Coeur d’Alene Lake Tributaries Watershed Advisory Group
Thursday March 3, 2011
Coeur d’Alene Public Library – Community Room
10:00 – 12:00

Agenda
Introductions
WAG Roles/Responsibilities
Coeur d’Alene Lake and River Sub-basin Assessment and Proposed TMDL 5-year review
Other
Coeur d’Alene Lake and River TMDL 5-Year Review

presented to Coeur d’Alene Watershed Advisory Group
March 3, 2011

Kristin Keith
A subbasin Assessment is an evaluation and summary of current water quality status, pollutant sources, and control actions a watershed.
- While this is not a requirement of the TMDL, the assessment ensures impairment listings are up to date and accurate.

A TMDL is an estimation of the maximum pollutant amount that can be present in a water body and still allow that water body to support beneficial uses.
- TMDL is water body, and pollutant specific
- It allocates allowable discharges of individual pollutants among the various sources.
TMDL

**TMDL:**

\[ LC = LA + WLA + NB + MOS \]

- **LC** = Load Capacity of the waterbody
- **LA** = Load allocation (nonpoint sources)
- **WLA** = Waste Load Allocation (point sources)
- **NB** = Natural Background
- **MOS** = Margin of Safety

The load capacity must be based on critical conditions.

A load is fundamentally a quantity of a pollutant discharged over some period of time, and is the product of concentration and flow.
Coeur d’Alene Lake and River (17010303) Subbasin Assessment and Proposed TMDL

- “Coeur d’Alene Lake and River TMDL”
- Approved by the EPA in 2000

<table>
<thead>
<tr>
<th>Watershed</th>
<th>Watershed Acres</th>
<th>Streams Addressed in the TMDL</th>
<th>Pollutant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cougar Creek</td>
<td>10,711</td>
<td>Cougar, North Fork Cougar, Unnamed Tributary to Cougar Creek</td>
<td>Sediment</td>
</tr>
<tr>
<td>Kid Creek</td>
<td>3,738</td>
<td>Kid Creek</td>
<td>Sediment</td>
</tr>
<tr>
<td>Latour Creek</td>
<td>33,359</td>
<td>Latour, Baldy, Butler, Larch</td>
<td>Sediment</td>
</tr>
<tr>
<td>Mica Creek</td>
<td>14,941</td>
<td>Mica, North Fork Mica, South Fork Mica</td>
<td>Bacteria, Sediment</td>
</tr>
<tr>
<td>Wolf Lodge Creek</td>
<td>39,720</td>
<td>Wolf Lodge, Stella, Phantom, Blue Grouse, Lonesome, Halladay, Unnamed Tributary to Wolf Lodge Creek, Marie Creek and its tributaries, Cedar Creek and its tributaries</td>
<td>Sediment</td>
</tr>
</tbody>
</table>
Narrative water quality standard for sediment:

- sediment shall not exceed quantities . . which impair designated beneficial uses.
The Coeur d’Alene Lake and River TMDL evaluated sediment impairment to streams by estimating sediment yield to streams using sediment transport model coefficients and GIS.
Sediment Modeling

- **WATSED**: Forested Land
- **RUSLE**: Agriculture and County Roads
- **CWE**: road erosion 200 feet on either side of road crossings, not total road mileage
- **CWE + McGreer relationship**: road surface erosion
- **Road fill failures**: CWE divide by 10
- **Road encroachment**: roads within 50 feet of stream were given a set erosion rate
- **Wolf Lodge Creek**: 33 tons/yr bank recession
The Coeur d’Alene Lake and River TMDL set an interim load capacity of the streams based on the following assumptions:

- Natural background levels of sedimentation would be fully supportive of the beneficial uses;
- The stream system can function at a sedimentation rate greater than background rates and be fully supportive of beneficial uses.

Given these assumptions, the interim load capacity was set equal to natural background conditions.
Coeur d’Alene Lake and River TMDL

\[
LC = LA + WLA + NB + MOS
\]

\[
LA = NB + MOS
\]

LC = Load Capacity of the waterbody
LA = Load allocation (nonpoint sources)
WLA = Waste Load Allocation (point sources)
NB = Natural Background
MOS = Margin of Safety
TMDL Margin of Safety

- Implicit: conservative assumptions

- Explicit: typically is 10% when used
Conservative Assumptions

- 100 percent delivery from forest and agricultural lands.
- 100 percent delivery from all road miles up to 200 feet from a stream crossing.
- 100 percent delivery from roads within 50 feet of the stream.
- Fill failure estimations developed from CWE field assessments were over-estimated by 60 percent.
Coeur d’Alene Lake and River TMDL

\[ LC = LA + WLA + NB + MOS \]

\[ LC = LA = NB \]

- LC = Load Capacity of the waterbody
- LA = Load allocation (nonpoint sources)
- WLA = Waste Load Allocation (point sources)
- NB = Natural Background
- MOS = Margin of Safety
## TMDL Load Reductions

<table>
<thead>
<tr>
<th>Watershed</th>
<th>Pollutant</th>
<th>Estimated Yield to Stream (tons/yr)</th>
<th>Interim Load Capacity (Natural background) (tons/year)</th>
<th>Load Reduction (percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cougar Creek</td>
<td>Sediment</td>
<td>467</td>
<td>407</td>
<td>12.8</td>
</tr>
<tr>
<td>Kid Creek</td>
<td>Sediment</td>
<td>176.3</td>
<td>142</td>
<td>19.4</td>
</tr>
<tr>
<td>Latour Creek</td>
<td>Sediment</td>
<td>893</td>
<td>767</td>
<td>14.1</td>
</tr>
<tr>
<td>Mica Creek</td>
<td>Sediment</td>
<td>648.1</td>
<td>568</td>
<td>12.3</td>
</tr>
<tr>
<td>Wolf Lodge Creek</td>
<td>Sediment</td>
<td>1,157</td>
<td>910</td>
<td>21.0</td>
</tr>
</tbody>
</table>
## TMDL Load Allocations and Load Reduction by Land Use
(in Tons Per Year)

<table>
<thead>
<tr>
<th>Watershed</th>
<th>U.S. Forest Service</th>
<th>Private Forest</th>
<th>State Forest</th>
<th>Agriculture/Ranchettes</th>
<th>BLM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LA</td>
<td>LR</td>
<td>LA</td>
<td>LR</td>
<td>LA</td>
</tr>
<tr>
<td>Cougar Creek</td>
<td>--</td>
<td>--</td>
<td>291</td>
<td>42.9</td>
<td>16</td>
</tr>
<tr>
<td>Kid Creek</td>
<td></td>
<td></td>
<td>75</td>
<td>18</td>
<td>--</td>
</tr>
<tr>
<td>Latour Creek</td>
<td>23</td>
<td>4</td>
<td>294</td>
<td>48</td>
<td>175</td>
</tr>
<tr>
<td>Mica Creek</td>
<td>--</td>
<td>--</td>
<td>432</td>
<td>60.9</td>
<td>24</td>
</tr>
<tr>
<td>Wolf Lodge Creek</td>
<td>655</td>
<td>178</td>
<td>108</td>
<td>29</td>
<td>--</td>
</tr>
</tbody>
</table>
Subbasin Assessment Addendum
Cougar Creek

- Cougar Creek assessment unit (ID1701033PN02_02) is included in Idaho’s draft 2010 Integrated Report as not supporting cold water aquatic life and salmonid spawning beneficial uses.

- The cause of impairment is listed as habitat alteration, sedimentation, and temperature.

- The Coeur d’Alene Lake and River TMDL identified the sediment interfering with the beneficial use in Cougar Creek is moderate to fine grain sands.
Cougar Creek
TMDL Implementation

- Nature Conservancy 88 acres) of property at the mouth. Natural streambank protection and channel revegetation has been restored on that property.
- Upstream of the Nature Conservancy property grazing on 75 acres has been eliminated.
- Conservation easements?
Cougar Creek Monitoring Data

- No BURP since TMDL was published
- 2002 KSSWCD stream erosion survey
- 2009 KSSWCD and IDEQ stream erosion survey
- 2009 IDL CWE scores
- Cutthroat data (May 2009)
Results: densely foliated, but entrenched, significant bank erosion as evidenced by bare, vertical streambanks and/or sod-root overhangs. Frequent mass wasting.
Cougar Creek
2009 Stream Erosion Surveys
Kootenai-Shoshone Soil and Water Conservation District and IDEQ
Cougar Creek
2009 Stream Erosion Surveys
Kootenai-Shoshone Soil and Water Conservation District and IDEQ
Cougar Creek
2009 Stream Erosion Surveys
Kootenai-Shoshone Soil and Water Conservation District and IDEQ
Cougar Creek
2009 Stream Erosion Surveys
Kootenai-Shoshone Soil and Water Conservation District and IDEQ
Cougar Creek
2009 Stream Erosion Surveys
Kootenai-Shoshone Soil and Water Conservation District and IDEQ
Cougar Creek
SBA Conclusion

- Positive Trend in the lower watershed
- It is reasonable to assume Cougar Creek is still functioning at a sediment transport/deposition rate above its sediment load capacity.
- Excess sedimentation is contributing to the impairment cold water aquatic life and salmonid spawning beneficial uses.
- It is recommended Cougar Creek be subject to load reductions defined in the *Coeur d’Alene Lake and River TMDL*.
- High priority for BURP
Kid Creek

- The Kid Creek assessment unit (ID17010303PN03_02) is included in Idaho’s draft 2010 Integrated Report as not supporting the cold water aquatic life beneficial use.

- The causes of the beneficial use impairment are habitat alteration and sediment.

- The Coeur d’Alene Lake and River TMDL identified the sediment interfering with the beneficial use within Kid Creek is most likely large bedload particles that is mobilized during large discharge events (return period of 10-15 years).
Kid Creek
TMDL Implementation

Kootenai-Shoshone Soil and Water Conservation District

- Riparian buffers, upland sediment ponds, and grade control structures within the creek.
Kid Creek
Monitoring Data

- No BURP since TMDL was published
- No CWE Evaluation
- 2002 KSSWCD Stream Erosion Survey
- 2009 KSSWCD and IDEQ Stream Erosion Survey
- No cutthroat are present (May 2009)
From the Worley Highway District office and ended at the mouth.

The headwaters of Kid Creek were characterized as a slightly entrenched with moderate undercut banks and no canopy cover.

Much of the creek downstream was in fairly good condition with abundant vegetation. However, there were localized areas of concern and some culverts that were a source of excessive sediment.

At the mouth of Kid Creek, significant entrenchment and headcutting were present.
Kid Creek
2009 Stream Erosion Surveys
Kootenai-Shoshone Soil and Water Conservation District and IDEQ
Kid Creek
2009 Stream Erosion Surveys
Kootenai-Shoshone Soil and Water Conservation District and IDEQ
Kid Creek
2009 Stream Erosion Surveys
Kootenai-Shoshone Soil and Water Conservation District and IDEQ
Kid Creek
2009 Stream Erosion Surveys
Kootenai-Shoshone Soil and Water Conservation District and IDEQ
Kid Creek SBA Conclusion

- Kid Creek may be functioning at or near its sediment load capacity.
- Due to the numerous culverts and few localized areas of concern, more analysis is needed before any assessment decisions are made for the Integrated Report.
- High priority for BURP.
- Until these assessments are made, it is recommended be subject to load reductions defined in the Coeur d’Alene Lake and River TMDL.
The Latour Creek assessment unit (ID17010303PN015_02) is listed in Idaho’s draft 2010 Integrated Report as not supporting cold water aquatic life and salmonid spawning beneficial uses.

The causes of impairment are sediment and temperature.

The CDA Lake and River Subbasin Assessment identified the sediment interfering with the beneficial use within the Latour Creek watersheds is most likely large bedload particles that is mobilized during large discharge events (return period of 10-15 years)
The Idaho Department of Lands improved 5.7 miles of road:
- Bridge replacement over Lost Girl Creek and Butler Creek.
- Work was also done on the support structures and decking on the Latour Creek Bridge.
- Reconstruction of the 5.7 mile road.
- 4 relief culverts, replaced 5 undersized stream crossing culverts, pulled ditches and outside shoulders, rocked ditch lines, aligned, crowned, and installed rolling dips.
Latour Creek Monitoring Data

- No BURP data since TMDL was published.
- 2009 IDL CWE Scores (Headwaters)
- 2009 IDL CWE Scores (Mouth)
- 2009 IDEQ stream erosion survey
- Cutthroat data (May 2009)
Latour Creek
Quantitative Stream Erosion Survey
IDEQ (2008)

Three separate reaches, with intermediate erosive conditions of streambanks along Latour Creek, to conduct a stream stability survey as described in *Rosgen (2006)*.

- 18 percent of banks unstable
- The estimated erosion rate for the 785 ft of study reach was 0.4-0.6 ft/yr or 217 ft³/yr (10 tons/year).
Mass wasting evident at the headwaters

From the confluence with Butler Creek to the Mouth. Observations:
- Road encroachment
- Excessively high bedload.
- Going downstream to the mouth, it became more and more evident that Latour Creek did not have enough stream energy to competently move this excessive bedload material downstream.
Latour Creek
SBA Conclusion

- Latour Creek is functioning at a sediment transport/deposition rate well above its load capacity;
- There are still significant sources of excess sediment to the system; and
- Significant land management changes need to occur before Latour Creek before it is functioning at its sediment load capacity.
- Too soon for IDL implementation reductions to have affected the stream
- It is recommended Latour Creek be subject to load reductions defined in the Coeur d’Alene Lake and River TMDL.
Figure 29: Map of deltaic sediments between 2128 and 2182 on tributaries to Coeur d'Alene Lake.