

REPORTING WATERSHED IMPROVEMENT

Based on Multiple Evidence of Watershed-wide Improvement (Option 2b)

Jordan, Cub, and Calamity Creeks (HUC 170103010103):

North Fork Coeur d'Alene River Watershed, Idaho

Watershed Identification

a	Organization	Idaho Department of Environmental Quality (IDEQ)
b	Point of Contact	Kajsa Eagle Van de Riet Watershed Coordinator, Idaho Department of Environmental Quality 2110 Ironwood Parkway, Coeur d'Alene, Idaho 83814 Phone: (208) 769-1422 Email: kajsa.vanderiet@deq.idaho.gov
c	Project Title	Stream restoration, erosion control, and natural recovery efforts reduce sediment levels in the Jordan Creek watershed in the headwaters of the North Fork Coeur d'Alene River subbasin, Idaho
d	No. Watersheds Improved	One HUC-12 watershed improved: 170103010103, Jordan Creek , part of the North Fork Coeur d'Alene River Subbasin in northern Idaho.

Description of 2002 Baseline Condition

e	Watershed(s)	HUC 170103010103: Jordan Creek
f	2002 Impairments	Within HUC 170103010103: <ul style="list-style-type: none"> • Jordan Creek. Listing ID: AU# ID17010301PN014_02 (sediment) • Cub Creek. Listing ID: AU# ID17010301PN014_02a (sediment) • Calamity Creek. Listing ID: AU# ID17010301PN014_02b (sediment)
g	Map (optional)	See Attachment A, Figure 1

Evidence of Watershed Approach

h	Area of Effort	<p>The Jordan Creek HUC12 watershed is in the North Fork Coeur d'Alene (NFCDA) River Subbasin in northern Idaho. The NFCDA subbasin drains the Coeur d'Alene Mountains (part of the northern Rocky Mountain's Bitterroot Range) and meets the South Fork Coeur d'Alene River near Enaville, Idaho.</p> <p>For more than 20 years, partners have been working to restore streams throughout the NFCDA drainage, and have implemented targeted restoration efforts within the Jordan Creek watershed. Jordan Creek lies within the boundaries of the Idaho Panhandle National Forests, and the U.S. Forest Service (USFS) Coeur d'Alene River Ranger District leads the effort to plan and implement watershed restoration projects.</p>
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The Jordan Creek HUC12 includes four assessment units (AUs), three of which were listed as impaired for sediment in 2002 (see section e). Sediment impairments in Jordan, Cub, and Calamity creeks were originally based on 1992 USFS data, particularly riffle armor stability index (RASI) values that indicated instability of the stream channel. Cub Creek and Calamity Creek were added to the Clean Water Act section 303(d) list as impaired due to sediment in 1994. Although Jordan Creek had higher RASI values in the 1992 USFS report than Cub and Calamity creeks (indicating instability), it was not listed as impaired by sediment at that time; instead, the Jordan Creek headwaters and tributaries AU was first listed as impaired by sediment on the 2002 Integrated Report.

i Key Stakeholders Involved and Their Roles

Idaho Department of Environmental Quality (IDEQ). Conducts assessment and planning. IDEQ conducted biological monitoring under the Beneficial Use Reconnaissance Program (BURP) in the Jordan Creek watershed in 1996, 1998, and 2012. In 2001, DEQ completed sediment total maximum daily loads (TMDLs) for the NFCDA River Subbasin, which includes the Jordan Creek AU, the Cub Creek AU, and the Calamity Creek AU. In 2014 IDEQ completed a 5-year TMDL review to assess improvements in water quality.

USFS Idaho Panhandle National Forests. Conducted RASI studies in the early 1990s, which led to the initial listing of Cub and Calamity creeks in the Jordan Creek HUC-12 watershed. As the primary land manager in the subbasin, the USFS leads the effort to plan and implement watershed restoration projects throughout the NFCDA watershed, including in the Jordan Creek watershed. USFS uses money collected from timber sales, USFS funds, and other grants for restoration. Recently, USFS participated in the 5-year TMDL review to assess improvements in water quality.

NFCDA River Watershed Advisory Group (WAG). This group of interested citizens, local government and stakeholders, and resource management agencies provides local public input and guidance to IDEQ during TMDL development and implementation. The WAG works to plan and implement water quality improvement projects to achieve targets set by existing TMDLs for sediment. Recently, the NFCDA WAG participated in the 5-year TMDL review to assess improvements in water quality.

U.S. Environmental Protection Agency (EPA). EPA is a member of the NFCDA WAG, participated in development of the TMDL, and assisted with the NFCDA watershed 5-year TMDL review.

Idaho Department of Fish and Game. Collaborated with USFS on habitat restoration project planning and implementation.

j Watershed Plan

U.S. Forest Service. 2015. **Land Management Plan (2015 Revision), Idaho Panhandle National Forests** (see http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprd3826554.pdf).

NFCDA WAG Planning and Coordination Meetings. 2007 to present. Multiple documents and meeting minutes available at <http://www.deq.idaho.gov/regional-offices-issues/coeur-dalene/basin-watershed-advisory->

[groups/north-fork-coeur-dalene-river-wag/](#).

U.S. Forest Service. 2012. **Coeur d'Alene River Corridor Management Plan, North Fork and Little North Fork of the Coeur d'Alene River** (www.deq.idaho.gov/media/864768-north-fork-cda-river-wag-meeting-river-corridor-plan-062812.pdf)

Watershed Professionals Network. 2007. **Sediment Source Analysis, North Fork Coeur d'Alene River Subbasin** (www.deq.idaho.gov/media/572896-wpn_sediment_source_report.pdf). Report submitted to IDEQ.

Watershed Professionals Network. 2007. **Watershed Overview & History, North Fork Coeur d'Alene River Subbasin** (www.deq.idaho.gov/media/572884-wpn_watershed_overview.pdf). Report submitted to IDEQ.

Idaho DEQ. 2001. **Subbasin Assessment and Total Maximum Daily Loads of the North Fork Coeur d'Alene River (17010301)** (see www.deq.idaho.gov/media/453947-water_data_reports_surface_water_tmdls_cda_river_nf_cda_river_nf_entire.pdf)

U.S. Forest Service Idaho Panhandle National Forest. 1998. **Toward an Ecosystem Approach: An Assessment of the Coeur d'Alene River Basin**, Ecosystem paper #4.

U.S. Forest Service. 1987. **Idaho Panhandle National Forests Land and Resource Management Plan**

k Restoration Work

USFS and the Idaho Department of Fish and Game completed **two instream habitat improvement projects** in the upper reaches of Jordan Creek (downstream of Lost Fork): (1) in 1993, 68 logs and rootwads were placed in the stream, and (2) in 1995, more than 200 logs were placed into the stream to provide habitat and water quality benefits. This woody debris provides crevices and branches that force the water to shift direction and velocity, dropping silt in quiet places and removing it from riffle areas. It also dissipates the energy of rushing water that could otherwise lead to the erosion of a stream bank.

In Lost Fork (the headwaters of Jordan Creek), the USFS **replaced an undersized crossing structure** on Forest Road (FR) 412 with a larger, bottomless arch structure. This new structure improved passage for aquatic organisms and restored a more natural hydrology, thereby reducing the likelihood for erosion and siltation. Properly-sized structures also reduces the risk of failure and associated sediment delivery to the stream.

The USFS **closed approximately 1 mile of unauthorized all-terrain vehicle trails** in the lower Lost Fork Creek drainage (headwaters of HUC 170103010103). This reduced the likelihood that sediment eroding from unvegetated and unstable trail areas would enter the stream.

The USFS **treated more than 3 miles of road** (FR600C) along the south side of Lost Fork and Jordan Creek. USFS closed the road, removed 14 culverts, and constructed waterbars on the remaining road surface. Removing culverts, which could be overwhelmed during high water events, prevents

sediments eroding from around the culvert and the road bed that would enter the stream. Adding waterbars (humps of dirt placed diagonally across the road bed) reduced sediment entering the stream by preventing road runoff from flowing down the road, increasing in flow and volume, and creating sheet or rill erosion.

During the Ulm Peak fire in 2006, the **USFS completed extensive road treatments** on FR992 within HUC 170103010103, including blading and reshaping the road surface for improved travel, drainage, and erosion control.

Evidence of Watershed-wide Improvement

l Impairments Removed (if applicable)

On the basis of the physical, biological, and modeling data, three AUs (comprising 100 percent* of segments within this HUC-12 watershed listed as impaired in 2002) have been proposed for delisting for one impairment each (sediment) in Idaho’s 2014 Integrated Report (still in draft form):

1. **Jordan Creek (Headwaters and Tributaries)**. Listing ID: ID17010301PN014_02 (sediment). Includes Jordan Creek’s first- and second-order streams (15.3 miles). This segment is fully supporting its aquatic life designated use.
2. **Cub Creek**. Listing ID: ID17010301PN014_02a (sediment) (1.48 miles). This segment is fully supporting its aquatic life designated use.
3. **Calamity Creek**. Listing ID: ID17010301PN014_02b (sediment) (2.35 miles). This segment is fully supporting its aquatic life designated use.

*Note: A fourth assessment unit (Jordan Creek And Lower Lost Fork Below Plant Creek— including 3rd order streams, ID17010301PN014_03) was listed for temperature impairment in 2010 and remains listed. This AU was not listed as impaired for sediment in 2002 or at present.

m Improving Trend in Water Quality

In 2012 IDEQ conducted biological monitoring (i.e., BURP) throughout HUC 170103010103 in Jordan, Cub, and Calamity creeks. According to section 6 of IDEQ’s 2002 *Water Body Assessment Guidance*, an average BURP score of greater than or equal to 2.0 indicates full support of cold water aquatic life. Data show all three impaired segments now fully support their cold water aquatic life designated use and have been proposed for delisting in the 2014 integrated report (note: this report is still in draft form as of August 31, 2016).

Data collected in 2012:

- **Jordan Creek (near its confluence with Lost Fork Creek)**. Average BURP score = 2.67 (full support). Macroinvertebrates increased in diversity from 28 taxa to 39 taxa, and samples included numerous EPT (ephemeroptera [mayflies], plecoptera [stoneflies] and trichoptera [caddisflies]) that are associated with cold, clear mountain streams. The fish survey detected sculpin and westslope cutthroat trout, native species associated with good water quality.

n Supporting Trends (one or more)

- **Cub Creek (near its confluence with Lost Fork).** Average BURP score = 2.3 (full support). Macroinvertebrates increased in diversity from 12 taxa to 40 taxa. Samples included numerous EPT. The fish survey detected sculpin and westslope cutthroat trout.
- **Calamity Creek (near its confluence with Jordan Creek).** Average BURP score = 3.0 (full support). Macroinvertebrates increased in diversity from 30 taxa to 35 taxa. Samples included numerous EPT. The fish survey detected sculpin and westslope cutthroat trout.

IDEQ also assessed percent fines and stream condition. According to IDEQ's *Guide to Selection of Sediment Targets for Use in Idaho TMDLs*, most impairment is found when percent fines of 2.5 millimeters in size are greater than 30 percent. None of the sites exceeded this threshold.

Supporting data trends:

- **Jordan Creek (near its confluence with Lost Fork Creek).** Stream habitat data showed high bank stability and cover, low impacts from human activities on riparian areas, and low percent fines (7%). Habitat measures have improved over time (Table 1). Updated sediment modeling for the entire Jordan Creek watershed estimated that sediment loads remained lower than the stream's assimilative capacity (Target load = 390 tons/year; Existing load = 380 tons/year).

Table 1. Individual Habitat Measures: Jordan Creek		
	1999	2012
Bank cover	95%	100%
Bank stability	33%	85%
Percent fines (≤2.5 mm)	17%	7%
Percent fines (≤6 mm)	19%	10%

- **Cub Creek (near its confluence with Lost Fork).** Stream habitat improved in bank cover and stability; only 13% of the substrate consisted of material less than or equal to 2.5 mm in size. Habitat measures have improved over time (Table 2). Updated sediment modeling for the entire Jordan Creek watershed estimated that sediment loads remained lower than the stream's assimilative capacity (Target load = 390 tons/year; Existing load = 380 tons/year).

Table 2. Individual Habitat Measures: Cub Creek			
	1996	1998	2012
Bank cover	73%	100%	100%
Bank stability	2%	93%	97%
Percent fines (≤2.5 mm)	9%	28%	13%
Percent fines (≤6 mm)	11%	28%	20%

- **Calamity Creek (near its confluence with Jordan Creek).** Stream habitat improved in canopy cover and streambanks were highly stable. Only 21% of the substrate consisted of material less than or equal to 2.5mm in size.

Other habitat measures remained stable or improved (Table 3). Updated sediment modeling for the entire Jordan Creek watershed estimated that sediment loads remained lower than the stream's assimilative capacity (Target load = 390 tons/year; Existing load = 380 tons/year).

Table 3. Individual Habitat Measures: Calamity Creek		
	1996	2012
Bank cover	100%	100%
Bank stability	95%	100%
Percent fines (≤ 2.5 mm)	23%	21%
Percent fines (≤ 6 mm)	29%	23%

o Evidence of implementation

The USFS Coeur d'Alene River Ranger District manages the Jordan Creek watershed as part of the Idaho [Panhandle National Forests](#) and has implemented numerous restoration projects over the past 20 years (see section k). The [North Fork Coeur d'Alene Watershed Advisory Group \(WAG\)](#) meets regularly (six or seven times per year). The group is comprised of interested citizens and stakeholders who provide local public input and guidance to IDEQ during development and implementation of total maximum daily load (TMDL) water quality improvement plans for watersheds within the North Fork Coeur d'Alene subbasin. The North Fork Coeur d'Alene River WAG and IDEQ are planning and implementing water quality improvement projects to achieve targets set by existing TMDLs for sediment in the subbasin.

p No deteriorating trends

No deteriorating trends are present (see section n).

q Photos/Graphics (optional)

See Attachment A, Figures 2, 3, and 4, for photos of these three streams in 2012. No pre-project photographs of sites are available.

Attachment A Photos and Maps

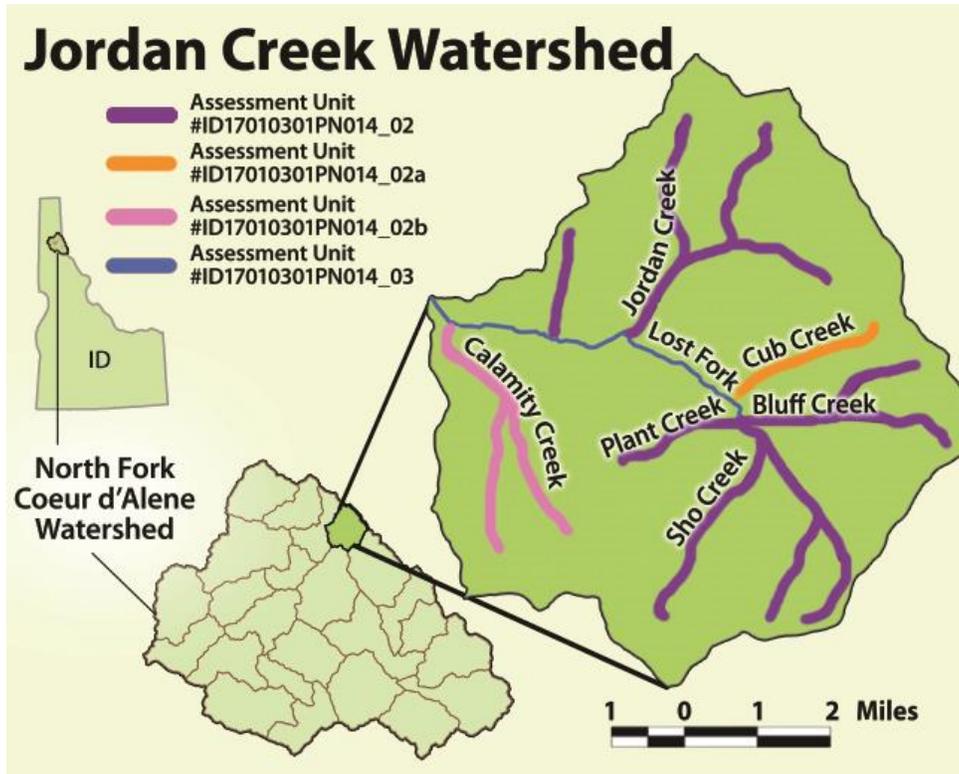


Figure 1. One HUC-12 watershed was improved thanks to the watershed approach (170103010103, Jordan Creek) in the North Fork Coeur d'Alene River Subbasin in northern Idaho. This HUC had three segments listed as impaired for sediment in 2002. In the 2014 integrated report, all of these sediment impairments are being removed: (1) Jordan Creek (17010301PN014_02), (2) Cub Creek (17010301PN014_02a), and (3) Calamity Creek (17010301PN014_02b). Lower reaches of Lost Fork Creek and Jordan Creek (17010301PN014_03) were not listed as impaired in 2002.



Figure 2. Jordan Creek, 2012



Figure 3. Cub Creek, 2012

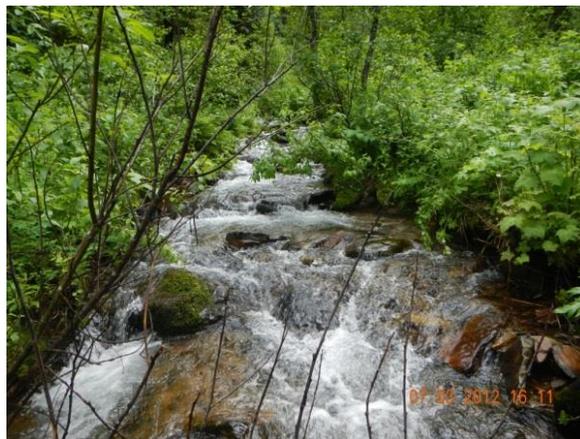


Figure 4. Calamity Creek, 2012