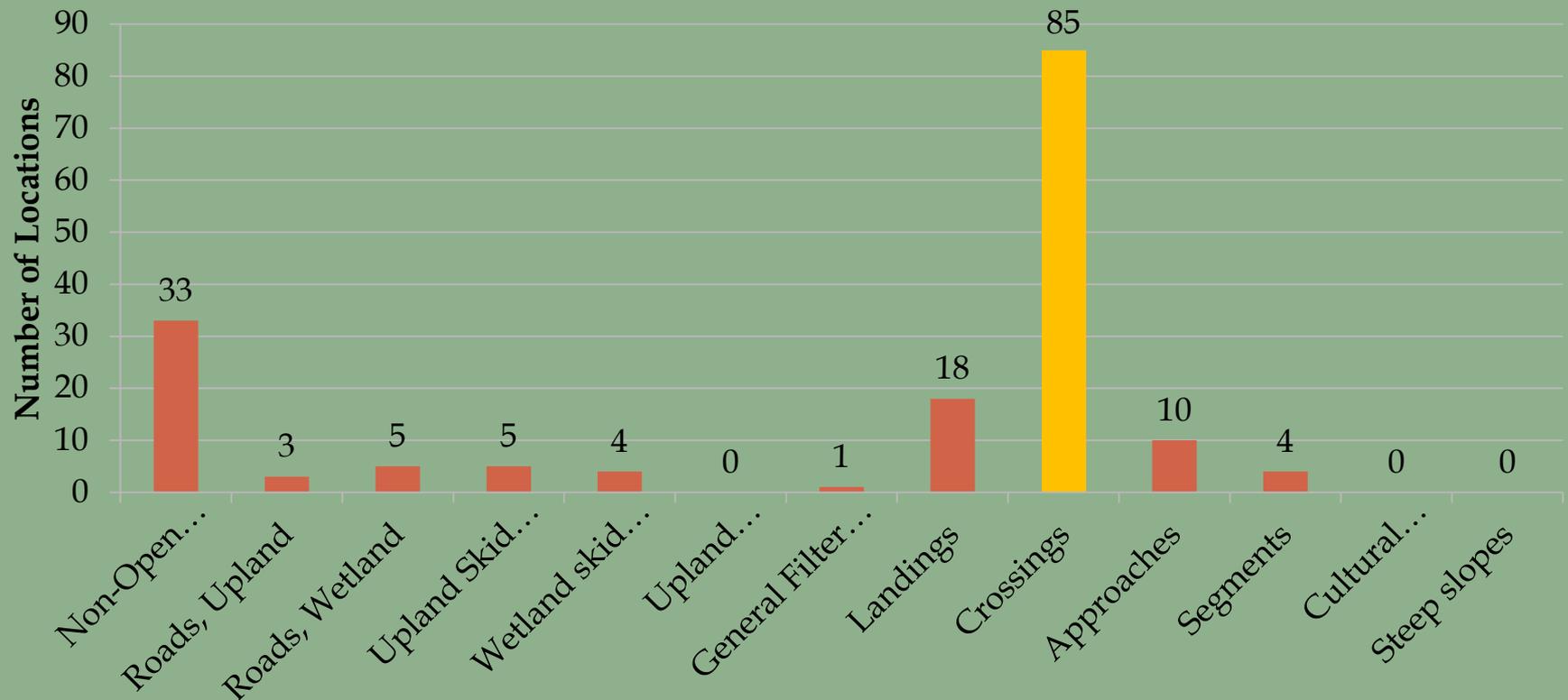
- No seasonal ponds crossed – good thing
- 18% of 278 crossings judged as avoidable



- Rutting occurred on 33% of crossings

Rutting

- ▣ Rutting occurred on 56% of 84 sites
 - 10% of 1836 individual locations rutted
 - 50% of rutting occurred on crossings



Biomass – FWD retention

- ▣ 23 sites (27%) with biomass harvest
- ▣ Only 39% retained $\geq 20\%$ of the FWD
- ▣ 70% retained incidental breakage
- ▣ Only 3 sites had specific regulations

Landing Location

180 landings

- ▣ Over 1/2 located at least partially in wetland or filter strip (Of these 41% had upland available)
- Overall - 75% met guidelines of locating landing outside wetlands or filter strips where possible
- No landings located within RMZs or cultural resources

Landing Location

Table 35: Landing Location, 2011

			Percent by Location
Upland Only			42.2%
Within RMZ			0.0%
Atop cultural resource			0.0%
In Upland and Filter strip			21.7%
In Wetland Only			18.9%
In Upland, Filter Strip & Wetland			17.2%
Total			100%
	On-Site	Off-Site	Total
New landing	95.2%	46.1%	91.6%
Pre-existing landing	84.8%	53.9%	8.4%
Total (#)	167	13	180

Improvements needed

Water diversion and erosion control practices

- ▣ 50% of segments required WD/EC
 - 66% of these had them installed
 - 55% of WQ segments had WD/EC installed

Improvements needed

Water diversion and erosion control practices

- ▣ 50% of segments required WD/EC
 - 66% of these had them installed
 - 55% of WQ segments had WD/EC installed
- ▣ 19% of approaches needing WD/EC had practices in place

Improvements needed

Water diversion and erosion control practices

- ▣ 50% of segments required WD/EC
 - 66% of these had them installed
 - 55% of WQ segments had WD/EC installed
- ▣ 19% of approaches needing WD/EC had practices in place
- ▣ 30% of filter strips had roads, skid trails or landings
 - 96% of erosion occurring within filter strips was from roads, skid trails or landings.
 - Half of existing roads needed WD/EC practices

Erosion

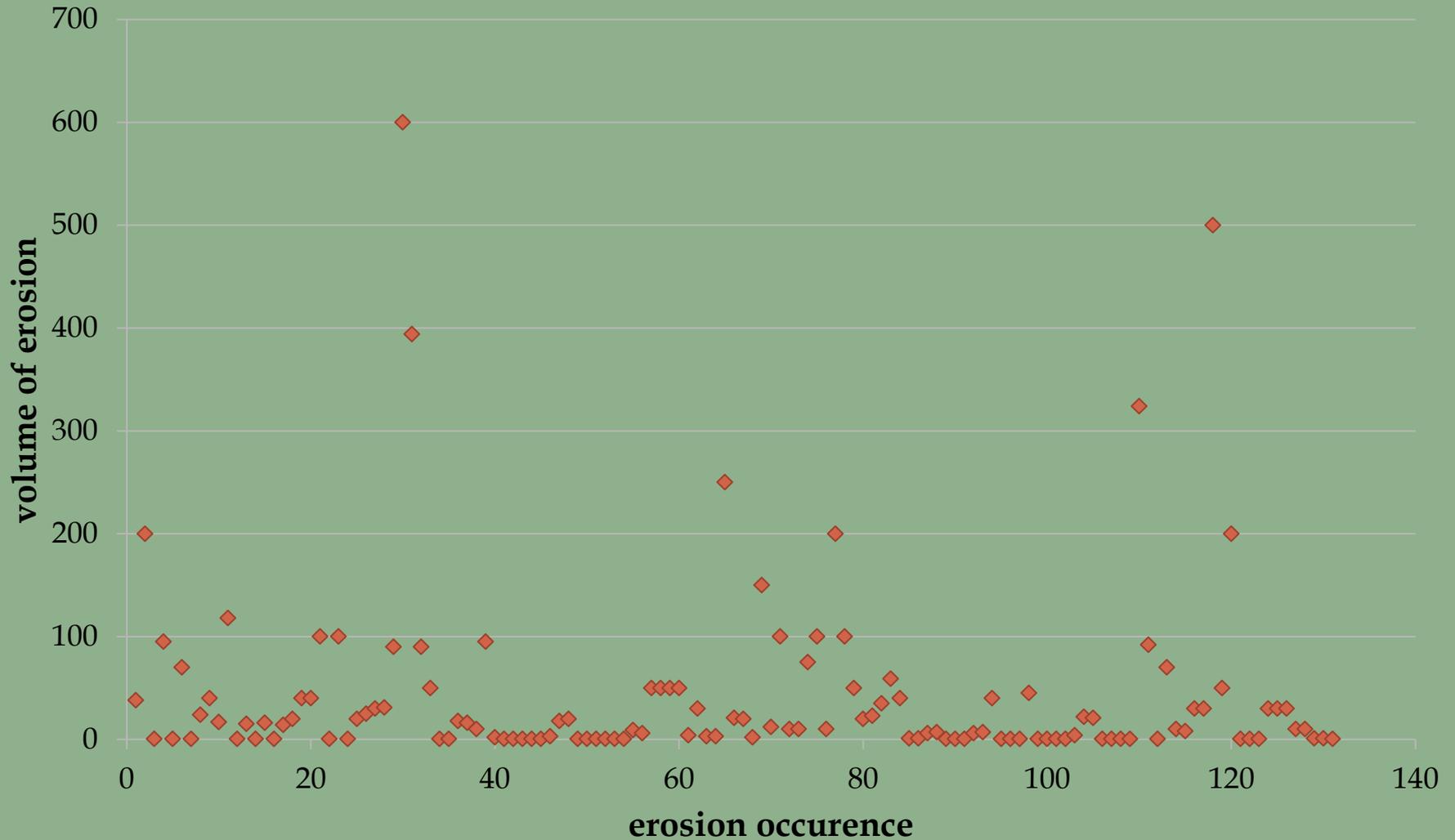
New in 2011

Documented occurrence and volume

- ▣ 1848 individual locations observed
- ▣ Only 9% had erosion (91% no erosion evident)
- ▣ 2% had sediment reaching waterbody
- ▣ Highest occurrence - landings
- ▣ Highest volume - landings

Erosion

Volume of erosion where observed



Conclusions & Recommendations

- ▣ Overall implementation is good - similar to previous reports
- ▣ Three important guidelines improved

- ▣ Opportunities for improvement
 - Avoid crossings where possible
 - Locate landings outside of wetlands and filter strips
 - Implement WD/EC where needed
 - ▣ Segments, approaches, roads in filter strips
 - Implement FWD retention on biomass sites
 - Pre-harvest planning & records checking - NIPF sites

Next Steps

- ▣ Monitoring Report for 2011 is complete
 - Final editing is on-going

- ▣ Report will be posted on internet
 - limited hard copies available

- ▣ Feed back to individual landowners

- ▣ Incorporate findings into training

Questions?

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