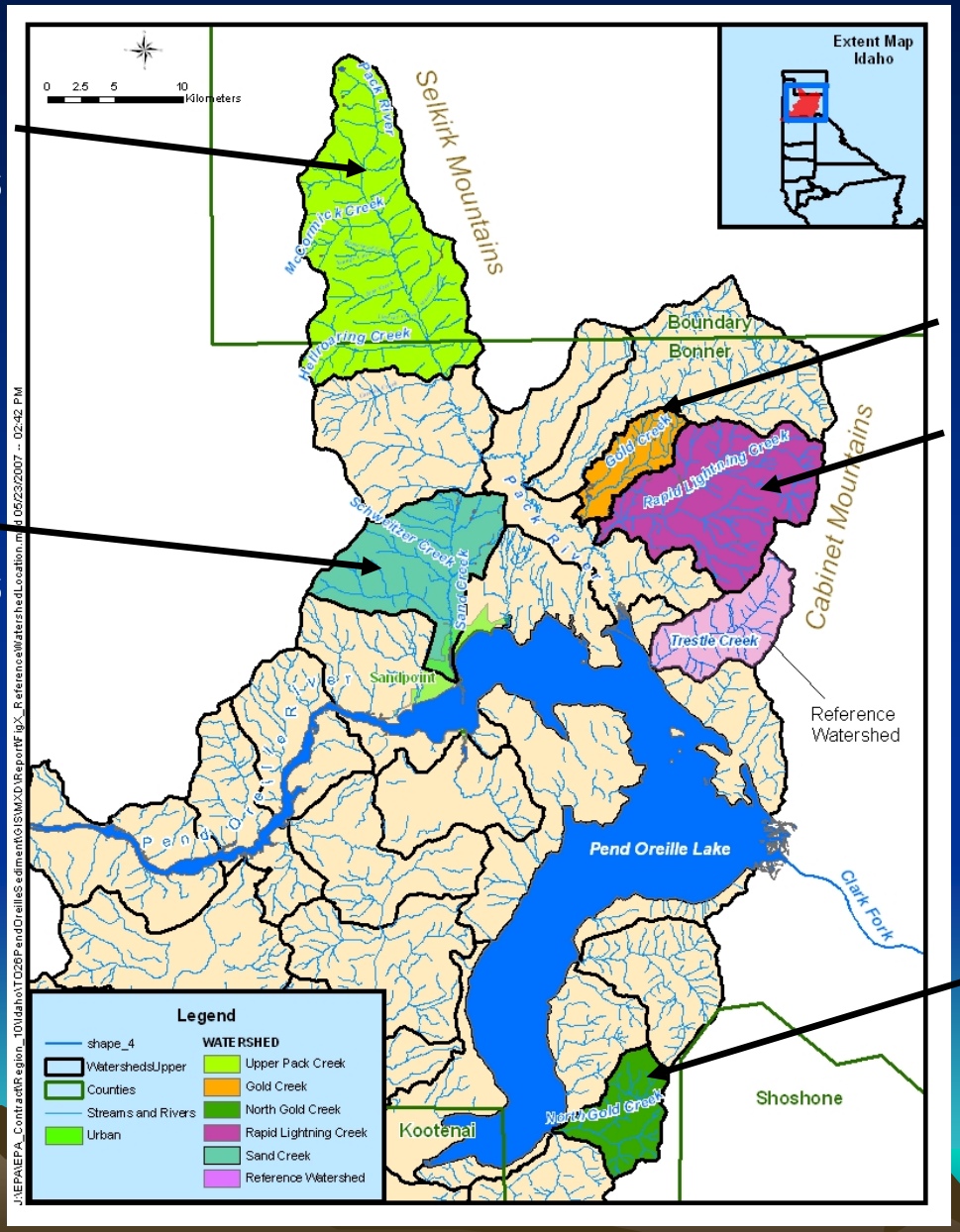
PEND OREILLE TRIBUTARIES SEDIMENT TMDLS

June 14, 2007
Idaho Department of Environmental Quality
USEPA Region 10
PARSONS

WATERSHED BOUNDARY MAP

Upper Pack River -
4 Assessment Units

Sand Creek,
Schweitzer Creek -
3 Assessment Units

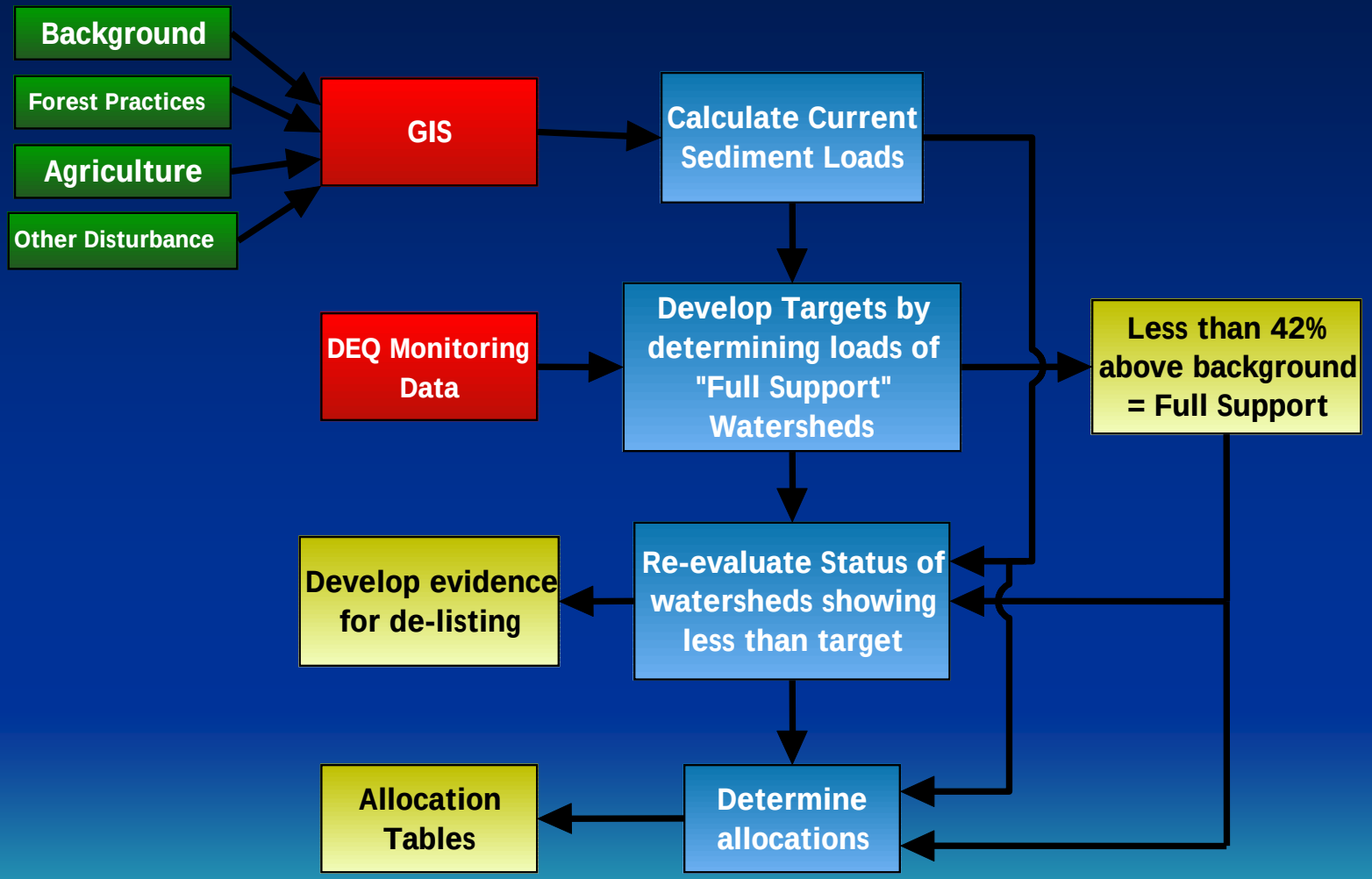


Gold Creek

Rapid Lightning Creek

North Gold Creek-
2 Assessment Units

SEDIMENT TMDL PROCESS



SEDIMENT SOURCES

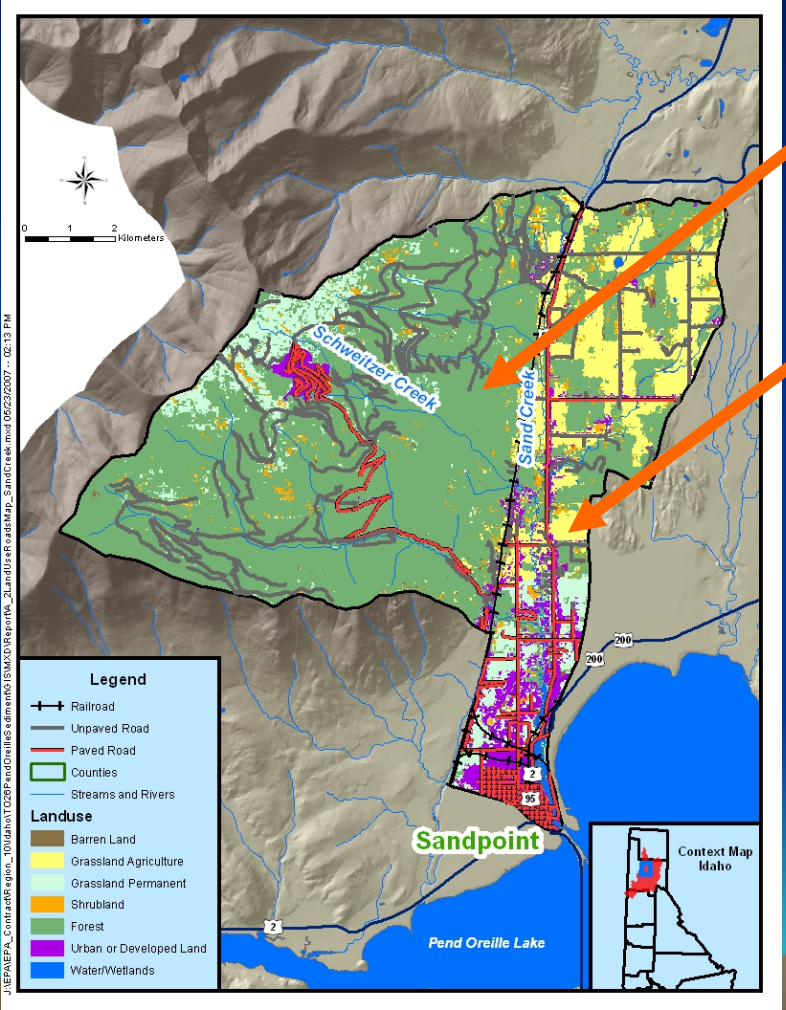
Background

- Forest
- Shrubland
- Barren (no delivery)
- Water (no delivery)
- Mass Wasting

“Non-Natural”

- Grassland Agriculture
- Grassland Permanent
- Urban
- Mass Wasting (originating from road or harvested area)
- Harvest
- Roads
- Road Crossings
- Fire

SEDIMENT MODELING/ESTIMATION TECHNIQUES



- Sediment yield coefficients for forestland, shrubland, and urban areas.
- RUSLE 2 estimated erosion from agricultural and permanent grassland.

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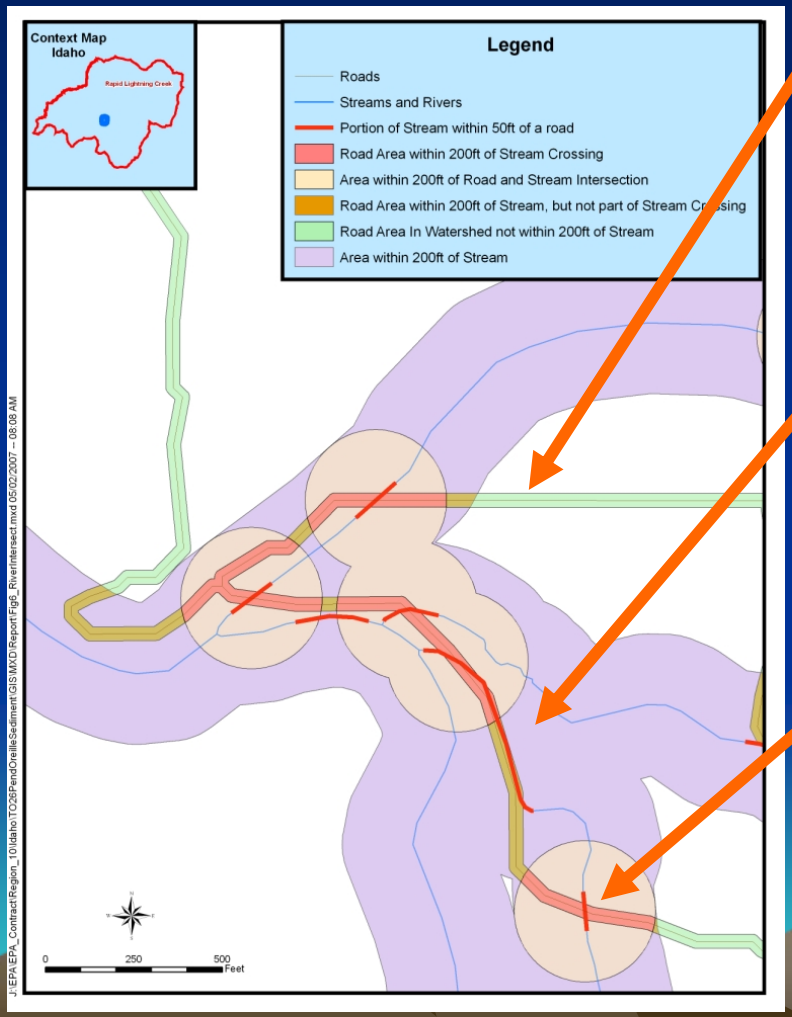
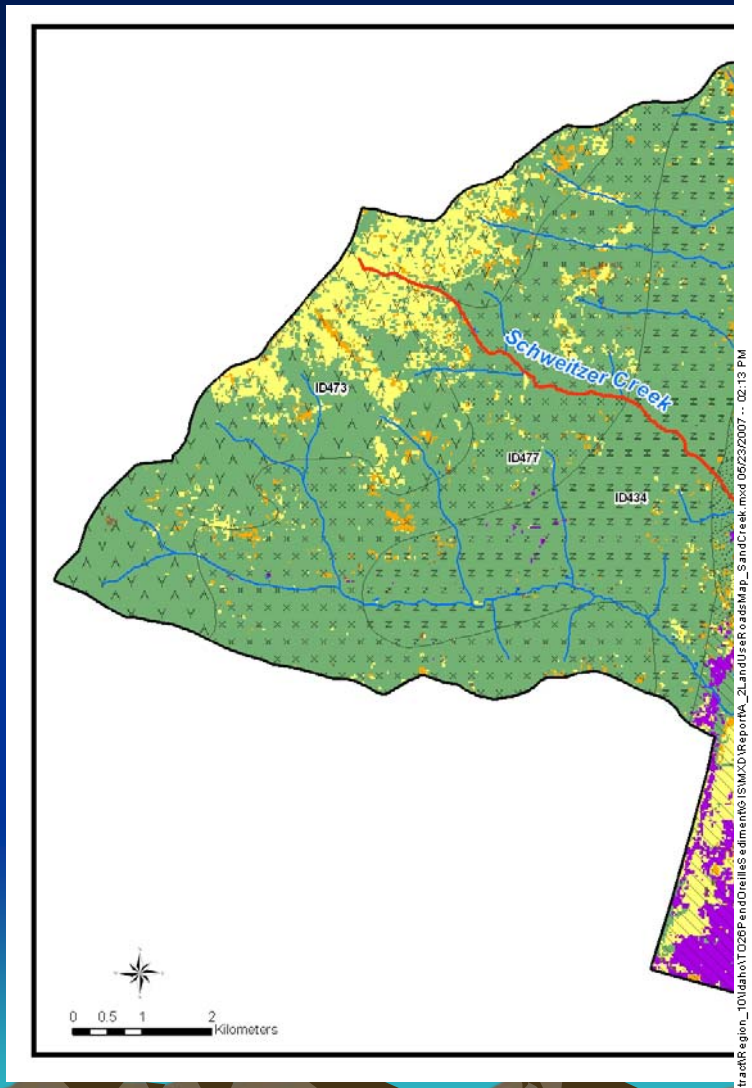


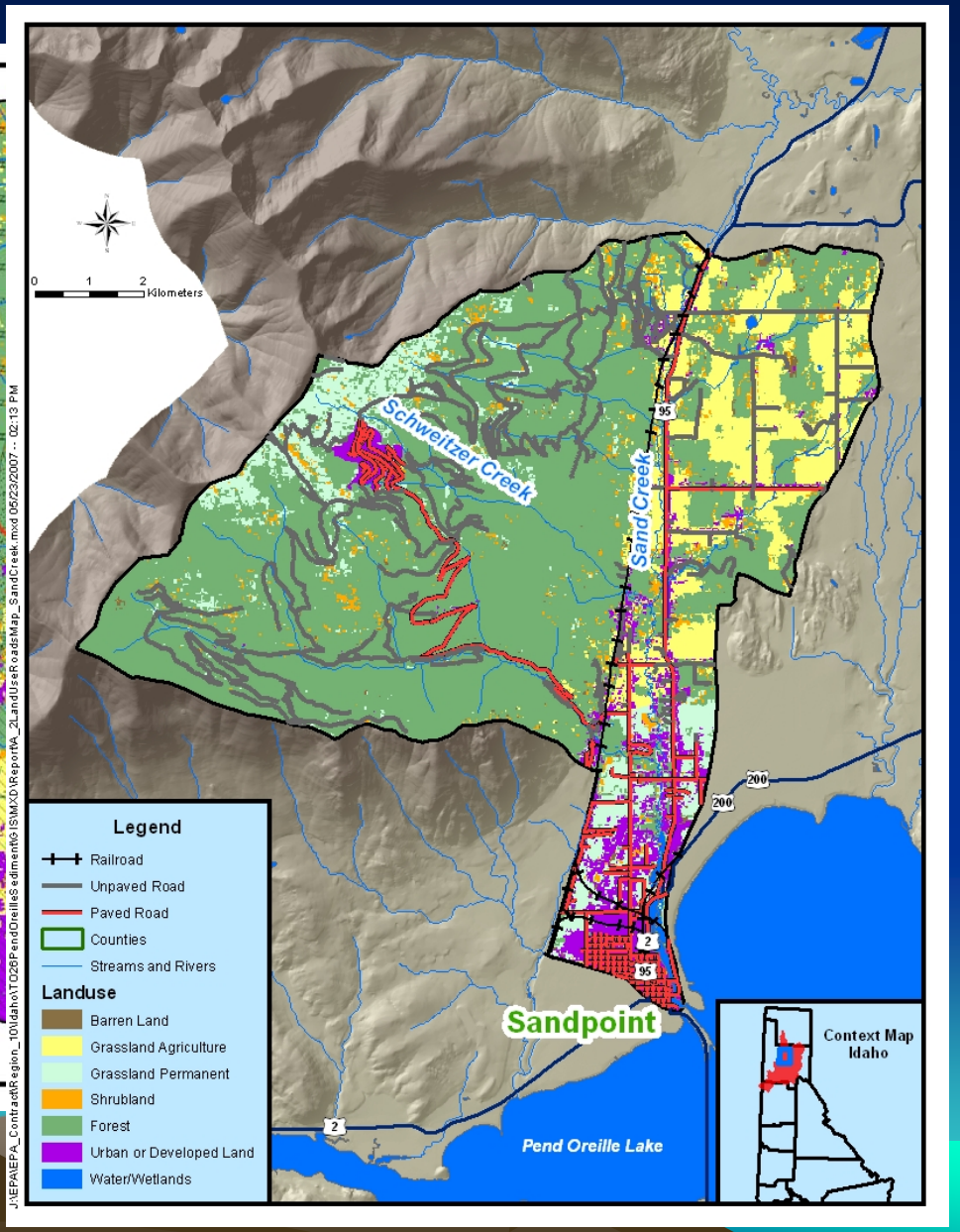
- McGreer Relationship approximated erosion from roads, other than at stream crossings.
- Best professional judgment was used to estimate stream erosion due to narrowing of the stream channel near roadways.
- WEPP Roads calculated erosion from roads at stream crossings.

TRIBUTARY WORKING GROUP REQUESTS

Question	Answer
Harvest activities not shown clearly	Maps prepared
Is sparse rural areas development in model	Yes
Paved roads need to receive a lower delivery coefficient	Coefficient for paved reduced by 50%
Ownership of roads needs to be included	See allocations
Review land use and ownership coverages in Sand and Schweitzer Creek watersheds	Maps revised
Pastureland delivery coefficients below natural background level is atypical	Coefficients revised as directed by NRCS
Differentiate between natural and non-natural mass wasting in tables	Completed
Redo load allocations to reflect changes	Completed

LAND USE/LAND COVER REVISIONS





LAND USE/LAND COVER REVISIONS

Watershed	Landuse	Acres	Percent of Total
Gold Creek (Pack River)	Grassland Agriculture	1,058	13.7%
North Gold Creek	Grassland Permanent	28	0.3%
Rapid Lightning Creek	Grassland Agriculture	487	1.6%
Sand Creek &	Grassland Agriculture	3,124	12.9%
Schweitzer Creek	Grassland Permanent	2,172	9.0%
Upper Pack River	Grassland Permanent	4,061	8.4%

LOAD CAPACITY SUMMARY

Watershed	Load Type	Watershed Area (acres)	Estimated Existing Load (tons/year)	Natural Background Load (tons/year)	Load Capacity at 42% above Background[1] (tons/year)
Gold Creek	Sediment	7,747	390	181	257
North Gold Creek	Sediment	10,519	762	246	349
Rapid Lightning Creek	Sediment	30,985	1,014[2]	717	1,018
Schweitzer Creek Sand Creek	Sediment	24,209	2,039	562	798
Upper Pack River	Sediment	48,467	2,309	970	1,377

[1] Load capacity=natural background x 1.42

[2] No TMDL is required since Existing Sediment Load is less than Load Capacity.

ESTIMATED SEDIMENT LOAD REDUCTIONS BY WATERSHED

Watershed	Watershed Area (acres)	a	b	(a-b)	(a-b)/a x 100
		Estimated Existing Load (tons/year)	Load Capacity at 42% above Background (tons/year)	Required Sediment Load Reduction (tons/year)	Percent Load Reduction Required
Gold Creek	7,747	390	257	133	34%
North Gold Creek	10,519	762	349	412*	54%
Sand and Schweitzer Creeks	24,209	2,039	798	1,241	61%
Upper Pack River	48,467	2,309	1,364	945	41%
Rapid Lightning Creek	30,985	1,014	1,018	0**	0%**

*Value varies from difference between column “a” and column “b” due to rounding error.

** Sediment determined not to be a pollutant of concern based on model.

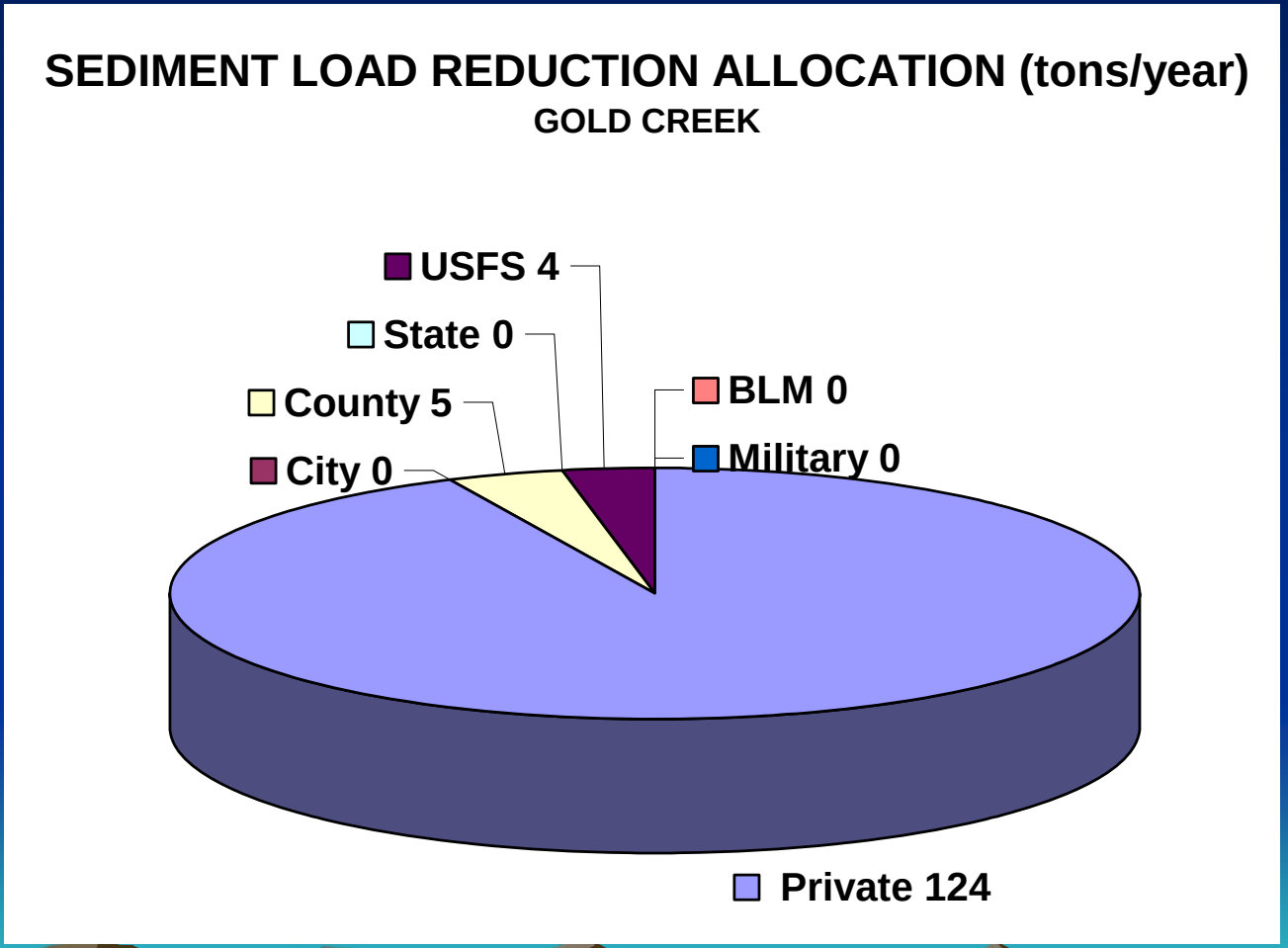
ESTIMATED ANNUAL AVERAGE EXISTING SEDIMENT LOADS BY LAND TYPE

Land Type	EXISTING SEDIMENT LOAD[1] (tons/year)				
	Gold Creek	North Gold Creek	Rapid Lightning Creek	Sand and Schweitzer Creek	Upper Pack River
Forest[2]	151	210	690	376	584
Forest - Harvested	0	435	4	0	398
Forest - Burned	0	0	0	0	0
Grassland-Agriculture	170	0	78	406	0
Grassland-Permanent	0	3	0	261	386
Shrubland[2]	3	1	13	18	241
Urban	18	2	9	465	23
Unpaved Roads	31	72	108	347	255
Paved Roads	0	0	0	73	0
Mass Wasting-Natural[2]	0	0	0	0	34
Mass Wasting-Anthropogenic	0	0	0	0	296
Road Encroachment	17	39	112	93	92
Total Existing Load	**390**	**762**	**1,014**	**2,039**	**2,309**

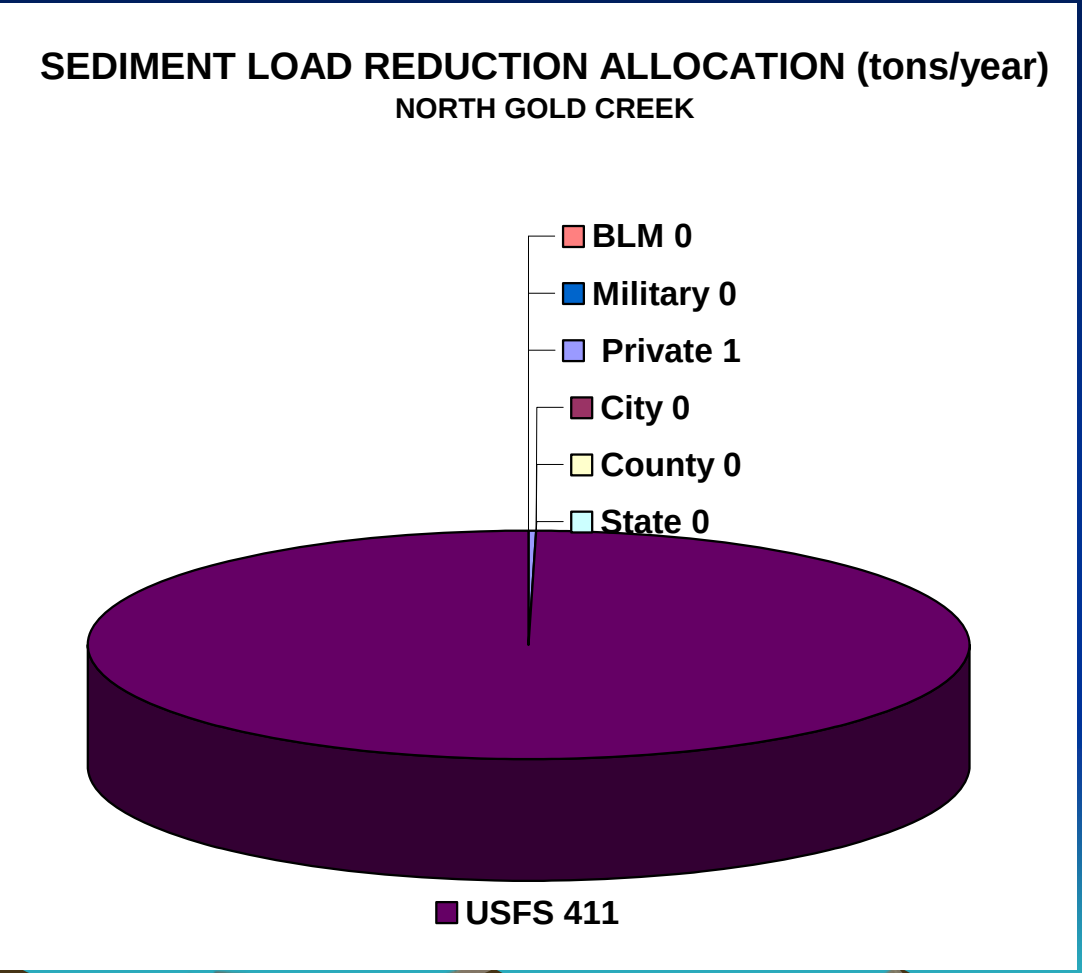
1 Existing Sediment Load = Natural Background Load + Non-natural Nonpoint Sources Load

2 Sediment sources defined as natural.

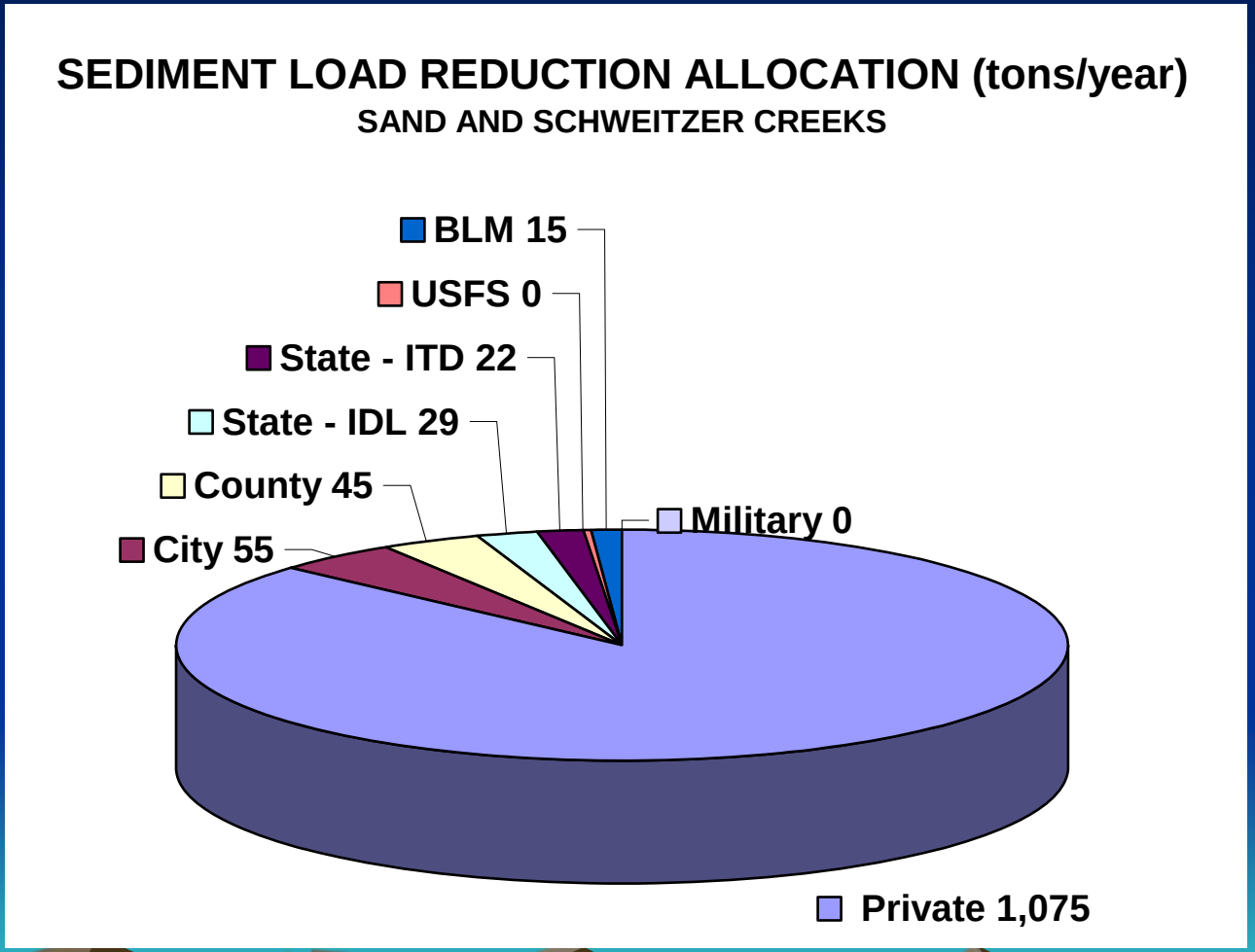
LOAD ALLOCATIONS BY LAND MANAGER FOR GOLD CREEK



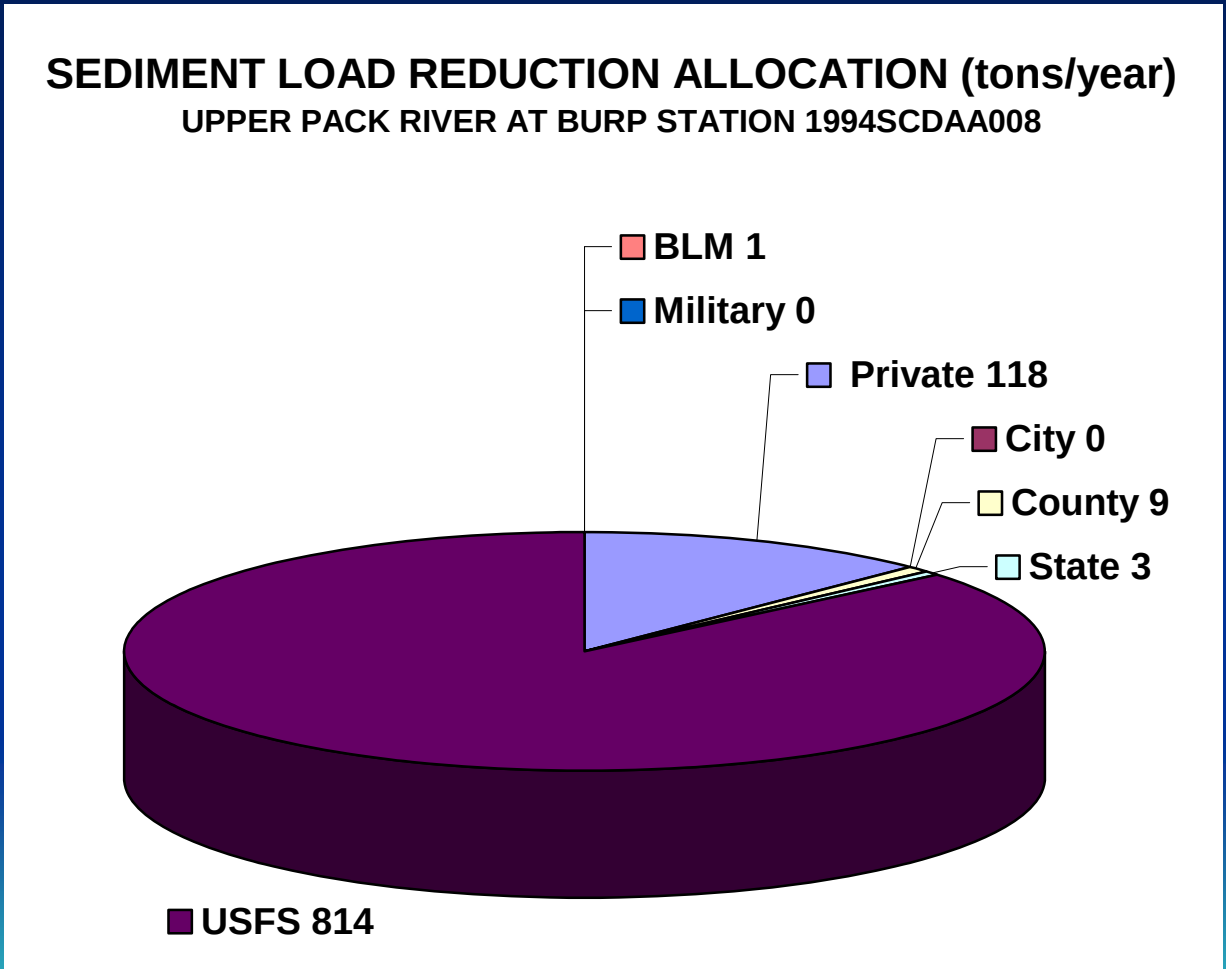
LOAD ALLOCATIONS BY LAND MANAGER FOR NORTH GOLD CREEK



LOAD ALLOCATION BY LAND MANAGER FOR SAND AND SCHWEITZER CREEKS



LOAD ALLOCATION BY LAND MANAGER FOR UPPER PACK RIVER



LOAD ALLOCATIONS BY LAND USE FOR GOLD CREEK

Land Type	Area Associated With Anthropogenic Sediment Load (acres)	Anthropogenic Sediment Load (tons/year)	Percent of Load	Sediment Load Reduction (tons/year)
Grassland-Agriculture	1,058	169	72%	96
Urban	72	18	8%	10
Unpaved Roads - Road Crossing	0	9	4%	5
Unpaved Roads - Within 200'	0	12	5%	7
Unpaved Roads - Exceeding 200'	0	10	4%	6
Road Encroachment	0	17	7%	10
Total	**1,129***	**235**	**100%**	**133***

* Total value varies from sum of individual values due to rounding error.

LOAD ALLOCATIONS BY LAND USE FOR NORTH GOLD CREEK

Land Type	Area Associated With Anthropogenic Sediment Load (acres)	Anthropogenic Sediment Load (tons/year)	Percent of Load	Sediment Load Reduction (tons/year)
Forest - Harvested (04-06)	356	356	65%	267
Forest - Harvested (01-03)	491	49	9%	37
Forest - Harvested (97-00)	597	30	5%	22
Grassland-Permanent	28	3	1%	2
Urban	6	2	0%	1
Unpaved Roads - Road Crossing	0	31	6%	23
Unpaved Roads - Within 200'	0	27	5%	21
Unpaved Roads - Exceeding 200'	0	13	2%	10
Road Encroachment	0	39	7%	29
Total	**1,479***	**550**	**100%**	**412**

* Total value varies from sum of individual values due to rounding error.

LOAD ALLOCATIONS BY LAND USE FOR SAND AND SCHWEITZER CREEKS

Land Type	Area Associated With Anthropogenic Sediment Load (acres)	Anthropogenic Sediment Load (tons/year)	Percent of Load	Sediment Load Reduction (tons/year)
Grassland-Agriculture	3,124	406	25%	306
Grassland-Permanent	2,172	261	16%	197
Urban	1,862	465	28%	351
Unpaved Roads - Road Crossing	0	252	15%	190
Unpaved Roads - Within 200'	0	28	2%	21
Unpaved Roads - Exceeding 200'	0	67	4%	51
Paved Roads - Road Crossing	0	53	3%	40
Paved Roads - Within 200'	0	5	0%	4
Paved Roads - Exceeding 200'	0	15	1%	11
Road Encroachment	0	93	6%	70
Total	**7,157***	**1,645**	**100%**	**1,241**

Parsons * Total value varies from sum of individual values due to rounding error.

LOAD ALLOCATIONS BY LAND USE FOR UPPER PACK RIVER

Land Type	Area Associated With Anthropogenic Sediment Load (acres)	Anthropogenic Sediment Load (tons/year)	Percent of Load	Sediment Load Reduction (tons/year)
Forest - Harvested (04-06)	387	387	27%	252
Forest - Harvested (97-00)	215	11	1%	7
Grassland-Permanent	4,061	386	27%	252
Urban	94	24	2%	15
Unpaved Roads - Road Crossing	0	138	10%	90
Unpaved Roads - Within 200'	0	45	3%	29
Unpaved Roads - Exceeding 200'	0	72	5%	47
Anthropogenic Mass Wasting	0	296	20%	193
Road Encroachment	0	92	6%	60
Total	**4,757**	**1,450***	**100%***	**945**

* Total value varies from sum of individual values due to rounding error.

Discussion