Economic Implications of New Water Typing Rules in Western Washington

Western Forest Economists
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Comparison of New Water Typing Rules

Old Typing

- **Type 1 – 3**
  - **Fish bearing**
  - **Site specific buffer of ~120 feet**
- **Type 4**
  - **Non fish bearing**
  - **First 300 feet 50 foot buffer**
  - **50% of remaining stream 50 foot buffer**
- **Type 5 and 9**
  - **Seasonal and Unknown**
  - **No buffer**

New Typing

- **S and F (Type 1 – 3)**
  - **Fish bearing**
  - **Site specific buffer of ~120 feet**
- **Np (Type 4)**
  - **Non fish bearing perennial**
  - **First 300 feet 50 foot buffer**
  - **50% of remaining stream 50 foot buffer**
  - **Beginning of Np water determined by Perennial Initiation Point (PIP)**
- **Ns and U (Type 5 and 9)**
  - **No Buffer**

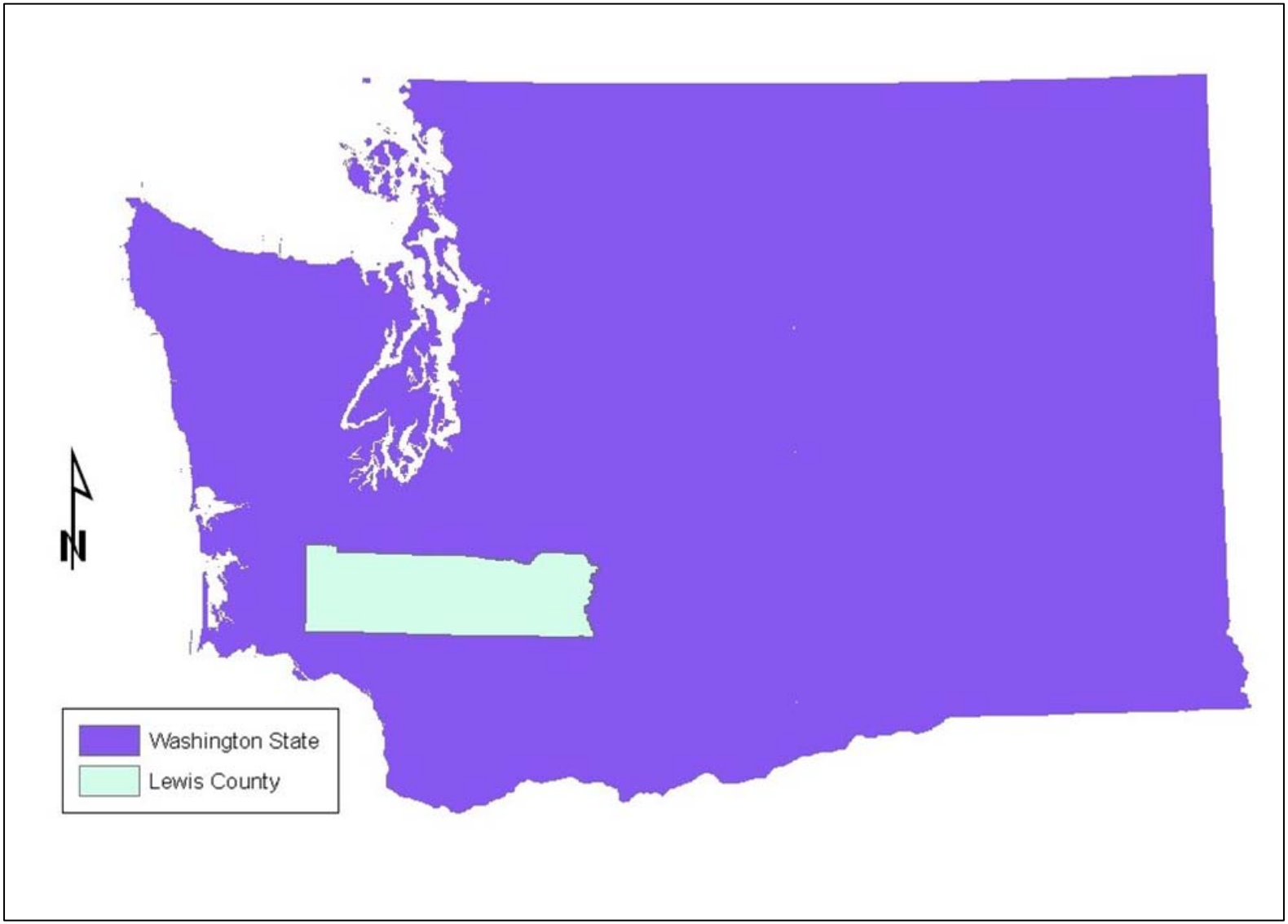
Effects of New Typing Rules

- **Most Type 4, some 5 and 9 are now fish bearing (F and S)**
- **Some 5 and 9 are now Np**
- **PIPs now define beginning of Np**
  - **52 acre inflow area defines PIP for Western Washington outside Sitka Spruce Zone**

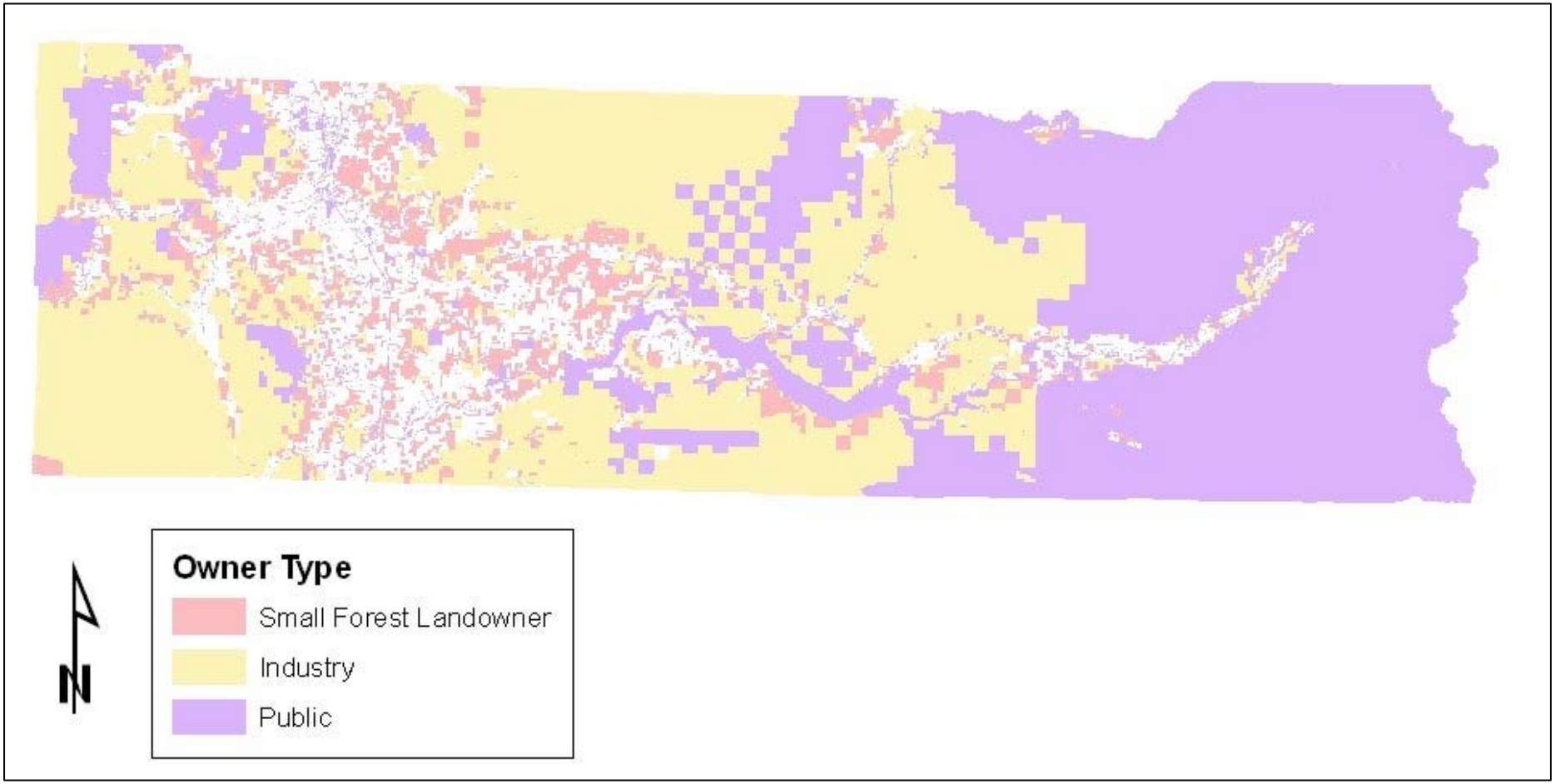
Estimated Core Economic Impact:

- **Age class distribution is nearly uniform – cut & thin on 50 yr rotation**
- **Harvest 30 mbf/acre @ $396 net, thin 10 mbf @ $313**
- **Estimate lost harvest revenue from no-harvest buffers (does not include additional losses from partial harvest buffers)**
- **Not including road or planning costs or impact of more fragmented access**
- **Compute for NIPF and Industry lands on F and Np streams**
- **Buffer acres derived from GIS and Hydrological models in ArcGIS on 10 meter DEM for PIPs**

Lewis County example



Lewis County Forest Land Ownership



Impact of new stream typing rules in Lewis Co

Industry 569,000 acres

	New	Old	change	%
buffers (acres)	49550	31840	17710	56
% of total acres	8.7	5.6	3.1	56
Rev/yr ($mils)	14.9	9.6	5.3	56
NPV ($Mils)	298	192	106	56

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Impact of new stream typing rules in Lewis Co

Lewis Co: NIPF 148,000 acres

	New	Old	change	%
buffers (acres)	15221	8606	6615	77
% of total acres	10.3	5.8	4.5	77
Rev/yr ($mils)	4.6	2.6	2.0	77
NPV ($Mils)	92	52	40	77
NIPF+Ind NPV	**390**	**244**	**146**	**60**

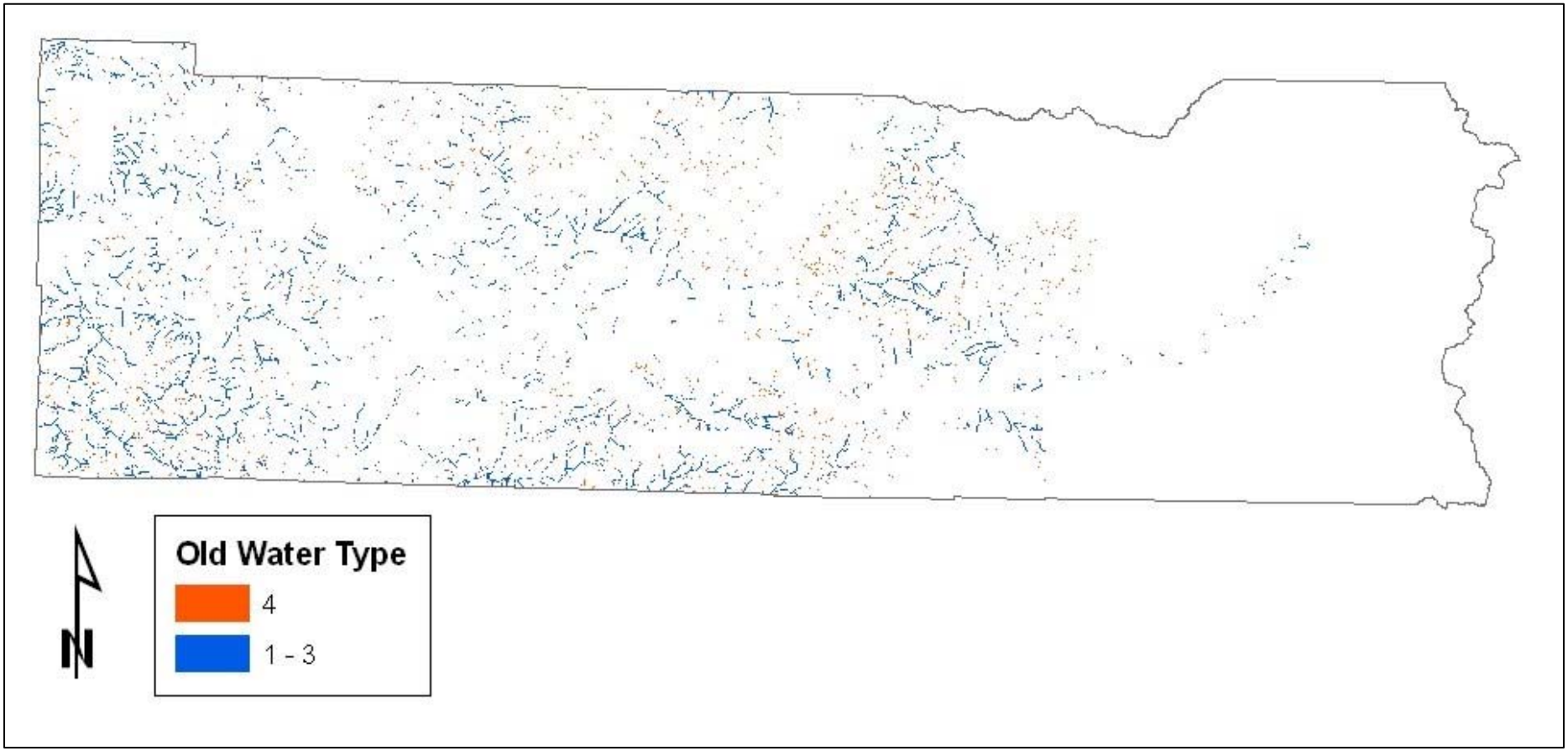
Averages don't tell the story

Small owner buffer areas run the full range of 0-100%

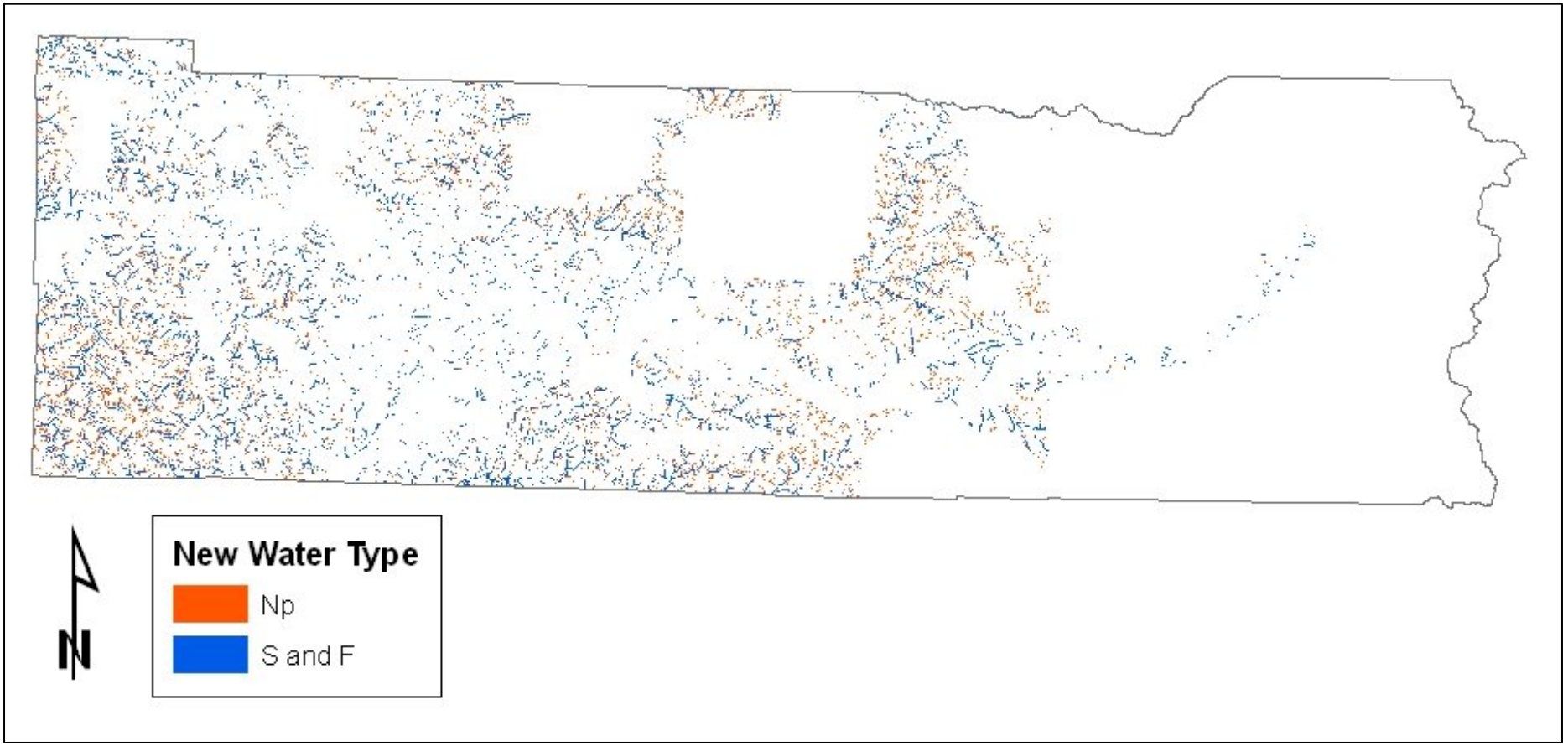
For 10 WWA case studies (old rules):

- **Forest value loss: 22 to 54%**
- **Land value loss (SEV): 34 to 115%**
- **Many will not meet a target rate of return on the whole property not just the RMZ**

Buffers – Old Water Typing Rules



Buffers – New Water Typing Rules



Impact of new stream typing rules scaled to WWA

NIPF 2.4 mil. acres	New	Old	change
Buffers (acres)	247246	139794	6615
Rev/yr ($mils)	75	42	32
NPV ($Mils)	1494	845	650
Ind 3.3 mil. acres			
Buffers (acres)	288363	185297	103066
Rev/yr ($mils)	87	56	31
NPV ($Mils)	1734	1115	619
NIPF+Ind NPV	**3229**	**1960**	**1269**

Impact by Stream Type

Lewis Co stream type	NIPF **F**	%F new/old	**Np**	%Np new/old	%Np of Total
Buffers(acres)	12580	67%	2641	145%	17.4%
% of total acres	8.52		1.79		
Rev/yr ($mils)	3.8		0.8		
NPV ($Mils)	75.7		15.9		
	Industry				
Buffers(acres)	33867	35%	15683	133%	32%
% of total acres	5.95		2.76		
Rev/yr ($mils)	7.5		2.0		
NPV ($Mils)	150.9		40.5		

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Cost per acre:

- **NPV loss/buffer acre: $6020**
- **NPV NIPF loss/total acre: $620 (old 352 + F 207 + Np 64)**
- **NPV Ind loss/total acre: $524 (old 338 + F 93 + Np 95)**
- ***Typical bare land forest use value (SEV) assuming 5% cost of money:***
  - ***$600-1000/acre***

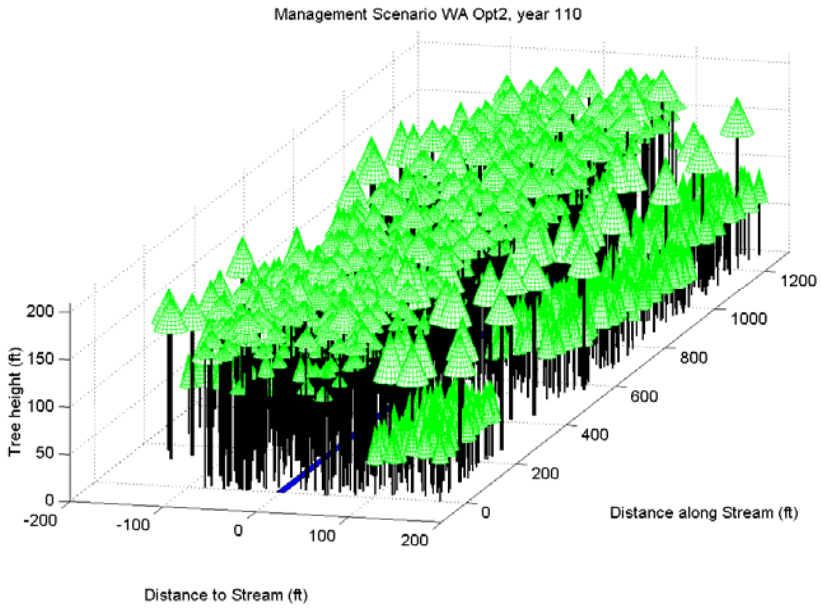
Implications:

- **Sell off the buffers?**
- **Convert to other uses (especially NIPF)**
- **Thinning in the RMZ and narrower buffers can reduce the loss substantially and produce more old-forest attributes (DFC) -- there are alternatives.**

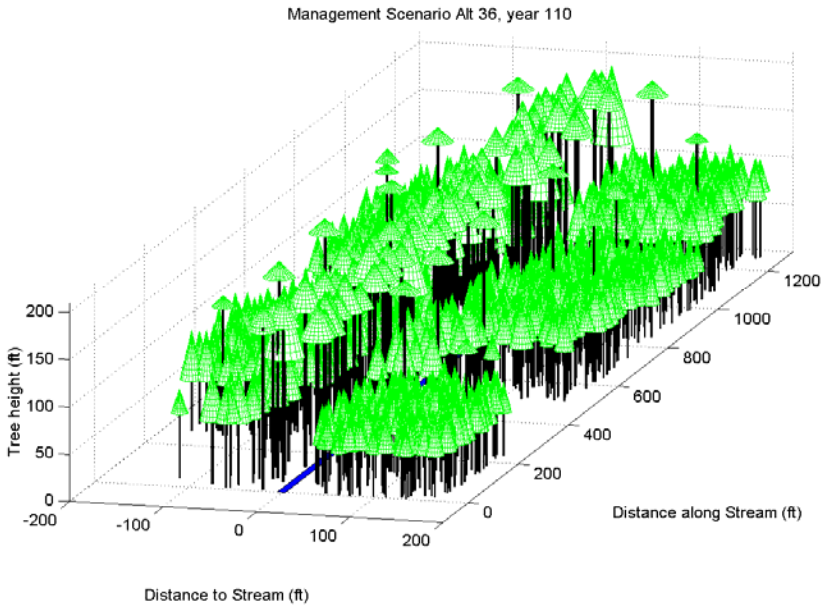
Thinning Alternative

	Forest Land Value SEV acre	% Time in DFC
No Touch Buffer	$-215	32
Thin & Narrow Buffer	$207	65-70
No Buffer	$627	<<32

Landscape Comparison of Thinning Alternative

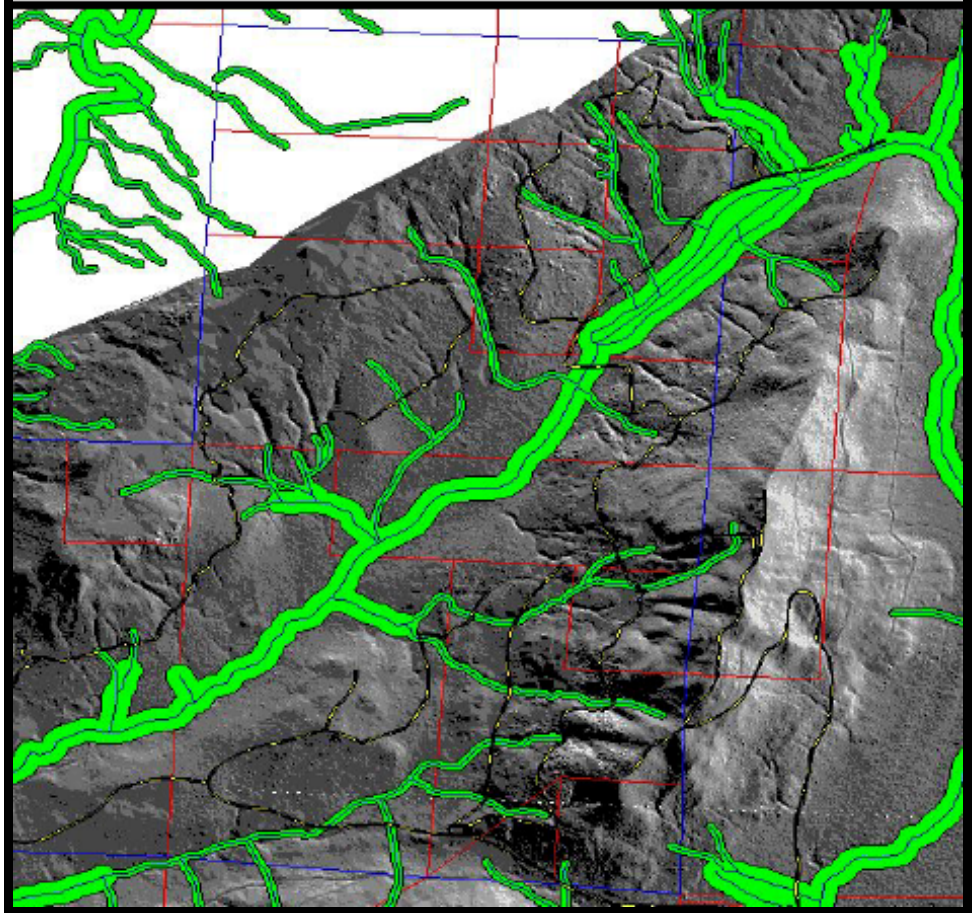


FFR

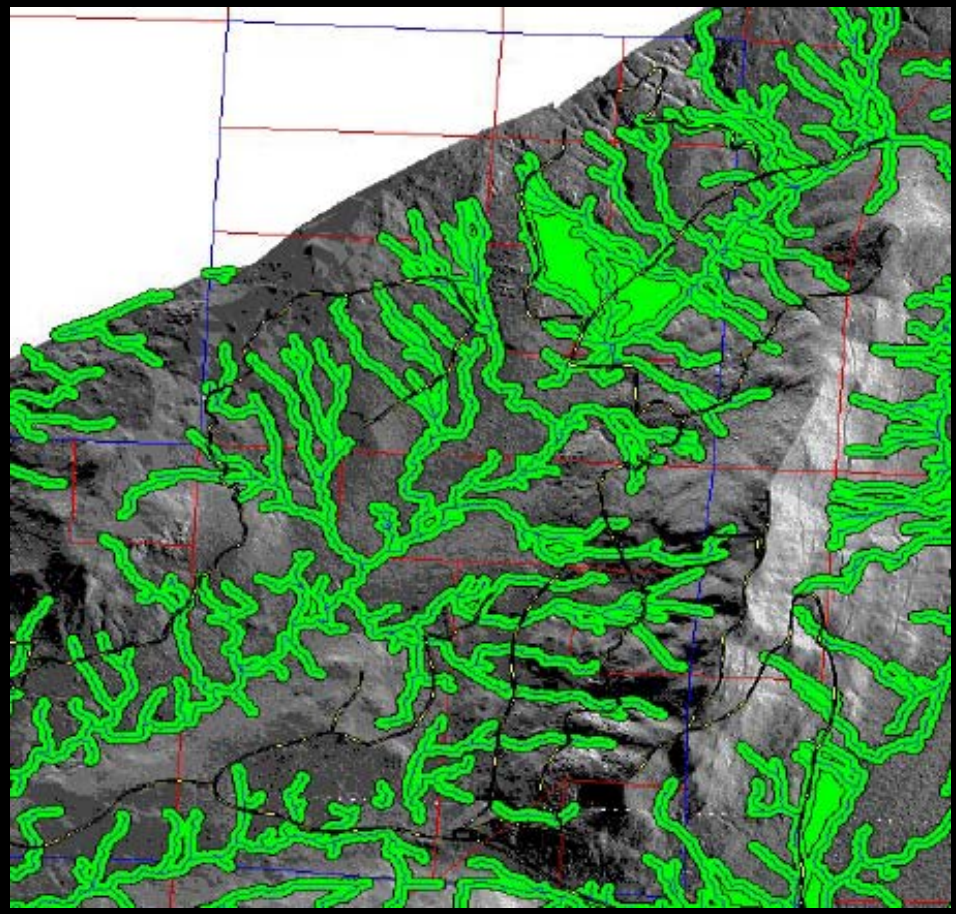


Thinning Alternative

DNR Hydro Layer vs. LiDAR DEM



- 142-ha of buffers
- 21% of Study Area



- 324-ha of buffers
- 41% of Study Area

Example Np Buffer Change Using Lidar

	Length (Km)	Area (hectare)
DNR Hydro	68	240
LIDAR	362	860
LIDAR/DNR-H	5.30x	3.60x

Conclusions:

- **The new buffer rules will have the unintended consequence of motivating a change in land use away from forests and forest buffers**
- **Even ignoring land conversion other alternatives appear to be more attractive**
- **Until we walk the multi-disciplinary talk our objectives are likely far out of reach**

Conclusions (cont):

- **The legislated regulation has not produced stability in rule making**
- **New science (LiDAR) with current rule making procedures will likely contribute to additional increases in buffers, owner losses and conversions**