

**DRAFT CLOSURE REPORT
ON**

CANYON CREEK RESPONSE ACTIONS 1995 – 1999

LOWER CANYON CREEK TAILING RESPONSE ACTION NEAR
WOODLAND PARK, WALLACE, IDAHO

CANYON SILVER MINE/MILLSITE RESPONSE 1996
FORMOSA REACH BETWEEN GEM AND WOODLAND PARK ON
CANYON CREEK, 1995-1997

CANYON CREEK FLOODPLAIN IN THE NARROWS
RESPONSE BETWEEN WOODLAND PARK AND WALLACE, IDAHO
1996-98

TAMARACK, FRISCO AND GEM MINES AND MILLSITES ON
CANYON CREEK: FLOODPLAIN REMOVALS AND FLOODPLAIN
STABILIZATION 1997-1998

IDAHO TRANSPORTATION DEPARTMENT FRISCO BRIDGE
REPLACEMENT AND FLOODPLAIN REMOVALS 1999

Submitted by:

Silver Valley Natural Resource Trustees
Kellogg, Idaho

May 9, 2000

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CANYON CREEK RESPONSE ACTIONS 1995 – 1999

SECTION 1 – EXECUTIVE SUMMARY

Century old, historic mining practices left contaminated sources in Canyon Creek, a tributary of the South Fork Coeur d'Alene River. A metals source control project in Canyon Creek was planned by a multi-agency, owner and stakeholder group beginning in 1994, envisioning a voluntary, non-time critical CERCLA action to excavate and remove tailings and mine wastes from the floodplain of Canyon Creek and depositing them in one of two repository locations near Grays Road at Woodland Park. Stabilization of the resulting, uncovered creek bed and disturbed floodplain were included in planning.

Contaminated Soil Removal volumes were 380,000cy from Woodland Park and Narrows, 92,000cy from Formosa Mill vicinity and 127,000 cy from the Tmarack, Frisco, Gem sites for a total of 610,000 cy at a cost of \$4,372,225.

Funding was from the Silver Valley Natural Resource Trust Fund. Union Pacific Railroad (\$65,000), Hecla Mining Company (\$177,000), State of Idaho appropriation (\$200,000) and Federal 319 dollars (\$226,000). Properties acted on were owned by BLM, Hecla Mining Company, Canyon Silver Company, and a number of smaller homeowners adjoining the sites.

As of this date, September 1999, 610,000cy yards of contaminated materials were removed from the floodplain of five and one half miles of Canyon Creek. Initial cost estimates to the Trust fund were \$2,500,000 for the Woodland Park reach and \$800,000 for the Frisco Tamarack reach. Additional work was added to the scope at the Canyon Silver and Gem mill sites, the "racetrack" in the Formosa, and administration of the DEQ contract in the Narrows. The Woodland Park repository was expanded (annex design) to accommodate the additional contaminated soils. Final total expenditures to the fund are listed in Section 6.

Project Goals:

The Canyon Creek response is a voluntary and cooperative, jointly sponsored and funded group of projects to reduce non-point source loading of trace metals to the South Fork Coeur d'Alene River from historic deposition of mine waste in the floodplain . The site is consistent with the general remedial goals of the Silver Valley Natural Resource Trust.

Specific goals

1. Continue and enhance the multi agency and stakeholder effort experienced in the Nine Mile Project.
2. Use CERCLA non-time critical remedial authorities, introducing the sponsors and the public to the EE/CA process
3. Complete removals in the contaminated flood plain starting with the highest priority areas first (the location of Woodland Park Flats, where the historic dam drapped materials)
4. Continue up and down stream as funding becomes available.
5. Make use of existing repository space.
6. Continue to work with local contractors to increase their experience in removals and stabilization activities. Removal levels determined by operator and SVNRT staff.

CANYON CREEK RESPONSE ACTIONS 1995 – 1999

SECTION 2 - INTRODUCTION

This preliminary Completion Report documents that the Silver Valley Natural Resource Trust and other sponsors have completed construction activities for the Canyon Creek Response in accordance with the work plan(s). The response is a non-time critical action occurring between 1995 and 1999. Mr. Earl Liverman, OSC, has met with the joint agency implementation team on a weekly basis for the duration. Repository site consultant and contractor, McCulley, Frick and Gilman Inc. have overseen the construction, QA/QC, and closure of the repositories.

CANYON CREEK RESPONSE ACTIONS 1995 – 1999

SECTION 3 – HISTORY OF SITE

The Canyon Creek is located above Wallace in Shoshone County, Idaho. The project site is 75 acres, located in the flood plain approximately one mile above Wallace, Idaho and Interstate 90 exchange. The most downstream point is the location where the old Standard Mammoth railroad spur once crossed Canyon Creek to access the Standard Mammoth mill site. The most upstream point is the location of the Tamarack adit at “deadman curve”.

A historic mining district, located in the headwaters of the South Fork Coeur d’Alene River, the Canyon Creek drainage was the location of over thirty lead and silver mines and eight mills beginning in 1878. A wood plank dam was placed across the Canyon in 1906 to control flooding of waste materials into Wallace. Two railroads served the upper workings as early as 1887. The railroad bed ballast was made with waste rock, slag or tails and other materials at hand.

Starting in 1939, a reprocessing effort of piles in Canyon Creek reworked an estimated 331,000 tons of deposition material. None the less, the metal contamination present in the soils today present a chronic metal load to the surface water. Floodplain sediments sampled at 3540 ppm to 136,000 ppm lead. Surface and groundwater from this site contributed the most significant loading of Zinc upstream of the Bunker Hill superfund site at 14% during high flow and 36% at low flow as measured in the South Fork at Wallace.

CANYON CREEK RESPONSE ACTIONS 1995 – 1999

SECTION 4 – PROJECT EXECUTION

Public Participation -

Public Meetings were held in Wallace Idaho on April 26, 1995, August 8, 1995, April 6, 1997 and September 10, 1997. Two residents of the area attended planning and management meetings periodically. A management office was maintained at the site to expedite information exchange with the community. Fliers were distributed on four occasions to notify residents of construction changes, information meetings, etc.

Project Administration -

The Silver Valley Natural Resource Trust was designated the project administration with Martha Calabretta as the Project Manager. Mr. Earl Liverman was the OSC for EPA. This voluntary and cooperative, jointly sponsored group of projects was planned by a technical team representing stakeholders and owners, including the SVNRT, Coeur d'Alene Basin Restoration Project, Bureau of Land Management, Hecla Mining Company, ASARCO, Idaho Department of Fish and Game. Weekly team meetings were held to share information and decisions.

On-site soil removals were begun on August 17, 1995 at Woodland Park, with waste taken to the Hecla Star Pond 2 as the main repository site was cleared and developed.

The construction sequence is shown in Table 1-1 and Table 1-2. Volumes placed at the repositories by Contract shown in Table 1-3.

QA/QC was directed and paid by Hecla Mining Company. Repository engineering and QA/QC was designed and implemented by McCulley, Frick and Gilman. In an agreement with SVNRT, Hecla Mining Company takes O & M responsibilities two years after the closure of the repositories.

CANYON CREEK RESPONSE ACTIONS 1995 – 1999

SECTION 5 – SUMMARY OF PROJECT MILESTONES

- 8/17/95 Start floodplain removals in Canyon Creek at Woodland Park
- 1/5/96 Mobilize repository base rock
- 3/30/96 Complete removals in Formosa reach on creek and open new stabilized channel
- 5/10/96 Removals at Canyon creek wetlands and at residences.
- 7/10/96 Begin removals at Canyon silver Mine and Millsite.
- 8/20/96 Place power poles at repository
- 9/12/96 Removals at BLM property “racetrack”
- 4/7/97 Begin removals Canyon Creek Contract
- 7/7/97 Begin “Narrows” contract
- 7/10/97 Begin Frisco Contract
- 5/1/98 Begin expansion of WP repository annex
- 7/98 Begin Gem millsite removals and logging road replacement
- 9/98 Complete Tamarack, Frisco stream stabilization work
- 8/98 Capping complete on main WP Repository unit
- 7/99 Idaho Transportation Department removals at Frisco Bridge
- 11/99 Closure of WP Repository annex unit

See Chart- Construction Sequence

5.1 Variations from the Initial Scope -

Over 100 power poles had been historically placed into floodplain soils and /or into the RRROW. We did not provide removal of these poles in the scope. In order to work we did move power poles in the vicinity of the Frisco – Gem location.

We anticipated removal of the RRROW in Woodland Park Flats and the Formosa reach. This intent to remove continued in the Tamarack – Frisco locations. However in the community of Gem itself, the RRROW is being used for roads and as an extension of one yard. In this area, the top was removed to the depth of two feet and clean fill and gravel was placed to restore grade.

Day Bridge Road provided access to the repository sites, the staging areas and woodland park removal areas. It was used for hauled materials from the Formosa, Tamarack and Frisco projects. In a cooperative effort Shoshone County and the SVNRT paved the surface of this road.

Development of the base of the Woodland Park Repository proceeded with deeper removals to base than anticipated in the downstream 1/3 which proved to

previously be wetland. This would also require additional cobble to build the base. The outline of the repository was reconfigured and moved upstream.

Surface water Quality monitoring was accomplished by the Idaho Division of Environmental Quality and Silver Valley Natural Resource Trustees, prior to, during and following construction. Groundwater monitoring in the lower flats was done historically by the University of Utah and the Silver Valley Natural Resource Trustees. Monitoring efforts continue into the year 2000.

CANYON CREEK RESPONSE ACTIONS 1995 – 1999

SECTION 6 – SUMMARY OF COSTS (thru 4-30-00)

6a.	LOWER CANYON CREEK TAILING RESPONSE ACTION NEAR WOODLAND PARK, WALLACE, IDAHO SV2CNY-01, 03, 04, 05 SVREVG-00, 01		
	REMEDIAL DESIGN	\$	22,875
	REMEDIAL ACTION	\$	2,271,987
	CONSTRUCTION MANAGEMENT	\$	<u>337,577</u>
	TOTALS	\$	2,632,439
6b.	CANYON SILVER MINE/MILLSITE RESPONSE 1996 FORMOSA REACH BETWEEN GEM AND WOODLAND PARK ON CANYON CREEK, 1995-1997 SV2CNY-02, 06		
	REMEDIAL ACTION	\$	600,845
	CONSTRUCTION MANAGEMENT	\$	<u>69,986</u>
	TOTALS	\$	670,831
6c.	CANYON CREEK FLOODPLAIN IN THE NARROWS RESPONSE BETWEEN WOODLAND PARK AND WALLACE, IDAHO 1996-98 SV2CNY-07		
	REMEDIAL ACTION	\$	13,932
	CONSTRUCTION MANAGEMENT	\$	<u>12,301</u>
	TOTALS	\$	26,233
6d.	TAMARACK, FRISCO AND GEM MINES AND MILLSITES ON CANYON CREEK: FLOODPLAIN REMOVALS AND FLOODPLAIN STABILIZATION 1997-1998 SV2CNY-08		
	REMEDIAL ACTION	\$	976,903
	CONSTRUCTION MANAGEMENT	\$	<u>65,819</u>
	TOTALS	\$	<u>1,042,722</u>
	ALL TOTALS	\$	4,372,225
6e.	IDAHO TRANSPORTATION DEPARTMENT FRISCO BRIDGE REPLACEMENT AND FLOODPLAIN REMOVALS 1999 Funding State Appropriation		

Primary Contract RDS-

Contract CO for Canyon Creek Repository Annex @ \$170,603 on 6/19/98.
Idaho Appropriations/non SVNRT \$

Other Sponsors – NON MATCH ELIGIBLE

Canyon Creek Floodplain in the Narrows 1996-1998	
Funding Source for removals only – DEQ/EPA	\$226,000

CANYON CREEK RESPONSE ACTIONS 1995 – 1999

SECTION 7 – DIFFICULTIES ENCOUNTERED

Various vocal residents of the canyon community felt that the project was a waste of time and effort and totally unnecessary. They frequently told workers to move on and denied parking along the State Highway which adjoined their property. Phone calls of complaint were registered at the County Commission office and the Governor office.

Work was ongoing in residential areas, including equipment operation beginning early in the morning and constant hauling on public roads. Complaints of dust were responded to immediately with the water truck. . In several cases the highway is within 20 feet of the public road in this narrow canyon. The team responded with a public information meeting in Gem at the Contractor's staging area and was well attended. The reasons for the project and numerous complaints and worries were discussed at length.

Two rock sources above Burke at the head of the Canyon had been permitted by two contractors. As the project expanded into the Tamarack reach, the local source of rock was depleted and rock for stabilization was acquired and hauled from a permitted source in Pinecreek.

Residents of the Canyon have been in the habit of moving materials and bringing materials onto their property. In two instances this involved filling wetland areas and placing small creeks into informal pipes. Having agency staff on hand as a part of the management team made it impossible to ignore these situations. Regulatory interventions were then blamed on the project.

High water events in 1996 and 1997 caused flooding into basements in Woodland Park. Residents stated the impact was caused by the removals and streamwork. Inspection of the basements indicated they were frequently flooded, primitive in nature.

Tailings lie under the historic Wallace dump (private) and seepage from the fields continue into the lower Canyon Creek (Narrows) and were not addressed during tailings removals other than to make the edge adjacent to the creek stable with riprap in order to discourage bottle digging and the ongoing erosion from the dump.

Disruption of the soils and construction activities impact surface and groundwater data.

The establishment of vegetation was determined to be a staged process with the requirement of accreting sufficient soils before a riparian zone could be established. However the stakeholders and agencies were impatient with this timetable as pressure grows to evaluate the project.

CANYON CREEK RESPONSE ACTIONS 1995 – 1999

SECTION 8 – RECOMMENDATIONS (LESSONS LEARNED)

1. It proved helpful for the SVNRT to have a small office in the Contractor's trailer in Woodland Park. It is recommended that staff be present at all times that the contractor is working. The team approach allowed for a backup in listening to citizen complaints and working toward resolution.

2. Weekly Coordination meetings were held on the site, and were well attended during the construction season. Issues discussed and logged into written reports now provide the background information for construction management. It is recommended that the sponsors, individual trustees and interested public have constant access to these working documents.

3. Work can be done in a timely and cost effective manner if the sponsors are willing to take risks and to adjust to field changes that may be encountered. The understanding of the loading of metals to the surface waters, and planning of scope was accomplished with an organized sampling protocol, historic record review and minimal test pits.

4. Construction disturbance through excavation, stabilization work and grading is significant over several years and most clearly pictured in the Groundwater monitoring samples. This flushing effect over several additional years is to be expected. Data Collected in order to guide future actions in the drainage should be carefully interpreted.

CANYON CREEK RESPONSE ACTIONS 1995 – 1999

SECTION 9 - INDEX OF DOCUMENTS OF SITE

“Idaho State Natural Resource Damage Trust fund; Trustee Action Plan, 1994-South Fork Coeur d’Alene River” Martha Calabretta, 1994.

“Canyon Creek Response Action Work Plan 1995, Idaho State Natural Resource Trustees, June 7, 1995.

“Engineering Evaluation/Cost Analysis for the Canyon Creek Response” USEPA July 21, 1995. Response Memorandum, July 28, 1995.

Approval Memorandum, Action Memorandum for a Response Action at the Canyon Creek , USEPA dated July 28, 1995.

“Contract Between the Idaho Department of Health and Welfare, Division of Environmental Quality, Trustees of the Silver Valley Natural Resources Trust Fund and the United States Environmental Protection Agency” Signed Chuck Moss, Wallace Cory, Jane Moore for Chuck Clarke, James F. Simon on or before August 15, 1995.

Letter from Earl Liverman, EPA, to modify contract to include the Canyon silver Mine Site May 7, 1996.

Letter from Earl Liverman, EPA to include State Bridge # SG-5760 in scope of work.

Memorandum”Change in the Scope of Response for Action underway at Canyon Creek,” June 23, 1997. (to include Tamarack to Frisco and Gem to Formosa floodplain) Signed Randy Smith, July 22, 1997.

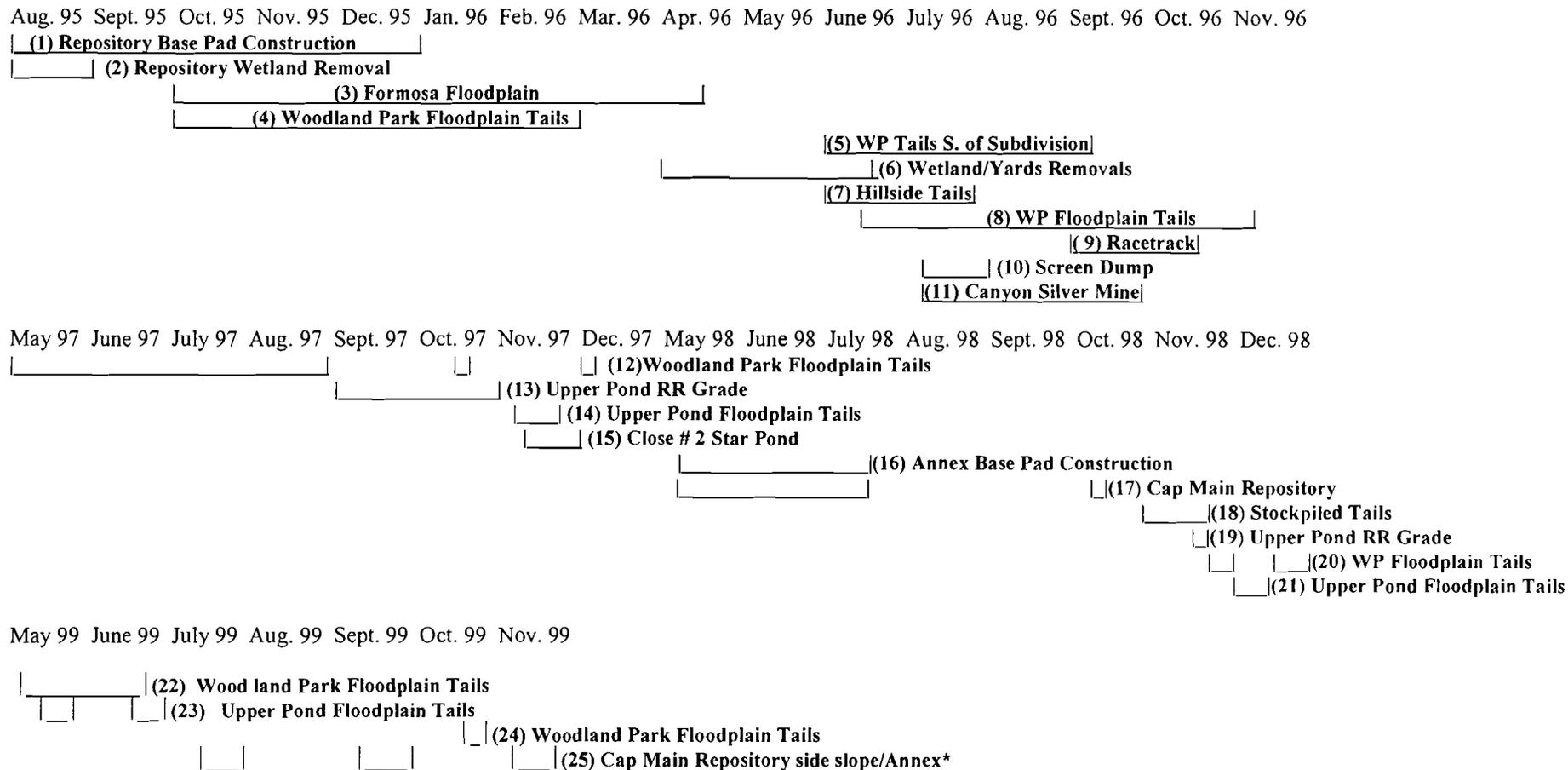
**TABLE 1-1
CHRONOLOGY OF REMOVAL ACTIONS**

SITE ID #	REACH	DESCRIPTION	APPROXIMATE STATION LOCATION	DATE
Repository Base Pad Construction (Removal of Gravels and Cobbles from Canyon Creek Stream Channel)				
1	Woodland Park	Repository Base Pad Construction	28+00 to 40+00	August 1995 to December 1995
Tailings and Mine Waste Removal				
2	Woodland Park	Repository Wetland Removal	26+00	August 1995
3	Formosa	Formosa Floodplain	80+00 to 108+00	October 1995 to April 1996
4	Woodland Park	Woodland Park Floodplain Tails	00+00 to 20+00	October 1995 to February 1996
5	Woodland Park	WP Tails S. of Subdivision	14+00 to 23+00	June 1996 to September 1996
6	Woodland Park	Wetland/Yard Removals	13+00 to 22+00	April 1996 to June 1996
7	Woodland Park	Hillside Tails	00+00 to 26+00	June 1996 to July 1996
8	Woodland Park	Woodland Park Floodplain Tails	21+00 to 26+00	June/July 1996 to September October 1996 to November 1996
9	Formosa	Racetrack	98+00 to 102+00	September 1996 to October 1996
10	Woodland Park/Upper Pond	Screen Dump	8+00 to 12+00 50+00 to 55+00	July 1996
11	Formosa	Canyon Silver Mine	80+00 to 90+00	July 1996 to September 1996
12	Woodland Park	Woodland Park Floodplain Tails	26+00 to 41+00	May 1997 to September 1997 October/December 1997
13	Upper Pond	Upper Pond Railroad Grade	47+00 to 81+00	September 1997 to November 1997
14	Upper Pond	Upper Pond Floodplain Tails	47+00 to 60+00	November 1997 to December 1997
Closure of the # 2 Star Pond				
15	Upper Pond	Closing # 2 Pond	42+00 to 51+00	November 1997

SITE ID #	REACH	DESCRIPTION	APPROXIMATE STATION LOCATION	DATE
Annex Base Pad Construction (Removal of Gravels and Cobbles from Canyon Creek Stream Channel)				
16	Woodland Park	Annex Base Pad Construction	4+00 to 38+00	May 1998 to July 1998
Closure of the Main Repository				
17	Woodland Park	Closing Main Repository	24+00 to 28+00	May 1998 to July 1998 / Oct 1998
Tailings and Mine Waste Removal				
18	Woodland Park	Stockpiled Tailings	30+00	October 1998 to November 1998
19	Upper Pond	Upper Pond Railroad Grade	41+50 to 46+00	November 1998
20	Woodland Park	Woodland Park Floodplain Tails	24+00 to 41+00	November 1998 to December 1998
21	Upper Pond	Upper Pond Floodplain Tails	41+50 to 46+00	November 1998 to December 1998
22	Woodland Park	Woodland Park Floodplain Tails	28+00 to 41+00	May 1999 to June 1999
23	Upper Pond	Upper Pond Floodplain Tails	41+50 to 44+00	May 1999 to June 1999
24	Woodland Park	Trap Clean	Narrows/- 4+00	October 1999
Closure of the Annex				
25	Woodland Park	Closing Main Repository side slope/Annex*	28+00 to 32+00	July/September/November 1999

*Not Complete (first Foot)

**TABLE 1-2
TIME LINE REPRESENTATION OF WOODLAND PARK REMEDIAL ACTIVITIES**



*Not Complete (first foot)

Note: Approximate Periods of Remedial Activities represented by Line Graphs

Silver Valley Natural Resource Trust Fund Tailings Removal and Floodplain Stabilization Project

SITE MAP - South Fork Coeur d'Alene River Upper Tributaries including:
Canyon Creek, Nine Mile Creek and East Fork Nine Mile Creek

Note: South Fork Cd'A River Projects not shown this sheet

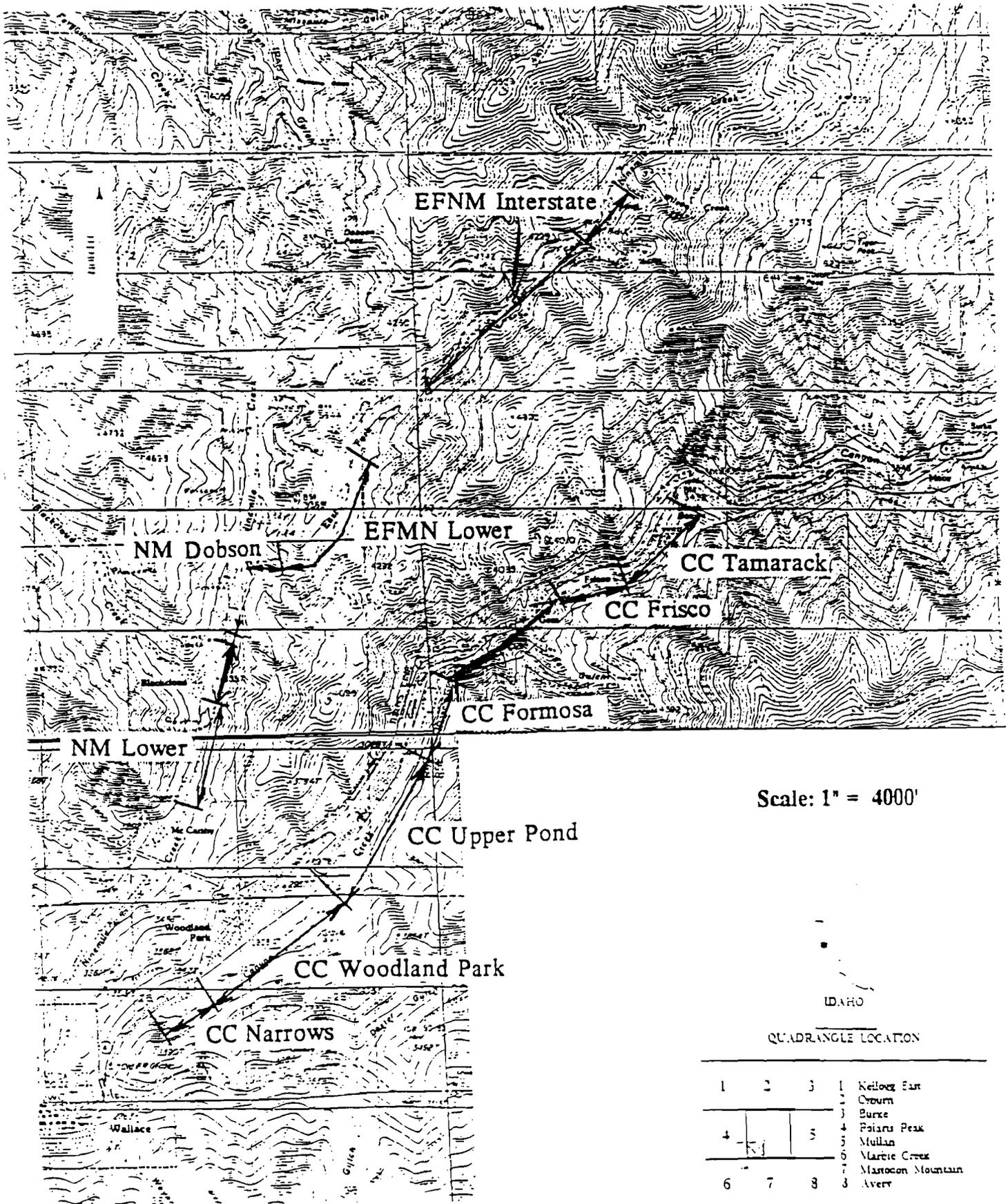


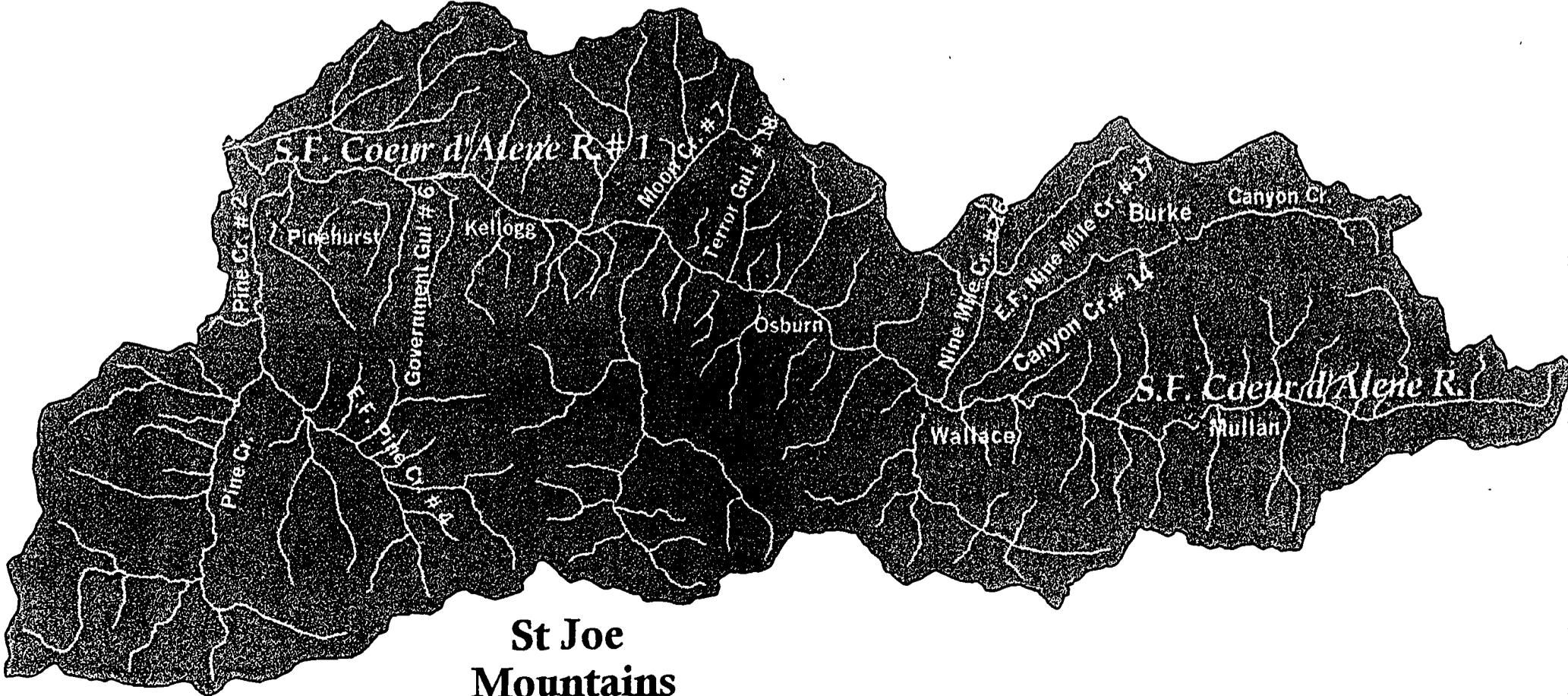
Figure 1. S.F. Coeur d'Alene Watershed Huc # 17010302

Huc # 17010302-(#)

Water Quality Limited Segments

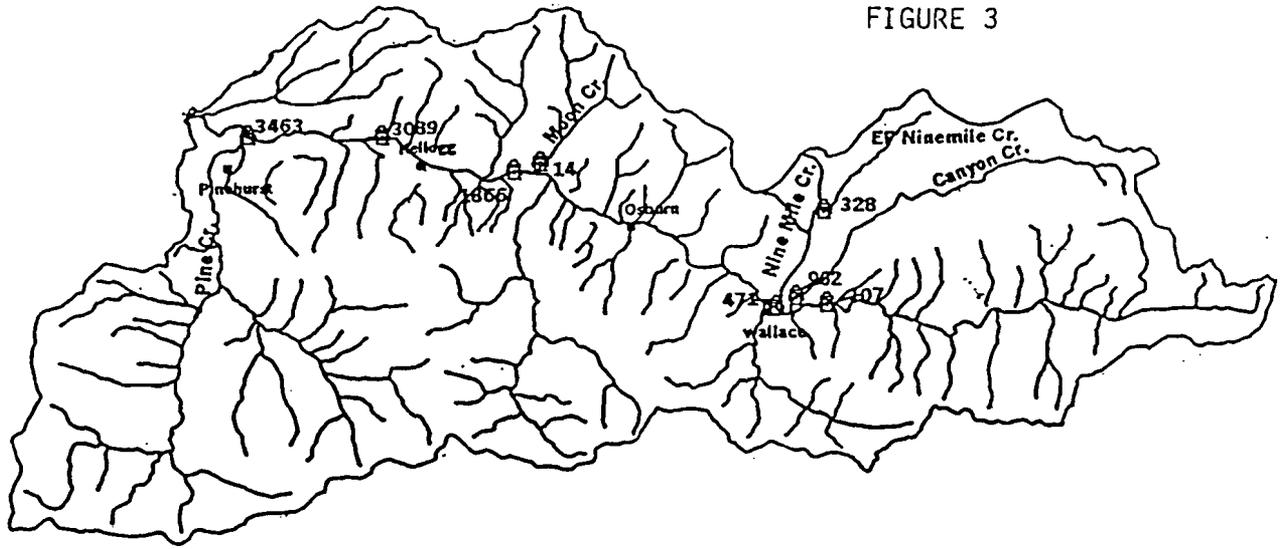
- S.F. Coeur d'Alene R.# 1
- Pine Creek # 2
- E.F. Pine Creek # 4
- Government Gulch # 6
- Moon Creek # 7
- Canyon Creek # 14
- Nine Mile Creek # 16
- E.F. Nine Mile Creek # 17
- Terror Gulch # 18

Coeur d'Alene
Mountains



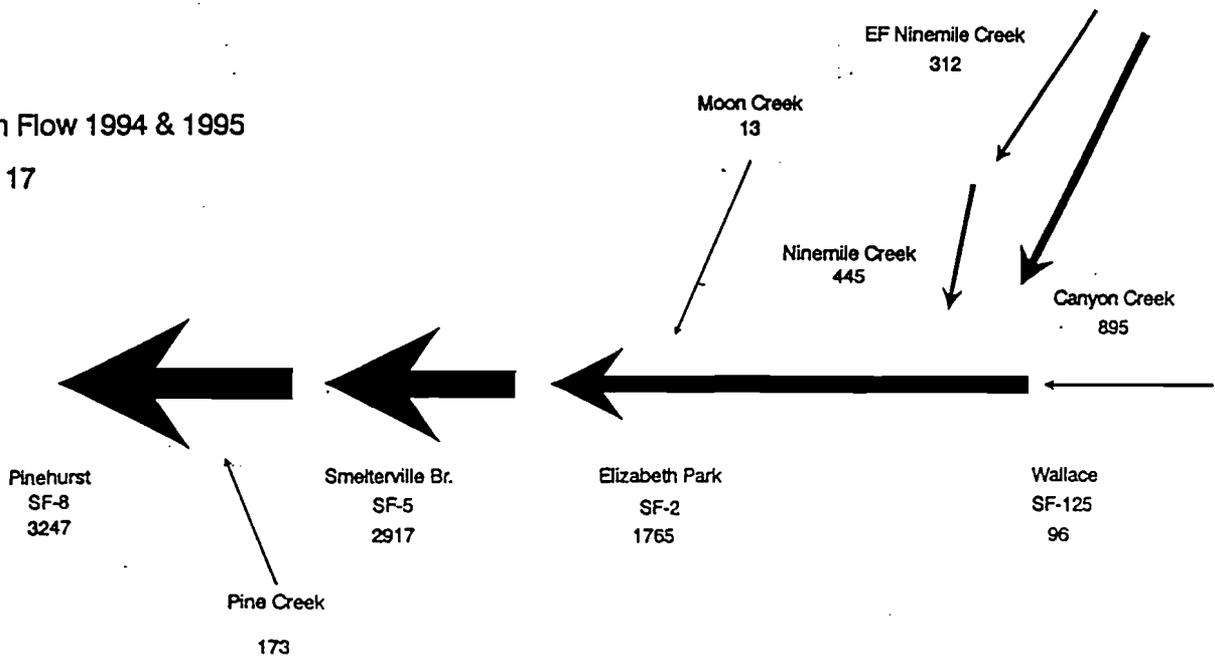
St Joe
Mountains

FIGURE 3



SF Coeur d'Alene River
Total Zinc Load (lb/d)

High Flow 1994 & 1995
n = 17



Low Flow 1994 & 1995
n = 17

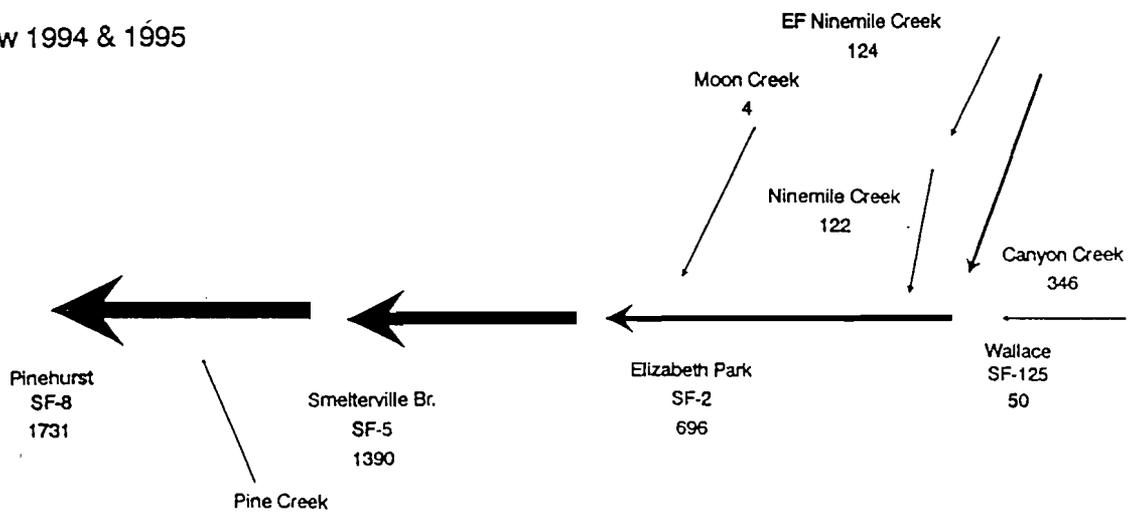
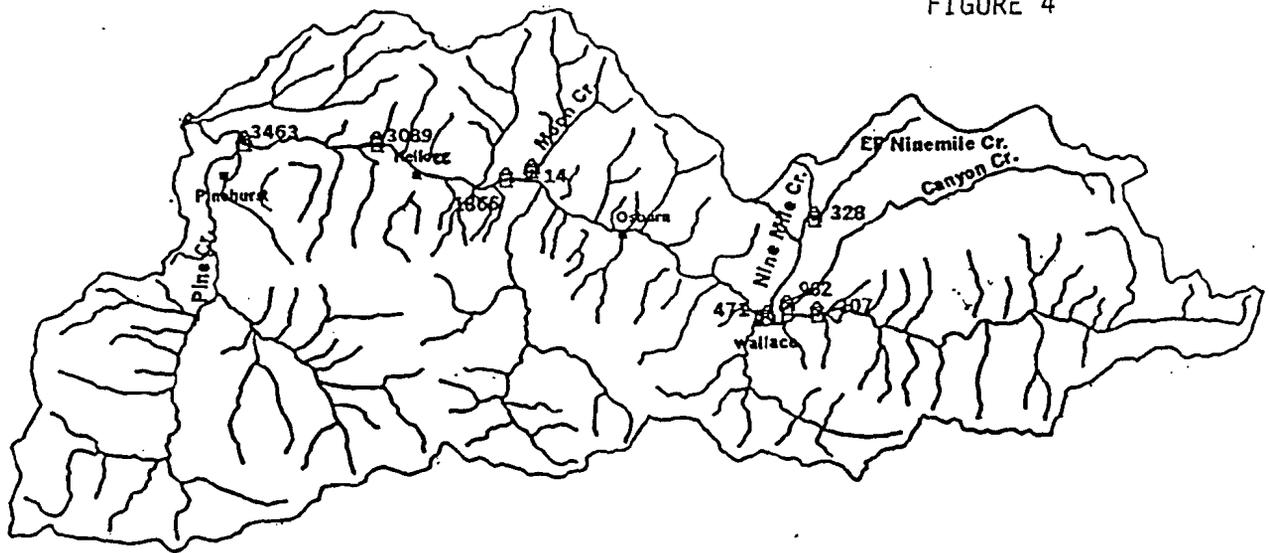


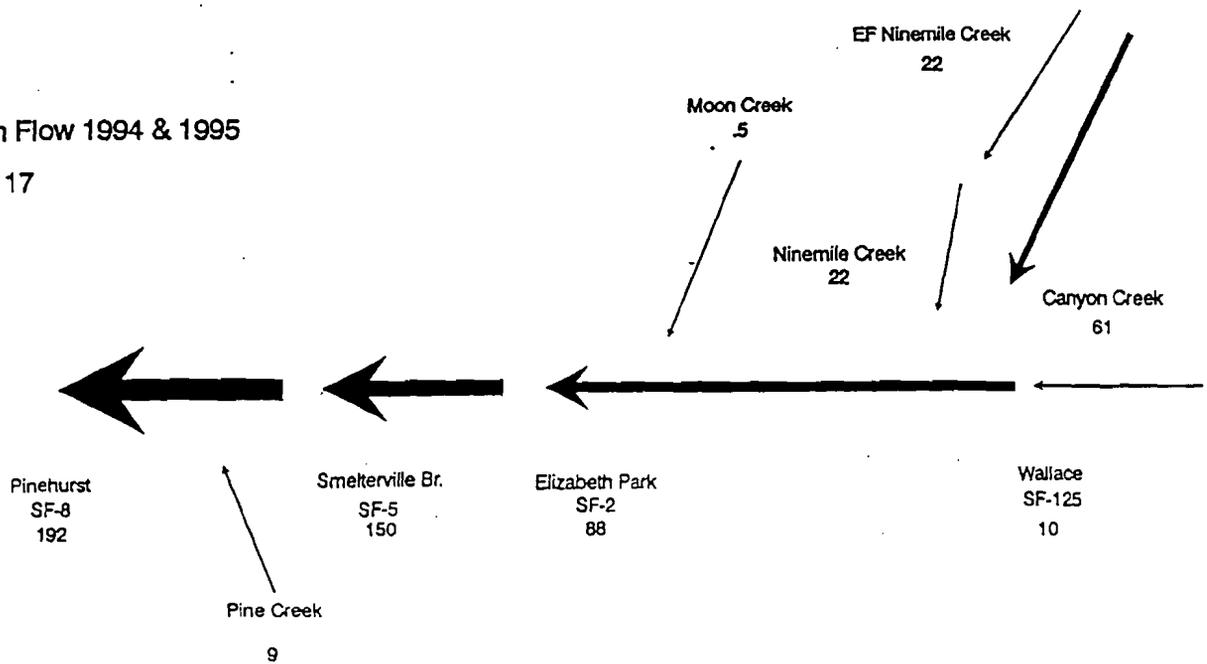
FIGURE 4



SF Coeur d'Alene River
Total Lead Load (lb/d)

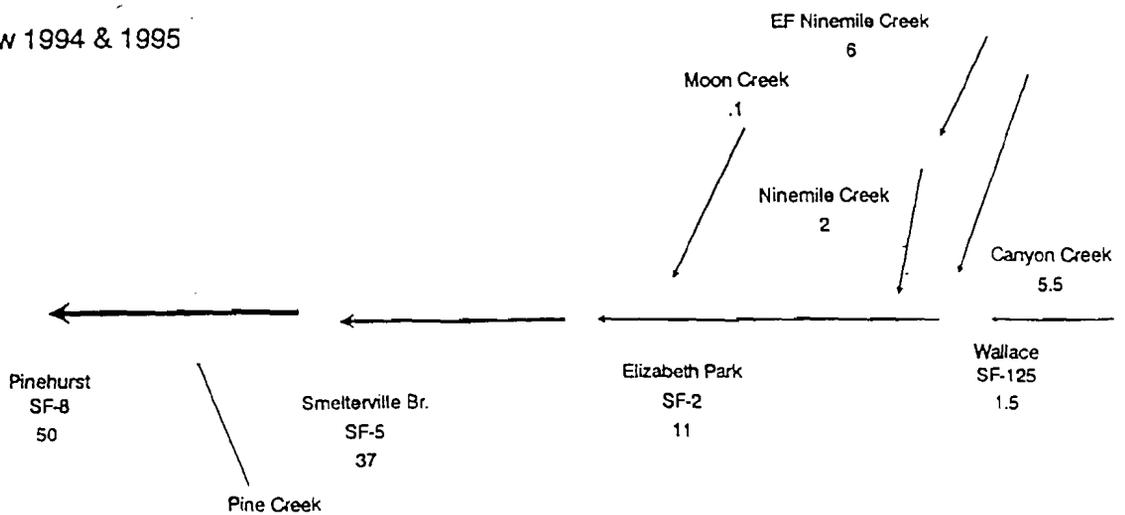
High Flow 1994 & 1995

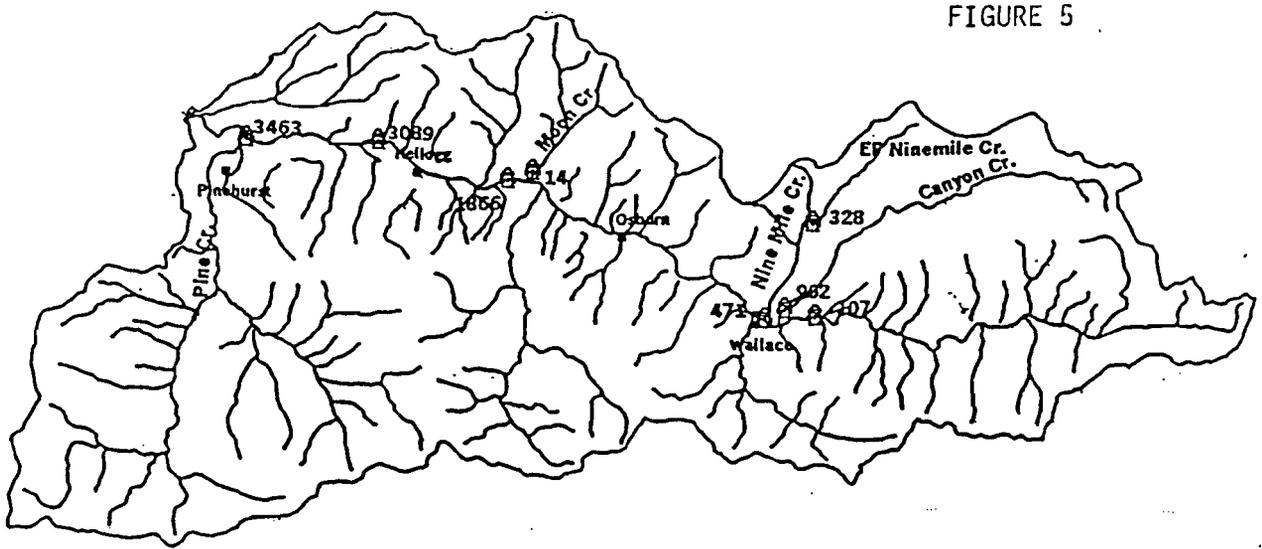
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Low Flow 1994 & 1995

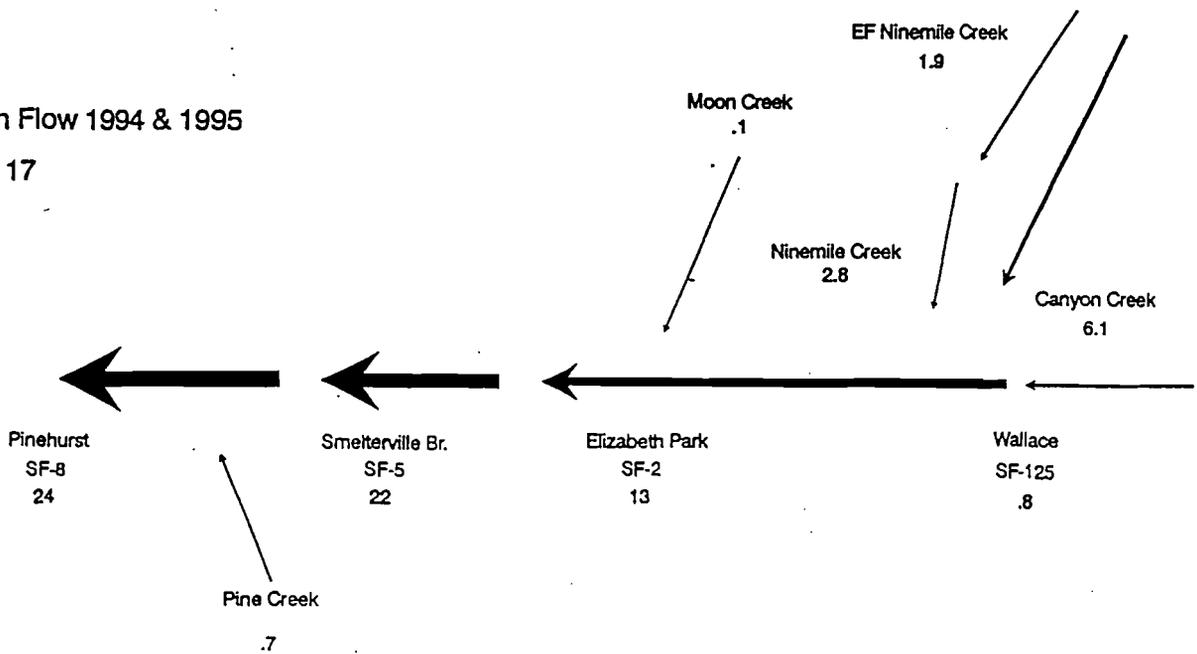
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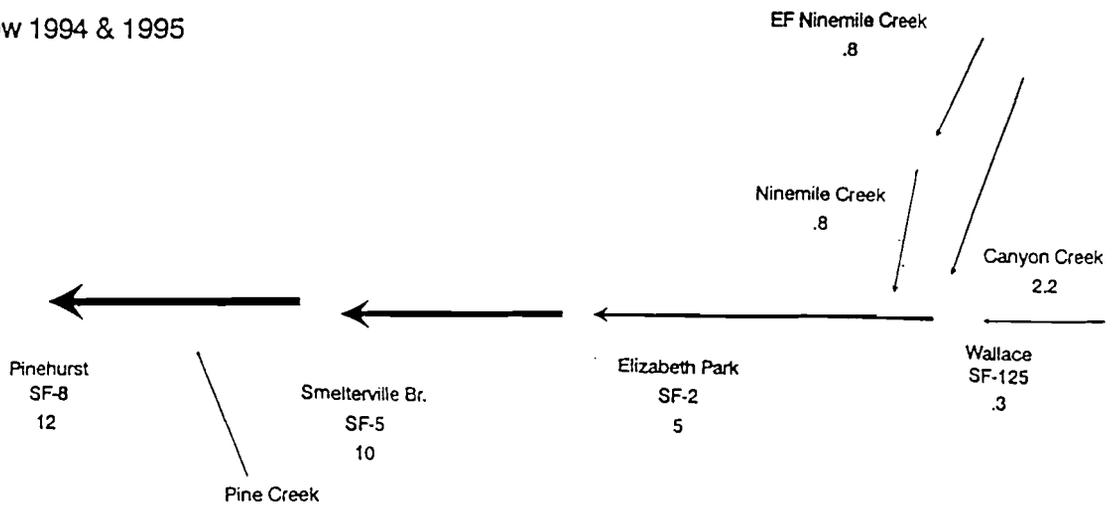


SF Coeur d'Alene River
Total Cadmium Load (lb/d)

High Flow 1994 & 1995
n = 17



Low Flow 1994 & 1995
n = 17



TOTAL METALS LOADING DATA

SF CdA River
 Total metals Load (lbs/d)
 Low Flow

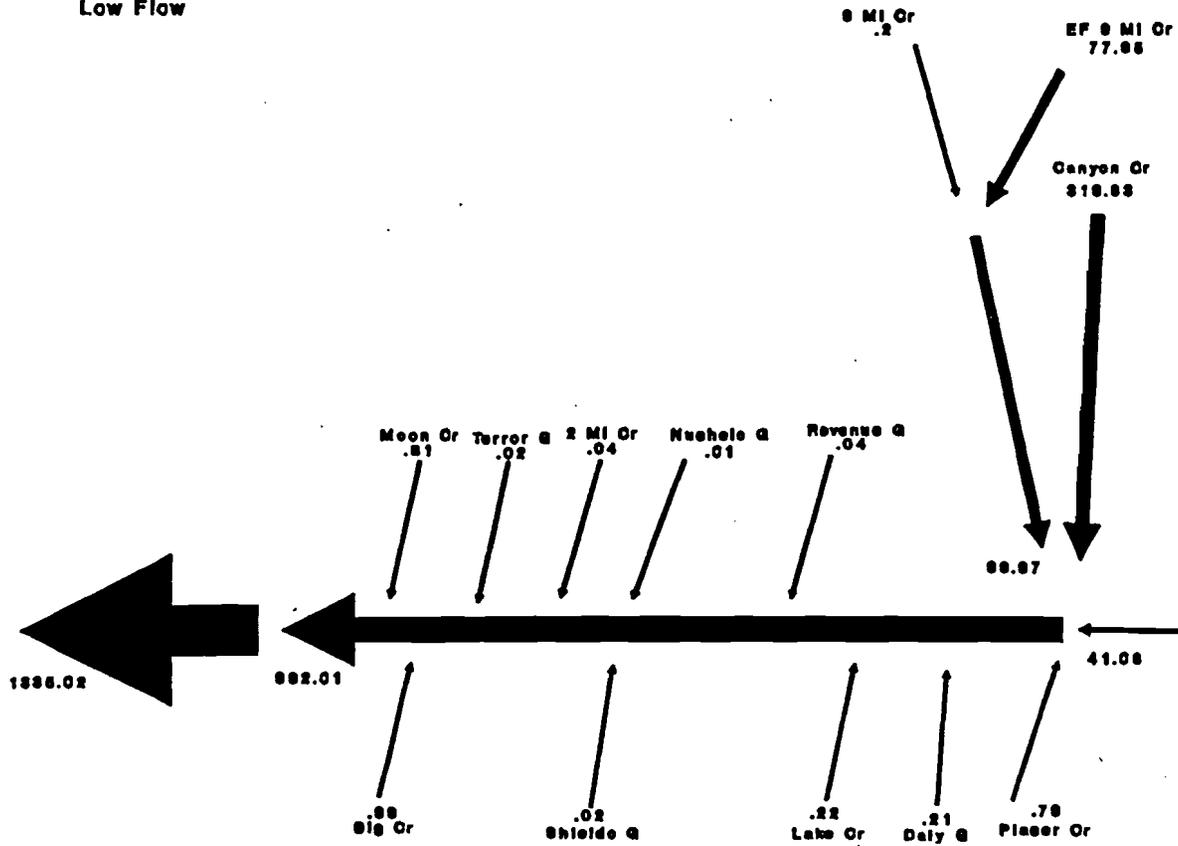
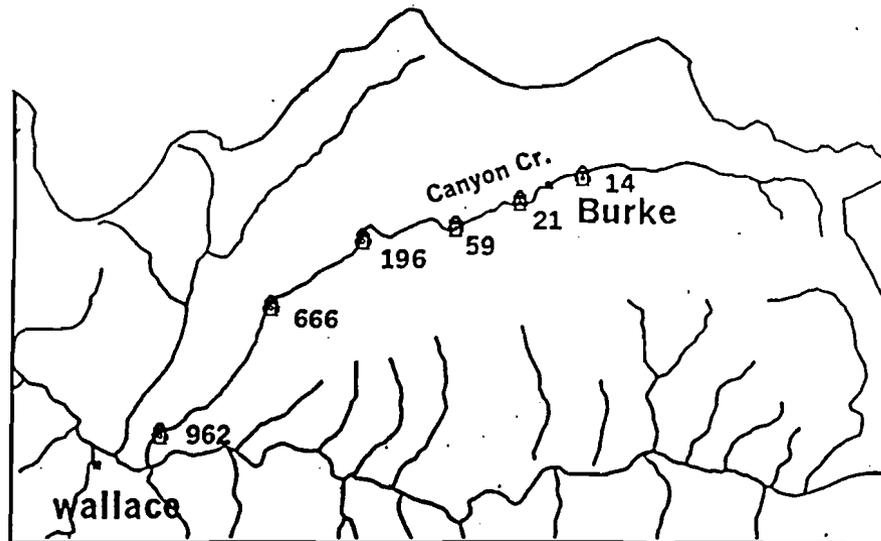


FIGURE 1



Canyon Creek

Total Zinc Loading (lb/d)

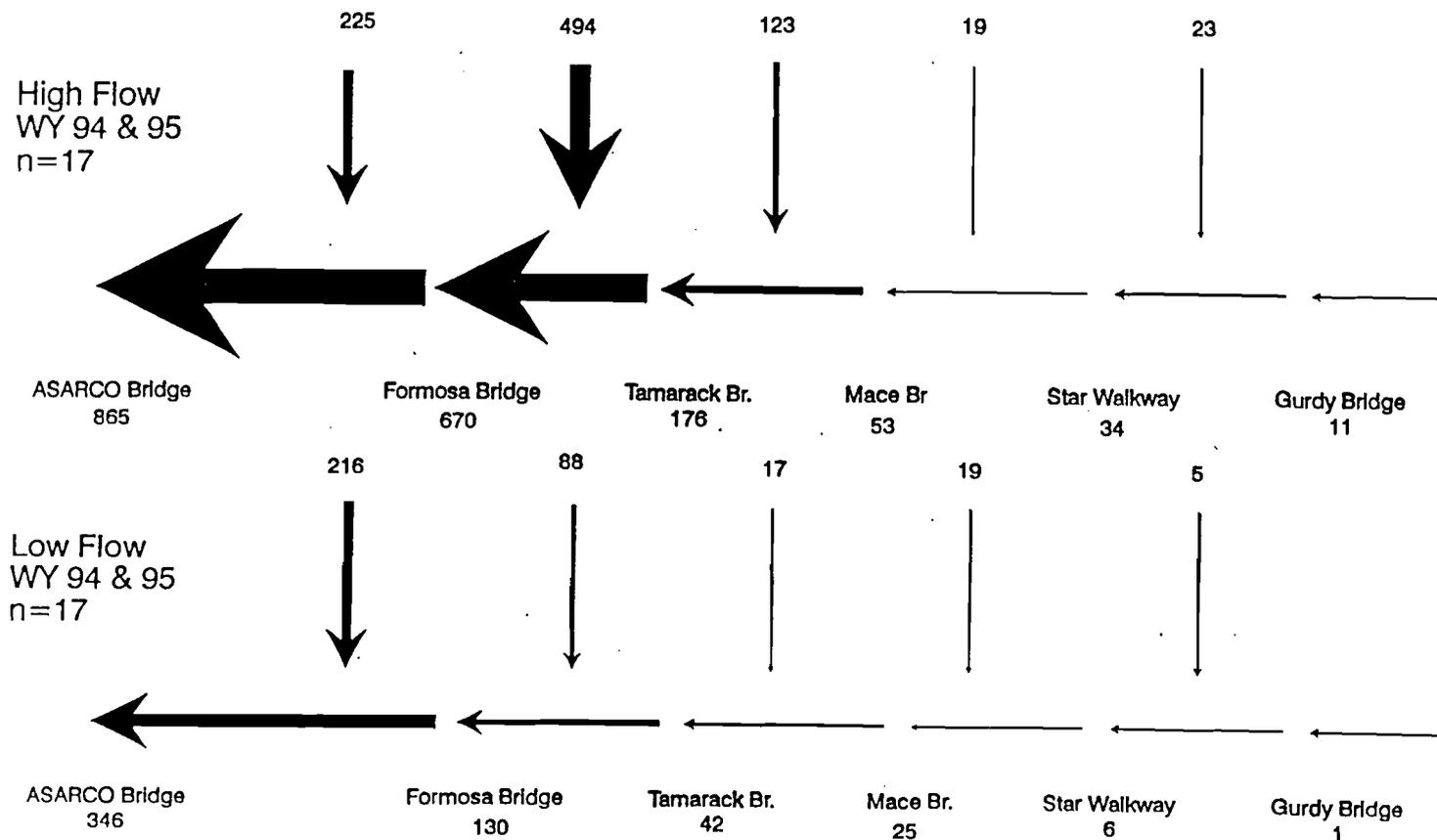


FIGURE 9

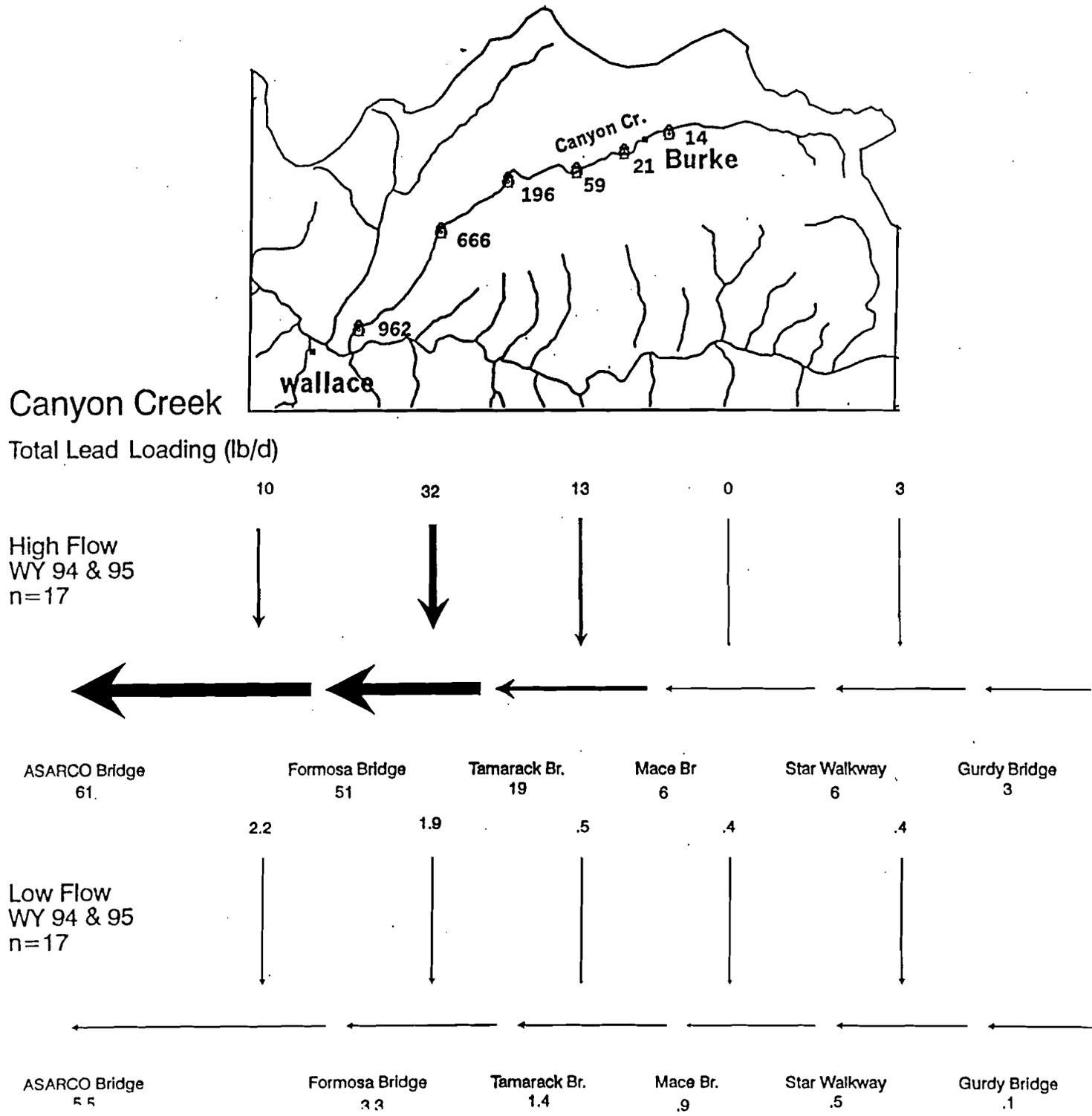
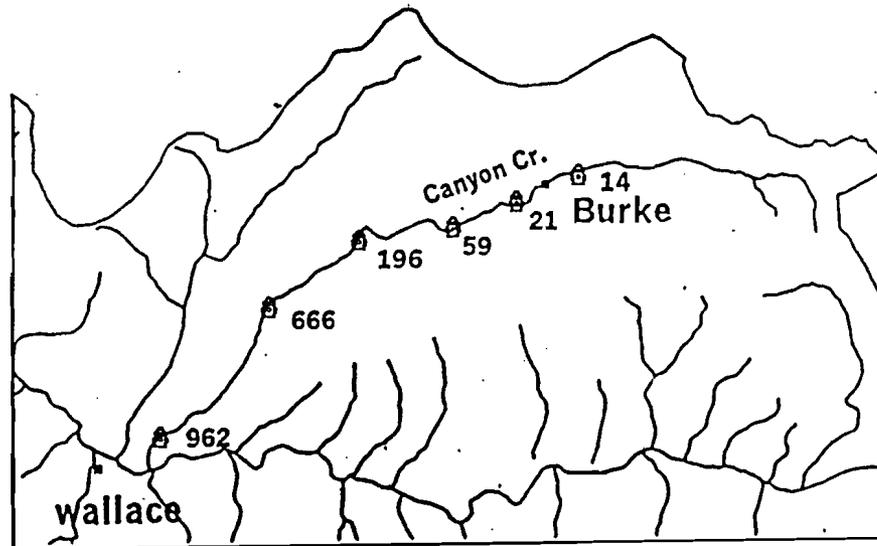


FIGURE 10



Canyon Creek

Total Cadmium Loading (lb/d)

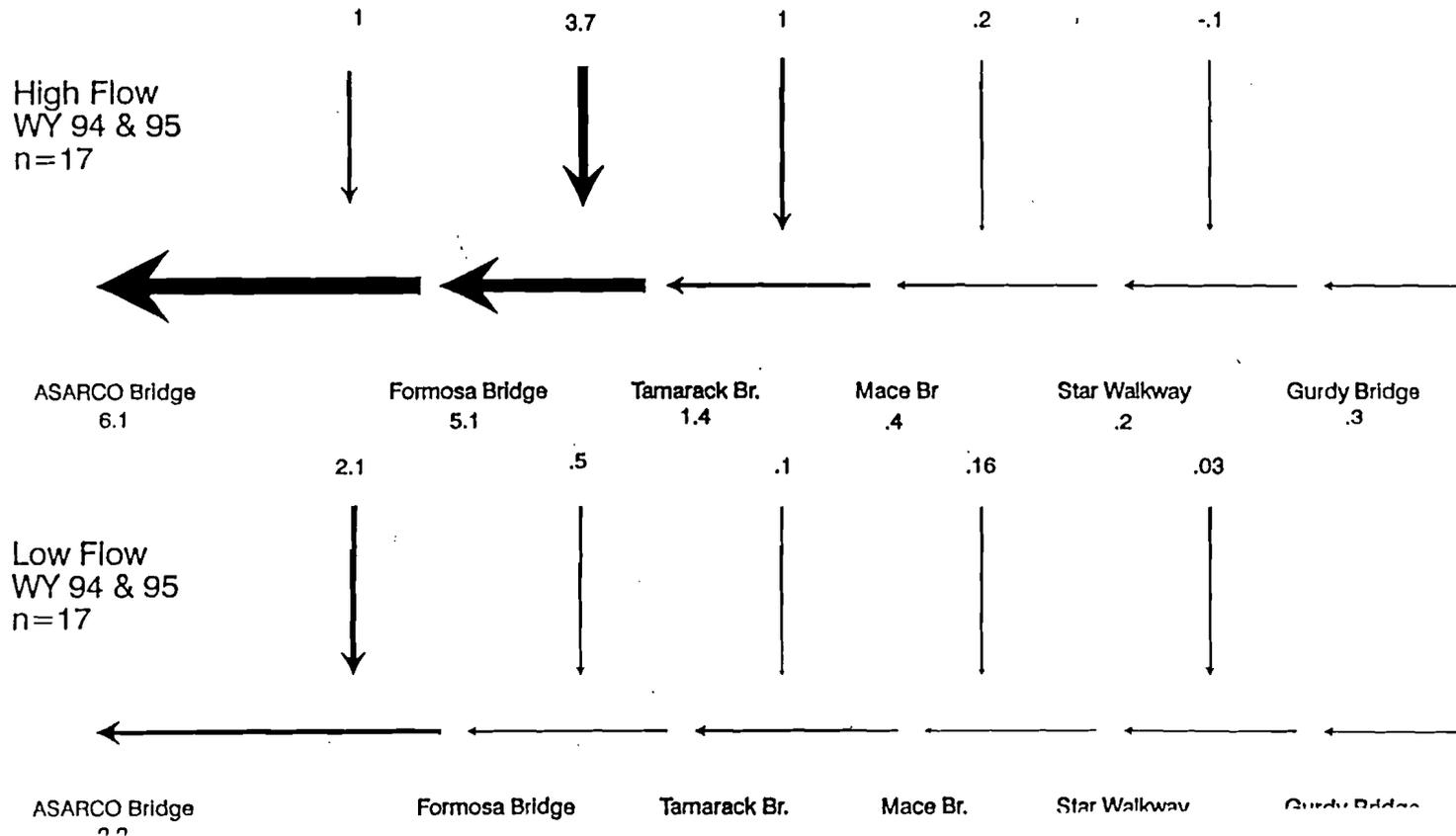
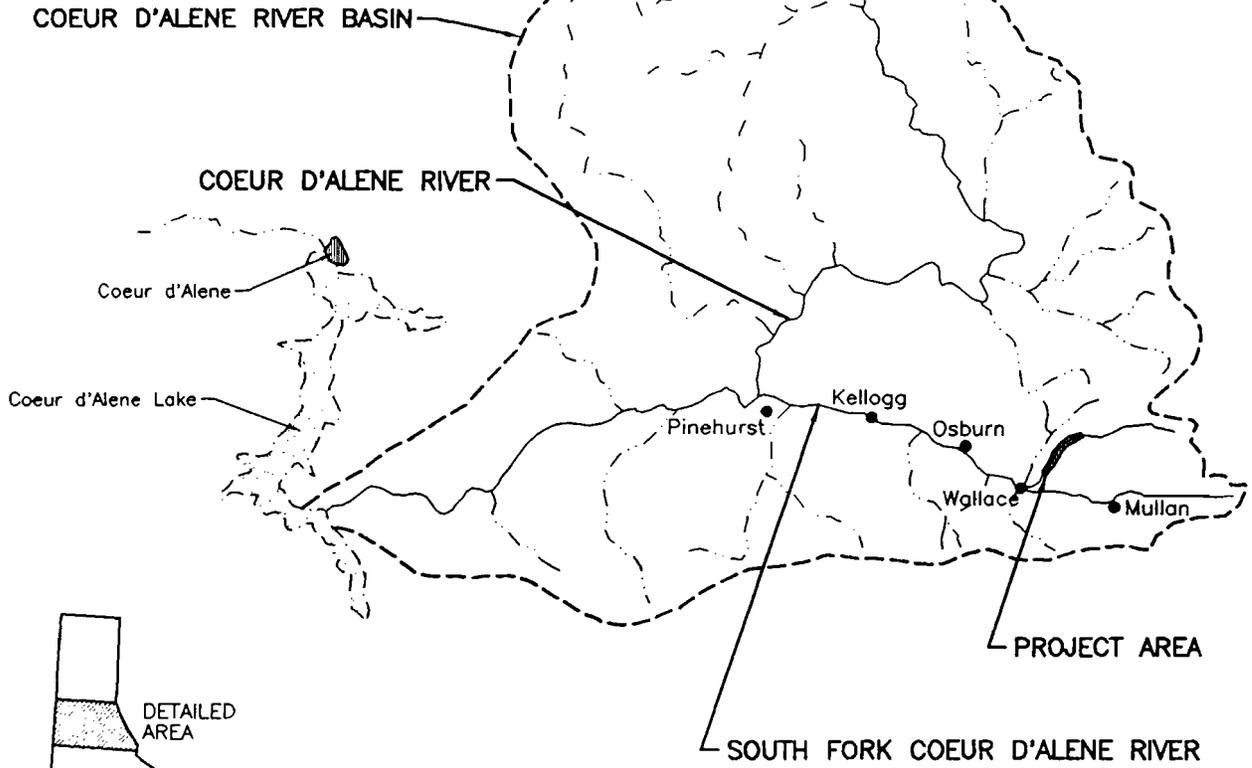


FIGURE 11



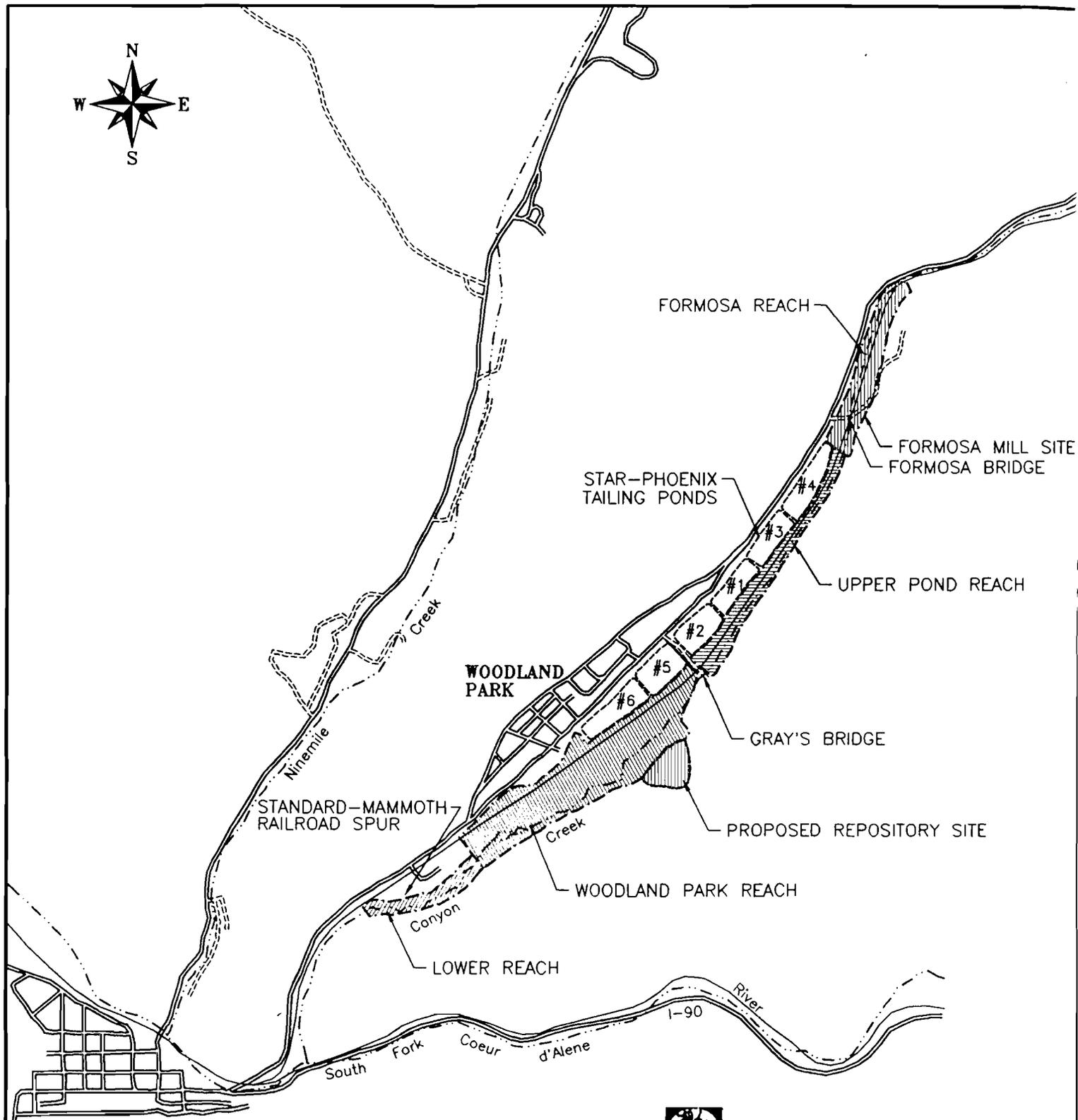
IDAHO



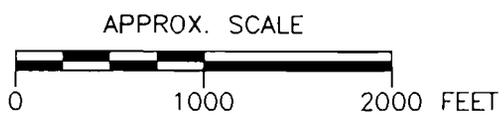
McCulley Frick & Gilman, Inc.
OSBURN, ID

LOCATION MAP
CANYON CREEK - WOODLAND PARK AREA
SHOSHONE COUNTY, IDAHO

DRAWN BY: D.E. HILL	PROJECT #: 2291	REVISION:
DATE: 2-23-95	FIGURE 1	DRAWING NUMBER
SCALE: NONE		2291-11M



WALLACE



McCulley Frick & Gilman, Inc.
OSBURN, ID

LOCATION MAP		
CANYON CREEK - WOODLAND PARK AREA		
SHOSHONE COUNTY, IDAHO		
DRAWN BY: D.E. HILL	PROJECT #: 2291	REVISION:
DATE: 2-23-95	FIGURE 2	
SCALE: AS SHOWN	DRAWING NUMBER 2291-21M	