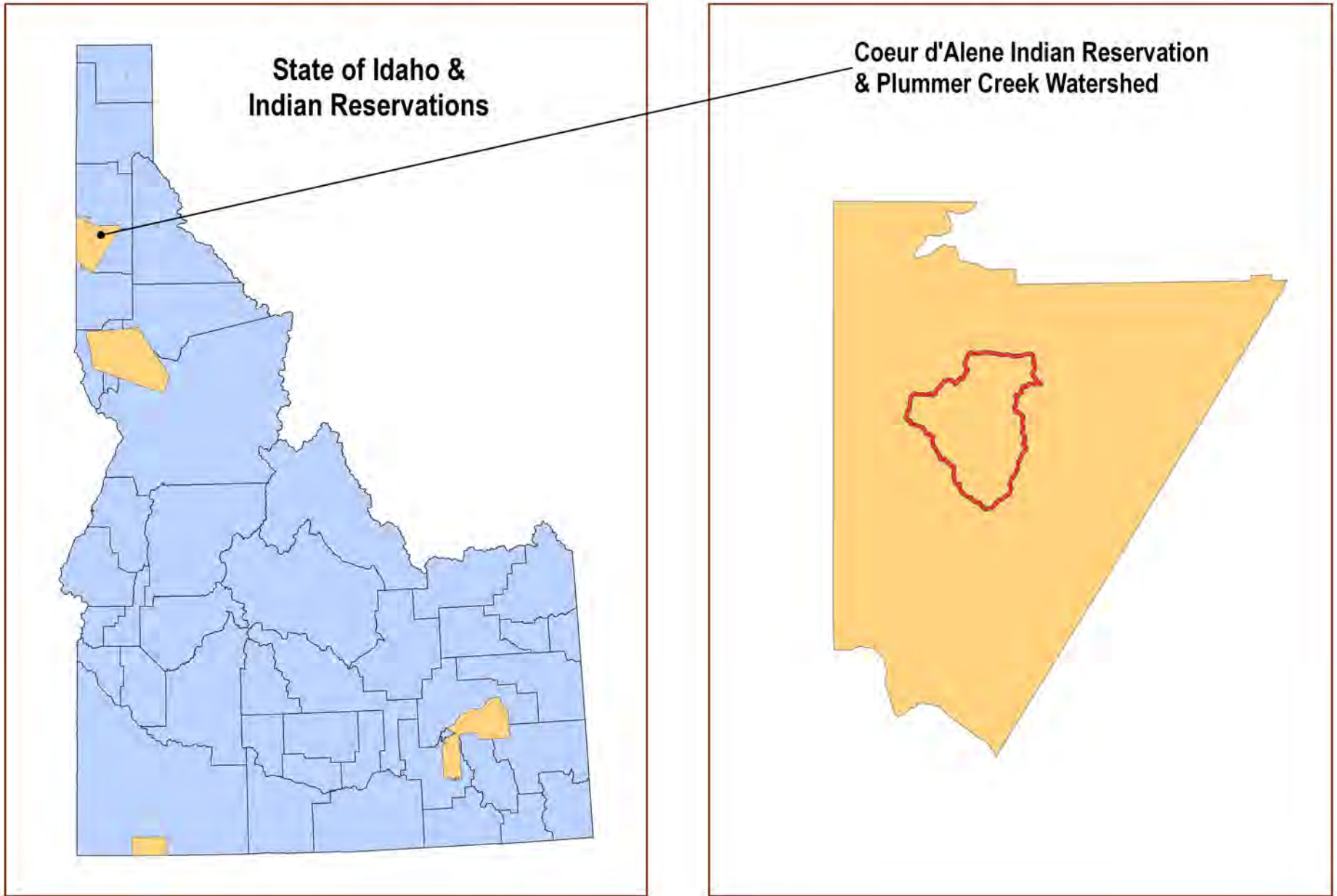


Plummer Creek Watershed Analysis Map Series



Watershed analyses summarized in this series of maps and their associated tables were derived using the Automated Geospatial Watershed Assessment (AGWA) Version 2.0 (USDA-ARS) extension for ArcMap 9.2 featuring the Soil and Water Assessment Tool (S.W.A.T.) ver. 2005, to predict specific environmental conditions found in the Plummer Creek Watershed. Input data evaluated and displayed on these maps include: 1-meter resolution DEM (from LiDAR - Coeur d'Alene Tribe), SSURGO Soil data from the National Cooperative Soil Survey (NRCS), vegetation cover digitized from aerial photography (Surdex 2006 - 1 meter resolution) and verified with field surveys, temperature and precipitation data from the St. Maries Weather Station, canopy coverage and impermeable characteristics from the National Land Cover Dataset (NRCS 2001). Additional input data to the model has been developed by TerraGraphics Environmental Engineering, Inc.

 TerraGraphics Environmental Engineering, Inc. www.TerraGraphics.com <small>Geospatial Analysis by TerraGraphics Geospatial Analysis & Mapping Center</small>	This project commissioned by the Coeur d'Alene Indian Tribe. 	PROJECT NAME AND MAP THEME Plummer Creek Watershed Analysis Map Series Cover Page			
		FILE Plummer_Creek_WS_20081122.mxd	PROJECT NUMBER Coeur d'Alene Tribe: 08065	PROJECT MANAGER D. Brandt	
		PRINT DATE December 5, 2008	GEOSPATIAL ANALYST & MAPPER W. Schlosser	REQUESTOR D. Brandt	
This map was produced using information obtained from several different sources that have not been independently verified. These sources have also not provided information on the precision and accuracy of the data. Information on this map is not a substitute for survey data.					

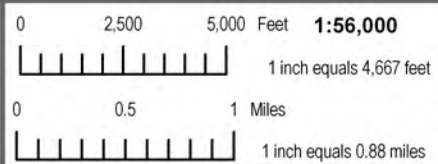
Plummer Creek Watershed



Legend

- ★ Communities
- Roads**
- Highways
- Surface Roads
- Railroad
- ▭ Plummer Creek Watershed
- Stream: Bankfull Width (ft)**
- 2.3' - 2.6'
- 2.6' - 3.5'
- 3.5' - 4.5'
- 4.5' - 9.0'
- 9.0' - 14.6'

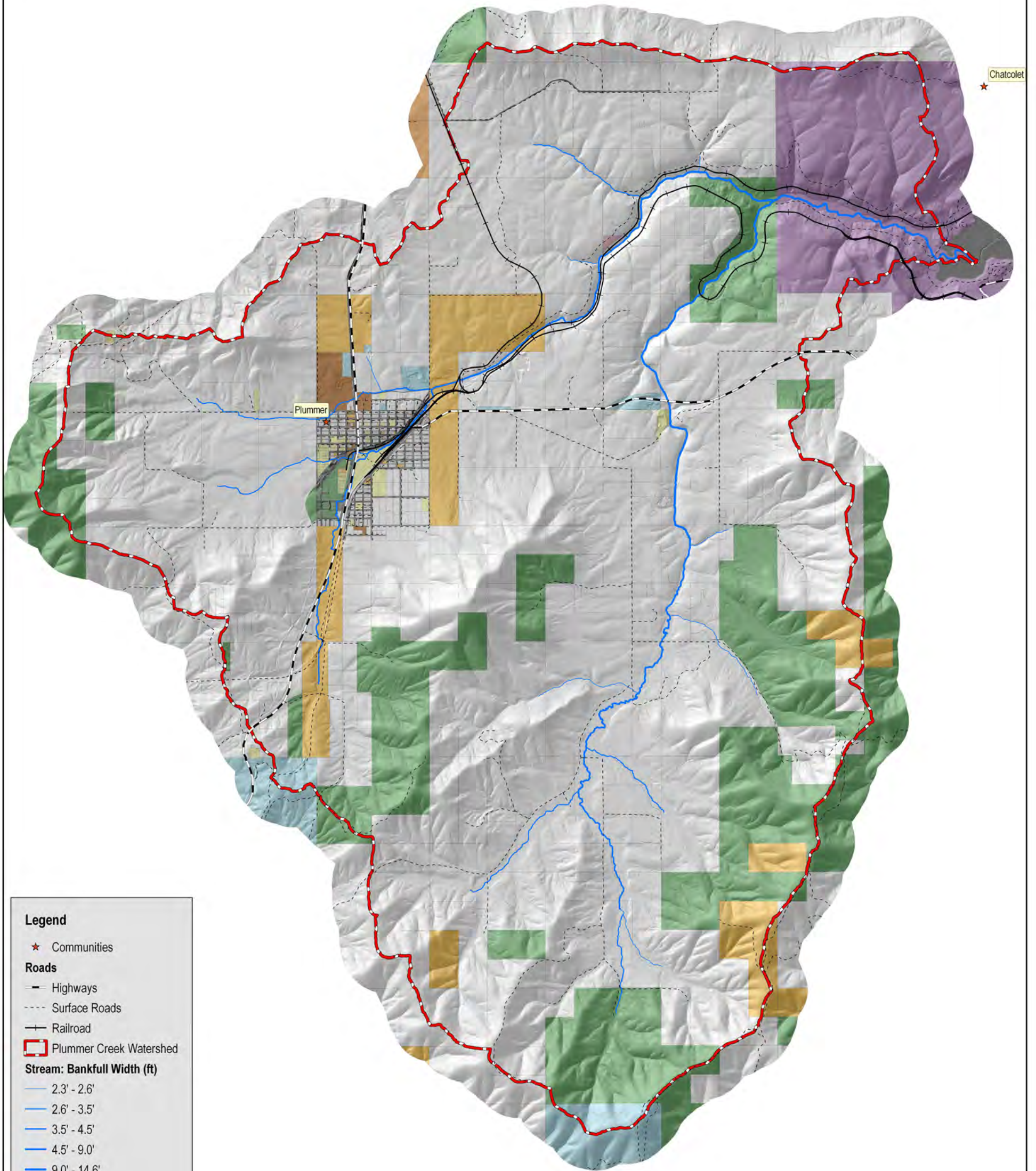

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PROJECT NAME AND MAP THEME		Plummer Creek Watershed Analysis Figure 1: Aerial Photography (SURDEX 1m - 2006)	
FILE	PROJECT NUMBER	PROJECT MANAGER	
Plummer_Creek_WS_20081122.mxd	Couer d'Alene Tribe: 08065	D. Brandt	
PRINT DATE	GEOSPATIAL ANALYST & MAPPER	REQUESTOR	
December 5, 2008	W. Schlosser	D. Brandt	

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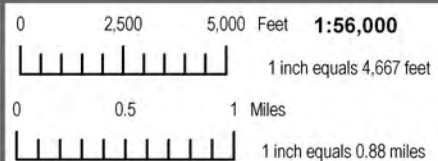
Plummer Creek Watershed



Legend

- ★ Communities
- Roads**
- Highways
- Surface Roads
- +— Railroad
- ▭ Plummer Creek Watershed
- Stream: Bankfull Width (ft)**
- 2.3' - 2.6'
- 2.6' - 3.5'
- 3.5' - 4.5'
- 4.5' - 9.0'
- 9.0' - 14.6'
- Ownership**
- Coeur d'Alene Tribe
- BIA
- BIA: Trust Lands
- State of Idaho
- Benewah County
- Heyburn State Park
- Local Government
- Forest Industry
- Private

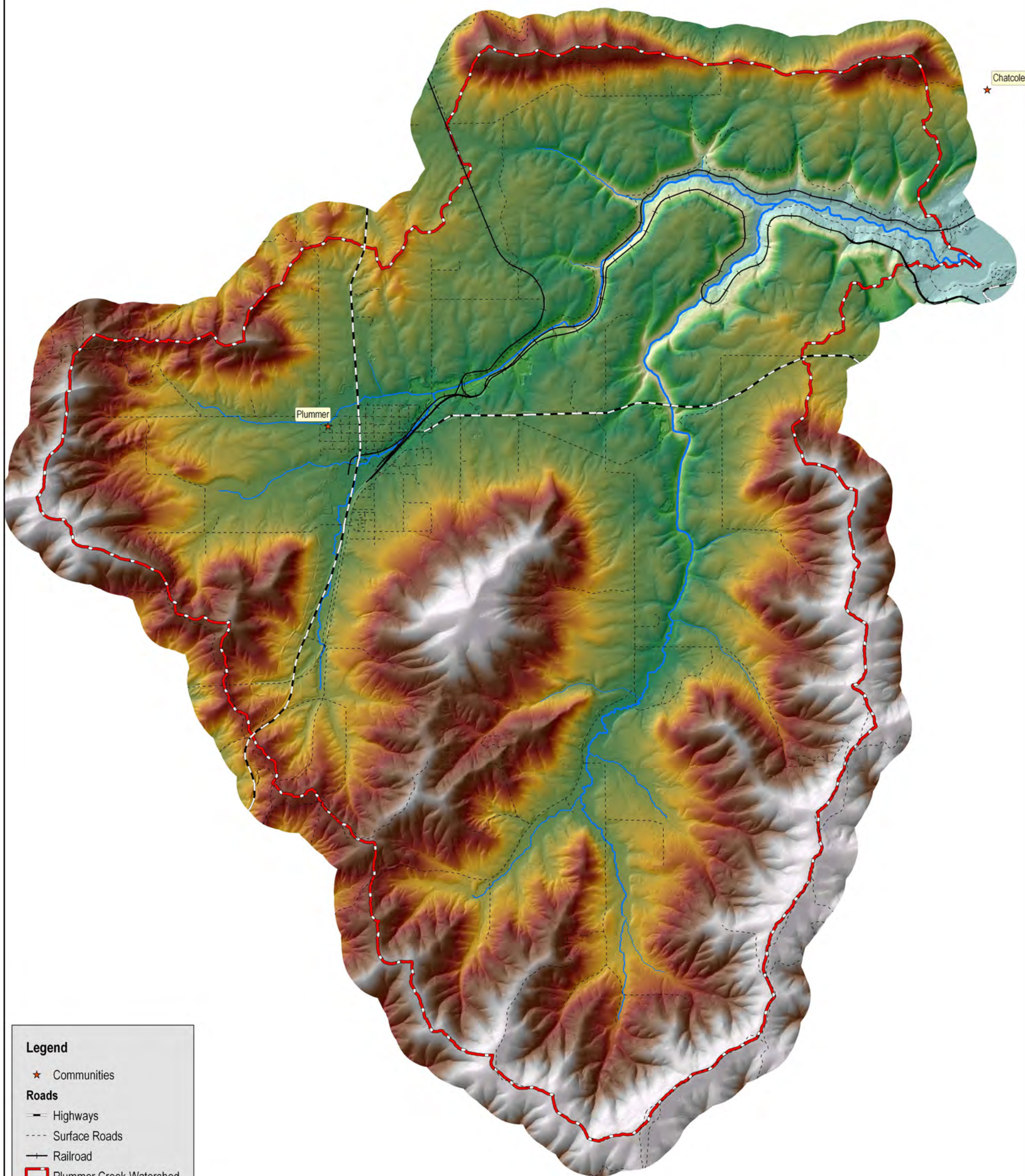

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PROJECT NAME AND MAP THEME		Plummer Creek Watershed Analysis Figure 2: Ownership	
FILE	PROJECT NUMBER	PROJECT MANAGER	
Plummer_Creek_WS_20081122.mxd	Coeur d'Alene Tribe: 08065	D. Brandt	
PRINT DATE	GEOSPATIAL ANALYST & MAPPER	REQUESTOR	
December 5, 2008	W. Schlosser	D. Brandt	

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Plummer Creek Watershed



Legend

- ★ Communities
- Roads**
- Highways
- Surface Roads
- +— Railroad
- ▭ Plummer Creek Watershed
- Stream: Bankfull Width (ft)**
- 2.3' - 2.6'
- 2.6' - 3.5'
- 3.5' - 4.5'
- 4.5' - 9.0'
- 9.0' - 14.6'
- LiDAR DEM**
- High : 4,450'
- Elevation
- Low : 2,120'



Geospatial Analysis by
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0 2,500 5,000 Feet **1:56,000**

1 inch equals 4,667 feet

0 0.5 1 Miles

1 inch equals 0.88 miles



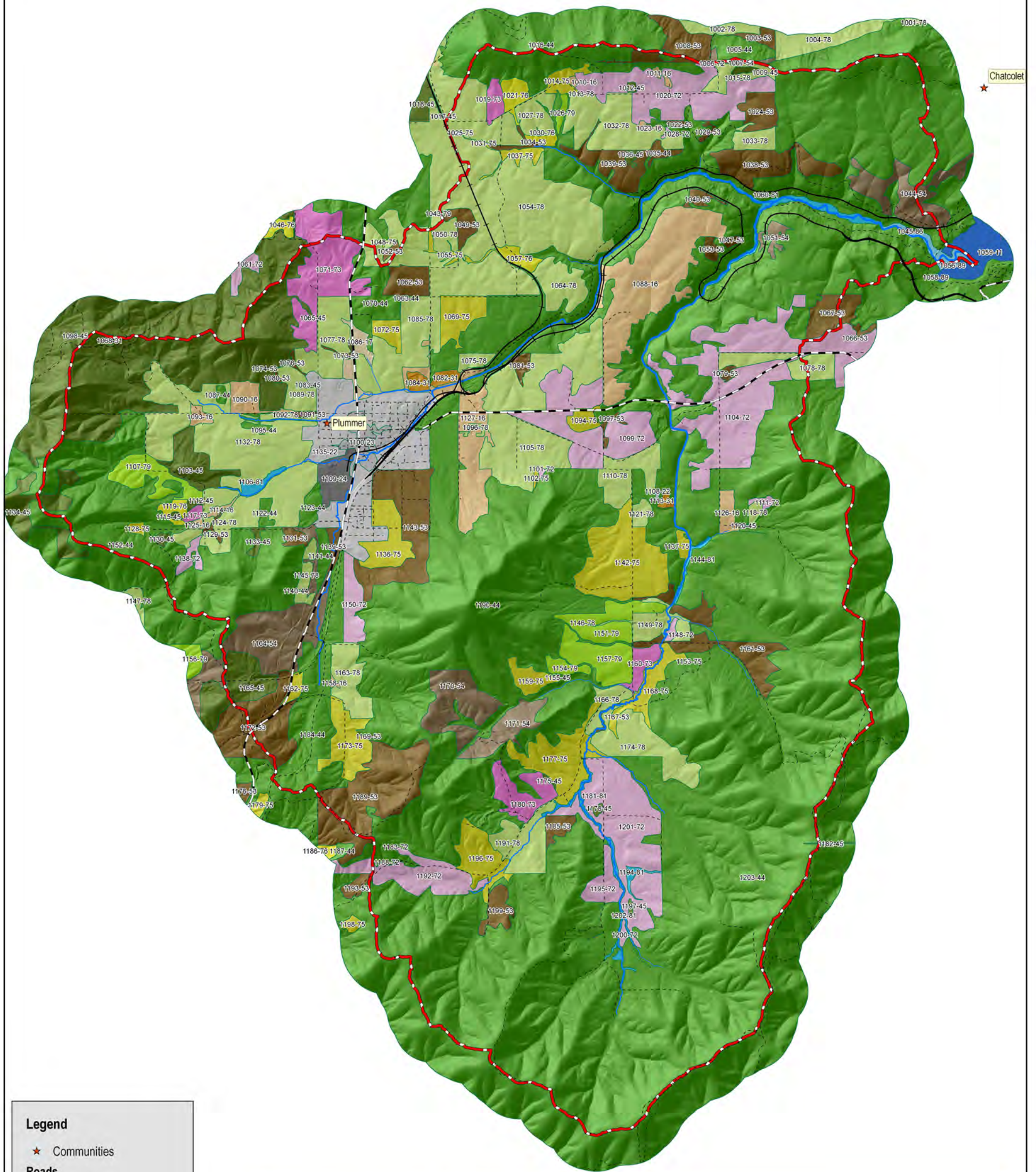
PROJECT NAME
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Plummer Creek Watershed Analysis
Figure 3: Topography

FILE Plummer_Creek_WS_20081122.mxd	PROJECT NUMBER Coeur d'Alene Tribe: 08065	PROJECT MANAGER D. Brandt
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Plummer Creek Watershed



Legend

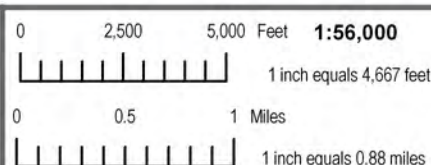
- ★ Communities
- Roads**
- Highways
- Surface Roads
- + Railroad
- ▭ Plummer Creek Watershed
- Stream: Bankfull Width (ft)**
- 2.3' - 2.6'
- 2.6' - 3.5'
- 3.5' - 4.5'
- 4.5' - 9.0'
- 9.0' - 14.6'

Legend for Land Cover Classification Label Key: 4-digit Polygon ID - Cover Type

- | | | |
|---|---|--|
| ■ Barren Land | ■ Developed, Open Space - Poor condition | ■ Palustrine Forested Wetland - Good condition |
| ■ Cultivated Crops (wheat and bluegrass) - Fair | ■ Emergent Herbaceous Wetlands - Good condition | ■ Pasture/Hay - Fair condition |
| ■ Cultivated Crops (wheat and bluegrass) - Poor | ■ Evergreen Forest - Fair condition | ■ Pasture/Hay - Poor condition |
| ■ Developed, High Intensity | ■ Evergreen Forest - Poor condition | ■ Scrub/Shrub - Fair condition |
| ■ Developed, Low Intensity | ■ Grasslands/Herbaceous - Fair condition | ■ Scrub/Shrub - Poor condition |
| ■ Developed, Medium Intensity | ■ Grasslands/Herbaceous - Poor condition | ■ Woody Wetlands - Poor condition |
| ■ Developed, Open Space - Fair condition | ■ Open Water | |



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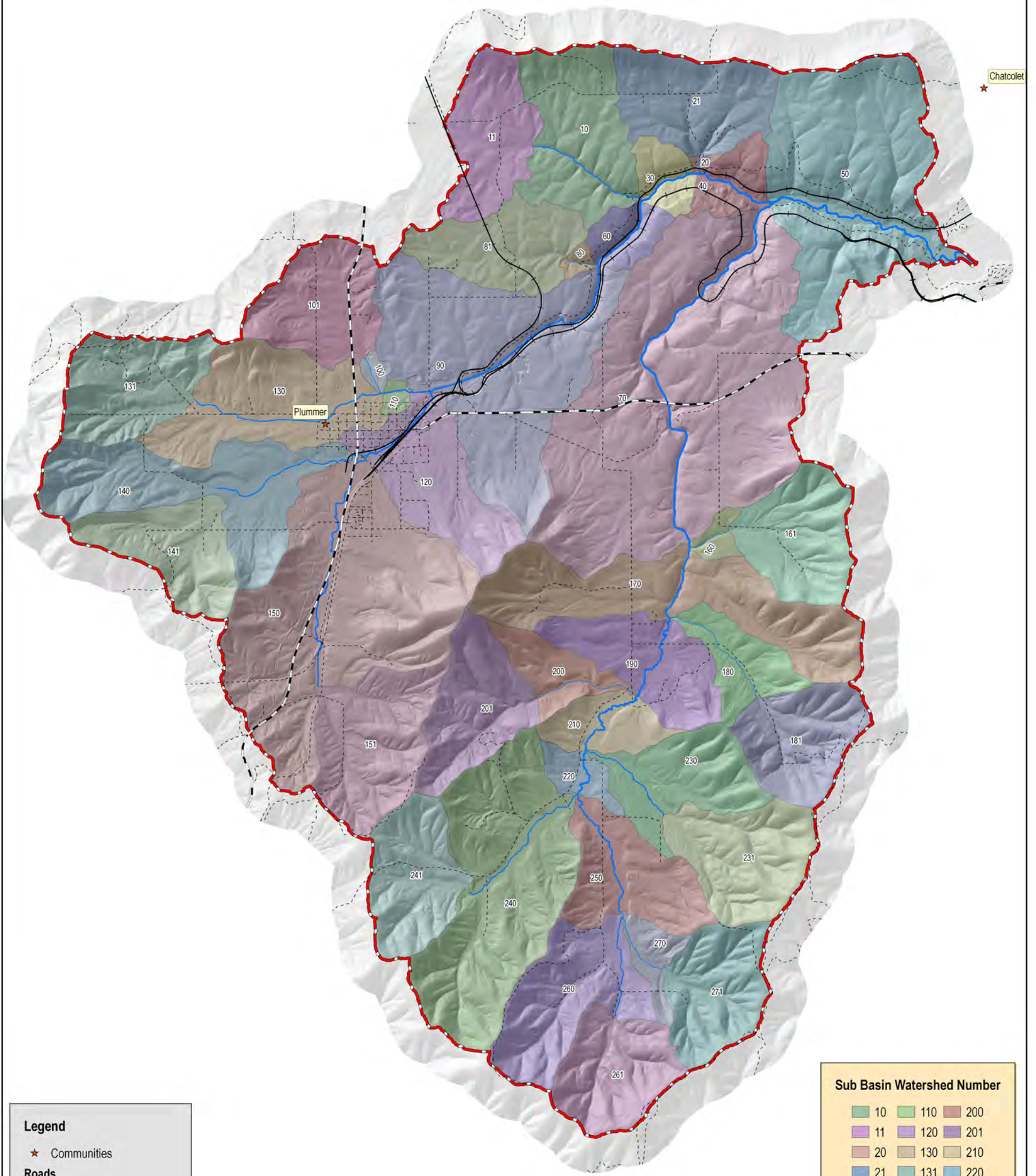
PROJECT NAME
AND MAP THEME

Plummer Creek Watershed Analysis
Figure 4: Land Cover Classification

FILE Plummer_Creek_WS_20081122.mxd	PROJECT NUMBER Cover d'Alene Tribe: 08065	PROJECT MANAGER D. Brandt
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Plummer Creek Watershed



Legend

- ★ Communities
- Roads**
 - Highways
 - Surface Roads
 - + Railroad
- ▭ Plummer Creek Watershed
- Stream: Bankfull Width (ft)**
 - 2.3' - 2.6'
 - 2.6' - 3.5'
 - 3.5' - 4.5'
 - 4.5' - 9.0'
 - 9.0' - 14.6'

Sub Basin Watershed Number

10	110	200
11	120	201
20	130	210
21	131	220
30	140	230
40	141	231
50	150	240
60	151	241
70	160	250
80	161	260
81	170	261
90	180	270
100	181	271
101	190	

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0 2,500 5,000 Feet **1:56,000**

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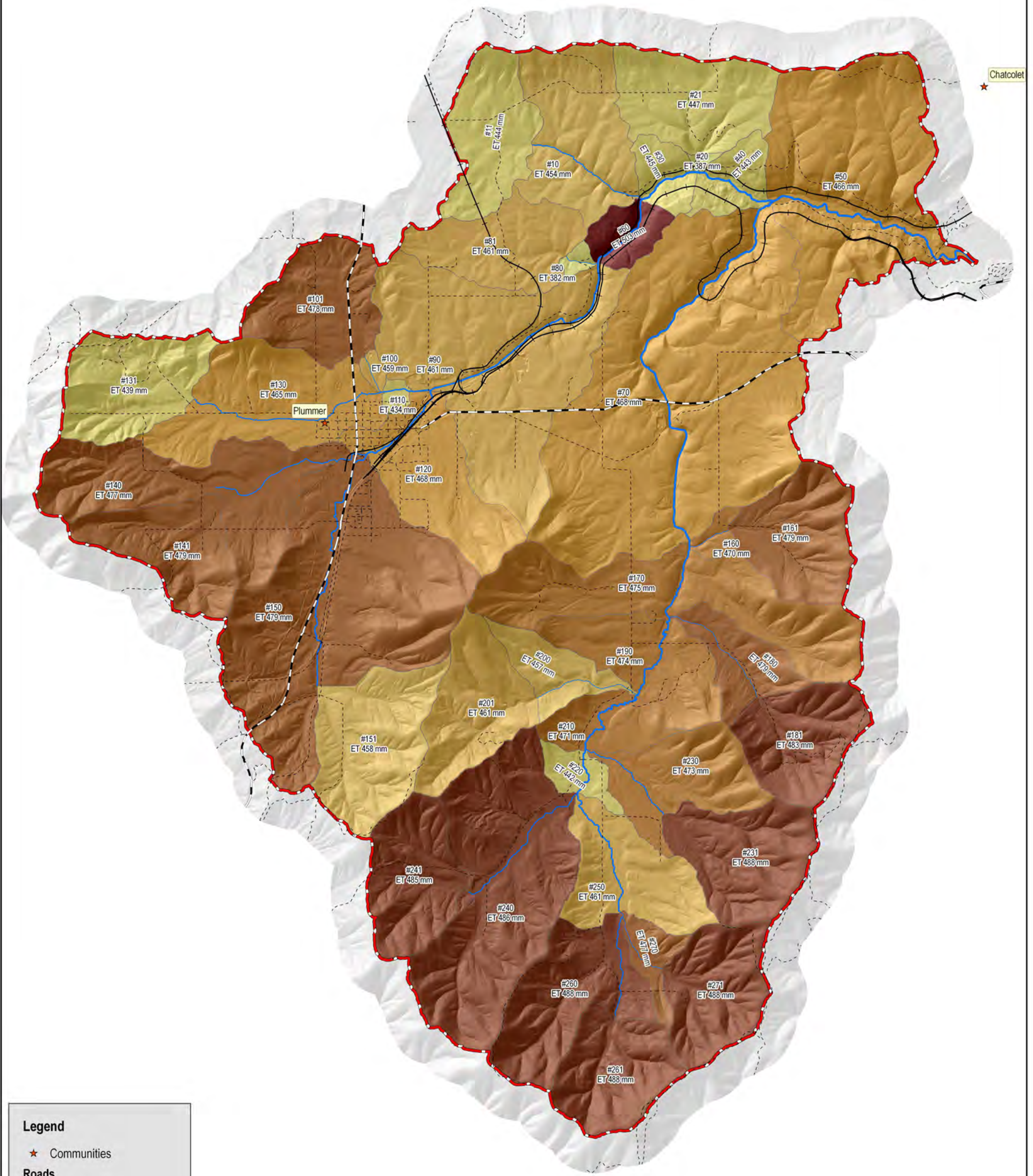
0 0.5 1 Miles

1 inch equals 0.88 miles

PROJECT NAME AND MAP THEME		
Plummer Creek Watershed Analysis Figure 5: Sub Basin Watershed Number		
FILE Plummer_Creek_WS_20081122.mxd	PROJECT NUMBER Coeur d'Alene Tribe: 08065	PROJECT MANAGER D. Brandt
PRINT DATE December 5, 2008	GEOSPATIAL ANALYST & MAPPER W. Schlosser	REQUESTOR D. Brandt

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Plummer Creek Watershed



Legend

- ★ Communities
- Roads**
- Highways
- Surface Roads
- + Railroad
- ▭ Plummer Creek Watershed
- Stream: Bankfull Width (ft)**
- 2.3' - 2.6'
- 2.6' - 3.5'
- 3.5' - 4.5'
- 4.5' - 9.0'
- 9.0' - 14.6'

Legend for Sub Basin Watersheds Average Annual Evapotranspiration (mm/yr)

- | | | |
|-----------------|-----------------|-----------------|
| 381.72 - 387.43 | 457.71 - 461.03 | 479.13 - 488.43 |
| 387.43 - 446.82 | 461.03 - 467.87 | 488.43 - 503.00 |
| 446.82 - 457.71 | 467.87 - 475.33 | 475.33 - 479.13 |



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0 2,500 5,000 Feet **1:56,000**

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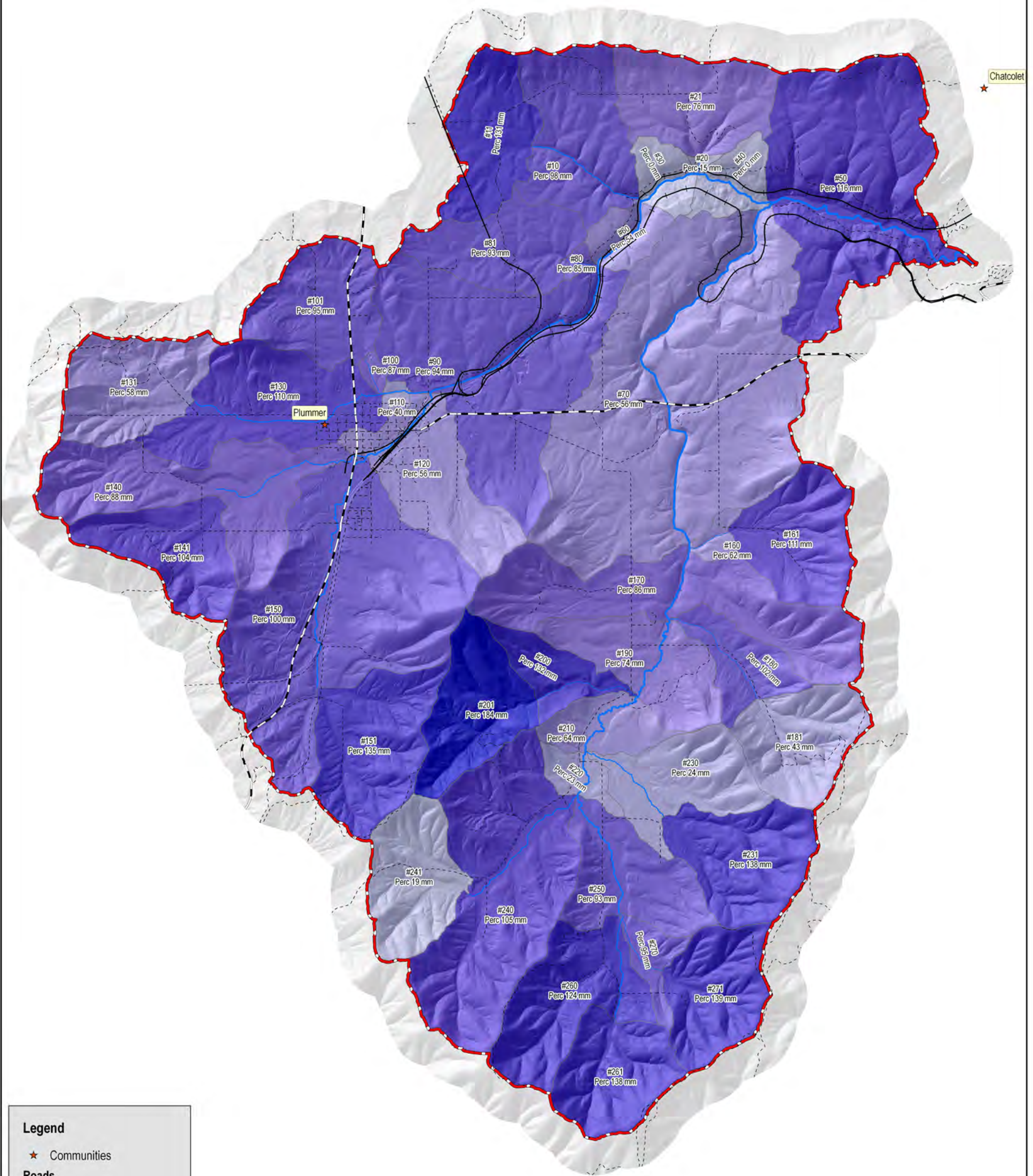


PROJECT NAME AND MAP THEME **Plummer Creek Watershed Analysis
Figure 6: Average Annual Evapotranspiration**

FILE Plummer_Creek_WS_20081122.mxd	PROJECT NUMBER Cover d'Alene Tribe: 08065	PROJECT MANAGER D. Brandt
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Plummer Creek Watershed



Legend

- ★ Communities
- Roads**
- Highways
- Surface Roads
- + Railroad
- ▭ Plummer Creek Watershed
- Stream: Bankfull Width (ft)**
- 2.3' - 2.6'
- 2.6' - 3.5'
- 3.5' - 4.5'
- 4.5' - 9.0'
- 9.0' - 14.6'

Legend for Sub Basin Watersheds Average Annual Percolation (mm/yr)

Percolation (mm/yr)	64.04 - 75.77	115.86 - 138.63
	75.77 - 87.77	138.63 - 183.87
	87.77 - 101.68	
	101.68 - 115.86	
	18.60 - 43.22	
	0.17 - 18.60	
	43.22 - 64.04	



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0 2,500 5,000 Feet **1:56,000**

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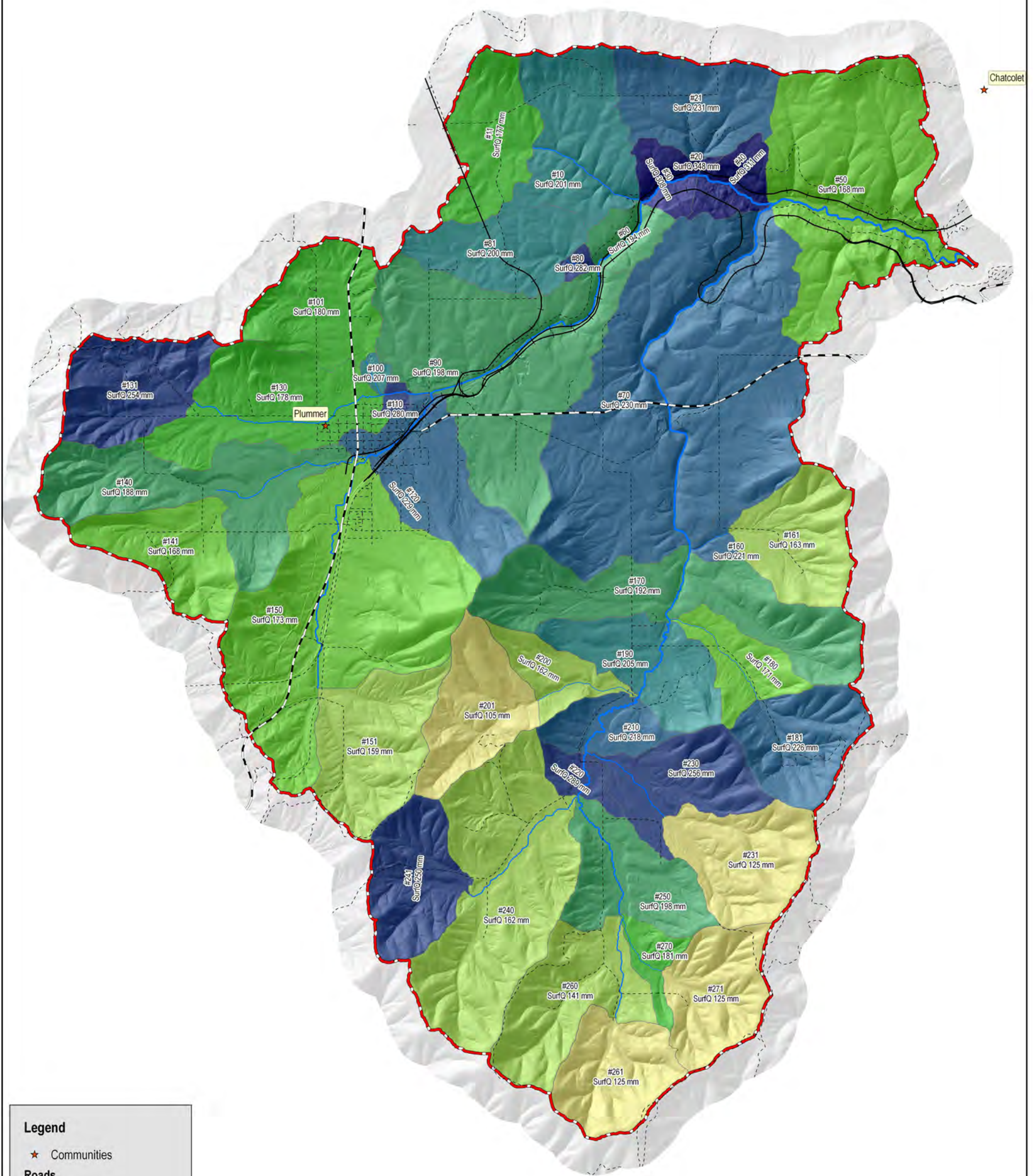
PROJECT NAME
AND MAP THEME

Plummer Creek Watershed Analysis
Figure 7: Average Annual Percolation

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Plummer Creek Watershed



Legend

- ★ Communities
- Roads**
- Highways
- Surface Roads
- Railroad
- ▭ Plummer Creek Watershed
- Stream: Bankfull Width (ft)**
- 2.3' - 2.6'
- 2.6' - 3.5'
- 3.5' - 4.5'
- 4.5' - 9.0'
- 9.0' - 14.6'

Legend for Sub Basin Watersheds Average Annual Surface Runoff (mm/yr)

Surface Runoff (mm/yr)	
104.68 - 125.24	172.88 - 180.92
125.24 - 162.50	180.92 - 197.70
162.50 - 172.88	197.70 - 207.46
207.46 - 230.51	230.51 - 289.40
289.40 - 347.50	



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0 2,500 5,000 Feet **1:56,000**

1 inch equals 4,667 feet

0 0.5 1 Miles

1 inch equals 0.88 miles



PROJECT NAME
AND MAP THEME

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Plummer_Creek_WS_20081122.mxd

PRINT DATE
December 5, 2008

Plummer Creek Watershed Analysis
Figure 8: Average Annual Surface Runoff

PROJECT NUMBER
Cover d'Alene Tribe: 08065

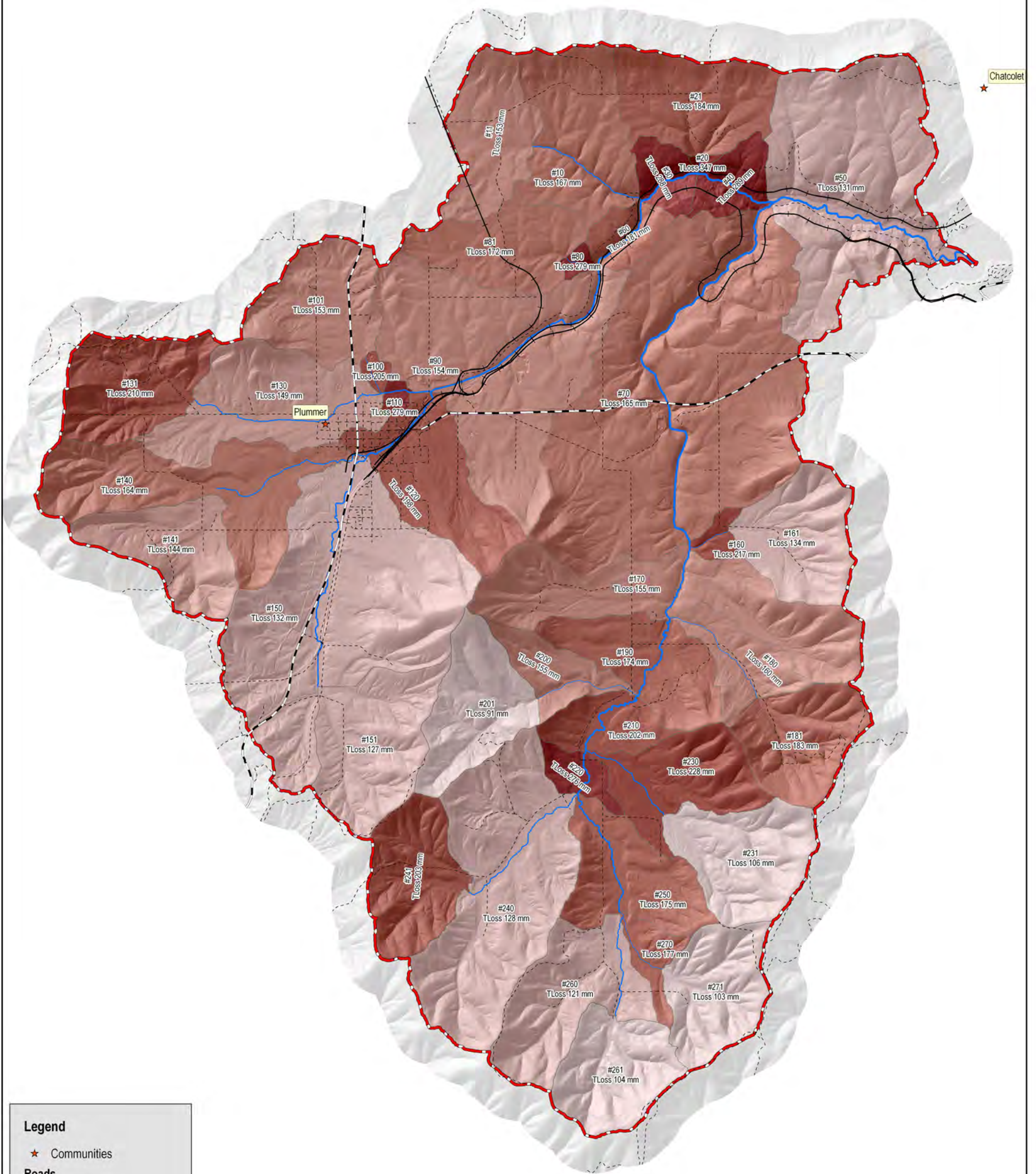
GEOSPATIAL ANALYST
& MAPPER
W. Schlosser

PROJECT MANAGER
D. Brandt

REQUESTOR
D. Brandt

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Plummer Creek Watershed



Legend

- ★ Communities
- Roads**
- Highways
- Surface Roads
- + Railroad
- ▭ Plummer Creek Watershed
- Stream: Bankfull Width (ft)**
- 2.3' - 2.6'
- 2.6' - 3.5'
- 3.5' - 4.5'
- 4.5' - 9.0'
- 9.0' - 14.6'

Legend for Sub Basin Watersheds Average Annual Transmission Loss (mm/yr)

Transmission Loss (mm/yr)	149.26 - 160.45	160.45 - 172.22	172.22 - 184.19	184.19 - 210.35	210.35 - 227.60	227.60 - 347.23
90.89 - 105.77						
105.77 - 134.28						
134.28 - 149.26						



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0 2,500 5,000 Feet **1:56,000**

1 inch equals 4,667 feet

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1 inch equals 0.88 miles

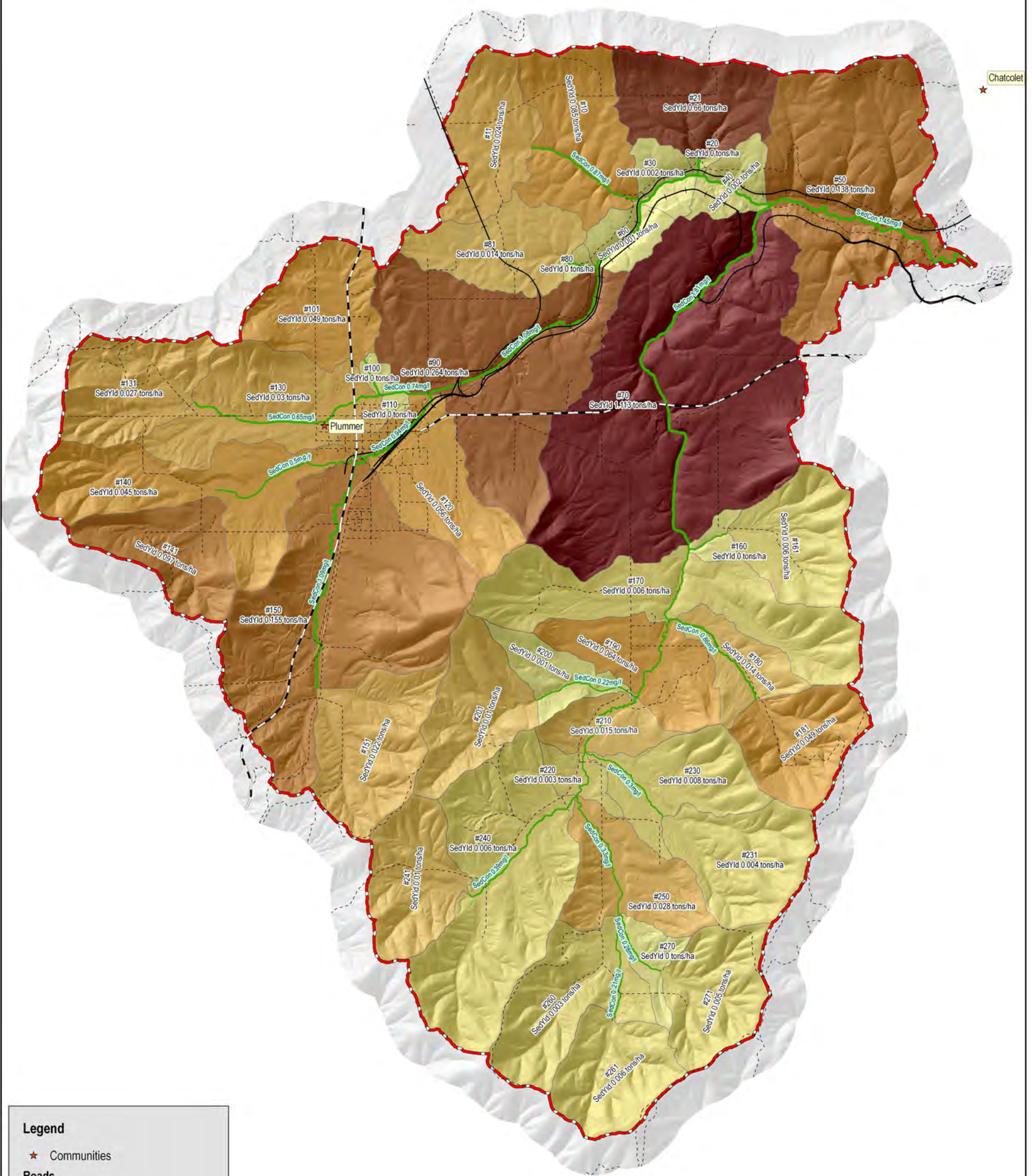


PROJECT NAME AND MAP THEME
**Plummer Creek Watershed Analysis
Figure 9: Average Annual Transmission Loss**

FILE Plummer_Creek_WS_20081122.mxd	PROJECT NUMBER Coeur d'Alene Tribe: 08065	PROJECT MANAGER D. Brandt
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Plummer Creek Watershed



Legend

- ★ Communities
- Roads**
- Highways
- Surface Roads
- Railroad
- ▭ Plummer Creek Watershed
- Stream Sediment Concentration (mg/l)**
- 0.21 - 0.36
- 0.36 - 0.50
- 0.50 - 0.87
- 0.87 - 1.08
- 1.08 - 2.09

Legend for Sub Basin Watersheds Average Annual Sediment Yield (metric tons/ha)

- | Sediment Yield (tons/ha) | |
|--------------------------|---------------|
| 0.000 - 0.002 | 0.264 - 0.660 |
| 0.002 - 0.008 | 0.030 - 0.085 |
| 0.008 - 0.015 | 0.085 - 0.155 |
| 0.015 - 0.030 | 0.155 - 0.264 |



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0 2,500 5,000 Feet **1:56,000**

1 inch equals 4,667 feet

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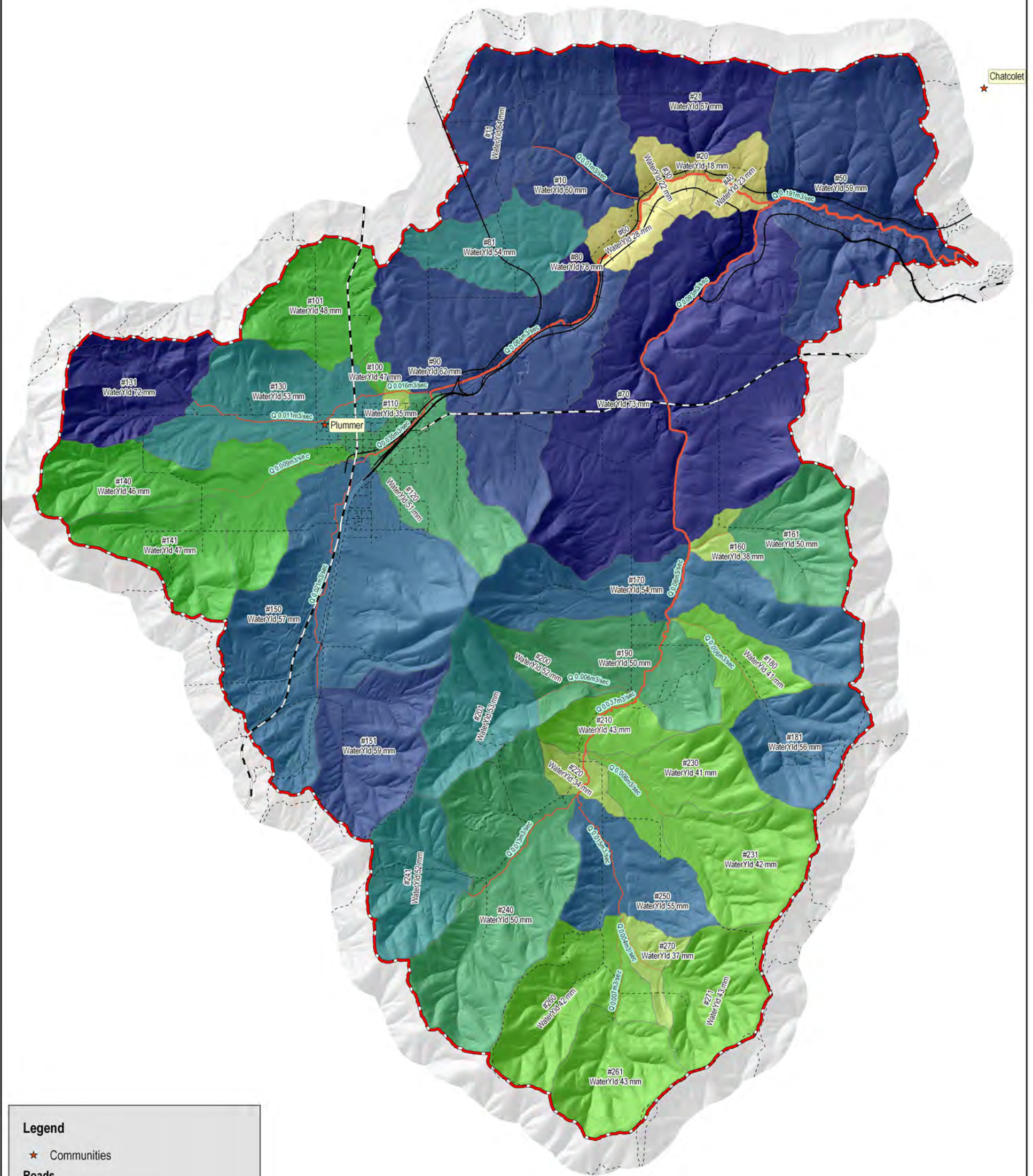


PROJECT NAME AND MAP THEME
Plummer Creek Watershed Analysis
Figure 10: Average Annual Sediment Yield & Concentration

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Plummer Creek Watershed



Legend

- ★ Communities
- Roads**
- Highways
- Surface Roads
- Railroad
- ▭ Plummer Creek Watershed
- Average Annual Channel Discharge (m3/sec)**
- 0.003 - 0.009
- 0.009 - 0.020
- 0.020 - 0.046
- 0.046 - 0.092
- 0.092 - 0.191

Legend for Sub Basin Watersheds Average Annual Water Yield (mm/yr)

- | | | |
|---------------------|---------------|---------------|
| Water Yield (mm/yr) | 43.25 - 47.98 | 57.06 - 64.27 |
| | 18.01 - 28.10 | 64.27 - 77.60 |
| | 28.10 - 37.60 | 51.56 - 53.65 |
| | 37.60 - 43.25 | 53.65 - 57.06 |



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0 2,500 5,000 Feet **1:56,000**

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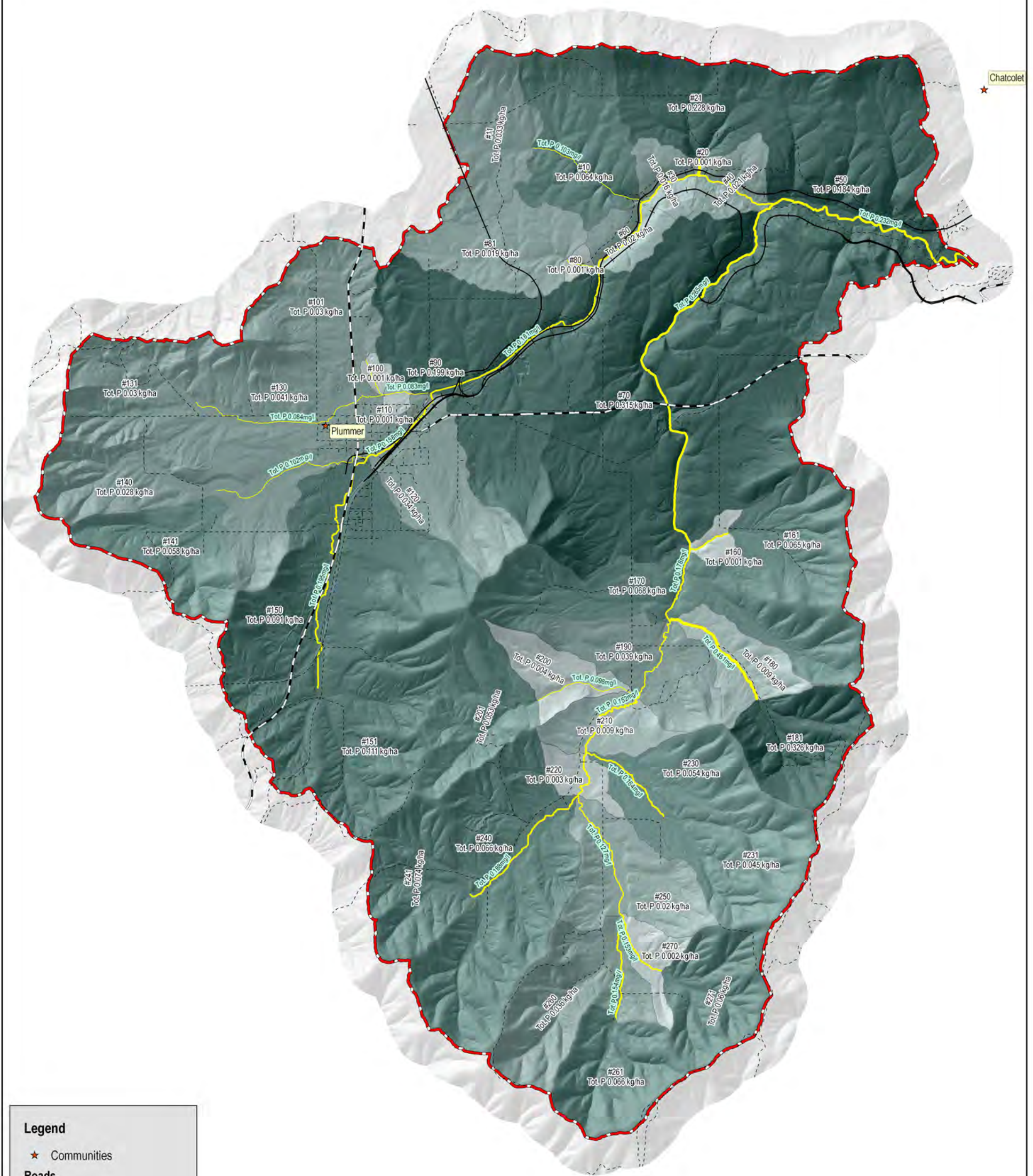


PROJECT NAME AND MAP THEME
Plummer Creek Watershed Analysis
Figure 11: Average Annual Water Yield & Channel Discharge

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Plummer Creek Watershed



Legend

- ★ Communities
- Roads**
- Highways
- Surface Roads
- Railroad
- ▭ Plummer Creek Watershed
- Annual Total Phosphorus (mg/l)**
- 0.058 - 0.103
- 0.103 - 0.141
- 0.141 - 0.195
- 0.195 - 0.264
- 0.264 - 0.461

Legend for Sub Basin Watersheds

Average Annual Total Phosphorus

- | | | |
|--------------------------|---------------|---------------|
| Total Phosphorus (kg/ha) | 0.021 - 0.041 | 0.111 - 0.228 |
| 0.001 - 0.004 | 0.041 - 0.058 | 0.228 - 0.326 |
| 0.004 - 0.009 | 0.058 - 0.074 | |
| 0.009 - 0.021 | 0.074 - 0.111 | |



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TerraGraphics Geospatial Analysis & Mapping Center

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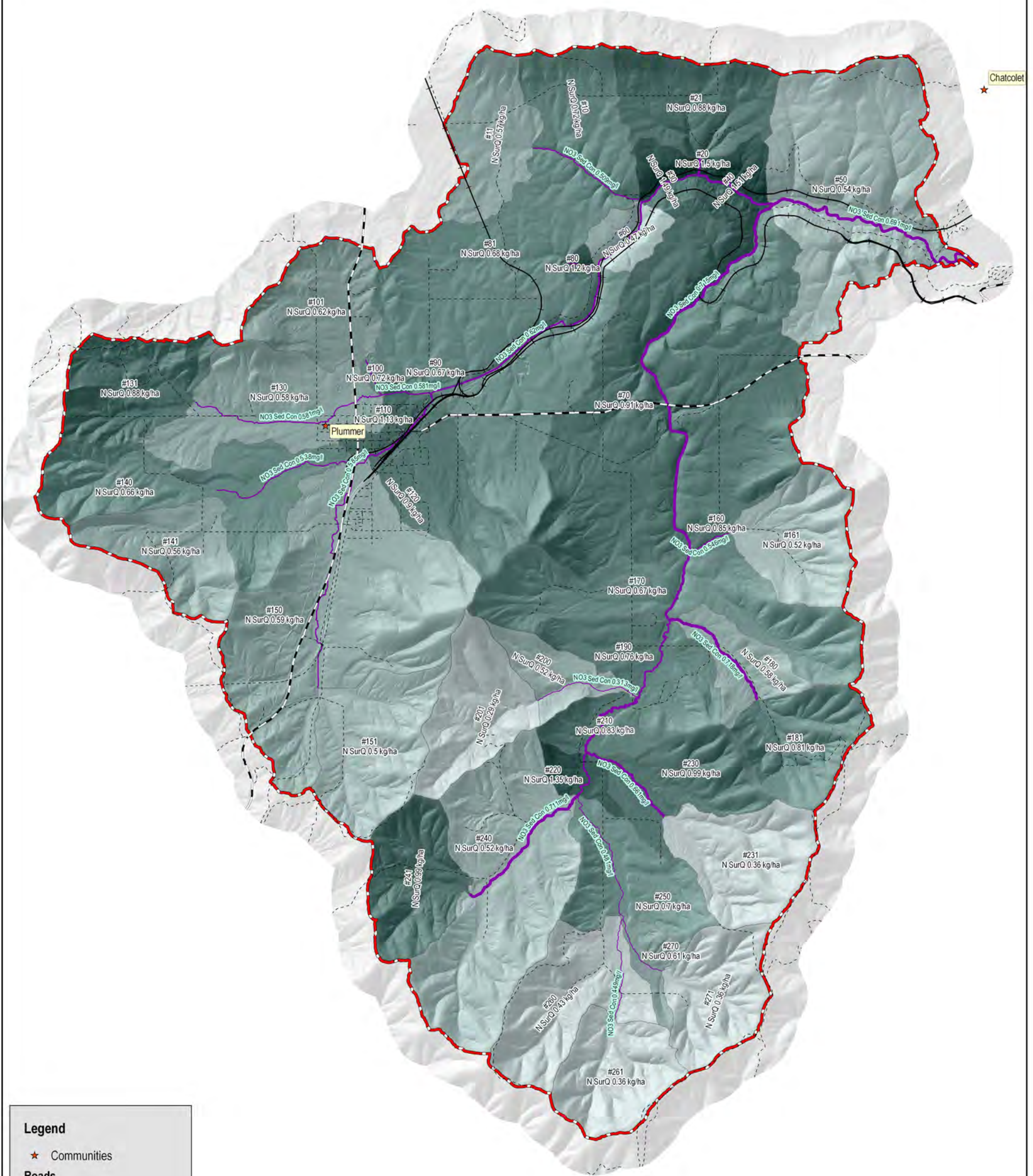


PROJECT NAME AND MAP THEME
Plummer Creek Watershed Analysis
Figure 12: Average Annual Total Phosphorus

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Plummer Creek Watershed



Legend

- ★ Communities
- Roads**
- Highways
- Surface Roads
- Railroad
- ▭ Plummer Creek Watershed
- Nitrate Concentration (mg/l)**
- 0.312 - 0.480
- 0.480 - 0.585
- 0.585 - 0.625
- 0.625 - 0.660
- 0.660 - 0.718

Legend for Sub Basin Watersheds Average Annual N Surface Runoff (kg/ha)

- | | | |
|--------------------------|---------------|---------------|
| N Surface Runoff (kg/ha) | 0.587 - 0.620 | 0.993 - 1.195 |
| 0.292 - 0.427 | 0.620 - 0.719 | 1.195 - 1.514 |
| 0.427 - 0.541 | 0.719 - 0.850 | |
| 0.541 - 0.587 | 0.850 - 0.993 | |



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0 2,500 5,000 Feet **1:56,000**

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PROJECT NAME
AND MAP THEME

Figure 13: Average Annual N Surface Runoff
& Stream Nitrate Concentration

FILE
Plummer_Creek_WS_20081122.mxd

PROJECT NUMBER
Cover d'Alene Tribe: 08065

PROJECT MANAGER
D. Brandt

PRINT DATE
December 5, 2008

GEOSPATIAL ANALYST
& MAPPER
W. Schlosser

REQUESTOR
D. Brandt

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