REVISED

Proposal–Site-Specific Selenium Criteria for North Fork Sage Creek

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List of Abbreviations

AMSL	Above Mean Sea Level
BAF	Bioaccumulation Factor
BURP	Beneficial Use Reconnaissance Program
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
EC10	Effect Concentration
EF	Enrichment Factor
EPA	United States Environmental Protection Agency
Formation	Formation Environmental, LLC
IDAPA	Idaho Administrative Procedures Act
IDEQ	Idaho Department of Environmental Quality
µg/L	micrograms per liter
mg/kg dw	milligrams per kilogram dry weight
NFSC	North Fork Sage Creek
NOEC	No Observed Effect Concentration
NTCRA	Non-Time-Critical Removal Action
ODA	Overburden Disposal Area
PCC	Pole Canyon Creek
Simplot	Simplot Company
SSD	Species Sensitivity Distribution
SSSC	Site-Specific Selenium Criterion
SU	Standard Unit
TTF	Trophic Transfer Factor
YCT	Yellowstone Cutthroat Trout

Executive Summary

The proposed site-specific selenium criteria (SSSC) for North Fork Sage Creek (NFSC) is based on monitoring data compiled from 2020 through 2025. Mechanistic and bioaccumulation factor (BAF) models were used to derive water column criterion elements based on brown trout tissue data for egg/ovary and whole-body. The proposed criterion elements are shown in Table ES-1.

Table ES - 1. Proposed Site-Specific Selenium Criterion Elements, North Fork Sage Creek - Source to Mouth (segment ID17040105SK009_02).

Chronic [1]			***Short-Term***
Fish Tissue (mg/kg dw)		***Water Column (µg/L)***	***Water Column (µg/L)***
Egg-Ovary	*Whole-Body*	*Water Lotic*	*Water*
20.5[1]	*13.6*[2]	*3.94*[3]	*Intermittent Exposure Equation*[4,5]
mg/kg dw – milligrams per kilogram dry weight, µg/L – micrograms per liter			

Table Notes:

1. *Egg/ovary supersedes any whole-body or water column element when fish egg/ovary concentrations are measured. Single measurement of an average or composite sample of eggs/ovaries from at least five (5) individuals of the same species. Not to be exceeded; DEQ will evaluate all representative egg-ovary data to determine compliance with this criterion element.*

2. *Fish tissue supersedes the water column element when both fish tissue (whole-body) and water concentrations are measured. Fish tissue elements are expressed as a single arithmetic average of tissue concentrations from at least five (5) individuals of the same species where the smallest individual is no less than seventy-five percent (75%) of the total length (size) of the largest individual. Not to be exceeded; DEQ will evaluate all representative egg-ovary data or whole-body data to determine compliance with this criterion element.*

3. *Water column values are derived using the empirical bioaccumulation factor (BAF) method. Water column values are the applicable criterion element in the absence of steady-state condition fish tissue data. In fishless waters, selenium concentrations in fish from the nearest downstream waters may be used to assess compliance.*

4. *The 30-day average can be based on a single or multiple days of monitoring within a 30-day period. The geometric mean is used as the average.*

5. *Intermittent Exposure Equation* = $\frac{WQC_{30\ day} - C_{bkgrnd}\ (1-f_{int})}{f_{int}}$

   where $WQC_{30\text{-}day}$ *is the water column monthly element, for either lentic or lotic waters;* C_{bkgrnd} *is the average background selenium concentration, and* f_{int} *is the fraction of any 30-day period during which elevated selenium concentrations occur, with* f_{int} *assigned a value ≥ 0.033 (corresponding to one day).*

The proposed SSSC for NFSC changes the existing non-sturgeon-water tissue-based criteria currently adopted to the brown trout egg/ovary[1] and whole-body tissue[2] criteria elements. This change is based on several lines of evidence justifying the rationale, including: 1) brown trout is the most sensitive species found in NFSC, 2) brown trout adult reproduction studies applicable to NFSC are site-specific to the area, 3) species assemblages in NFSC are consistent with downstream species assemblages where these data were previously applied for SSSC, and 4) NFSC is connected to these downgradient streams.

The BAF-derived water column element is based on calculation of multiple BAFs for each time and location sampled where fish were present. Using the brown trout egg criterion, Yellowstone cutthroat trout (YCT) whole-body tissues were converted to equivalent egg values and divided by the dissolved selenium surface water concentration for a given location and time to derive a BAF. The brown trout egg value was then divided by the BAF to arrive at a time- and site-specific water column criterion element. These individual water criterion elements were averaged to derive the final proposed water column element of 3.94 micrograms per liter (µg/L). The methods used are consistent with the literature and EPA (2021) methods for deriving a water column criterion element.

[1] EC_{10} egg/ovary criterion = 20.5 milligrams per kilogram dry weight (mg/kg dw)
[2] EC_{10} whole-body tissue criterion = 13.6 mg/kg dw

1 Introduction

The Simplot Company (Simplot) is developing a chronic site-specific selenium criterion (SSSC) for streams within or adjacent to the Smoky Canyon Mine (the mine) in southeast Idaho (Figure 1). A SSSC for North Fork Sage Creek (NFSC) and Pole Canyon Creek (PCC) was initially proposed in the Proposed Site-Specific Selenium Criterion for Hoopes Spring, Sage Creek, and Crow Creek near the Smoky Canyon Mine (Formation 2017). Idaho Department of Environmental Quality (IDEQ) vetted the initial proposal during a series of public meetings and negotiated rule making, and Simplot submitted the final SSSC proposal in October 2017. The proposal was integrated into a rule package and submitted to the Idaho State Legislature. The final rule package was adopted by the Idaho Legislature and became effective under Idaho State Law on March 28, 2018 (IDAPA 58.01.02.287). IDEQ submitted the adopted rule to the United States Environmental Protection Agency (EPA) for review and approval on August 24, 2018.

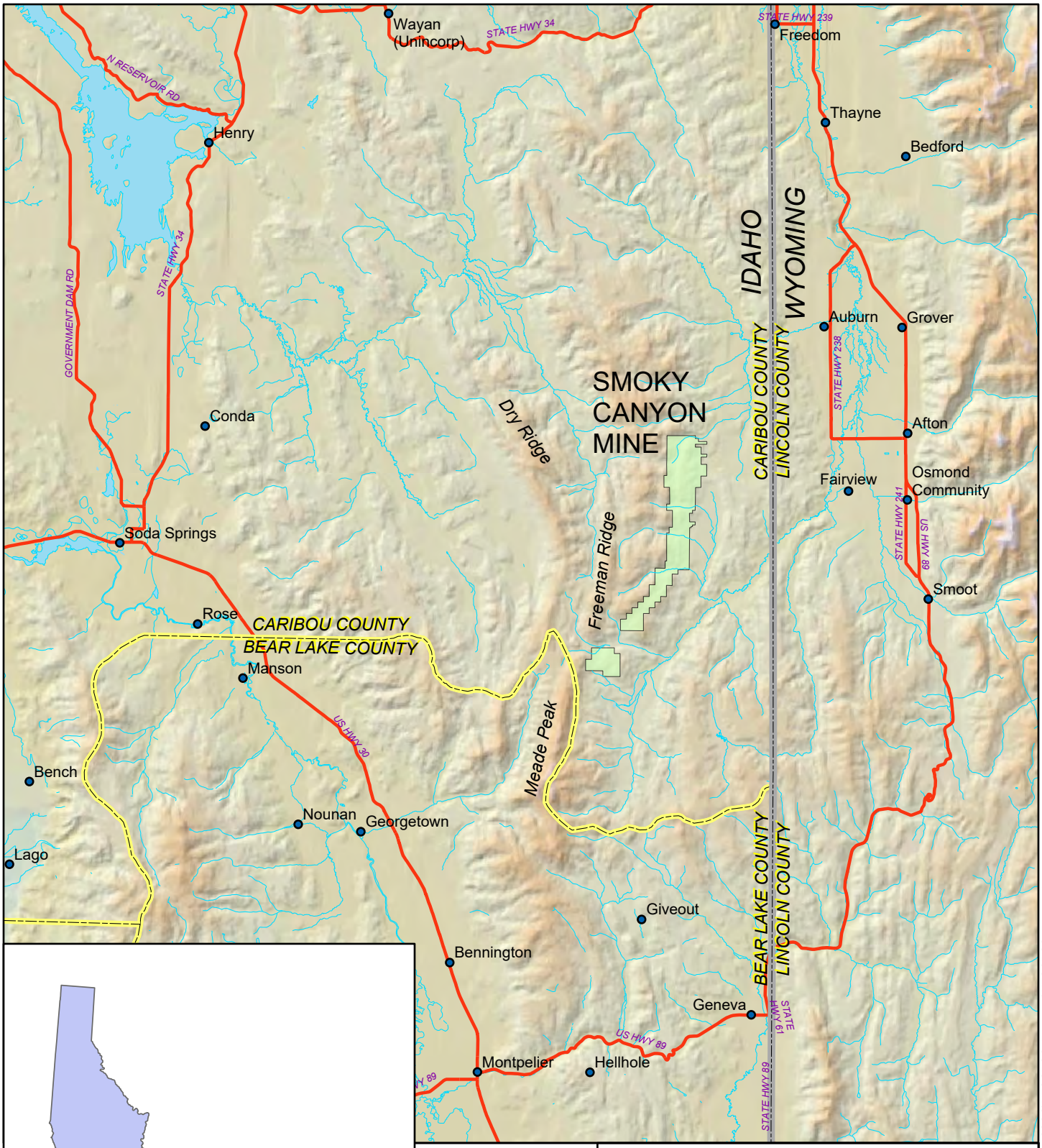
EPA approved the SSSC for Hoopes Spring and Sage Creek downstream of the Sage Creek and NFSC confluence, but disapproved application of the SSSC to NFSC and PCC. In early May 2019, EPA, IDEQ, and Simplot convened a call to discuss the pending approval of the SSSC for Hoopes Spring and Sage Creek and EPA's position on the disapproval of the SSSC for NFSC and PCC. Based on these discussions, Simplot sent a letter to IDEQ dated May 9, 2019, indicating that Simplot would develop a work plan and collect additional data for NFSC and PCC. In a July 9, 2019, letter from EPA to IDEQ (EPA 2019) documenting EPA's review and action on Idaho's selenium aquatic life criterion, EPA approved Idaho's new SSSC for Hoopes Spring, Sage Creek, and Crow Creek that were discussed during the May call, but disapproved the application of the SSSC for Sage Creek to NFSC and PCC because the data did not show that the SSSC was appropriate and protective of designated uses. To address the disapproval, EPA suggested collection of paired fish and water column data for calculation of a site-specific bioaccumulation factor (BAF) and a water column criterion or collection of sufficient data to calculate site-specific enrichment factors to run the mechanistic model for derivation of an SSSC for NFSC and PCC. Based on these suggestions, Simplot developed the *Work Plan – Field Monitoring Studies for Developing Site-Specific Selenium Criteria in North Fork Sage Creek and Pole Canyon Creek* (hereafter Work Plan) and provided the plan to EPA and IDEQ in April 2020. The Work Plan was revised in accordance with agency comments, and a final version was provided to the agencies in January 2022 (Formation Environmental, LLC [Formation] 2022). The Work Plan is included as Appendix A in this proposal.

Conditions in NFSC and PCC were initially characterized as part of a *Site Investigation* (NewFields 2005) and a *Remedial Investigation/Feasibility Study* (Formation 2014) for Smoky Canyon Mine. Site-specific monitoring studies for the NFSC and PCC were conducted from 2020 to 2022 with continued sampling at the downstream most location on NFSC through the spring of 2025. These data are described in the *North Fork Sage Creek and Pole Canyon Creek Data Summary Report* (DSR) (Appendix B). Recent monitoring included collecting samples to characterize concentrations of selenium in water, sediment, periphyton, benthic macroinvertebrates, and fish tissues.

As a result of EPA's disapproval letter, the selenium criterion elements applicable to NFSC and PCC are the non-sturgeon selenium criteria developed by IDEQ as part of their 2019 Negotiated Rule Making. The resulting criteria approved by EPA are as follows:

- Egg/ovary = 19 milligrams per kilogram dry weight (mg/kg dw)
- Whole-body = 9.5 mg/kg dw
- Lotic water = 3.1 micrograms per liter (µg/L) (dissolved)

The goals of this site-specific criterion proposal are two-fold, (1) unify the tissue criteria for NFSC to be consistent with those adopted and approved in the downstream adjacent segment of Sage Creek utilizing brown trout (*Salmo trutta*) egg/ovary and whole-body tissue criteria, and (2) derive a site-specific water column element based on the tissue criteria described in (1) above.



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2 Setting, Study Area, and Scope of Applicability

2.1 Setting

Phosphate ore is extracted from the Phosphoria Formation at the Smoky Canyon Mine in a series of open pits referred to as mine panels. The ore is milled on site and then a slurry of phosphate ore is pumped to the Don Plant in Pocatello, Idaho. Weathering of seleniferous waste shales in overburden provides the mechanism for the release and transport of selenium to surface water and groundwater.

The mine is in Caribou County, Idaho, within the Southeastern Idaho Phosphate Mining District, approximately 10 miles west of Afton, Wyoming and 23 miles east of Soda Springs, Idaho (Figure 1). Situated on the eastern edge of the Webster Range overlooking Sage Valley to the east, elevations at the mine range from 6,500 feet to 8,300 feet above mean sea level (AMSL).

The closest main population center to the mine is the Star Valley community, which includes the town of Afton, Wyoming, approximately 10 miles directly east of the mine. The town of Afton has a population of approximately 2,280 (World Population Review 2025). This region has a cool and dry climate, with prevailing winds and weather patterns moving from west to east. Meteorological data from the Slug Creek Divide SNOTEL station provides the basis for tracking temperature, precipitation, and snowpack at the site. Annual precipitation is typically in the range of 20 to 50 inches per year. The most abundant precipitation occurs in the spring and early summer months. The peak snowpack, measured as Snow-Water Equivalent (SWE) has ranged from 7.8 inches (Water Year [WY] 1992) to 32.1 inches (WY 1982) since WY 1981, and snow cover typically remains on the ground from November to April or May. Summer temperatures in the region normally range from 44 to 82 degrees Fahrenheit, while winter temperatures typically range from 4 to 28 degrees Fahrenheit (Mariah Associates 1980). The Smoky Canyon Ecological Risk Assessment provides a detailed description of the wildlife and plant species found in the area (Formation 2016).

NFSC originates in Sage Valley and flows from north to south on the eastern side of the valley while PCC bisects the mine flowing from west to east into Sage Valley where it joins NFSC. The NFSC eventually joins the western fork of Sage Creek to form the mainstem of Sage Creek, which flows south and joins Crow Creek. Crow Creek flows north to north-east to the Salt River which terminates in Palisades Reservoir, formed by the inundation of the Snake River and several smaller tributaries. More detailed descriptions and summaries of existing data for NFSC and PCC are included in the Work Plan (Appendix A).

Under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Simplot has implemented two Non-Time-Critical Removal Actions (NTCRAs) at Pole Canyon, which have significantly reduced releases of selenium to the surrounding environment. The NTCRAs included isolating the cross-valley fill overburden disposal area (ODA) from Pole Canyon Creek through installation of a bypass pipeline (2006) and reducing infiltration into the ODA by installation of a cover (2013). Together these actions have reduced the release of selenium to the environment by approximately 90 percent.

Prior to the installation of the Pole Canyon ODA bypass pipeline, it was believed that PCC surface flows did not reach NFSC, except during higher than the typical runoff conditions. Since the development of the

2020 Work Plan, Simplot has exercised their water right on PCC resulting in an irrigation diversion where PCC water is conveyed via pipeline to the northern portion of NFSC where PCC water not utilized for irrigation or stock watering discharges just downstream of the headwaters of NFSC.

2.2 Study Area Monitoring Locations and Frequencies

Monitoring was conducted beginning in September 2020 and concluded with sampling in September 2022. Monitoring locations are illustrated in Figure 2. Two locations on PCC were monitored including LP-PD and LP-PDT while three locations were monitored on NFSC including NSV-5, NSV-6, and NSV-7. Additional sampling continued at a single location (NSV-7) through May 2025 to provide additional data for the derivation of SSSC.

Monitoring was conducted during spring (high flow) and fall (low flow) at each location, consistent with the Work Plan which described two spring and three fall monitoring periods. The fall sampling period selected was within the Beneficial Use Reconnaissance Program (BURP) index period. Seasonal periods for sampling were designed to include temporal variation in concentrations/conditions which can affect bioaccumulation.

2.3 Geographic Scope of Applicability

The site-specific criterion is to be derived to provide adequate protection for the entire site; however, the site is defined (EPA 1994). In the general context of site-specific criteria, a "site" may be a state, region, watershed, waterbody, or segment of a waterbody; thus, the geographic scope of the "site" must be defined. For this effort, the Site or geographic scope of applicability includes NFSC from its source to mouth (Figure 2).

The water bodies being investigated are found within the Salt Subbasin, HUC 17040105, of the Upper Snake River Basin. IDEQ's *Integrated Report* (IDEQ 2024) identifies specific stream segments including the following:

- North Fork Sage Creek is identified as segment ID17040105SK009_02, which is made up of lateral tributaries and an irrigation diversion ditch off Sage Creek. Two subsegments are included in this drainage: reach 17040105000839 – North Fork Sage Creek at eastern headwater tributary confluence to confluence with Pole Canyon Creek (Assessment Unit ID17040105SK009_02) and reach 17040105000847 – North Fork Sage Creek at Pole Canyon confluence to the Sage Creek confluence (Assessment Unit ID17040105SK009_02).

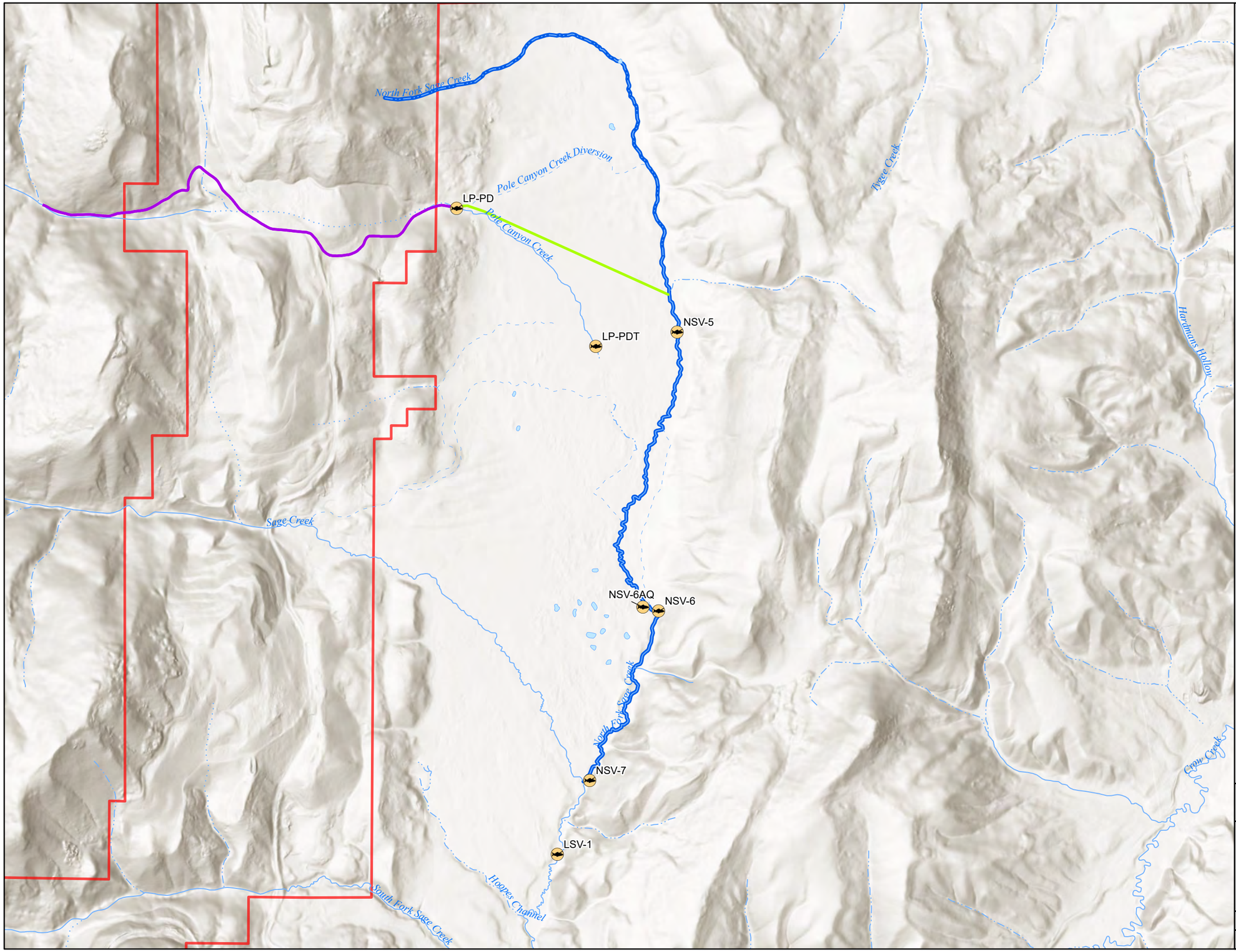
Within the *Integrated Report*, streams are grouped by drainage and hydrologic subunits, and specific stream segments or assessment units are defined relative to their use attainment status. The NFSC reach ID17040105SK009_02 is classified in the 2024 *Integrated Report* as Category 5[3] and listed on the 303(d)-list indicating the stream segment does not meet its designated uses for cold water aquatic life.

[3] Waters do not meet applicable water quality standards for one or more beneficial uses due to one or more pollutants; therefore, an EPA-approved Total Maximum Daily Load (TMDL) is needed. Category 5 water bodies make up the § 303(d) list.

Because assessment units (AUs) may be modified, the SSSC is further defined by the following permanent geographic features:

1. The downstream extent of NFSC is the confluence with Sage Creek.
2. The upstream extent of NFSC is the headwaters (source).

Since completion of the Work Plan and sampling at the NFSC and PCC locations, Simplot has exercised its water right to utilize PCC water for livestock watering and northern Sage valley irrigation. Residual water is discharged to upper NFSC via a pipeline that conveys water across the valley, such that the old flow path of PCC no longer exists. The current alignment of the pipeline delivering PCC water to NFSC is shown on Figure 2. Data collected for PCC are provided herein but are not utilized for developing the SSSC water column element described in this proposal.



Legend

- Monitoring Locations

Streams

- Pre-ODA Creek Flow Path
- Irrigation Ditch
- Intermittent Stream
- Perennial Stream
- 2006 NTCRA Bypass Pipeline Alignment
- Pole Canyon Creek Pipeline Extension
- NFSC stream segment for criteria application

Waterbodies

- Lake/Pond
- Reservoir
- Swamp/Marsh

0 1,000 2,000 4,000

Feet

N

SIMPLOT COMPANY
SMOKY CANYON MINE
NFSC/PCC PROPOSAL

FIGURE 2

MONITORING LOCATIONS

DATE: MAY 28, 2026

By: WSB | For: SMC

FORMATION

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3 Results

Water, sediment, and biotic tissue samples collected during both the spring and fall monitoring periods were submitted for chemical analysis, the results for which are reported in the Data Summary Report included as Appendix B. In addition, physical habitat, fish population and community and benthic community were monitored each fall (Appendix B). A summary of the chemical data is provided in Table 1. All raw data compiled are provided in Appendix B. These data represent the most current information available for NFSC including fishery investigations, habitat, and chemistry in surface water, sediment, and biotic tissues.

Fish population and community data, including species collected during the 2020 through 2025 sampling period are documented in Appendix B and reported to the Idaho Department of Fish and Game (IDFG) as a condition of the scientific collection permit. These data report the most currently available fishery data for NFSC. Fish species found in NFSC include brown trout, YCT, and Paiute sculpin, an assemblage of species consistent with Sage Creek downstream of Hoopes Spring and Sage Creek upstream of its confluence with NFSC. A brook trout was found at LSV-2c immediately downstream of Hoopes Spring in 2024. Farther downstream in Sage Creek, closer to its confluence with Crow Creek, the same three species are the predominant species captured with occasional captures of brook trout, mountain whitefish, and Utah sucker (Table 2). The species assemblage found in NFSC is small, consisting of three species, but it is consistent with the assemblage found in connecting and downgradient streams.

Table 1
Fish Species Present During Monitoring from 2006 to 2025

Family/Common Name (Species)	Upper Crow Creek			Deer Creek		Lower Crow Creek		
	CC-75	CC-150	CC-350	DC-600[1]	DC-100	CC-1A	CC-3A	CC-FV
Salmonidae								
Brown Trout *(Salmo trutta)*	√	√	√	√		√	√	√
Yellowstone Cutthroat Trout (*Oncorhynchus clarki bouvieri*)	√	√	√	√	√	√	√	√
Brook Trout (*Salvelinus fontinalis*)						√	√	√
Mountain Whitefish *(Prosopium williamsoni)*		√	√			√	√	√
Cuttbow hybrid trout *(Oncorhynchus clarki bouvieri x Oncorhynchus mykiss)*						√		
Cottidae								
Paiute Sculpin *(Cottus beldingi)*	√	√	√	√		√	√	√
Mottled Sculpin *(Cottus bairdi)*	√	√	√			√	√	√
Cyprinidae								
Longnose Dace *(Rhinichthys cataractae)*		√	√			√	√	√
Speckled Dace (*Rhinichthys osculus*)		√	√			√	√	√
Redside Shiner *(Richardsonius balteatus)*		√	√			√	√	√
Northern Leatherside Chub *(Lepdomeda copei)*			√					
Catostomidae								
Utah Sucker *(Catostomus ardens)*		√	√			√	√	√
Mountain Sucker *(Catostomus platyrhynchus)*			√			√		
# of Species	**4**	**9**	**11**	**3**	**1**	**12**	**10**	**10**

Notes:

[1]Only a single brown trout has been observed in Deer Creek. This occurred at DC-600 in 2017.

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Table 2
Fish Species Sensitivity Data from Adult Reproduction Studies - Egg/Ovary

Species	Scientific Name	Source Study	Adult Exposure	Endpoint	Endpoint Statistic	Selenium (mg/kg dw)	Statistic Derivation Source
Rainbow trout	*Oncorhynchus mykiss*	Holm 2002; Holm et al. 2003; Holm et al. 2005[d]	Field	Larval abnormalities	EC10	24.5	b
Yellowstone cutthroat trout	*Oncorhynchus clarkii bouvieri*	Hardy 2005; Hardy 2010	Lab	Larval abnormalities/ mortality	NOEC	>16.04	b,c
		EPA 2016; 2021	Field	Larval abnormalities	NOEC	>30	b
		Covington et al. 2025	Field	Larval survival	EC10	35.1	a
Westslope Cutthroat trout	*Oncorhynchus lewisi*	Kennedy et al. 2000	Field	Larval abnormalities/ mortality	NOEC	>21	c
		Rudolph et al. 2008	Field	Alevin mortality	EC10	24.7	b
		Nautilus 2011; Elphick et al. 2009	Field	Alevin mortality	EC10	27.7	b
Brown Trout	*Salmo trutta*	Covington et al. 2018	Field	Larval survival	EC10	20.5	a
		USEPA 2016; 2021	Field	Larval survival	EC10	21	b
Brook trout	*Salvelinus fontinalis*	Holm et al. 2005	Field	Larval abnormalities	NOEC	>48.7	b
		Holm et al. 2005 and Pilgrim 2009	Field	Larval survival	EC10	32	e
Dolly Varden char	*Salvelinus malma*	McDonald et al. 2010	Field	Larval abnormalities	EC10	56.2	b
Mountain Whitefish	*Prosopium williamsoni*	Brix et al. 2025	Field	Larval abnormalities	EC10	>54	a
Northern pike	*Esox lucius*	Muscatello et al. 2006	Field	Larval abnormalities	EC24	34	b
White sucker	*Catostomus commersonii*	de Rosemond et al. 2005	Field	Larval abnormalities	EC13	40.3	b
Slimy sculpin	*Cottus cognatus*	Loe et al. 2014	Lab	Larval abnormalities/ mortality	NOEC	>22	a
Redside shiner	*Richardsonius balteatus*	Golder Associates 2020	Field	Larval abnormalities/ mortality	NOEC	>28	a
Desert Pupfish	*Cyprinodon macularius*	Besser et al. 2012	Lab	Lab	EC10	27	b

a Derived as part of the analyses included in this publication

b USEPA (2016, 2021)

c Deforest et al. (2012)

d EC10 values from combined datasets 2000, 2001, and 2002 for skeletal deformities as reported in USEPA (2021)

e Larval survival EC10 derived from the reported survival data in Holm et al. (2005) and Pilgrim (2009).

NOEC - no observed effect concentration

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4 Site-Specific Selenium Criteria Elements

EPA (2016; 2021) recommends that states adopt four criteria elements applicable to all waterbodies for selenium, including an egg/ovary tissue element, a whole-body and/or muscle tissue element, and a water element (chronic and short-term criteria). As discussed in Section 1, the egg/ovary, whole-body tissue, and chronic lotic water criteria applied to NFSC are the non-sturgeon water criteria developed by IDEQ. These criteria are inconsistent with the site-specific tissue and water column elements developed for Sage Creek downstream. Standardization of the tissue criteria used throughout the watershed will allow for better consistency in deriving and applying the water column criteria elements derived from the site-data to translate tissue criteria to water criteria. While NFSC is a non-sturgeon water, these criteria are based on an assemblage of species that is intended to provide protection for a wide variety of species across the State (i.e., those water that do not contain sturgeon but may contain a diverse fish species assemblage including salmon, bass, catfish, perch, crappie, carp, whitefish, and/or walleye, among others). These statewide site-specific criteria elements allow for a less stringent whole-body and egg/ovary tissue threshold for non-sturgeon waters as compared to EPA (2021) recommended criteria. For the NFSC, the species assemblage is much smaller than the non-sturgeon water criteria, and as described previously, is consistent with the surrounding and adjacent streams. Further, site-specific studies have already been completed for species in the NFSC drainage to develop thresholds of effects that have been approved by the state and EPA.

4.1 Tissue Elements

Because of the specificity and sensitivity of the brown trout tissue criterion elements, they are the most directly applicable thresholds for use in NFSC and should form the basis for any water criterion element derived from the tissue criteria. In the subsections that follow, information is provided on the rationale for changing the tissue criteria, species selenium sensitivity data for multiple species, protectiveness of the tissue criteria, and applicability. Data were previously provided on the fish species assemblage in NFSC.

4.1.1 Rationale for Changing Tissue Threshold

The approach outlined in the Work Plan included a procedure for deriving the water column element using the brown trout whole-body tissue criterion developed for Hoopes Spring and South Fork Sage Creek for deriving a SSSC water criterion element for NFSC. This was done intentionally for the following reasons:

- The non-sturgeon water criterion tissue elements are not specific to Sage Creek or its tributaries which include NFSC.
- Brown trout is the most sensitive species present, and the thresholds developed for egg/ovary and whole-body tissues have been approved by EPA and integrated into Idaho state standards for Hoopes Spring, South Fork Sage Creek, and Sage Creek.
- The species assemblage for NFSC is no different than that found in Sage Creek downstream, as described previously; however, these assemblages are very different from the species assemblages for Idaho's non-sturgeon waters.

- The brown trout tissue threshold developed using wild trout from the local area and site-specific exposures that encompassed a wide range of selenium concentrations are directly applicable to NFSC.
- Brown trout populations are present in NFSC which connects to Sage Creek downstream.
- Brown trout tissue criteria provide a consistent basis of site-specific tissue effects-based thresholds from which the water criterion elements can be derived.

4.1.2 Species Sensitivity

The prevailing scientific evidence supports the current thinking that effects to developing fish are among the most sensitive aquatic biological indicators of excessive selenium exposure (EPA 2004; Lemly 1996; Ogle and Knight 1996; Skorupa et al. 1996; Janz et al. 2010). EPA (2021) reviewed most of these studies in detail. Appendix C includes additional information about the field and laboratory brown trout and YCT site-specific studies conducted to characterize exposure environments and obtain selenium-toxicity response data that were used to derive the SSSC for Hoopes Spring, Sage Creek, and South Fork Sage Creek, because of their relevance to this SSSC proposal. A wide range of effect thresholds determined for tissues and endpoints are provided in the discussion that follows (Table 3) together with studies not included within EPA (2021).

Besser et al. (2025) evaluated the response of *C. dilutus* and *H. azteca* to selenium via dietary exposure using endpoints of survival, growth and biomass. Species mean chronic values converted to equivalent whole-body fish tissue concentrations were 18 mg/kg for *H. azteca* and 68 mg/kg for *C. dilutes* ranking 6th and 12th in the distribution of whole-body genera used to derive the whole-body tissue criterion for selenium. The four whole-body fish tissue thresholds used to generate the criterion are lower than the lowest of these two invertebrate species. These data indicate that the fish tissue threshold is protective of invertebrates further supporting the evidence that effects to developing fish are among the most sensitive aquatic biological indicators of excessive selenium exposure.

In the genus *Oncorhynchus,* no observed effect concentrations (NOECs) and EC_{10}s range from >16.04 to 35.1 mg/kg dw (Table 3). Among the larger salmonid order, excluding *Oncorhynchus* data, NOECs and EC_{10}s in egg tissues range from 20.5 to 56.2 mg/kg dw. YCT data from Hardy (2005; 2010) provided an unbounded NOEC of >16.04 mg/kg dw. The EC_{10} for brown trout range is either 20.5 mg/kg dw (Covington et al., 2018) or 21 mg/kg dw (EPA, 2016; 2021) (Appendix C). The rainbow trout EC_{10} was 24.5 mg/kg dw (Holm, 2002; Holm et al., 2003; Holm et al., 2005) while the Westslope cutthroat trout responses ranged from a NOEC of >21 mg/kg dw to an EC_{10} of 27.7 mg/kg dw (Kennedy et al., 2000; Rudolph et al., 2008; Elphick et al., 2009; and Nautilus, 2011). Covington et al. (2025) found an egg/ovary EC_{10} for larval survival of YCT equal to 35.1 mg/kg dw and 35.2 mg/kg dw for abnormalities confirming EPA's (2021) review of these data indicating effects for deformities were greater than 30 mg/kg dw (Appendix C).

Data for brook trout yielded an unbounded NOEC for larval abnormalities of >48.7 mg/kg dw (Holm et al., 2005)[4], while the combined survival datasets of Holm et al., (2005) and Pilgrim (2009) yielded an EC_{10} for brook trout survival of 32 mg/kg dw[5]. At the upper end of the salmonid effects ranges, Mountain whitefish and Dolly Varden char had a EC_{10}s of >54 and 56.2 mg/kg dw, respectively. Of the Salmonids found in NFSC for which reproductive toxicity thresholds are available, brown trout is the most sensitive species, well below the threshold defined for YCT.

Other cold-water species, including white sucker and northern pike have species effects thresholds (EC_{13} to EC_{24}) at the upper end of the sensitivity distribution ranging from 34 to 40.3 mg/kg dw egg Se (Table 3).

Golder and Nautilus Environmental examined the effects of dietary selenium on the reproductive capabilities of slimy sculpin (*Cottus cognatus*) (Lo et al. 2014) and found a NOEC egg tissue concentration of 22.0 mg/kg dw selenium, indicating that the effect threshold was greater than 22 mg/kg dw. Among the minnow species, two studies were found evaluating reproductive toxicity including one for desert pupfish and the other for redside shiners. The desert pupfish study conducted by Besser et al. (2012) yielded a larval survival EC_{10} of 27 mg/kg dw egg selenium. Although desert pupfish are not a cold-water species, the study provides representative reproductive toxicity data for the Cyprinid family. De Bruyn et al. (2023) found no effects to survival, growth or abnormalities in redside shiners up to 28 mg/kg egg selenium yielding an unbounded NOEC of >28 mg/kg.

4.1.3 Protectiveness of Tissue Elements

Table 3 provided a wide range of egg/ovary effects values for cold water species (and a representative warm water Cyprinid species). The species sensitivity distributions (SSD) shown in Figures 3 and 4 narrow the focus of the species assemblage to include effects thresholds more consistent with species found in streams such as NFSC and downstream adjacent waters. Figure 3 presents the egg effects thresholds as an SSD to illustrate the range of species sensitivities of a hypothetical cold water fish community comprised of secondary and tertiary consumers. The species represented in this SSD are more than those identified during surveys of NFSC which only found brown trout, YCT, and sculpins. Inclusion of desert pupfish was done to provide a secondary Cyprinid species, although Desert pupfish is not a cold-water species and is not found in NFSC. This SSD provides a visualization of the range of selenium sensitivity based on egg selenium concentrations across a wide range of species. Brown trout is the most sensitive species based on its egg EC_{10} threshold indicating the brown trout EC_{10} is sufficiently sensitive to be protective of other less sensitive species.

Whole-body tissue thresholds are derived from the species-specific egg data discussed above using conversion factors (CFs) which are presented in Table 3. Despite the inherent cause and effect relationship of egg/ovary selenium concentrations and manifestation of effects in young fish, the current guidance derives effects for different tissues independently. The egg/ovary effects thresholds shown in Table 3 and

[4] As derived in EPA (2016, 2021)

[5] Pilgrim (2009) examined rainbow, brook, and cutthroat trout for deformities and survival from reproductive studies, but due to the relatively high variability of the concentration responses for the replicate data using the deformity endpoint, none of these data were considered in the 2016 National Criterion development.

Figure 3 were converted to whole-body tissue equivalents using the CFs in Table 3. The whole-body SSDs are shown in Figure 4. As noted in Table 3, the CF for brown trout is shown as geometric mean, which is based on the information presented in the 2017 proposal (Formation 2017) adopted by IDEQ and approved by EPA. Two defensible whole-body concentrations for brown trout were available. EPA (2021) identified a brown trout whole-body no observed effect concentration (NOEC) of 13.2 mg/kg dw, which was the single highest value of the many paired egg/ovary and whole-body tissue concentrations where there were no observed effects in survival based on egg selenium concentrations. In the 2017 SSSC proposal, the CF derived was 1.46 using all the site-specific data available for brown trout which yielded a whole-body equivalent concentration of 14.0 mg/kg. A geometric mean of 13.2 and 14.0 mg/kg dw is 13.6 mg/kg dw. The adopted and approved site-specific whole-body tissue criterion for brown trout is 13.6 mg/kg. The ratio of these adopted and approved criteria (e.g., egg/ovary to whole-body tissue selenium) results in a CF of 1.51.

Covington et al. (2025) developed a Yellowstone cutthroat trout threshold using data collected from the same drainage where the brown trout studies were conducted. The egg/ovary to whole-body CF examined a regression-based approach and simple ratio approach that included and excluded the hatchery fish CFs used in that study. The CFs derived from hatchery fish were significantly different than those from wild collected fish. Simplot reassessed the brown trout data and derived the median ratio from the original site-specific data set, excluding the hatchery fish and derived at CF of 1.52 which is consistent with the site-specific egg/ovary threshold divided by the whole-body threshold (e.g., 20.5/ 13.6 = 1.51). Using the empirically derived CF (1.52) applied to EPA's brown trout egg/ovary criteria of 21.0 mg/kg dw, results in a whole-body tissue concentration of 13.8 mg/kg. The original value proposed, adopted, and approved (e.g., 13.6 mg/kg dw) is a conservative and biologically relevant threshold based on the site-specific data and the corresponding CF (e.g., 1.51) is applicable and conservative.

For most species shown, egg/ovary to whole-body CFs were obtained directly from EPA (2021). Egg to whole-body CFs for *Oncorhynchus* species were different than those used in EPA (2021) based on the current scientific findings that the CFs used for rainbow trout and Westslope cutthroat trout are likely lower than 1.96 (Detering et al. 2025). Further the findings in Covington et al. (2025) and Detering et al. (2025) indicate that the YCT conversion factor is also likely lower than the CF value for *Oncorhynchus.*

The northern pike whole-body threshold is based on an EC_{24} and a corresponding EC_{10} would likely be lower than that observed for brown trout. However, northern pike are not found in these streams nor serve as a surrogate for any species in these streams.

For mountain whitefish, the CF used in EPA (2021) was 7.39 which is based on an egg/ovary to muscle then muscle to whole-body CF. Brix et al. (2025) provides updated assessments and new data for mountain whitefish effects thresholds. For whole-body, Brix et al. (2025) found the following:

> "The USEPA (2016) previously reported a significant relationship between MWF muscle and ovary (not egg) Se based on data collected from Elk Valley. However, the relationship slope is extremely steep (m = 5.8) compared with most other species (typically slope ~1–2). Data from the current study using egg Se rather than ovary Se suggests the apparent relationship in USEPA (2016) is spurious, as we observed no relationship using a larger data set. Our observations are also

> supported by a more recent analysis of fish tissue ratios that evaluated a larger ovary data set and similarly found no relationship with muscle Se concentrations (Detering et al., 2025). Among species that have a sufficiently large data set with ovary/egg Se concentrations spanning at least a factor of 5, MWF appear to be unique in lacking a relationship between these two tissues."

Because of this lack of relationship, for the purpose of the whole-body SSD figure, the salmonid CF provided in USEPA (2021) was utilized for mountain whitefish. Based on the representative species assemblage and their respective whole-body effects thresholds, the SSD for whole-body (egg/ovary thresholds converted to whole-body equivalents) indicates that brown trout is the most sensitive species on a whole-body tissue basis (Figure 4).

4.1.4 Applicability

The size of fish monitored for whole-body tissue selenium concentrations to assess potential future compliance with a tissue criterion is important, particularly for trout. If the trout are too large, they may be migratory and move considerable distances and not be representative of the location exposure. Brown trout greater than about 230 mm tend to be reproductive size fish and sampling these larger reproductive fish, particularly females, can damage the population by removing spawning sized fish and the hundreds to thousands of eggs they produce each year. The Idaho Fish Tissue Protocol workgroup convened in 2007 to minimize potential damage to trout populations due to oversampling and to focus on trout that are likely resident to where they were spawned. The initial protocol focused on sampling individual trout <100 mm long but allowed for larger fish based on the needs of the sampling program or if insufficient numbers of <100 mm fish are present. The protocol has been revised to include fish up to 150 mm. In the 2012 Technical Support Document (Formation 2012), which provided subsequent data and analyses for the 2017 SSSC proposal, an analysis was conducted that examined the juvenile fish (up to 150 mm) collected during the same year (2007) and exposure conditions as those adult fish used for the reproduction studies (i.e., fish > 150 mm). No significant difference in whole-body tissue concentrations was observed between these adults and juveniles collected during the same time period (Kruskal Wallace one way ANOVA on ranks, p = 0.192). A more recent assessment targeted fish tissue selenium concentrations based on approximate age of sexual maturity (e.g., those fish <230 mm and those >230 mm). This assessment spanned several locations and selenium exposures using the 2007 data when adult fish were collected for the reproduction study. No significant differences in tissue concentrations for brown trout <230 mm and >230 mm were observed (Welch's t-test, p=0.9125) (Figure 5). Finally, a wider range of tissue concentrations was evaluated where juvenile (<230 mm) and adult fish (>230 mm) were compared by location and time collected. Of the 17 pairings from 2007, 2010, 2020, and 2025, only one significant difference was observed between tissue concentration for fish <230 and those >230 mm (Table 4). All but one pair were not statistically significantly different.

Idaho's Selenium Implementation Guidance (IDEQ 2022) indicates that "Through years of internal sampling, DEQ determined the preferred size of salmonids that directly relate to species fidelity is young of year (YOY), which at the time of sampling (i.e., late summer, early fall) is considered fish less than 4 inches. If enough YOY are not available, then fish that have obviously spent most of their life history in the

Table 3
Fish Species Sensitivity Data from Adult Reproduction Studies - Whole-Body

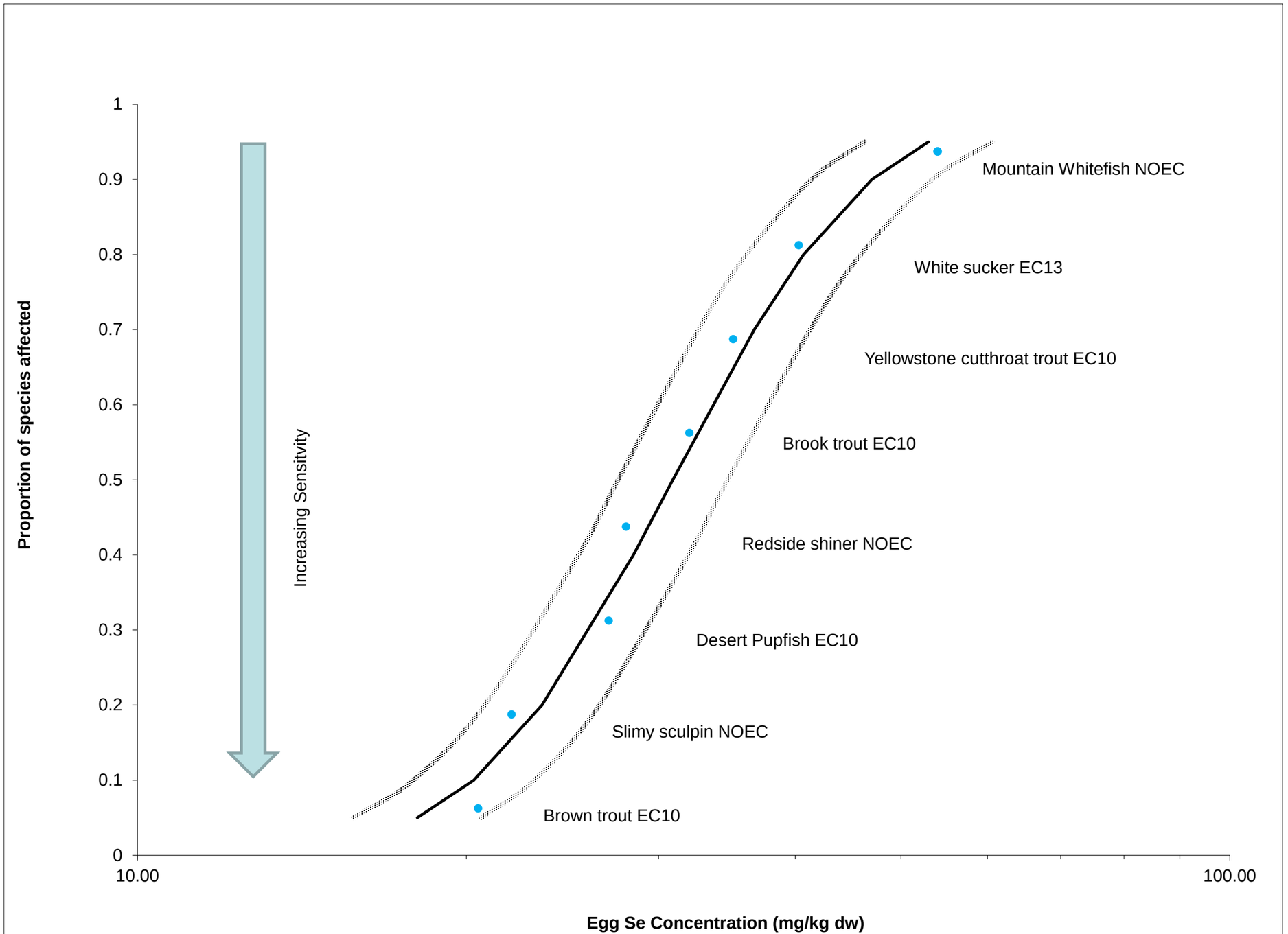
Species	Scientific Name	Source Study	Adult Exposure	Endpoint	Endpoint Statistic	Egg/Ovary Selenium	Whole Body Selenium	Conversion Factor (CF)	CF Source
Rainbow trout	*Oncorhynchus mykiss*	Holm 2002; Holm et al. 2003; Holm et al. 2005	Field	Larval abnormalities	EC10	24.5	17.10	1.43	Proposed Blackfoot
Westslope Cutthroat trout	*Oncorhynchus lewisi*			Geometric mean EC10s	EC10	26.2	18.32	1.43	
		Rudolph et al. 2008	Field	Alevin mortality	EC10	24.7		1.43	
		Nautilus 2011; Elphick et al. 2009	Field	Alevin mortality	EC10	27.7		1.43	
Yellowstone cutthroat trout	*Oncorhynchus clarkii bouvieri*	Covington et al. 2025	Field	Larval survival	EC10	35.1	24.50	1.45	Source study[a]
Brown Trout	*Salmo trutta*	Covington et al. 2018	Field	Larval survival	EC10	20.5	13.60	1.51	Source study[a]
Brook trout	*Salvelinus fontinalis*	Holm et al. 2005	Field	Larval abnormalities	NOEC	>48.7	>35.29	1.38	Brook trout[b]
		Holm et al. 2005 and Pilgrim 2009	Field	Larval survival	EC10	32	23.19	1.38	
Dolly Varden char	*Salvelinus malma*	McDonald et al. 2010	Field	Larval abnormalities	EC10	56.2	34.90	1.61	Dolly Varden[b]
Mountain Whitefish	*Prosopium williamsoni*	Brix et al. 2025	Field	Larval abnormalities	EC10	>54	31.58	1.71	Salmonid[b]
Northern pike	*Esox lucius*	Muscatello et al. 2006	Field	Larval abnormalities	EC24	34	<17.2	2.39	Northern Pike[b]
White sucker	*Catostomus commersonii*	de Rosemond et al. 2005	Field	Larval abnormalities	EC13	40.3	29.20	1.38	White sucker[b]
Slimy sculpin	*Cottus cognatus*	Loe et al. 2014	Lab	Larval abnormalities/ mortality	NOEC	>22	>15.2	1.45	Cottus[b]
Redside shiner	*Richardsonius balteatus*	Golder Associates 2020	Field	Larval abnormalities/ mortality	NOEC	>28	>14.36	1.95	Cypinid[b]
Desert Pupfish	*Cyprinodon macularius*	Besser et al. 2012	Lab	Lab	EC10	27	22.60	1.2	Desert pupfish[b]

a Derived as part of the analyses included in this publication

b USEPA (2016, 2021)

NOEC - no observed effect concentration

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Notes:
1. EC10 = 10% Effect Concentration
2. EC13 = 13% Effect Concentration
3. NOEC = No Observed Effect Concentration
4. mg/kg dw = milligrams per kilogram, dry weight

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FIGURE 3

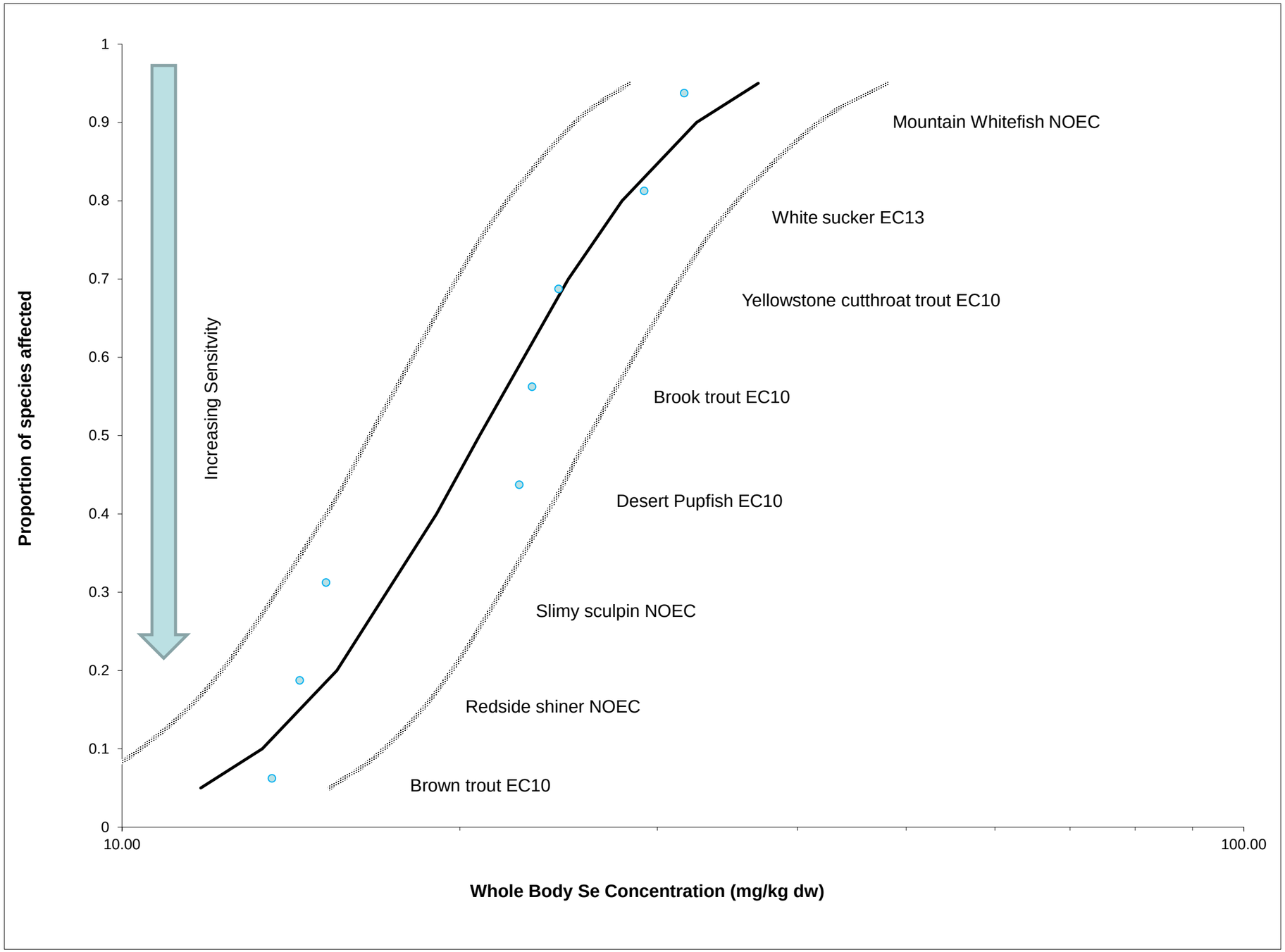
Species Sensitivity Distribution for a Cold Water Fish Community Based on Egg/ovary Selenium Tissue Concentrations

DATE: DECEMBER 2025

BY: WSB | FOR: SMC

FORMATION

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Notes:
1. EC10 = 10% Effect Concentration
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4. mg/kg dw = milligrams per kilogram, dry weight

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FIGURE 4

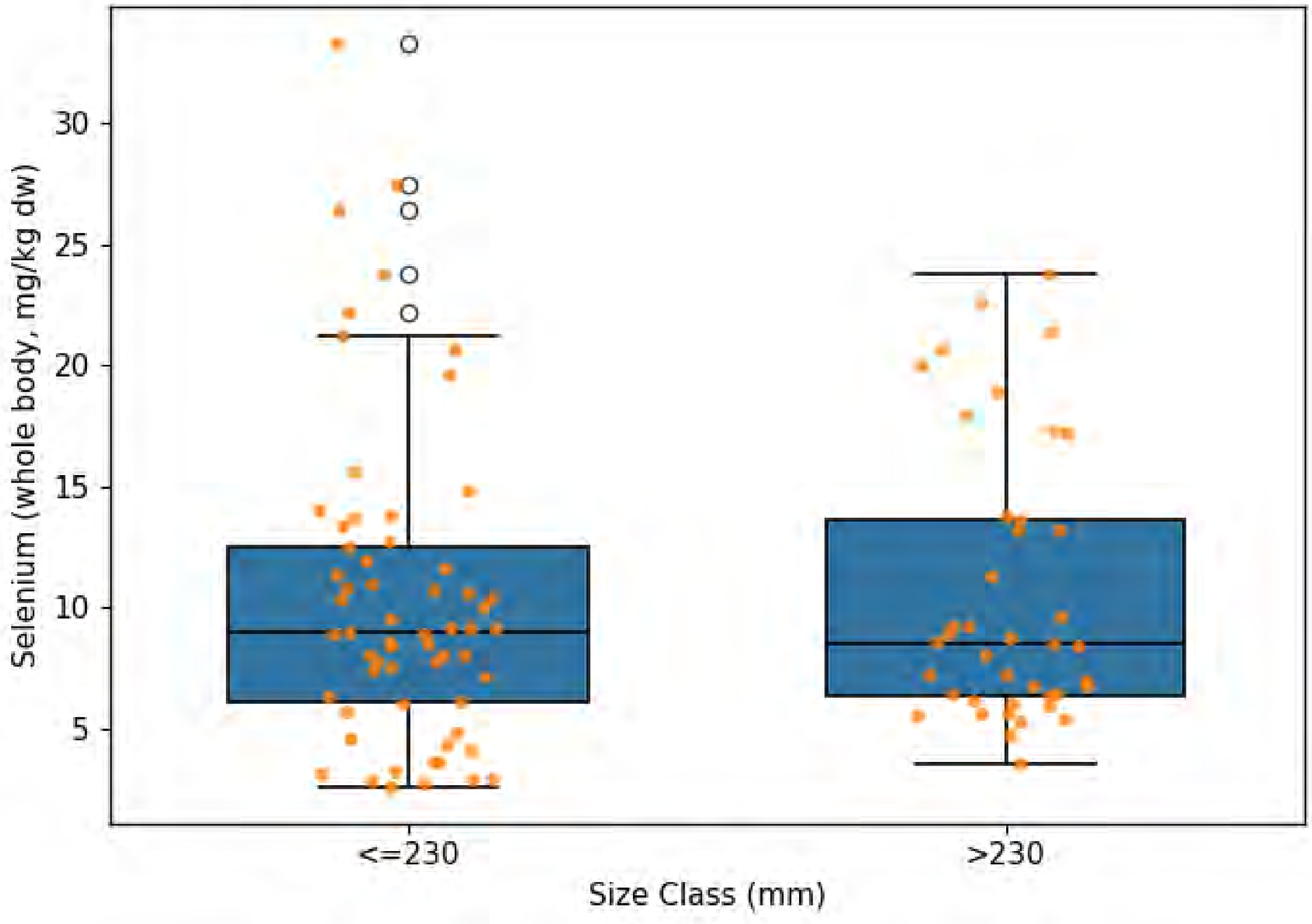
Species Sensitivity Distribution for a Cold Water Fish Community Based on Whole Body Selenium Tissue Concentrations

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Notes:

1. Limited data is available for brown trout >230 mm. Data used is from 2007, when an adequate number of trout from both age classes were collected, and includes whole-body brown trout tissue data from locations CC-75, CC-150, CC-350, CC-1A, CC-3A, and LSV-2C
2. <230 mm, n = 61, mean = 10.39
3. >230,mm, n=41, mean = 10.53
4. mg/kg dw = milligrams per kilogram, dry weight

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FIGURE 5

Comparison of Whole-Body Fish Tissue Selenium Concentrations by Age Class

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Table 4
Comparison of Brown Trout Whole Body Tissue Selenium Between Sexually Immature (<230 mm) and Sexually Mature (>230 mm) Size Classes

Waterbody location	Station	Year	n<230 mm	n>230 mm	Mean Se <230 mm (mg/kg dw)	Mean Se >230 mm (mg/kg dw)	p_value
Lower Crow Ck	CC-3A	2007	17	4	10.8	6.50	0.0055*
Sage Ck	LSV-2c	2007	12	21	19.5	14.4	0.059
Lower Crow Ck	CC-150	2007	5	10	7.28	6.25	0.30
Lower Crow Ck	CC-1A	2007	13	2	9.81	7.55	0.30
Upper Crow Ck	CC-350	2007	3	3	5.43	7.73	0.40
SF Sage Ck	LSS	2010	11	2	12.9	10.2	0.37
Sage Ck	LSV-4	2010	12	2	19.8	20.5	0.78
Sage Ck	LSV-3	2010	10	3	13.4	13.9	0.87
Lower Crow Ck	CC-1A	2020	2	5	20.7	21.7	0.56
Lower Crow Ck	CC-1A	2025	3	2	21.5	19.2	0.80
Lower Crow Ck	CC-FV	2025	2	3	17.2	18.0	0.80

Notes:
n is the number of fish in a size class for the year and location
* significantly different
mg/kg dw = milligrams per kilogram dry weight
Lower Crow Ck - downstream of Sage Creek
Upper Crow Ck - Upstream of Sage Creek
Sage Ck - Downstream of Hoopes Spring

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stream (up to 6 inches) should be collected. If more information is needed on migratory salmonids, for example, then fish larger than YOY will be collected".

The use of juvenile fish for compliance monitoring is consistent with the Idaho Selenium Implementation Guidance (IDEQ 2022) and the site-specific data show that juvenile fish tissues are representative of their environment, exposure, and not statistically different than fish tissue selenium from larger sexually mature fish. Juvenile fish are applicable for compliance monitoring in this setting.

4.2 Derivation of Water Column Element

According to EPA (2016), a protective water concentration may be developed from the site-specific egg/ovary, whole-body, or muscle criterion elements. Translation of the fish tissue criterion to a protective water concentration can be performed in a manner that accounts for site-specific conditions. Two approaches for developing protective water concentration from tissue thresholds are offered as valid approaches. These include: (1) use of a mechanistic approach (Presser and Luoma 2010) to model selenium through the food chain, or (2) use of an empirical BAF approach. Appendix K of EPA (2021) outlines the two approaches and discusses their advantages and disadvantages. A protective water selenium concentration was derived using both methods because sufficient data were available to evaluate the similarity or dissimilarity between them. Using the brown trout egg and whole-body criterion elements, a water column element was derived using empirical data for both approaches.

4.2.1 Integration of Site-Specific Data

As described in Section 1, Simplot agreed to collect additional data to develop applicable selenium criteria. The limited available data at the time indicated that during springtime runoff, dissolved selenium would occasionally exceed the surface water criteria. Likewise, more recently collected data indicates the same period of occasional exceedance of the water column element during spring runoff.

Historically, no fish tissue data from any of these streams were available to assess the tissue criteria and limited data were available for other biotic media. Data collected during the site-specific investigation characterizes selenium in abiotic and biotic media from NFSC and PCC over seasonally different time periods to develop the necessary data for derivation of a SSSC water column element. As previously described, only the data for NFSC were used to derive the water column element based on the brown trout tissue criteria for egg/ovary and whole-body tissues developed for Sage Creek downstream of the confluence with NFSC.

Section 6 of the Work Plan (Appendix A) describes in detail the two approaches for deriving site-specific water column elements. Both the mechanistic food web trophic model and the empirical BAF model were evaluated to derive the water column element value from brown trout egg/ovary and/or whole-body tissues.

Because there are more frequent measurement data for surface water, these data were integrated over temporal and spatial scales to use in each of the models. For spatial integration, surface water data from

two locations, NSV-6 and NSV-7 (~0.9 miles apart), were utilized to derive the water column element (Table 5). Selenium concentrations in surface water were collected at each sampling interval when sediment and tissue data were collected providing a snapshot of selenium concentrations at the time of sampling.

Selenium, like other bioaccumulative elements, takes time to bioaccumulate from the water and/or sediment to algae and higher order trophic levels. A single water quality measurement at the time of tissue collection does not adequately represent the changing concentrations of water column selenium available for exposure. Similarly, a single water quality measurement does not account for the fact that lower-level trophic organisms exposed upstream can subsequently be transported downstream. For the temporal data integration, dissolved selenium concentration data from each surface water location were integrated to include selenium concentrations from the date of tissue sampling and the prior season (spring or fall sampling). This is consistent with Appendix K of EPA (2021), where surface water data from up to one year prior to a fish tissue sampling event were compiled to derive a mean selenium concentration for surface water for each time period for use in deriving BAFs and in the trophic food web model. These integrated surface water concentrations were used for both the trophic model and BAF model (Table 5).

4.2.2 Model Inputs

Enrichment factors (EFs) were derived for sediment and periphyton and integrated as a median value for each data pair for each location and time. When integrating data across sites and time periods, an arithmetic average was used. Geometric means as used in Appendix K of EPA (2021) tend to be best for skewed data sets while a median selects the middle value of the data distribution (Table 6).

Based on the model inputs provided in Table 6, EF and trophic transfer factors (TTFs) were developed and are provided in Table 7.

When fish tissue data were absent, such as at NSV-6 for trout, the mean trout TTF was used to derive trout tissue concentrations from prey data. For some fish tissue data, outliers within a specific time and location dataset were identified and eliminated from the dataset resulting in a new mean for that time and location being derived. This occurred for one sculpin sample at NSV-7 (Spring 2024) and three trout tissue samples (Fall 2020 at NSV-6 and Fall 2021 and Fall 2022 at NSV-7).

Two benthic tissue samples were clearly elevated and inconsistent with previously collected data and were also identified as outliers (Fall 2023 [37.6 mg/kg] and Spring 2025 at NSV-7 [66 mg/kg]) using the Dixon test for outliers included in EPA's ProUCL 5.1 software (EPA 2015). At NSV-7 all previous benthic tissue samples ranged from 4.8 to 11.7 mg/kg dw. Further, co-collected periphyton data did not suggest any logical explanation for the elevated benthic tissue data. Due to these inconsistencies and being identified as statistical outliers, these two samples were eliminated, and the benthic TTF was used to derive a benthic tissue concentration. When either fish or benthic TTFs were used, a mean TTF value was derived based on the available existing data. For example, the mean benthic TTF used to derive the two benthic tissue samples was 2.25. For each time sampled, the compilation of data was used in the mechanistic trophic model and BAF model to derive an allowable water criterion element from the brown trout egg/ovary value of 20.5 mg/kg dw as the basis.

4.2.3 Mechanistic Trophic Model

The mechanistic model approach is more comprehensive, but due to its many steps (i.e., trophic levels) it can be more uncertain. The primary uncertainty arises in the enrichment factor (EF) portion of the model. EFs can vary widely, as they are a ratio of algae, detritus, and sediment to water which can vary over time. Further, concentrations of sulfate have been shown to affect selenium uptake and the resulting bioaccumulation in freshwater organisms, including algae (Brix et al. 2005, Ogle and Knight 1996, Williams et al. 1994). For the purposes of this SSSC, all inputs for the mechanistic model were derived from site-specific samples. Thus, the model is empirically based. The data, methods, assumptions, and calculations used to derive a water element from the egg/ovary SSSC are presented in the Work Plan (Appendix A). Overall, the equation for the mechanistic trophic model is shown below:

$$C_{water} = \frac{C_{egg}}{TTF_{composite} \; x \; EF \; x \; CF}$$

Where

C_{water} = predicted dissolved water criterion concentration of selenium (micrograms per liter [ug/L])

C_{egg} = target egg selenium criterion (20.5 mg/kg dw)

EF = selenium concentration (mg/kg dw) in particulate materials / dissolved selenium concentration in water [$C_{particulate}$ (periphyton, detritus, sediments) / C_{water}] (liters per kilogram dry weight [L/kg dw])

CF = Whole-body to egg conversion factor

Using the mechanistic trophic model, protective water concentrations were derived using data compiled from 2020 through 2025 for the two locations where fish were found. These data included seasonal variations for spring and fall. For this dataset (NSV-6 and NSV-7), the number of paired samples (water, sediment, periphyton, benthic invertebrate, sculpin, and trout) results in an N=14. Where multiple fish tissue samples were collected for a location and time, the arithmetic mean was used as the representative concentration. Criterion values were then averaged to derive a final water element value that integrated temporal (2020 through 2025) and spatial (NSV-6 and NSV-7) variation (Table 6).

The dissolved water concentrations allowed such that the egg/ovary criterion is not exceeded are 3.71 µg/L (trout) and 3.74 µg/L (sculpin) (Table 8).

4.2.4 Empirical BAF Model

The empirical BAF approach relies on a site-specific, field measured BAF (i.e., selenium tissue concentration divided by dissolved selenium concentration in surface water). It is a direct measure of selenium bioaccumulation into fish, without the trophic steps, and requires no assumption on dietary

intake. The BAF approach uses site-specific ratios developed that are not intended for use in other watersheds.

The 2017 Hoopes Spring and Sage Creek SSSC development process revealed several lessons learned. If calculated based on individual fish, BAFs will always show variability because multiple whole-body concentrations can be measured relative to a single surface water concentration. Selenium concentrations among individual fish can vary widely even if they are collected from a narrow range of water concentrations. This is especially true for low selenium concentrations in water.

In Crow Creek downstream of Sage Creek, the variability in whole-body concentrations led to a wide range of BAFs at the lowest selenium concentrations (<3 µg/L). At higher water concentrations (e.g., above 5 µg/L) the range of BAFs decreased (Crow Creek, Sage Creek, South Fork Sage Creek). The mechanism for higher bioaccumulation at low selenium concentrations in water and diet is not clear but may be related to dietary needs when selenium is low.

Those results showed two important trends:

1) BAFs tend to decrease as water selenium concentration increases, and

2) The range and variability of whole-body concentrations and BAFs is higher at low water selenium concentrations compared to higher water concentrations.

The first trend is commonly observed in water and other environmental media (Deforest et al. 2007; McGeer et al. 2003). Overall, these trends indicate that when setting the water column element of the selenium criterion, selection of the BAF used should consider the range of potential water column concentrations in which the criterion is expected to fall.

The second trend is important because it affects the ability to identify a water column concentration based on whole-body (or other tissue) concentrations. When calculating the water column element of the criterion, the selected BAF must be representative of the water and fish tissue concentrations present to ensure that the criterion is protective without being under or overprotective. Stephan et al. (1985) note that "[c]riteria should attempt to provide a reasonable and adequate amount of protection with only a small possibility of considerable overprotection or under protection." Simply using the highest BAF will result in a water concentration (e.g., criterion) much lower than needed to be protective because the highest factors are associated with the lowest exposure concentrations (Deforest et al. 2007).

To develop representative BAFs, a composite measure of BAFs (e.g., median, average) that integrates seasonal differences best represents conditions in the stream. This proposed criterion incorporates this relationship by using the integrated water column concentrations described previously together with mean trout and sculpin tissue concentrations from each respective time period (e.g., surface water data were paired with mean sculpin and mean trout tissue data from a time period) to derive location and time specific BAFs for each species (Table 7).

The BAFs derived are based on whole-body tissues, whereas the criterion is based on egg/ovary tissues. Whole-body tissue concentration BAFs were converted to egg/ovary concentration BAFs to derive the

allowable concentration that would not exceed the 20.5 mg/kg dw egg/ovary selenium criterion and would be comparable to the mechanistic model output using the following equation:

$$BAF_{EO} = \frac{C_{WB}\ x\ CF}{C_{water}}$$

Where: BAF_{EO} = BAF equivalent for egg/ovary tissues (L/kg)

C_{WB} = Tissue concentration of selenium in whole-body YCT or sculpins (mg/kg dw)

CF = Conversion Factor ratio for egg/ovary to whole-body (YCT = 1.43[6], Sculpins = 1.45[7])

C_{water} = Concentration of dissolved selenium in surface water (µg/L)

To derive the water column element, the following equation was used:

$$C_{water} = \frac{C_{EO}}{BAF_{EO}}$$

Where: C_{water} = Water column criterion element (µg/L)

$C_{egg\text{-}ovary\ criterion}$ = Egg/ovary tissue criterion in brown trout (20.5 mg/kg dw)

$BAF_{egg/ovary}$ = BAF equivalent for egg/ovary tissue concentration (L/kg)

Each location and time specific water column element value derived was averaged to arrive at a species-specific BAF derived water column element criterion across the locations and time periods for the site-specific data. For trout, the combined BAF derived water column element was 3.94 µg/L while for sculpin the value was 3.33 µg/L (Table 8).

4.2.5 Proposed Site-Specific Water Criterion Element

A logical expectation is that when using site-specific inputs for a mechanistic model approach and site-specific BAFs, the model outputs (e.g., predicted surface water concentrations) should be similar. If the output from the two approaches is similar, then it suggests that either method could be used. If the outputs are not similar, it suggests that the variability of the input data may result in uncertainties that should be evaluated.

Dissolved selenium concentrations using the mechanistic model and empirical BAF approach were relatively similar (Tables 7 and 8) for most time periods evaluated. Both approaches are equally effective in generating a protective selenium concentration in water for this Site using the site-specific inputs and assumptions. However, the mechanistic trophic model requires much more input data that is subject to large variations (e.g., outliers for benthic data that were eliminated and subsequently derived from the benthic TTFs). Based solely on the ease of data collection for future evaluations, this SSSC proposal recommends that the water value be based on the BAF model approach. The variable BAFs due to

[6] Recommended species- and site-specific conversion factor for YCT from Covington et al. (2025).
[7] Recommended genus conversion factor for sculpins from EPA (2021).

seasonal influences suggest that all seasonal data must be included to encompass the range of selenium concentrations that occur due to seasonal flows.

EPA's (2021) water column element is based on the 20th percentile of a range of either lotic or lentic water concentrations from across the United States. For lotic waters, the 20th percentile value is 3.1 µg/L. This type of approach is needed because the National Criterion water column concentration is applied across a broad range of conditions, species, landscapes, and regions. For this SSSC, there is no need to derive a 20th percentile, because the water column element in this proposal is derived from an egg/ovary criterion based on the most sensitive endpoint (e.g., larval survival) and most sensitive species (brown trout) of the species assemblage present.

Two BAF-based water column criterion elements were derived, one from YCT (3.94 µg/L) and a second from sculpins (3.33 µg/L) (Table 8). The YCT based BAF criterion element (3.94 µg/L) is selected as the water criterion element to be applied to NFSC because YCT are in the same family as brown trout (e.g., Salmonidae) and have similar exposure through dietary intake. Further a YCT EC_{10} was derived directly attributing larval survival to egg selenium concentrations, thus YCT sensitivity to selenium is known. Of the three species present in NFSC, brown trout, YCT, and sculpins, reproductive effects data are available for all three genera, however, EC_{10}s are only available for brown trout and YCT. The best available data for sculpins indicates that the unbounded NOEC was greater than 22 mg/kg dw egg tissue and that the actual EC_{10} is at an unknown concentration greater than 22 mg/kg dw.

To put the sculpin data into context, whole-body tissue data can be used to assess their sensitivity. Simplot has collected sculpin tissue data since 2004 and has assessed age class distributions by year based on lengths to assess sculpin recruitment. Janz et al. (2010) argues that for selenium, detecting an effect at the population level requires monitoring for recruitment failure, which is the logical population-level consequence of reproductive impairment. Based on the age class distributions calculated within the drainages since 2004, such recruitment failure has not been observed. The conservative EC_{10} for whole-body tissue concentrations can be estimated based on the available unbounded egg/ovary NOEC as greater than 15.2 mg/kg dw (e.g., 22 /1.45 CF[8]).

Using whole-body tissue concentration data for sculpins and age-length class frequency data, population level assessments can be evaluated. This approach was similarly used for the 2017 SSSC proposal approved by IDEQ and EPA (EPA 2019) to demonstrate sculpin sensitivity. Whole-body sculpin tissue concentrations have averaged between 23 and 30 mg/kg dw at CC-1A in Crow Creek downstream of Sage Creek, and between 6.5 and 9.2 mg/kg dw at CC-350 in Crow Creek upstream of Sage Creek. Age-length frequency data for these two locations during the same time frame (2020-2024) show that 13 to 69 percent of individuals are in age class 1 and 2 (<60 mm) at CC-1A, while at CC-350 the age-length class frequency shows a range of 25 to 56 percent of individuals in age class 1 and 2. High numbers of young age 1 and 2 sculpins year after year indicates successful recruitment at both locations. In this case, recruitment is higher at CC-1A where whole-body tissue selenium is higher than the local background concentrations. Recruitment is unaffected by selenium concentrations in whole-body tissues more than

[88] The sculpin CF is from USEPA (2021).

three times higher at CC-1A versus CC-350, attesting to this species selenium tolerance. During this same time frame, sculpin age-length frequency data at Sage Creek upstream of its confluence with Crow Creek (LSV-4) showed a decline in age class 1 and 2 individuals as sculpin whole-body tissues increased above 37 mg/kg dw.

These data indicate that the actual whole-body EC_{10} for sculpins is much higher than 15.2 mg/kg and is likely 30 mg/kg or greater. By comparison, recall that the brown trout whole-body tissue EC_{10} is 13.6 mg/kg dw and the YCT whole-body EC_{10} is 24.5 mg/kg dw, further support that brown trout is the most sensitive species for a tissue-based criterion that is protective of sculpins and YCT in the NFSC drainage and downstream in the Sage Creek drainage.

Table 5
Dissolved Selenium in Surface Water for Lower Crow Creek Locations

Station	Date	Flow	Dissolved Se (mg/L)	Qualifier
CC-1A	5/18/16	High	0.0120	
CC-1A	7/8/16	High	0.0160	
CC-1A	11/9/16	Base	0.0200	
CC-1A	5/17/17	High	0.0050	
CC-1A	8/2/17	Base	0.0195	
CC-1A	11/15/17	Base	0.0207	J
CC-1A	5/17/18	High	0.0080	
CC-1A	8/7/18	Base	0.0169	
CC-1A	10/24/18	Base	0.0144	
CC-1A	5/22/19	High	0.0074	
CC-1A	8/14/19	Base	0.0150	
CC-1A	11/6/19	Base	0.0153	
CC-1A	5/13/20	High	0.0057	
CC-1A	8/18/20	Base	0.0206	
CC-1A	11/5/20	Base	0.0164	
CC-1A	5/21/21	High	0.0125	
CC-1A	8/31/21	Base	0.0193	
CC-1A	11/10/21	Base	0.0118	
CC-1A	5/19/22	High	0.0067	
CC-1A	8/10/22	Base	0.0172	
CC-1A	10/26/22	Base	0.0147	
CC-1A	6/11/23	High	0.0086	
CC-1A	9/9/23	Base	0.0159	
CC-1A	11/7/23	Base	0.0133	
CC-1A	5/22/24	High	0.0069	
CC-1A	8/13/24	Base	0.0140	
CC-1A	10/18/24	Base	0.0153	
CC-1A	5/20/25	High	0.0107	
CC-1A	9/10/25	Base	0.0155	
CC-3A	9/4/06	Base	0.0029	
CC-3A	5/11/07	High	0.0014	J
CC-3A	8/26/07	Base	0.0018	J-
CC-3A	10/24/07	Base	0.0010	J-
CC-3A	5/15/08	High	0.0026	
CC-3A	9/7/08	Base	0.0058	
CC-3A	8/25/12	Base	0.0164	
CC-3A	8/25/13	Base	0.0173	
CC-3A	8/2/17	Base	0.0193	
CC-3A	8/7/18	Base	0.0160	
CC-3A	8/14/19	Base	0.0139	
CC-3A	8/18/20	Base	0.0185	
CC-3A	9/3/21	Base	0.0166	
CC-3A	8/10/22	Base	0.0167	
CC-3A	9/16/23	Base	0.0137	
CC-3A	9/8/24	Base	0.0165	
CC-3A	9/14/25	Base	0.0147	

Station	Year	Surface Water Concentrations (mg/L)		
		Average	Min.	Max.
CC-1A	2018	0.0152	0.0080	0.0207
CC-1A	2019	0.0123	0.0074	0.0150
CC-1A	2020	0.0139	0.0057	0.0206
CC-1A	2021	0.0161	0.0125	0.0193
CC-1A	2022	0.0119	0.0067	0.0172
CC-1A	2023	0.0131	0.0086	0.0159
CC-1A	2024	0.0125	0.0069	0.0159
CC-1A	2025	0.0138	0.0107	0.0155
CC-3A	2018	0.0160	0.0080	0.0207
CC-3A	2019	0.0139	0.0074	0.0150
CC-3A	2020	0.0185	0.0057	0.0206
CC-3A	2021	0.0166	0.0125	0.0193
CC-3A	2022	0.0167	0.0067	0.0172
CC-3A	2023	0.0137	0.0086	0.0159
CC-3A	2024	0.0151	0.0069	0.0227
CC-3A	2025	0.0147	0.0107	0.0155

Notes
mg/L = milligrams per liter
Se = selenium

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Table 6
Brown Trout Whole-Body Selenium Concentrations for Lower Crow Creek Locations

Year	Tissue Selenium Concentrations (mg/kg dw)			
	Count	Average	Min.	Max.
CC-1A				
2006	3	9.76	8.15	11.86
2007	15	9.51	6.3	14.8
2008	15	15.20	8.04	23
2009	9	10.81	7.43	13.7
2010	10	14.30	11.6	16.8
2011	10	12.24	7.52	15.5
2013	14	22.02	16.7	29.9
2017	6	16.80	9.1	40.2
2018	10	22.70	16.8	27.6
2019	7	22.99	18.7	32.5
2020	7	21.43	18.3	24.2
2021	4	24.85	21.3	28.9
2022	4	30.15	24.9	36.1
2024	5	17.14	15.4	21
2025	5	20.58	17.8	25.2
CC-3A				
2006	3	11.15	9.14	14.35
2007	21	9.95	5.3	15.6
2008	12	18.24	15	23.2
2013	8	22.78	20.5	26.4
2018	5	25.74	23.2	28.4
2019	7	21.91	17.4	26.9
2024	4	17.13	16.2	19.3
2025	4	20.90	20	23.4

Notes:
mg/kg dw = milligrams per kilogram, dry weight

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Table 7
Bioaccumulation Factors and Surface Water Criteria Derived from Brown Trout Whole-Body Tissue Se Concentrations

Station	Year	Surface Water Dissolved Se (mg/L)			Whole-Body Se (mg/kg dw)			BAFeo	SW Criteria	BAF_{wb}	SW Criteria
		Average	Min.	Max.	Average	Min.	Max.	(L/kg)	(µg/L)		(µg/L)
CC-1A	2018	0.0152	0.0080	0.0207	22.70	16.8	27.6	2255.1	9.1	1493.4	9.1
	2019	0.0123	0.0074	0.0150	22.99	18.7	32.5	2829.5	7.2	1873.8	7.3
	2020	0.0139	0.0057	0.0206	21.43	18.3	24.2	2334.0	8.8	1545.7	8.8
	2021	0.0161	0.0125	0.0193	24.85	21.3	28.9	2335.5	8.8	1546.7	8.8
	2022	0.0119	0.0067	0.0172	30.15	24.9	36.1	3826.8	5.4	2534.3	5.4
	2023	0.0131	0.0086	0.0159	No BRN			--	--	--	--
	2024	0.0125	0.0069	0.0159	17.14	15.4	21	2065.6	9.9	1367.9	9.9
	2025	0.0138	0.0107	0.0155	20.58	17.8	25.2	2246.4	9.1	1487.7	9.1
CC-3A	2018	0.0160	0.0080	0.0207	25.74	23.2	28.4	2429.2	8.4	1608.8	8.5
	2019	0.0139	0.0074	0.0150	21.91	17.4	26.9	2380.6	8.6	1576.6	8.6
	2020	0.0185	0.0057	0.0206	No BRN			--	--	--	--
	2021	0.0166	0.0125	0.0193	No BRN			--	--	--	--
	2022	0.0167	0.0067	0.0172	No BRN			--	--	--	--
	2023	0.0137	0.0086	0.0159	No BRN			--	--	--	--
	2024	0.0151	0.0069	0.0227	17.13	16.2	19.3	1712.5	12.0	1134.1	12.0
	2025	0.0147	0.0107	0.0155	20.90	20	23.4	2146.9	9.5	1421.8	9.6
Crow Creek Average								**2414.7**	**8.8**	**1599.2**	**8.8**

Notes:

Only brown trout (BRN) whole-body tissue samples were included in the calculations; No BRN = No brown trout were sampled

BAFeo = Bioaccummulation factor , egg/ovary tissue

BAFwb = Bioaccumulation Factor, whole body tissues

L/kg = liters per kilogram; mg/L = milligrams per liter; ug/L = micrograms per liter; mg/kg dw = milligrams per kilogram, dry weight

Criterion Elements:

Egg-Ovary (BRN)	20.5 mg/kg dw
Whole-Body (BRN)	13.6 mg/kg dw
Whole-Body (RBT)	12.5 mg/kg dw
Current WQS (Crow)	4.2 ug/L

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Table 8
Summary of Proposed Changes to Criteria Elements for the Crow Creek Drainage

Waterbody	Description	Egg/Ovary (mg/kg dw)	Whole-Body (mg/kg dw)	Water (Lotic) (µg/L)
Lower Crow Creek	Crow Creek downstream of Sage Creek	20.5	13.6	8.8
Upper Crow Creek and Deer Creek	Crow Creek upstream of Sage Creek	20.5	13.6	3.1

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5 Conclusions

This proposal recommends changing the tissue-based criteria currently adopted for the NFSC from non-sturgeon-water based tissue criteria to brown trout-based tissue criteria previously developed for Hoopes Spring, South Fork Sage Creek, and Sage Creek SSSC adopted by IDEQ and approved by EPA. Site-specific monitoring data for abiotic and biotic selenium concentrations were collected from 2020 through 2025 to characterize selenium exposure in the food web for NFSC. Both empirical trophic and BAF models were used to derive SSSC water elements protective of NFSC and downstream uses in Sage Creek. The water column element was derived from the brown trout egg/ovary and whole-body tissue thresholds because of the species sensitivity, site-specificity and representativeness of those data for the NFSC. The selected water quality criterion element using a BAF approach is 3.94 µg/L which is protective of species in NFSC and species downstream in Sage Creek.

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APPENDIX A - Work Plan

Work Plan – Field Monitoring Studies for Developing Site-Specific Selenium Criteria in North Fork Sage Creek and Pole Canyon Creek

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LIST OF ABBREVIATIONS

BAF	Bioaccumulation Factor
BURP	Beneficial Use Reconnaissance Plan
CEMPP	Comprehensive Environmental Monitoring Program Plan
EC_{10}	Exposure Concentration
EF	Enrichment Factor
EIS	Environmental Impact Statement
EPA	United States Environmental Protection Agency
GPS	Global Positioning System
HBI	Hilsenhoff Biotic Index
HSI	Habitat Suitability Index
IDAPA	Idaho Administrative Procedures Act
IDEQ	Idaho Department of Environmental Quality
L/kg dw	Liters per kilogram dry weight
LP-PD	Lower Pole Creek location monitored after the installation of the pipeline bypass
LWD	Large Wood Debris
mg/kg dw	milligrams per kilogram dry weight
µg/L	micrograms per liter
µm	micron
mg/L	milligrams per liter
mL	milliliter
mm	millimeter
NFSC	North Fork Sage Creek
NTCRA	Non-Time-Critical Action
ODA	Overburden Disposal Area
ORP	Oxidation-Reduction Potential
PCC	Pole Canyon Creek
QAPP	Quality Assurance Project Plan

RI/FS	Remedial Investigation/Feasibility Study
SAP	Sampling and Analysis Plan
SI	Site Investigation
SHI	Stream Habitat Index
SMI	Stream Macroinvertebrate Index
SOP	Standard Operating Procedure
SRI/CSE	Stream Reach Inventory and Channel Stability Evaluation
SSSC	Site-Specific Selenium Criterion
TTF	Trophic Transfer Factor
UP-PD	Upper Pole Creek location monitored after installation of the pipeline bypass
USFS	United States Forest Service
UTM	Universal Transverse Mercator
WBAG	Water Body Assessment Guidance
WER	Water Effects Ratio
ww	wet weight
YCT	Yellowstone Cutthroat Trout

1 INTRODUCTION

The J.R. Simplot (Simplot) Smoky Canyon Mine is in Caribou County, in the southeast corner of Idaho, approximately 10 miles west of Afton, Wyoming, and 23 miles east of Soda Springs, Idaho (Figure 1). The mine is situated on the eastern edge of the Webster Range overlooking Sage Valley to the east. In April 2017, Simplot proposed a chronic site-specific selenium criterion (SSSC) for several streams adjacent to the Smoky Canyon Mine that are influenced by discharges of groundwater with elevated selenium concentrations, including Hoopes Spring, Sage Creek, South Fork Sage Creek, Crow Creek downstream of Sage Creek, North Fork Sage Creek (NFSC) and Pole Canyon Creek (PCC) downstream of the pipeline diversion and Overburden Disposal Area (ODA) (Figure 2). Idaho Department of Environmental Quality (IDEQ) vetted the proposal during a series of public meetings and negotiated rule-making, and Simplot submitted a final SSSC proposal in October 2017. The proposal was integrated into a rule package and submitted to the Idaho State Legislature. The final rule package was adopted by the Idaho Legislature and became effective under Idaho State Law on March 28, 2018 (IDAPA 58.01.02.287). IDEQ submitted the adopted rule to United States Environmental Protection Agency (EPA) for review and approval August 24, 2018.

In early May 2019, EPA, IDEQ, and Simplot convened a call to discuss the pending approval of the Sage Creek and Hoopes Spring SSSC and EPA's position on the disapproval for NFSC and PCC. Based on these discussions, on May 9, 2019, Simplot sent a letter to IDEQ indicating that Simplot would collect additional data for NFSC and PCC and provide IDEQ and EPA with a Work Plan describing the data collection effort and analyses for criterion derivation.

On July 9, 2019, EPA sent a letter to IDEQ indicating EPA approval of the Sage Creek and Hoopes Spring SSSC together with the Crow Creek SSSC that was discussed during the May call. The letter included EPA's disapproval of the application of Sage Creek SSSC to NFSC and PCC. EPA's letter included their rationale for the disapproval indicating that they believe additional data were needed for NFSC and PCC tributaries (hereafter referred to as the Site) and that independent SSSC for these waters could be developed.

As a result of EPA's disapproval letter, the selenium criteria elements applicable to NFSC and PCC are the non-sturgeon water criterion elements developed by IDEQ and applicable to streams in the Salt River Drainage. IDEQ derived a non-sturgeon-water SSSC for several drainages in Idaho as part of their 2018 Negotiated Rule Making and the resulting criterion was approved by EPA. The criterion elements are as follows: Egg/ovary = A 19 milligrams per kilogram dry weight (mg/kg dw), whole body = 9.5 mg/kg dw, and lotic water = 3.1 micrograms per liter (µg/L).

1.1 PURPOSE AND OBJECTIVES

The purpose of this Work Plan is to provide the framework for collecting data to evaluate and/or derive SSSC for NFSC and PCC. These types of data rely on concentrations of selenium in different biotic media that are used to assess selenium bioaccumulation from the abiotic source media up through the food chain to higher level receptors. Based on monitoring data collected by Simplot, water in NFSC can and

does exceed the water quality criteria value of 3.1 µg/L, typically during spring high flows. In PCC, recent data from 2008 to present indicate that exceedances of the water quality criteria are rare; however, proximity to a significant potential source and evidence of historically elevated selenium concentrations in benthos and sediment suggest that further investigation is warranted. Data collected as part of this Work Plan will provide the basis for deriving the site-specific water criterion elements that are either consistent with the Sage Creek SSSC or as new criterion elements for the NFSC and PCC.

The objectives of this Work Plan include the following:

- Describe the methods for collecting site-specific samples of water, sediment, and biological tissues (periphyton, benthic invertebrates, and fish) to measure selenium concentrations and document selenium in each of these different environmental media.
- Describe the methods for collecting data to evaluate fish population and community characteristics, benthic community characteristics, and physical habitat quality and quantity available to support aquatic life.
- Provide the approach for compiling the field-collected site-specific data and deriving site-specific water criteria for selenium in NFSC and PCC.

2 SITE BACKGROUND

Pole Canyon Creek and NFSC were not characterized as part of the SSSC studies, but both streams have been characterized as part of sampling conducted for the Site Investigation (SI) (NewFields 2005), Smoky Canyon Mine Remedial Investigation/Feasibility Study (RI/FS) (Formation 2014) and historical monitoring studies for the Smoky Canyon Mine. The characterization includes documented concentrations of selenium in water, sediment, macrophytes, periphyton, and benthic tissues. Some limited data from fish surveys are also available. Figure 3 illustrates locations where previously sample data have been collected.

2.1 POLE CANYON CREEK

From 1985 to 1990, a cross-valley fill was constructed in PCC known as the Overburden Disposal Area (ODA). Water from the PCC entered the upstream side of the ODA, and then a portion was lost to Wells Formation bedrock and alluvial deposits beneath the ODA; the remaining water was discharged at the downstream end, or toe, of the ODA. During the relatively dry months from late summer through late spring, most of the creek flow was lost under the ODA to the Wells Formation and alluvial deposits. The creek water that emerged from the toe of the ODA was quickly lost to alluvial deposits before the creek crossed Sage Valley. During the fall of very dry years, all Pole Canyon Creek flow was lost underneath the ODA, and no measurable flow occurred at the toe (LP-1). During typical spring runoff (i.e., high flow) conditions, discharge from the toe of the ODA flowed in the PCC channel toward Sage Valley. The creek discharge from the ODA was then either lost to alluvial deposits or flowed across Sage Valley to eventually join the NFSC. Total selenium at the toe seep (LP-1) location was typically 2 mg/L or less prior to 2007. From 2007 to present, total selenium concentrations at the toe seep (LP-1) have ranged from 2.4 to 7.2

mg/L, with the most recent selenium concentrations (2019-2020) ranging from 2.3 to 5.2 mg/L. As noted above, no visible surface flow from the LP-1 seep connects to the current PCC channel (Figure 4).

The toe seep at LP-1, while not connected to PCC, may contribute to downgradient selenium increases during spring snowmelt via subsurface flows. Figure 5 shows flow data for LP-1 following flow diversion via the pipeline bypass. Seep flows are typically very low, with notable increases occurring during snowmelt runoff. Occasional episodic large snowmelt events have resulted in notable flow spikes, but overall, flows from LP-1 are very low. A cover system on the ODA has also been installed to reduce infiltration, and LP-1 flows have correspondingly declined. Overall, LP-1 seep flows have decreased, but the remaining surface flows, albeit low, go subsurface a short distance downgradient and have elevated selenium concentrations, which may be a source of selenium lower in the PCC drainage downstream of LP-PD.

The cross-valley fill and resulting ODA effectively severed the connection between upper PCC and lower PCC. Implementation of the Pole Canyon Non-Time-Critical Action (NTCRA) in 2007 reestablished a flow connection via construction of a bypass pipeline that conveys upper PCC surface water via gravity flow from the uppermost 615 acres, or approximately 60 percent, of the upper PCC watershed over and around the ODA, and that discharges this water back into the creek channel downstream from the ODA. Under the current configuration, clean upstream PCC water is discharged below the ODA into PCC at LP-PD.

Upper PCC (UP) prior to and after construction of the cross-valley fill ODA in about November 1985 had total selenium concentrations of 0.004 milligrams per liter (mg/L) or less through 2007 (Table 1).[1] From 2009 to 2018, at location UP-PD[2] (Table 1), total selenium concentrations have been less than 0.001 mg/L. From 1985 through 2007, selenium in surface water at the lower PCC location (LP) steadily increased with the highest concentration measured in the spring of 1999 (1.33 mg/L). For the most part, after the pipeline bypass became fully operational in late 2007, concentrations at LP-PD[3] have been low (<0.001 mg/L) except during a brief time in 2011 when the bypass pipeline and infiltration basin were being tested to evaluate potential downstream dilution in PCC[4] (Table 1).

PCC has undergone numerous stream flow modifications through the years. Once the cross-valley fill was constructed, stream flow from upper PCC was effectively cutoff, although runoff and seepage through the ODA maintained some flows in lower PCC (see Table 1 PCC flows for the LP location). In late 2007, the bypass pipeline reestablished flows from the upper watershed of PCC to the stream channel below the ODA. Historically, lower PCC was diverted for irrigation of Sage Valley by the previous landowner, but the

[1] Much of the historic monitoring data was collected by or for Simplot by Mariah Associates (1980 to 1993) and others. These data have been compiled by Formation for Simplot into a centralized database for future access.
[2] UP-PD is the Upper Pole Creek location monitored after installation of the pipeline bypass.
[3] LP-PD is the Lower Pole Creek location monitored after the installation of the pipeline bypass.
[4] In 2011, the pipeline was purposefully bypassed and all water upstream of the Pole Canyon cross-valley fill was directed to the infiltration basin. This was an attempt to determine if further dilution would be realized at LP-1. Instead, it resulted in a spike in concentration. Since this time, the pipeline has been operated according to standard operating procedure to deliver the clean upstream water around the Pole Canyon cross-valley fill.

annual quantity of water diverted is unknown. Since Simplot acquired the Sage Valley property, irrigation diversion of PCC flows has ceased. Figure 4 shows some of the key features of PCC below the ODA.

Prior to the installation of the ODA pipeline bypass, it was believed that PCC surface flows did not reach NFSC, except during higher than normal runoff conditions. Limited flow data shown in Table 1 for the PCC locations downstream of the ODA (LP and LP-PD) indicate typical mountains stream hydrology with higher flows in the spring during runoff followed by diminishing flows post runoff and into the summer. While the data are limited, the difference between flows at LP and LP-PD indicates higher peak flows in the spring at LP-PD than those observed at LP. Connection of the upper watershed upgradient of the ODA with the stream downgradient of the ODA may have returned lower PCC flows to a similar level that existed prior to the ODA.

The most recent observations suggest that water from PCC discharged via the pipeline bypass below the ODA at LP-PD likely reaches NFSC, but not as a defined stream channel. Downstream of the ODA pipeline bypass, PCC is perennial with a defined stream channel extending into Sage Valley. At the old irrigation diversion, water is not being diverted and within a short distance past this diversion, flows disperse into a wide alluvial wet meadow with diffuse surface flows. Recent observations of this section of PCC indicate that water was present, but no channel was defined. During drier years, the visible flow may go subsurface. While low-selenium upper PCC water currently flows into Sage Valley by way of the pipeline diversion, it flows across historic sediments with elevated selenium concentrations that may be transported to NFSC. The data for sediments and biological media described below illustrate selenium concentrations in different media for PCC that do not reflect currently low concentrations of selenium in water quality samples.

Some additional limited data on selenium concentrations in sediments and aquatic biota are also available to aid in understanding selenium bioaccumulation. In 2004, selenium in sediment at location LP near the base of the ODA (the stream monitoring station through 2007 until the bypass pipeline was installed) had a concentration of 58.1 mg/kg dw (Table 2). At LP-PD downstream of the bypass pipeline, the selenium concentration in sediments in 2010 was 13.4 mg/kg dw. Data collected as part of the RI/FS from 2010 to 2012 in the PCC channel yielded sediment concentrations that ranged from 1.7 to 96.7 mg/kg dw, with the highest concentrations measured in the dry creek channel just upstream of the confluence with the NFSC.

In 2004, aquatic vegetation and periphyton samples were collected at PCC locations upstream (UP) and downstream (LP) of the ODA (Table 3). Upstream of the ODA, macrophytes had selenium concentrations that ranged from 0.48 to 1.7 mg/kg dw and periphyton had a concentration of 3 mg/kg dw. Downstream of the ODA, macrophytes had selenium concentrations that ranged from 66.1 to 87.7 mg/kg dw and periphyton had a concentration of 69.1 mg/kg dw. The total selenium concentration in benthic invertebrate tissues at UP was 0.57 mg/kg wet weight (ww), while at the LP location it was 16.6 mg/kg ww. Corresponding dry weight concentrations were 2.84 mg/kg dw at the UP location and 82.59 mg/kg dw at the LP location. In 2010, benthic tissues had a total selenium concentration of 16.9 mg/kg dw at the LP-PD location.

Limited fish surveys have been conducted in PCC. Simplot consultants surveyed upper and lower PCC in 2004 and lower PCC below the bypass pipeline discharge in 2010. No fish were found during these surveys. Historical monitoring (from 1979 and 1981) also indicated that fish were absent in PCC. No surveys have been conducted in lower reaches of PCC in Sage Valley.

Historical use of PCC flows for Sage Valley irrigation and current observations indicate that physical surface flow connectivity is minimal and may be the most likely reason no fish have been found in PCC.

2.2 NORTH FORK SAGE CREEK

Originating in the foothills of northwestern Sage Valley, NFSC flows due east into the valley before turning and flowing south. A series of springs contribute to this headwater stream in Sage Valley where it is joined by alluvial flows of PCC.

Total selenium concentrations in NFSC surface waters have been documented since 1979 (Table 4). Concentrations of selenium in surface waters at NSV-5 upstream of PCC inputs have typically been low (<0.001 mg/L). In June 2011, higher than normal runoff flows occurred and selenium was measured at 0.044 mg/L. At NSV-6 downstream of PCC, selenium in surface waters have varied based on inputs from PCC and snow loads resulting in spring runoff. From 1979 to 2010 selenium concentrations have ranged from less than 0.001 to 0.041 mg/L. From 2011 to the present, selenium concentrations have ranged from less than 0.001 mg/L to 0.063 mg/L. Concentrations have typically been 0.006 mg/L or less with a few exceptions. In 2011, 2013, and 2014 concentrations were as high as 0.063 mg/L, 0.0229 mg/L, and 0.0104 mg/L, respectively, due to higher than normal snowpack and runoff. The 2011 concentration spike was due to a combination of higher than normal runoff and the dilution testing at the infiltration basin upstream of the ODA.

Sediment data from NSV-5 and NSV-6 are limited (Table 5). Selenium concentrations in sediments from NSV-5 ranged from 0.37 to 0.77 mg/kg dw, while at NSV-6 selenium concentrations ranged from 3.6 to 6.5 mg/kg dw from 1998 to 2010.

Similar to PCC, some limited data are available in NFSC aquatic biota (Table 6). At NSV-5, upstream of the PCC confluence, selenium concentrations in macrophytes ranged from 0.18 to 0.65 mg/kg dw in 2004. The benthic invertebrate tissue concentration at this location during 2004 was 1.09 mg/kg ww, which converted to dry weight was 5.42 mg/kg dw.[5] In 2010, the benthic tissue concentration at NSV-6 was 11.9 mg/kg dw.

Upper NFSC, near where one of the springs originates, was found to contain brown trout and high numbers of sculpin (Mariah Associates 1980). Sampling in upper NFSC during the RI/FS in 2010 was hampered by poor visibility and excessive algal growth caused by large numbers of cattle present in the stream and muddy bottoms. The lower section of NFSC near the confluence with Sage Creek has been

[5] Dry weight concentrations were derived using a 20.1% solids value derived from the mean of benthic invertebrate samples collected at various stream locations near the Smoky Canyon Mine.

observed to contain fish. Although the lower NFSC was not sampled as part of the SSSC effort or the RI/FS, historical records as reported in the Draft Environmental Impact Statement (EIS) for the Smoky Canyon Phosphate Mine from Heimer (1979), Mariah Associates (1980), and Collins and Heimer (1981) indicate that brown trout and Yellowstone cutthroat trout (YCT) were present.

3 GEOGRAPHIC SCOPE OF APPLICABILITY

The site-specific criterion is to be derived to provide adequate protection for the entire site; however, the site is defined (EPA 1994). In the general context of site-specific criteria, a "site" may be a state, region, watershed, waterbody, or segment of a waterbody; thus, the geographic scope of the "site" must be defined. For the work described in this Work Plan, the Site or geographic scope of applicability includes NFSC and PCC (Figure 6).

The water bodies being investigated are found within the Salt Subbasin, HUC 17040105, of the Upper Snake River Basin. IDEQ's 2018/2020 Integrated Report (IDEQ 2020) identifies specific stream segments as being limited by one or more parameters that affect use attainment. Within the Integrated Report, hydrologic subunits are defined to identify specific stream segments. These numeric stream segment identifiers from the Integrated Report are shown below together with a narrative description of where the SSSC investigations would apply within each stream segment.

North Fork Sage Creek is identified as segment ID17040105SK009_02, which is made up of lateral tributaries and an agricultural diversion ditch off Sage Creek. Two subsegments are included in this drainage as follows:

- Segment 17040105000839 – NFSC at eastern headwater tributary confluence to confluence with Pole Canyon Creek
- Segment 17040105000847 – NFSC at Pole Canyon confluence to the Sage Creek confluence

Pole Canyon Creek is identified as segment ID17040105SK009_02d, extending from its headwaters to its mouth at the confluence with NFSC. For PCC, the subsegment ID 17040105000825 extends for the entirety of the stream, from source to mouth; however, for the purpose of the SSSC, the specific area of applicability is PCC from the ODA pipeline diversion discharge to the PCC mouth at the NFSC confluence.[6]

Given that PCC flow has been permanently altered due to the ODA, two stream reaches exist: one upstream of the ODA and one downstream of the ODA. While surface water concentrations between the two reaches are similar, other abiotic and biotic media indicate that these two reaches are clearly different. Proposed work is intended to be applicable to the lower section of PCC below the ODA. IDEQ has indicated that application of different criteria to different stream subsegments will not require formal delineation of two stream subsegments within the segment identified.

[6] As noted previously for lower PCC, a portion of it flows in a defined stream channel, whereas further downgradient, the flow is diffused through a wet meadow with no apparent "mouth" at NFSC.

4 SCOPE OF WORK

Idaho's Administrative Code (IDAPA 58.01.02) indicates the following: "[t]o insure that the approach to be used in developing site-specific criteria is scientifically valid, the Department shall be involved early in the planning of any site-specific analyses so that an agreement can be reached concerning the availability of existing data, additional data needs, methods to be used in generating new data, testing procedures to be used, schedules to be followed and quality control and assurance provisions to be used." This Work Plan will be provided to the state and federal agencies for review and approval of data collection and analysis methods.

Previous work conducted for the Sage Creek and Hoopes Spring SSSC included site-specific toxicity testing using brown trout and YCT. Of these two species, the brown trout was found to be more sensitive. Consistent with EPA (2016), an egg/ovary criterion was derived (EC_{10} = 20.5 mg/kg dw) together with a whole-body criterion (13.6 mg/kg dw) based on the most sensitive species. Both brown trout and YCT are expected to be found in NFSC and as the most sensitive species, the brown trout effects endpoint will be used as the basis for water criterion calculations. No additional toxicity testing or egg to whole body translators are necessary for this Site.

The scope of work defined below provides an overview of the data to be collected as part of this Work Plan. Methods for collection and analysis are described in Section 5 as part of the Sampling and Analysis Plan (SAP).

4.1 CHEMICAL EVALUATIONS

Selenium concentrations will be measured in water and sediment at locations identified in this Work Plan. Monitoring will be conducted twice each year over the course of two years. For surface water, both total and dissolved selenium will be measured. Bulk stream sediment samples will be collected to analyze selenium concentrations in the fine sediment fraction (e.g., < 2 millimeters [mm]).

Selenium in biological tissues will be measured from field samples of periphyton, benthic macroinvertebrates, and whole-body fish. The goal is to provide representative samples of selenium concentrations in biotic tissues that are representative of exposure conditions and bioaccumulation that can be used in a trophic food web model to derive criteria.

As the primary producers in an aquatic system, periphyton are an important pathway for selenium into the aquatic food chain. Microbial and algal uptake of selenium begins the transformation of inorganic selenates to organic selenium species, which are more bioavailable than the inorganic forms. As the primary consumers, benthic invertebrates are the next step in selenium bioaccumulation. Data from some studies have indicated that while algal communities may concentrate selenium in their tissues to higher levels than what is measured in the surrounding water or sediment, the same observations are not seen in benthic invertebrates. Residues of selenium in benthic tissues tend to be lower than that measured in algae.

Because the selenium criterion is based on the response of fish to accumulation and toxicity of selenium, the fish tissue data become an increasingly important component of the data collection effort. Previous work for a site-specific selenium criterion for Sage Creek, Hoopes Spring, and Crow Creek identified key species present within these drainages. Brown trout were identified as an abundant and sensitive top predator species present in the Sage Creek drainage. For this data collection effort, fish tissue data will be collected from two species: brown trout and sculpins.

For trout, younger, non-spawning-age fish will be targeted to minimize the impacts of fish harvesting on populations. These younger trout (~75 to 150 mm) would have been spawned in the previous year and represent approximately age 1 fish, which tend to have good site fidelity and best represent site exposure. Concentrations of selenium in tissues from these juvenile trout are representative of tissue concentrations in larger adult trout.[7]

Sculpins[8] will also be targeted for fish tissue analysis because (1) they have a small home range (e.g., high site fidelity) and integrate exposure from a relatively localized area, and (2) they serve as prey for adult piscivorous fish.

4.2 AQUATIC COMMUNITY EVALUATIONS

In addition to collecting and analyzing chemistry data for water, sediments, and biological tissues, fish population and community and benthic invertebrate community data will be collected as supporting data that characterizes the existing biological communities. Currently, these streams have limited biological data; therefore, while not used to derive the aquatic criteria, it is important to adequately characterize the communities being evaluated. These supporting data will provide the information for NFSC and PCC aquatic communities and the species representing the existing food-webs for bioaccumulation. Benthic community data will be used to derive the stream macroinvertebrate index (SMI), which is part of the Beneficial Use Reconnaissance Plan (BURP) process to assess stream health. As a standardized metric, similar data can be collected in the future to assess potential changes in the benthic community. Fish community and population data will be collected to provide data on the species present, abundance, and age and population structure. These types of data for fish communities and populations have become important in quantifying age class structure for certain species.

[7] Simplot's June 26, 2017, letter to IDEQ provided comments on IDEQs proposed adoption of the 2016 National Selenium Criterion. In that letter, Simplot addressed whole body tissue concentrations of juvenile and adult trout and cited site-specific data showing no significant differences.

[8] There are two sculpin species present in the Crow Creek drainage and associated tributaries at the Site: Paiute sculpin (*Cottus beldingi*) and mottled sculpin (*Cottus bairdi*). Paiute sculpin were the dominant species found at all sampling locations within the Crow Creek drainage, and mottled sculpin are only found occasionally. Quist et al. (2004) found that Paiute sculpin have an affinity for fast water habitats, particularly riffles with large substrate, whereas mottled sculpin were more commonly found in lower gradient, lower elevation streams with deep pool habitat that were spring-fed. Field observations from onsite monitoring are consistent with those reported by Quist et al. (2004) with mottled sculpin being found (infrequently) in the lower reaches of Crow Creek, while Paiute sculpins were dominant and found in the higher lower order streams such as Sage Creek and Hoopes Spring.

4.3 PHYSICAL HABITAT EVALUATIONS

Physical habitat quality and quantity data will be collected at each site. Similar to the aquatic community data, habitat data are not needed to derive a SSSC, but provide supporting information about the physical characteristics available for the aquatic community. Physical habitat is a major factor influencing aquatic community characteristics, structure, and function. The quality of trout populations, the carrying capacity of streams, and the aquatic community as a whole are directly related to availability of quality habitat. Physical habitat quality can also play a role in water quality conditions, such as temperature, turbidity, and dissolved oxygen, among other factors.

5 SAMPLING AND ANALYSIS PLAN

This SAP details when, where, how, and the frequency of sample collection to meet the objectives of this study. It further defines sample analyses and describes how data resulting from this effort will be analyzed. The SAP is designed to provide comparable data for the purpose of evaluating selenium concentrations in biotic and abiotic media at a variety of locations under different seasonal conditions that may pose an adverse effect to biological communities.

Simplot has a Comprehensive Environmental Monitoring Program Plan (CEMPP) that encompasses all the environmental monitoring requirements for Smoky Canyon Mine (Formation 2015) and includes a Quality Assurance Project Plan (QAPP) and Standard Operating Procedures (SOPs) for data collection. The QAPP and specific SOPs applicable to this work are used herein to support this SAP for collection and analysis of data to develop an SSSC. The SAP provided in this subsection briefly summarizes the methods used for data collection while referencing more detailed quality assurance procedures and methods as part of the QAPP and SOPs (Appendix A).

5.1 MONITORING LOCATIONS AND FREQUENCY

Monitoring locations are illustrated on Figure 6 and described in Table 7. Existing locations with a long-term water quality monitoring history (LP-PD, NSV-5, and NSV-6) are used where possible. Data from these existing locations provide information on historic and current concentrations of selenium in surface water and other media when available. Exposure consideration of the existing locations was evaluated relative to representativeness of different exposure areas. Rationale for site selection is as follows:

Existing Locations

- LP-PD represents a surface water condition that is upgradient background, but sediment and benthos suggest past selenium concentrations that potentially influence bioaccumulation.
- NSV-5 represents upgradient background for Sage Valley with low selenium concentrations in surface water (upstream of PCC). The NSV-5 location's limited data for sediments and biological media suggest low bioaccumulation potential.

- NSV-6 represents potential exposure downstream of PCC. Changes in PCC flows and the large alluvial wet meadow disperses PCC flows; however, aerial imagery confirms that this location is downstream of PCC inputs. Seasonal surface water data indicate spring time exceedances of the surface water quality criteria (3.1 ug/L). Biological data from NSV-6 suggest elevated benthic tissue concentrations of selenium, which may be a function of seasonal selenium increases or transport of sediments and organic debris from PCC.

New Locations

- LP-PDT was selected based on review of the existing data for PCC that indicates high concentrations of selenium in sediments in PCC as it traverses Sage Valley (based on RI sampling in 2010). The location was selected as the furthest downgradient location where PCC flows in a confined stream channel before it disperses into a wet meadow. Sampling in the wet meadow would be inconsistent with the approach for sampling flowing stream sections.
- NSV-7 was selected to provide further characterization of selenium in biotic and abiotic media for NFSC and represent an integrative exposure for lower Sage Valley as the combined drainage of NFSC and PCC before NFSC confluences Sage Creek. Because PCC flow disperses into a wet meadow and spreads out in Sage Valley, some of the flow may not be captured by location NSV-6.

Spring and fall monitoring will be conducted at each location described above for each year of this investigation. The study is designed so that there are two spring and three fall monitoring periods, with monitoring to begin in September 2020. The fall sampling period selected is within the BURP index period. Seasonal periods for sampling may include more than a single calendar year. Seasonal sampling will be conducted because the available data indicate that selenium concentrations in water vary across the spring and late summer, which can affect bioaccumulation.

Water, sediment, and biota chemical sampling will be conducted during both the spring and fall monitoring periods. Fish population and community composition will also be monitored during spring and fall periods to assess any potential changes (particularly for trout) in the distribution and abundance of fish species. Benthic community composition will be monitored in the fall only, together with some limited physical habitat quality assessment. The habitat, community, and population data are not directly utilized in the derivation of a site-specific criteria; rather, these data provide information about the conditions and communities that exist, and provide sufficient information should any site be included in any long-term monitoring program to evaluate community characteristics and habitat quality through time.

Each location will have a stream reach (e.g., a length of stream with definable upstream and downstream boundaries) identified. The stream reach length at each location will be dependent on the stream width and a number of other physical factors as described below. All sampling for a location will be conducted within the confines of the identified reach. The process for identifying the upper and lower bounds of each reach is described below.

5.1.1 REACH IDENTIFICATION

During the summer of 2019, Simplot conducted a reconnaissance survey of NFSC and PCC. Each of the locations proposed for monitoring were visited to determine if adequate stream lengths could be defined to establish monitoring reaches. In the field, a Global Positioning System (GPS) unit was used to navigate to each of the locations identified (coordinates are listed in Table 7). For new locations, the field team identified a reach for each monitoring location in the field and recorded the GPS coordinates. Coordinates were recorded in Universal Transverse Mercator (UTM) units using the NAD83 datum. Photos of each reach from the 2019 reconnaissance are provided in Appendix B.

Upon arriving at each sampling location, a walking visual survey was conducted. Selection of a specific stream reach for sampling considered the following characteristics: channel shape, habitat diversity (e.g., pools, riffles, runs), hydraulic controls and or hydraulic modifications (e.g., irrigation diversions, returns, or tributary inflows), adjacent land use, stream width, and the reach's proximity to roads. Once a potential reach was identified, the upper and lower bounds of the reach were marked with stakes and the reach length was measured. Using Idaho's BURP Field Manual (IDEQ 2017) recommendations, each reach was defined as 30 times the bank full width or a minimum of 100 meters long.

5.2 FIELD MEASUREMENTS AND CHEMICAL EVALUATION METHODS

Field measurements and chemical evaluations will be conducted for three primary media, including surface water, sediment, and biological tissues. While selenium will be the focus of the chemical evaluations, a suite of additional analytes will be measured in surface water to provide supporting information that may provide insights on selenium bioaccumulation. In addition, in-situ field measurements will be recorded for each location during each visit to document important physiochemical parameters. Table 8 lists the chemical parameters and methods for chemical analysis for each media that will be sampled. Table 9 shows the sample preservation and storage requirements and holding times.

5.2.1 SURFACE WATER

To evaluate surface water quality, the following physiochemical parameters will be measured:

- Temperature, dissolved oxygen, pH, conductivity, and oxidation-reduction potential (ORP), and flow

Chemical parameters to be analyzed include the following:

- Total and dissolved selenium
- Hardness, alkalinity, sulfate, nitrate+nitrite, dissolved organic carbon, and total phosphorus

Temperature, pH, specific conductance, and dissolved oxygen (field parameters) will be measured, in-stream, immediately prior to sample collection and recorded on field sampling forms. Field parameter measurement and calibration protocols are detailed in JRS SOP No. 31, Water Quality Meter Calibration (Appendix A, Attachment A). When a water quality sample is collected, site location and conditions,

current and previous weather conditions, field personnel, and the sampling time and date will be recorded in a project field logbook along with any other pertinent observations.

Water quality samples, whether collected for laboratory analyses or collected in-situ using electronic instrumentation, will be collected according to the surface water sampling procedures presented in the SOP for Water Quality Sampling (JRS SOP No. 5, Appendix A, Attachment A). As described in detail in the SOP, unfiltered samples will be collected directly from the water bodies into sample bottles. For the filtered samples, water from the source waterbody will be pumped through a clean disposable 0.45-micron (µm) in-line, high-capacity filter using either a battery-operated peristaltic pump or hand-help manual pump. The in-line filter will be purged with approximately 200 milliliters (mL) of sample water before the laboratory container is filled. Filters and tubing will be used for only one sample and subsequently disposed. Collected samples will be labeled and stored prior to shipment according to JRS SOP No. 2, Sample Custody, Packaging, and Shipment (Appendix A, Attachment A). All QC samples identified in the QAPP will be collected as needed at the frequency identified.

5.2.2 SEDIMENT

Sediment chemistry analyses will measure total selenium in bulk sediment samples sieved to the 2 mm fraction, which will best represent the sands and finer substrate size particles. Percent solids will be measured in the laboratory for each sediment sample. Sediment samples will be collected according to JRS SOP No. 14, Sediment Sampling for Chemical Analysis (Appendix A, Attachment A).

One of the methods identified in JRS SOP No. 14 will be used to collect approximately 200 grams of sediment from each subsampling location. The appropriate method will depend on site-specific conditions, as described in the Sediment Sampling SOP. If sediment contains a range of grain sizes, then the subsample will be collected to represent the sand size and finer materials present (i.e., gravel, cobbles, and boulders would not be collected). The mass of sediment collected for each subsample used to generate a single composite sample will be approximately the same, and the mass may be estimated by visual assessment of sediment volume.

At each sampling location, sediment will be collected from the bed surface to a depth of 4 inches (i.e., 10 cm), which is the most biologically active sediment zone (USEPA 2001). A single sediment sample will be collected from each location (except for duplicate analyses). Each sample will consist of a homogeneous mixture, or composite, of six grab samples collected from inundated depositional areas where they occur along the creek channel within 50 feet of each riffle transect established for the BURP assessment of benthic communities. If sufficient sediment is not available from the inundated areas, sediment will be collected from within the active high-flow channel (i.e., no sediments will be collected from overbank areas).

To create each composite sample, the six subsamples will be placed together in a water-tight plastic bag (e.g., Ziploc bags). Excess water may be decanted from the sample bag, if necessary, after the five subsamples have been collected and allowed to settle for a short time. If water is decanted, care will be taken to avoid decanting fine sediment at the same time. Any coarse organic debris, such as sticks, leaves,

or aquatic vegetation, will be selectively removed from the composite sample. Such debris may be removed by hand, using gloves, or with a plastic or stainless steel scoop or spoon. The remaining sediment will be thoroughly mixed within the sealed bag by massaging and rotating the sealed bag for a minimum of 2 minutes.

For duplicates, the sample will be split into two aliquots after homogenization, and each aliquot will be placed directly into a new sample bag. After homogenization, the composite sample will be double-bagged, labeled, and placed in a cooler for storage and later shipping (JRS SOP No. 2, Appendix A, Attachment A).

Any reusable sampling equipment will be decontaminated after use at each of the sampling locations in accordance with JRS SOP No. 7, Equipment Decontamination (Appendix A, Attachment A). Specific quality control procedures and the collection of quality control samples are described in the QAPP (Appendix A).

5.2.3 BIOLOGICAL TISSUES

5.2.3.1 PERIPHYTON

Periphyton will be sampled by scraping or brushing rocks or other substrates to dislodge attached algae according to methods in JRS SOP No. 32, Attachment A, Appendix A. The BURP Field Manual (IDEQ 2017) provides similar protocols that are slightly modified here for collecting a composite periphyton sample from each site.

Periphyton samples will be collected from instream substrates (i.e., rocks or wood debris that are stable in the channel) at each reach location. Six substrates will be selected from three different riffle areas (two from each riffle) in each stream reach (e.g., those riffles identified during the BURP habitat assessment for collection of benthic community samples). Periphyton on the substrate side facing upward (i.e., toward the light) will be dislodged using a toothbrush and approximately 25 to 30 brush strokes.

A small amount of distilled water will be used to rinse the scrubbed area and the toothbrush into a collecting pan (e.g., small clean Tupperware container). This procedure will be repeated for each substrate surface. The volume of sample will depend on the quantity of water used to rinse the scrubbed substrate, but the goal is to provide 15 to 20 mL of sample to the laboratory.

At one location, additional periphyton samples will be collected to gain an understanding of potential variability of selenium in periphyton. For this effort, the process described above will be repeated two more times at each of the three transects. For the selected site, three composite periphyton samples will be submitted for analysis.

Once all six substrates are scrubbed and the contents composited, the contents of the collecting pan will be transferred to an appropriately labeled sample container and stored on ice for shipment to the laboratory. A single composite sample will be submitted for each location. A new toothbrush and collecting pan will be used at each location to avoid any cross-contamination between locations. All

reusable sampling equipment will be decontaminated in between sampling locations in accordance with JRS SOP No. 7 (Appendix A, Attachment A).

Periphyton samples will be analyzed for total selenium concentrations and percent moisture. Because the volume of materials generated for periphyton is small, at each location, a separate sample may be collected using the methods described above for the purpose of measuring percent solids and any laboratory quality assurance samples such as matrix spikes and matrix spike duplicates.

5.2.3.2 BENTHIC MACROINVERTEBRATES

Benthic macroinvertebrates will be collected from streams using a Surber sampler for community samples as described in JRS SOP No. 15, Benthic Macroinvertebrate Tissue and Community Sampling (Appendix A, Attachment A). Similar to the community samples, tissue samples for benthic macroinvertebrates will be collected from the riffle habitats defined from the BURP assessment.

Within the sample ring attached to the Surber sampler, substrates are disturbed vigorously for each sample to a uniform depth of about 4 inches or as deep as possible given the substrates present. The contents of each net are deposited into a decontaminated sorting pan.

Benthic invertebrates are picked from the sample and deposited into a pre-weighed sample jar. If extraneous materials are attached to the benthos being collected for tissue analysis, the organisms may be rinsed with distilled water in a separate container, such that only benthic organisms are placed into the sample container. The goal is to pick 5 grams of invertebrates for submittal to the laboratory for analysis; however, depending on the composition and size of invertebrates present, 5 grams may not always be attained. If satisfactory biomass is not obtained from the first Surber sample, additional samples will be collected (up to 3 total samples) to obtain a mass as close to 5 grams of benthic organisms as possible. Benthic tissue samples will be labeled and stored on ice, unpreserved for shipment to the laboratory.

To provide a benthic tissue sample representative of the community assemblage, the composite sample will be inspected to estimate the primary abundance of the major taxonomic groups (i.e., order or lower). The benthic tissue sample will be comprised of approximate proportions of these groups such that it is representative of the community. A single composite sample will be submitted to the laboratory for analysis. Major taxonomic groups used to create the benthic tissue sample will be noted in the field logbook. All sorting for the tissue sample will be conducted by a qualified taxonomist.

Benthic tissues will be analyzed for total selenium and percent solids. At locations where the benthic invertebrate biomass is abundant, an additional sample will be collected for the laboratory to conduct duplicate analyses.

5.2.3.3 FISH

Fish will be collected by electrofishing methods described below in Section 5.3.1 and in JRS SOP No. 10, Conducting Electrofishing Surveys (Appendix A, Attachment A). Whole-body fish tissue samples will be

collected and submitted to the laboratory for analysis of selenium for each spring and fall sampling period. Fish samples submitted for analysis will use the procedures described in JRS SOP No. 8, Collection of Fish Tissue for Chemical Analysis (Appendix A, Attachment A), augmented by Idaho's Fish Tissue Protocol Work Group methods. Trout retained for fish tissue analyses will be identified, measured for length, weighed, and observed for deformities or malformations. Sculpins retained for tissue residue analyses will be similarly handled. The goal for the number of fish submitted for tissue analyses collected at a site will be ten fish per species.

During both spring and fall sampling periods, up to 10 sub adult brown trout, ≤ 150 mm in length, will be retained for tissue analysis from each site depending upon availability of fish in this size range. In addition to brown trout, sculpin will be targeted for tissue analysis during both spring and fall periods. Ten sculpin will be retained for tissue analysis from each location. There is no specific target size for sculpin, although larger sculpin (60-100 mm long) will be retained for tissue analysis to ensure sufficient tissue mass for analyses.

Fish tissue samples retained for chemical analysis will be from the same species (i.e., brown trout and Paiute sculpins). If brown trout are not present, then YCT numbers will be evaluated to assess if tissue sample objectives can be met. Fish tissue samples will be collected during both spring and fall sampling events. The current timing of sampling during both periods coincides with YCT and sculpin spawning in the spring and is approximately two months prior to the brown trout spawning period which occurs about mid-November.

Individual whole-body fish will be submitted for analyses. If fish smaller than approximately two grams are collected, three or more individuals of the same species will be composited as a single sample. Care will be taken to prevent contamination of the fish by external media. Whole-body fish samples will be individually placed in a clean freezer-type Ziploc bag, double-bagged with another Ziploc bag, and labeled with species identification and other appropriate information. In addition to analysis of total selenium in tissues, percent solids will also be determined. Methods for tissue analysis and percent solids and sample holding times and preservation requirements are presented in Table 8 and Table 9 and in the QAPP (Appendix A, Table 4).

5.3 AQUATIC COMMUNITY EVALUATION METHODS

Aquatic community evaluations include the collection of fish population and community data as well as benthic macroinvertebrate community data. The following subsections detail the methods for collection of these data.

5.3.1 FISH POPULATION AND COMMUNITIES

In each reach selected, fish will be collected using electrofishing methods according to JRS SOP No. 10 (Appendix A, Attachment A) and generally consistent with Water Body Assessment Guidance (WBAG) (IDEQ 2016) and BURP protocols (IDEQ 2017). Single-pass electrofishing is recommended in the BURP protocols; however, because fish population estimates are desired, a multi-pass removal method will be

employed following methods of Platts et al. (1983) and Van Deventer and Platts (1983), with population estimates derived according to Van Deventer and Platts (1989, Version 4, 2018).

Block nets will be placed at the upper and lower limits of the reach to be fished in order to prevent the population present in the reach from exiting the reach and to block fish from outside the reach from entering the reach. A minimum of three field team members will constitute the electrofishing team. Electrofishing will be conducted using a backpack-mounted electrofishing unit (i.e., Smith Root or equivalent) capable of emitting sufficient electrical current into the water to stun fish for collection. Each electrofishing pass will begin at the downstream limit of the reach, immediately upstream of the block net. The electrofishing unit timer will be set to zero prior to each pass in order to record the time spent electrofishing during each pass. An electrofishing pass will be comprised of the electrofishing crew moving in an upstream direction in a zig-zag pattern with the electrodes in the water and the unit turned on. Stunned fish will be netted and immediately placed in buckets filled with stream water for holding until species identifications, counts, and measurements of weight, length, and observations of physical deformities are made. Nets used for fish capture will consist of a mesh size of one-eighth to one-quarter inch. An electrofishing pass is completed when the field team has reached the upstream limit of the reach where the block net is placed. The time for each pass will be recorded in the field logbook together with any observations or counts of fish missed by netters, or observations of where fish tend to be collected (i.e., associated with a particular habitat feature).

Fish collected during each pass will be identified, counted, weighed, measured for total length, and evaluated for physical condition and abnormalities. Trout will be scanned for the presence of a pit tag. No fish will be returned to the reach until all three passes have been completed. Captured fish will be held in flow-through containers placed in-stream to allow for adequate oxygenation and temperature. Fish collected during each pass will be held separately from those fish collected in subsequent passes. Both Paiute and mottled sculpin are potentially present at selected field monitoring sites. Field identification will be conducted to distinguish between these two species and logged accordingly. Due to the high numbers of sculpin collected, the first 100 sculpin will be identified to species, weighed, and measured for length. After 100 sculpins have been identified and measured, a total count of sculpins will be made. Voucher specimens for sculpin will be collected for species verification.

Larger trout are mobile and may move in and out of areas being monitored during the course of these investigations. Up to 20 larger trout will be tagged for future identification. A coded pit tag will be inserted into the intraperitoneal cavity of trout larger than 230 mm. The coded tag number will be recorded along with species identification, length, weight, and observations of condition and/or deformities. Tagging data will not be used for population estimates. Fish are tagged to track fish movement, particularly between locations and growth data for adults for fish that are captured multiple times.

Fish with visible tumors, lesions, or other apparent deformities will be recorded on the fish field data sheet along with species identification, weight, and length data to provide a record of the occurrence and condition of these fish. Fish will be released into the same reaches from where they are collected following completion of counts and tagging.

Population estimates, biomass, and condition factors for fish using the multi-pass removal method will be derived using Microfish software (Van Deventer and Platts 1989, Version 4, 2018) from the United States Forest Service (USFS).

5.3.2 BENTHIC MACROINVERTEBRATE COMMUNITIES

Benthic macroinvertebrates will be collected from streams using a Surber sampler as described in JRS SOP No. 15, Benthic Macroinvertebrate Tissue and Community Sampling (Appendix A, Attachment A). Benthic community data will only be collected in late summer or early fall.[9] Benthic samples collected in early spring have high percentages of invertebrates as early instars, which are small and make identifications more difficult. Furthermore, during late summer or early fall there tends to be less flow variability, which allows for better comparisons of communities, where flow is not a factor.

Three benthic invertebrate samples for benthic community composition, diversity, and biomass from each reach will be collected. Each sample is collected at the riffle designated in the BURP habitat process using a Surber sampler. With the bottom edge of the sample net seated and pressed firmly against the substrate, the sampler will position next to the sampling net and begin to disturb the substrate immediately upstream of the net (kicking) within the confines of the Surber sampler ring. Substrate will be disturbed using the heel of the boot or entire foot by kicking to dislodge the upper layer of cobbles or gravel and to scrape the underlying bed. Disturbance of the substrate will be to an approximate depth of 10 cm (~ 4 inches). To standardize the effort, the sampler will kick for one minute per sample. In addition to kicking to dislodge substrates, individual rocks or debris may require hand-scraping and cleaning. Sample material will be transferred from the interior of the net to a bucket, being sure to pick all specimens off the net interior. Specimens that cling to the exterior of the net are not considered part of the sample. They may be removed and placed back into the stream. The net contents will be placed into a white sorting pan to pre-clean samples by removing excessive debris or larger rock substrates. From the sorting pan, samples will be transferred to a 1-L wide-mouth polyethylene jar for preservation, shipping, and storage. Samples for each riffle will be preserved separately using 70% ethanol and 10% formalin. Taxonomy and enumeration will be conducted as counts of 500 organisms from each replicate sample.

Idaho DEQ's Biological Assessment Frameworks and Index Development for Rivers and Streams in Idaho (Jessup 2011) provides documentation and methods for deriving a Stream Macroinvertebrate Index (SMI). The following nine metrics will be calculated for the benthic community samples in order to derive the SMI: total taxa, Trichoptera taxa, percent of five dominant taxa, Ephemeroptera taxa, percent Plecoptera, scraper taxa, Plecoptera taxa, Hilsenhoff Biotic Index (HBI), and clinger taxa. Summation of the individual metric scores provides a total score, or SMI, which can then be evaluated based on stream reference conditions in one of several categories that provides an indicator of benthic community health relative to reference conditions.

[9] The index period runs from July 1 to September 15.

5.4 PHYSICAL HABITAT QUALITY EVALUATION METHODS

Development of site-specific criteria for selenium does not include or require information about habitat conditions other than identifying if the criteria are applicable to a lentic or lotic waterbody. Consistent with the effort Simplot provided for the Sage/Hoopes and Crow Creek criteria, qualitative and quantitative measures of the physical habitat quality will be collected to provide a characterization of the habitat sampled and its relative quality for aquatic communities. The strategies employed are not exhaustive but do provide sufficient information about habitat quality collected in a systematic approach that will allow for future use and comparison. Two approaches are included as assessment strategies due to their strengths. The SRI/CSE system from Pfankuch (1975) is used to evaluate channel stability. IDEQ's BURP protocols (2017) use the Stream Habitat Index (SHI) to evaluate physical habitat quality and quantity.

5.4.1 STREAM REACH INVENTORY AND CHANNEL STABILITY EVALUATION (SRI/CSE)

Channel stability of each reach will be assessed using the SRI/CSE procedure developed by Pfankuch (1975). The procedure was developed to provide a systematic measurement and evaluation of the resistive capacity of mountain stream channels to the detachment of bed and bank materials and to provide information about the capacity of streams to adjust and recover from potential changes in flow and/or increases in sediment production (Pfankuch 1975). This ocular system involves the numerical evaluation of 15 hydraulic indicators found within three major stream zones: upper banks, lower banks, and channel bottom. Basically designed for application on second- to fourth-order streams, the procedure is flexible in that it can be used in the physical evaluation of stream reaches of various lengths. Scoring is based on four stability categories: excellent, good, fair, and poor, with a numerical value assigned to each of the 15 indicators within each category. The total reach score is found by summing the values recorded under each category. The reach score is then compared to a series of numerical intervals, thereby determining the reach to either be excellent, good, fair, or poor, in terms of hydraulic stability.

5.4.2 STREAM HABITAT INDEX

Habitat quality data will be collected during the summer/fall, to be consistent with IDEQ's BURP protocols (2017) and Jessup (2011) that establish an index period of June through mid-September. The SHI uses data collected for the following ten habitat parameters: instream cover, large wood debris (LWD), percent fines (<2 mm), embeddedness, substrate size classes (Wolman), channel shape, percent bank vegetation, percent canopy cover, disruptive pressure, and zone of influence. Parameters are measured and/or ranked and then used to derive an SHI value that can be compared to other sites being evaluated and to reference sites. Additional habitat metrics collected as part of the BURP process include the following: bank full width (feet), reach length (feet), stream gradient, Rosgen stream type, sinuosity, width/depth ratio, stream bank condition, bank stability, stream bank cover, number of pools, pool variability, predominant habitat type, overhead cover, pool substrate character, bank angle, and percent undercut banks. The SHI will be developed for summer/fall sampling period data to be consistent with IDEQ's index period.

6 DATA INTEGRATION, ANALYSIS, CRITERION DERIVATION, AND REPORTING

As noted previously, this Work Plan defines the data collection effort necessary to provide data for developing new water quality criteria elements derived from the tissue elements. Until a SSSC for NFSC and PCC is developed, the tissue criteria for selenium in these streams are as follows:

- Egg/ovary = 19 mg/kg dw (total)
- Whole body = 9.5 mg/kg dw (total)
- Lotic water = 3.1 micrograms per liter (µg/L) (dissolved)

As part of the criteria derivation process for NFSC and PCC, the proposal will include the rationale and justification for using the brown trout tissue criteria developed for Sage Creek and Hoopes Spring, given it is the most sensitive species in the region and the thresholds developed are applicable to these streams. Both YCT and brown trout are expected to occur in NFSC, while no fish are expected to be found in PCC. Because the tissue criteria form the basis for deriving the water quality criteria elements, using the site-derived tissue thresholds will be an important component of developing the overall SSSC elements.

According to EPA (2016), a protective water concentration may be developed from the site-specific egg/ovary, whole body, or muscle criterion elements. Translation of the fish tissue criterion to a protective water concentration can be performed in a manner that accounts for site-specific conditions. Two approaches for developing a protective water concentration from tissue thresholds are offered as valid approaches, including: (1) a mechanistic model approach (Presser and Luoma 2010) to model selenium through the food chain, or (2) a bioaccumulation factor (BAF) approach. For the purposes of this SSSC Work Plan, all inputs for the mechanistic model and the BAF model will be derived from empirical data derived from the Site. Appendix K of EPA (2016) outlines the two approaches and discusses some of their advantages and disadvantages. The sections that follow summarize that information together with site-specific information gathered from the Sage Creek effort to describe the process for deriving the water criteria values for NFSC and PCC.

6.1 MECHANISTIC MODEL

The mechanistic approach is a more comprehensive, multi-step model that accounts for selenium bioaccumulation through the food chain as compared to the BAF model. The mechanistic model integrates bioaccumulation from water to primary producers, primary producers to primary consumers, and so forth through to the top levels of the food chain. Due to its many steps (i.e., dietary pathways or trophic levels), uncertainty can be introduced into the process. A potential limitation of this approach is that the selenium enrichment factors (EFs) and trophic transfer factors (TTFs) selected to represent a given exposure and food-web scenario are treated as constants across all water and fish selenium concentrations (DeForest et al. 2017). The empirical data, however, suggest that there are no constants, and TTFs and EFs can vary widely within a system and even with a narrow exposure regime. The primary uncertainty arises in the EF portion of the model. Further, if assumptions about the dietary pathway are incorrect, further uncertainty is added to the model. The types of data, methods, assumptions, and calculations used to derive a water

element from the egg/ovary SSSC using the mechanistic model are more fully developed and presented below.

EPA's National Criterion (2016) utilizes the Presser and Luoma (2010) model as its basis for the mechanistic trophic model approach. Both EPA (2016) and Presser and Luoma (2010) provide approaches to derive the basic EFs and TTFs if site data are limited. This study, however, will generate data for every level of the food chain as well as concentrations in abiotic media.

Effective use of the available site-specific information requires integration of the data into representative model inputs (EFs and TTFs). The data are collected and compiled on an individual seasonal basis and will be reported as such, but these data must ultimately be integrated to derive the water criterion element. Data for two types of seasonal conditions will be integrated across each year/location combination using the median value. The seasonal conditions include spring high flow conditions and later summer/fall low flow conditions. The following subsections describe how the data will be integrated to derive representative EFs and TTFs.

6.1.1 Derivation of Enrichment Factors (EF)

Presser and Luoma (2010) define EF as a partition descriptor for selenium from the water to particulate fractions (e.g., algae, detritus, and sediments). Phase transformation reactions from dissolved to particulate selenium are of toxicological significance because particulate selenium is the primary form by which selenium enters food webs (Cutter and Bruland 1984; Oremland et al. 1989; Luoma et al. 1992). The different biogeochemical transformation reactions also result in different forms of selenium in particulate material—organo-selenium, elemental selenium, or adsorbed selenium—which in turn affects the bioavailability of selenium to invertebrates depending on how an invertebrate processes the complex water, sediment, and particulate milieu that composes its environment (Presser and Luoma 2010). The EF is derived as follows:

$$EF = C_{particulate}/C_{water}$$

Where

$C_{particulate}$ = selenium concentration in algae (periphyton), detritus, and/or sediments

C_{water} = selenium concentration in surface water (dissolved concentration)

Field data collected will include selenium concentrations in both sediments and periphyton; therefore, EFs will be derived for sediment and periphyton. Presser and Luoma (2010) suggest that if the data are available, averaging concentrations of selenium in sediment, detritus, biofilm, and algae may help to define EF and take into account partitioning in different media and best represent the dynamic conditions present in an aquatic system. EPA (2016) recommends using the geometric mean to derive a single EF estimate where there are multiple EFs for a location (e.g., sediment, algae, and/or detritus).

For this effort, two different EFs will be derived for each location and time period: a periphyton EF and a sediment EF. The periphyton and sediment EFs will be averaged to derive a site- and time-specific EF. The EF will not be derived solely on the basis of sediment selenium concentrations. Decisions concerning use of the geometric versus arithmetic mean for the site/time period EFs will be based on the strength of the relationship between observed (measured) dissolved selenium versus predicted selenium. For the Sage Creek and Hoopes Spring location and time-specific EFs, periphyton and sediment EFs were averaged using a geometric mean and an arithmetic mean to derive a single EF for each location and time period. Two regressions were run to assess the relationship between the predicted dissolved water selenium concentration versus the measured water selenium concentration using a final EF based on a geometric mean and one based on an arithmetic mean. The linear regression showing the best relationship (i.e., higher R^2) was for the regression using the arithmetic-mean-derived EFs; thus, these values were used in all subsequent calculations. For the present criteria development process, similar assessments to derive appropriate site and time specific integrated EFs will be evaluated, including comparison of best fit robust models for predicting modeled selenium vs actual measured selenium and/or evaluating different percentages of sediment and algae configurations of the EFs relative to their predictive ability for the modeled vs actual water concentrations under different conditions. When EFs are integrated across time periods and locations, the median EF value will be utilized.

6.1.2 Derivation of Trophic Transfer Factors (TTF)

A key aspect of selenium risk is bioaccumulation (i.e., internal exposure) in prey and predators (Luoma and Rainbow 2005). Just as the EFs were used to describe partitioning of selenium at the base layers of the food chain, TTFs are derived to describe the accumulation of selenium from lower trophic levels to upper trophic levels. They link particulate, invertebrate, and predator selenium concentrations. TTFs differ from traditional BAFs in that BAFs are almost always implemented as the selenium concentration in an animal relative to selenium in water, whereas the TTF is the selenium concentration in the animal relative to the selenium concentration in its prey.

6.1.2.1 Invertebrates

Selenium analyses of benthic tissues will be conducted on composite community samples that represent a cross-section of the resident benthic invertebrate community. From these field collected data, a site-specific $TTF_{invertebrates}$ will be derived as follows:

$$TTF_{invertebrate} = C_{invertebrate}/C_{particulate}$$

Where:

$C_{invertebrate}$ = selenium concentration (mg/kg dw) in benthic macroinvertebrates

$C_{particulate}$ = selenium concentration (mg/kg dw) in particulate materials

Consistent with the work conducted for Sage Creek, the $C_{particulate}$ term will be the sum of 10 percent sediment selenium and 90 percent periphyton selenium concentrations. As noted previously, the average of sediment and periphyton concentrations were used in the derivation of EF. For a diverse benthic invertebrate community assemblage, it is assumed that the bulk of their selenium intake is through ingestion of selenium-containing periphyton with a small percentage of sediment ingestion. Using this approach, a representative $C_{particulate}$ term for invertebrates will be derived.

6.1.2.2 SCULPIN

Sculpin are ubiquitous throughout the monitoring locations but are more abundant at some locations than others. Sculpin are important components of fish assemblages in the Western United States (Quist et al. 2004), are native species, and are often numerically dominant fish assemblages of streams of the interior Rocky Mountain region (Bailey 1952; Jones 1972 [cited from Quist et al. 2004]). They represent a secondary consumer in the food chain and are primarily benthic invertivores, although they have been documented to be cannibalistic (Johnson 1985). For this assessment, the $TTF_{sculpin}$ will be derived using benthic invertebrates as the primary food source as follows:

$$TTF_{sculpin} = C_{sculpin}/C_{invertebrate}$$

Where:

$C_{sculpin}$ = mean selenium concentration in sculpin from a location and time period (mg/kg dw)

$C_{invertebrate}$ = selenium concentration in benthic invertebrates (mg/kg dw) from the same location and time period

The $TTF_{sculpin}$ will be derived by dividing the measured selenium concentration in sculpin tissues (geometric mean for a location) by the selenium concentrations in benthic invertebrates from the same location for each seasonal sample.

6.1.2.3 TROUT

Trout are the apex aquatic species in the site-specific trophic bioaccumulation food web and are likely the most sensitive taxa of the community assemblage found in these waters. The two primary trout species expected to be found are brown trout and YCT. YCT have been collected in upper Sage Creek together with brown trout and in some cases may be the more dominant species encountered. Determining the TTF_{trout} will be based on the available literature that describes each species feeding behavior. The equation to derive TTF_{trout} is described below:

$$TTF_{trout} = C_{trout}/\left(diet\ proportion \times C_{sculpin}\right) + \left(diet\ proportion\ \times C_{invertebrate}\right)$$

Where:

C_{trout} = mean selenium concentration in brown trout from a location and time period

Diet proportion = fraction of diet assumed (e.g., 50% – 0.5 for the proportion)

$C_{sculpin}$ = mean selenium concentration in sculpin (mg/kg dw) from the same location and time period

$C_{invertebrate}$ = selenium concentration in benthic invertebrates (mg/kg dw) from the same location and time period

Diet information and trophic modeling approaches for each species are described in more detail below.

BROWN TROUT

Adult brown trout are opportunistic feeders. Their diets have been described as "diversified," and their food habits range broadly with variation in size and age, spatial and temporal variability in food availability, behavior, and habitat characteristics (Simpson and Wallace 1982, Bachman 1991, Baxter and Stone 1995, Bridcut and Giller 1995). A TTF_{trout} will be derived to describe the transfer of selenium via the dietary pathway to a top-level predator: in this case, brown trout.

Adult brown trout are opportunistic feeders but primarily piscivores as adults, and while they continue to consume macroinvertebrates, size selection of the prey items increases as the fish matures. With the exception of extremely productive systems that produce dense populations of aquatic invertebrates, most larger brown trout (>310 mm [12.2 inches]) inhabiting large streams, rivers, and lakes are thought to transition from a diet composed predominately of invertebrates to one comprised mainly of fish and crayfish (Bachman 1991). Certainly, the ratio of forage fish to invertebrates in the brown trout diet will vary with fish size, brown trout gape size, and prey type and availability, among other factors.

Based on review of the brown trout diet information, it appears that as trout size increases, the proportion of fish in the diet is expected to increase. By the time adults reach a size of about 16 to 18 inches or larger, one might expect that the proportion of fish in their diet to exceed 50 percent, especially if fish as prey are readily available. Wood (2008) found that pattern of piscivory is consistent with sculpin density estimates, indicating that brown trout consume more sculpins where they are more readily available. In addition, Wood (2008) reported that brown trout with fish observed in their stomachs ranged in size between 235-390 mm total length, indicating that a shift to piscivory occurred at a size of around 235 mm or greater, and the proportion of fish in the diet increased steadily with predator size between the 230 mm and 300 mm size classes. The brown trout habitat suitability index (HSI) (Raleigh et al. 1986) states that at 25 cm (~8 inches), fish as prey items will begin to enter the adult brown trout diet. Adult brown trout that are sexually mature (>230 mm) range in size, and the composition of their diet is likely opportunistic and composed of mixed intake of fish and invertebrates based on the size of the adult trout.

Because of the size range of adult trout that are likely to be present, identifying a fish only or invertebrate only diet is not practical.[10] The literature base describing brown trout diets is as varied as the different diets reported. To account for this, TTF_{trout} will include a mixed diet proportion of sculpin (i.e., forage fish) and invertebrates for adult brown trout. For brown trout to derive TTF_{trout}, C_{trout} will be divided by the sum of the assumed dietary intake, 50% sculpin and 50% invertebrates.

YCT

Diet studies for fluvial populations of YCT are limited with some of the more pertinent studies summarized in Gresswell (2009). The data that are available suggest that YCT are opportunistic omnivores that consume food items according to availability with trout in streams generally feeding on drift, benthic invertebrates, terrestrial invertebrates, and other fish (Thurow et al. 1988; Allan 1995; Skinner 1985). Skinner (1985) noted an increase in growth as migratory populations of Yellowstone cutthroat trout in Idaho shifted from insectivory to piscivory. From the limited data, it is clear that compared to brown trout, fish make up a much smaller portion of the YCT diet, although fish do appear to be present as a dietary component, particularly for larger adults. For YCT, to derive TTF_{trout}, C_{trout} will be divided by the sum of the assumed dietary intake, 10% sculpin and 90% invertebrates.

6.1.2.4 COMPOSITE

The variable $TTF_{composite}$ brings all the dietary intake variables into a single variable for use in the final equation. EPA (2016) indicates that the parameter $TTF_{composite}$ quantitatively represents all dietary pathways of selenium exposure for a particular fish species within an aquatic system. It is derived from the individual TTFs for each trophic level modeled and represents the food web characteristics of the aquatic system. For this SSSC, $TTF_{composite}$ represents a fourth level food web as follows:

$$TTF_{composite} = TTF_{trout} \times TTF_{sculpin} \times TTF_{invertebrate}$$

Where:

TTF_{trout} = trophic transfer factor for brown trout from a location and time period

$TTF_{sculpin}$ = trophic transfer factor for sculpin from the same location and time period

$TTF_{invertebrate}$ = trophic transfer factor for benthic invertebrates from the same location and time period

6.1.3 DERIVATION OF WATER CRITERION ELEMENT: MECHANISTIC MODEL

Previous work from the Hoopes Spring and Sage Creek SSSC identified the egg/ovary EC_{10} for brown trout as 20.5 mg/kg dw and the whole-body equivalent as 13.6 mg/kg dw. Brown trout are the most sensitive species in these waters, and the egg/ovary EC_{10} has been approved as a protective threshold for the

[10] Data from the continuous fish population work by Simplot for Sage Creek and Hoopes Spring spanning from 2006 to 2019 indicate that a wide size range of sexually mature fish are present.

resident aquatic community. Likewise, the corresponding egg/ovary equivalent whole-body tissue concentration is also protective of the resident aquatic community. Because egg/ovary data are difficult to collect and a suitable whole-body equivalent has been derived, the whole-body criterion will be used to derive the water criterion element using the new site-specific data with the following equation:

$$C_{water} = \frac{C_{whole\ body}}{TTF_{composite}\ x\ EF}$$

Where:

C_{water} = predicted dissolved selenium criterion concentration in water (µg/L)

$C_{WB\ criterion}$ = whole body equivalent to egg/ovary selenium criterion (13.6 mg/kg dw)

EF = selenium concentration (mg/kg dw) in particulate materials/dissolved selenium concentration in water [$C_{particulate}$ (periphyton and sediments)/C_{water}] (liters per kilogram dry weight [L/kg dw])

6.1.4 Derivation of Water Criterion Element: BAF Model

The BAF approach relies on site-specific, field-measured BAFs (i.e., fish selenium tissue concentration divided by dissolved selenium concentration in surface water). It is a direct measure of selenium bioaccumulation into fish, without the trophic steps, and requires no assumption on dietary intake. The approach uses site-specific BAFs that are not intended for use in other watersheds. Two important trends occur when BAFs are used for deriving the water criterion element, including the following:

- BAFs tend to decrease as water selenium concentration increases.
- The range and variability of whole-body concentrations and BAFs is higher at low water selenium concentrations compared to higher water concentrations.

The first trend is commonly observed in water and other environmental media (DeForest et al. 2007; McGeer et al. 2003). When setting the water column element of the selenium criterion, selection of the BAF should consider the range of potential water column concentrations in which the criterion is expected to fall.

The second trend is important because it affects the ability to identify the effect of water column concentration on whole-body (or other tissue) concentrations. When calculating the water column element of the criterion, the selected BAF must be representative of the water and fish tissue concentrations present to ensure that the criterion is protective without being under or overprotective.

Stephan et al. (1985) note that, "Criteria should attempt to provide a reasonable and adequate amount of protection with only a small possibility of considerable overprotection or under protection." Simply using the highest BAF will result in a water concentration (e.g., criterion) much lower than needed to be protective because the highest factors are associated with the lowest exposure concentrations (DeForest

et al. 2007). This suggests that within this range of water concentrations, a composite measure of BAFs (e.g., median, average) is likely to best represent conditions in the stream.

The BAF approach will rely on trout or sculpin data collected from locations within the Site. Individual BAFs will be derived for each trout tissue (or sculpin tissue) concentration and dissolved selenium concentration for a location and time period. Multiple trout will likely be captured for analysis at each location, while only a single water quality sample will be collected; thus, a range of BAFs will be derived for each location and time period. The BAFs derived will be based on whole body tissues. To integrate the range of BAFs across locations and time periods within a stream (or if similar across the two streams), the median species-specific BAF will be utilized.

The water quality element is derived from the whole-body BAF equivalent to the egg/ovary EC_{10} using the following equation:

$$C_{water} = \frac{C_{WBcriterion}}{BAF}$$

Where:

C_{water} = Criterion concentration of dissolved selenium in surface water (µg/L)

$C_{WBcriterion}$ = Whole body equivalent to egg/ovary criterion (13.6 mg/kgdw)

BAF = Whole body fish tissue concentration of selenium/dissolved selenium concentration in water (L/kg)

A median BAF (e.g., median of BAFs from seasonal and similar locations) will be used to derive the water criterion element. The whole-body tissue criterion element for brown trout (13.6 mg/kg dw) will be used in the equation above to derive the water criterion.

6.2 FISHLESS WATERS

IDAPA 58.01.02 adopted language consistent with Appendix K of the 2016 National Criterion (EPA 2016) that states the most sensitive downstream species may be used for modeling to identify the water concentration allowed relative to an egg threshold. In fishless waters, mechanistic modeling is one approach that can be used to predict the water criterion element even though fish are not present if assumptions are made about fish TTFs. Rather than make assumptions about the fish TTFs, another approach is to utilize data collected from the fishless stream to derive the lower trophic level EF and TTFs and use fish data from the nearest downstream location where fish are present to derive the fish TTFs.

Reconnaissance and historical data suggest that upper NFSC and PCC are not expected to contain fish. A mechanistic model will be used for PCC sites to estimate the water quality criterion element.

6.3 REPORTING

Following data collection, analyses, and calculation of the water criterion elements, a report will be generated describing the findings and results of the derivation process together with any modifications in how the data were assembled to derive the water criterion element. This report will be provided to IDEQ and EPA Region 10 for review and comment.

Following agency review and depending upon the results of the criteria derivation effort, Simplot will make a decision about submitting a formal proposal for an SSSC for NFSC and PCC. If a formal proposal is submitted to the agencies, the previously submitted and reviewed report will serve as the technical support document for the proposal document.

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REPORT TABLES

Table 1. Selenium Concentrations in Surface Water of Pole Canyon Creek

Sample Location	Date	Selenium, Total			Flow (cfs)
		mg/L	LQ	VQ	
UP	10/1/1979	0.001	---	---	---
UP	9/15/1981	0.001	---	---	---
UP	9/15/1983	0.002	---	---	---
UP	5/15/1984	0.002	---	---	---
UP	9/15/1984	0.004	---	---	---
UP	5/15/1985	0.002	---	---	---
UP	9/15/1985	0.002	---	---	---
UP	5/15/1986	0.001	---	---	---
UP	9/15/1986	0.001	---	---	---
UP	5/15/1987	0.001	---	---	---
UP	9/15/1987	0.001	---	---	---
UP	9/15/1990	0.001	---	---	---
UP	5/15/1991	0.001	---	---	---
UP	9/15/1991	0.001	---	---	---
UP	5/15/1992	0.001	---	---	---
UP	9/15/1992	0.001	---	---	---
UP	5/15/1993	0.001	---	---	---
UP	9/15/1993	0.001	---	---	---
UP	5/15/1994	0.001	---	---	---
UP	9/15/1994	0.001	---	---	---
UP	5/15/1995	0.001	---	---	---
UP	9/15/1995	0.001	---	---	---
UP	5/15/1996	0.001	---	---	---
UP	9/15/1996	0.001	---	---	---
UP	5/15/1997	0.001	---	---	10.62
UP	9/15/1997	0.00022	---	---	0.35
UP	5/15/1998	0.001	---	---	---
UP	9/15/1998	0.001	---	---	---
UP	5/15/1999	0.001	---	---	---
UP	9/15/1999	0.001	---	---	---
UP	5/15/2000	0.001	---	---	---
UP	6/22/2000	0.001	---	---	1.33
UP	9/15/2000	0.001	---	---	---
UP	9/26/2000	0.001	---	---	---
UP	5/15/2001	0.001	---	---	---
UP	9/15/2001	0.001	---	---	---
UP	5/16/2002	0.001	U	---	1.94
UP	10/17/2002	0.001	B	J	0.08
UP	5/23/2003	0.001	U	---	2.57
UP	10/29/2003	0.0002	U	---	0.04
UP	5/7/2004	0.00052	B	J-	1.75
UP	7/20/2004	0.0003	U	U	0.43
UP	9/28/2004	0.0003	U	---	0.07
UP	9/20/2005	0.00025	B	---	0.16
UP	5/13/2006	---	---	---	3.79
UP	5/21/2006	0.00081	B	---	---
UP	10/16/2006	0.0002	U	---	1.04
UP	5/20/2007	---	---	---	---
UP	5/22/2007	0.00032	B	---	---

Sample Location	Date	Selenium, Total			Flow (cfs)
		mg/L	LQ	VQ	
UP-PD	6/2/2009	0.0002	U	---	4.87
UP-PD	11/22/2009	0.00039	B	---	0.13
UP-PD	6/28/2010	0.0007	B	U	---
UP-PD	6/28/2010	0.0002	B	---	---
UP-PD	11/11/2010	0.0002	U	---	0.01
UP-PD	6/14/2011	0.0002	U	---	---
UP-PD	11/7/2011	0.00031	B	---	---
UP-PD	5/11/2012	0.0002	U	---	---
UP-PD	9/13/2012	0.0002	U	---	---
UP-PD	11/7/2012	0.0002	U	---	1.09
UP-PD	5/21/2013	0.0002	U	---	1.99
UP-PD	8/23/2013	0.0002	U	---	---
UP-PD	11/5/2013	0.0002	U	---	0.06
UP-PD	5/20/2014	0.00028	J	---	0.01
UP-PD	8/12/2014	0.00038	J	U	0.35
UP-PD	11/19/2014	0.00033	J	---	0.10
UP-PD	11/19/2014	0.00024	J	---	---
UP-PD	5/11/2015	0.00062	U	J	2.69
UP-PD	5/11/2015	0.00062	U	J	---
UP-PD	9/12/2015	0.00062	U	---	0.20
UP-PD	11/5/2015	0.00062	U	---	---
UP-PD	5/18/2016	0.0002	J	---	2.88
UP-PD	11/7/2016	0.0004	J	---	0.15
UP-PD	5/15/2017	0.0004	U	---	6.85
UP-PD	11/13/2017	0.0004	U	---	---
UP-PD	5/14/2018	0.0002	J	---	3.67
UP-PD	5/14/2018	0.0002	U	---	---
UP-PD	10/22/2018	0.0002	U	---	0.17

Table 1. Selenium Concentrations in Surface Water of Pole Canyon Creek

Sample Location	Date	Selenium, Total			Flow
		mg/L	LQ	VQ	(cfs)
LP	6/5/1979	0.01	---	---	---
LP	10/1/1979	0.001	---	---	---
LP	9/15/1982	0.02	---	---	---
LP	5/15/1983	0.1	---	---	---
LP	5/15/1984	0.002	---	---	---
LP	5/15/1985	0.002	---	---	---
LP	5/15/1986	0.002	---	---	---
LP	5/15/1987	0.037	---	---	---
LP	5/15/1991	0.07	---	---	---
LP	9/15/1991	0.115	---	---	---
LP	5/15/1992	0.125	---	---	---
LP	9/15/1992	0.19	---	---	---
LP	5/15/1993	0.17	---	---	---
LP	5/15/1994	0.262	---	---	---
LP	5/15/1995	0.5	---	---	---
LP	9/15/1995	0.32	---	---	---
LP	5/15/1996	0.21	---	---	---
LP	9/15/1996	0.69	---	---	---
LP	5/15/1997	0.33	---	---	4.81
LP	6/15/1997	---	---	---	2.32
LP	7/15/1997	---	---	---	0.42
LP	8/15/1997	---	---	---	0.08
LP	5/15/1998	0.22	---	---	---
LP	6/3/1998	---	---	---	2.9
LP	7/1/1998	---	---	---	1.93
LP	8/4/1998	---	---	---	0.42
LP	5/15/1999	1	---	---	---
LP	5/15/2000	0.71	---	---	---
LP	6/22/2000	0.51	---	---	0.55
LP	5/15/2001	0.47	---	---	---
LP	5/15/2002	0.86	---	---	2.02
LP	5/24/2003	0.58	---	---	1.76
LP	5/7/2004	---	---	---	0.99
LP	6/4/2004	0.44	---	---	0.90
LP-A	6/4/2004	0.25	---	---	---
LP-B	6/4/2004	0.164	---	---	---
LP-C	6/4/2004	0.217	---	---	---
LP	7/20/2004	0.368	---	---	0.19
LP	9/28/2004	0.895	---	---	0.01
LP	5/18/2005	1.33	---	---	4.49
LP	9/20/2005	0.94	---	---	0.00
LP	5/21/2006	0.936	---	---	4.97
LP	5/22/2007	0.79	---	---	0.68

Sample Location	Date	Selenium, Total			Flow
		mg/L	LQ	VQ	(cfs)
LP-PD	5/19/2008	0.0409	---	---	7.37
LP-PD	8/27/2008	---	---	---	0.15
LP-PD	10/1/2008	0.0002	U	---	---
LP-PD	6/2/2009	0.00041	B	---	3.58
LP-PD	11/21/2009	0.00045	B	---	0.14
LP-PD	6/8/2010	0.0005	B	U	2.03
LP-PD	8/26/2010	---	---	---	---
LP-PD	11/11/2010	0.00044	B	---	0.2
LP-PD	6/4/2011	0.432	---	---	---
LP-PD	6/5/2011	0.098	---	---	---
LP-PD	6/7/2011	0.034	---	---	---
LP-PD	6/12/2011	1.091	---	---	---
LP-PD	6/14/2011	0.043	---	---	---
LP-PD	6/21/2011	0.001	---	---	---
LP-PD	6/27/2011	0.001	---	---	---
LP-PD	8/28/2011	0.00047	B	---	---
LP-PD	11/7/2011	0.00022	B	---	0.08
LP-PD	4/25/2012	0.00045	J	---	---
LP-PD	5/11/2012	0.0002	U	---	1.17
LP-PD	5/30/2012	0.00023	J	---	---
LP-PD	7/23/2012	0.00026	J	---	---
LP-PD	8/30/2012	0.0002	U	---	0.15
LP-PD	9/13/2012	0.0002	U	---	---
LP-PD	11/7/2012	0.0002	U	---	0.11
LP-PD	5/21/2013	0.0002	U	---	2.49
LP-PD	8/23/2013	0.0002	U	---	0.15
LP-PD	11/5/2013	0.0002	U	---	0.09
LP-PD	5/20/2014	0.00031	J	---	5.74
LP-PD	8/12/2014	0.00044	J	U	0.38
LP-PD	11/19/2014	0.00052	U	---	0.09
LP-PD	5/8/2015	0.00062	U	UJ	3.00
LP-PD	9/12/2015	0.0014	J	---	0.17
LP-PD	11/5/2015	0.00062	U	---	8.61
LP-PD	5/18/2016	0.0002	U	---	2.50
LP-PD	11/7/2016	0.0004	J	---	0.16
LP-PD	5/15/2017	0.0004	U	---	9.42
LP-PD	11/13/2017	0.0004	U	---	0.09
LP-PD	5/18/2018	0.0009	J	---	3.62
LP-PD	10/22/2018	0.0003	J	---	0.11
LP-PD	5/21/2019	0.0004	J	---	2.55

Notes:

cfs = cubic feet per second, mg/L = milligrams per liter, LQ = Laboratory Qualifier, VQ = Validation Qualifier

"---" = not analyzed or qualifier not assigned

Laboratory qualifiers: B and J - Estimated value reported between the Method Detection Limit and Practical Quantitation Limit;

U - Not detected at reported Detection Limit

Table 2. Selenium Concentrations in Pole Canyon Creek Channel Sediment

Sample Location	Date	Selenium Concentration	Units[1]
UP	7/22/2004	0.46	mg/kg
LP	7/22/2004	58.1	mg/kg
LPT1-2	7/20/2010	47.9	mg/kg
LPT1-2	8/11/2011	22.8	mg/kg
LP-PD	8/26/2010	13.4	mg/kg
LPT2-2	7/20/2010	18	mg/kg
LPT2-2	8/11/2011	19.2	mg/kg
LPT2-2	7/20/2010	18	mg/kg
LPT2-2	8/11/2011	19.2	mg/kg
LP-PD	8/26/2010	13.4	mg/kg
LPT3-2	7/20/2010	9.3	mg/kg
LPT3-2	8/11/2011	1.7	mg/kg
LPT4	11/7/2011	10.5	mg/kg
LPT4	11/7/2011	17.3	mg/kg
LPT5	11/7/2011	7.2	mg/kg
LPT5	11/7/2011	5.3	mg/kg
LPT-6	10/18/2012	16.8	mg/kg
LPT-6	10/18/2012	8.7	mg/kg
LPT-7	10/18/2012	21.6	mg/kg
LPT-7	10/18/2012	10.8	mg/kg
LPT-8U	10/18/2012	14.1	mg/kg
LPT-8U	10/18/2012	7.3	mg/kg
LPT-8D	10/18/2012	50.8	mg/kg
LPT-8D	10/18/2012	20	mg/kg
LPT-9	10/18/2012	96.7	mg/kg
LPT-9	10/18/2012	62.8	mg/kg

1 Sediment data are presented on a dry weight basis.

Table 3. Selenium Concentrations in Aquatic Biota of Pole Canyon Creek - Macrophytes, Periphyton, Benthic Invertebrates

Sample Location	Location Description	Aquatic Biota Description	Date	Dry vs Wet Basis	Selenium (mg/kg)	LQ	VQ
UP	Pole Canyon Creek (upstream of ODA)	Macrophytes (Equisetum)	7/24/2004	Dry	0.48	---	---
UP	Pole Canyon Creek (upstream of ODA)	Macrophytes (Filamentous algae)	7/24/2004	Dry	1.64	---	---
UP	Pole Canyon Creek (upstream of ODA)	Macrophytes (Bryophyte)	7/24/2004	Dry	1.7	---	---
LP	Pole Canyon Creek (stream station through 2007, downstream of ODA toe)	Macrophytes (Bryophyte, moss)	7/22/2004	Dry	66.1	---	---
LP	Pole Canyon Creek (stream station through 2007, downstream of ODA toe)	Macrophytes (Watercress)	7/22/2004	Dry	87.7	---	---
UP	Pole Canyon Creek (upstream of ODA)	Periphyton	7/24/2004	Dry	3	B	---
LP	Pole Canyon Creek (stream station through 2007, downstream of ODA toe)	Periphyton	7/22/2004	Dry	69.1	---	---
UP	Pole Canyon Creek (upstream of ODA)	Benthic Invertebrate	7/24/2004	Wet	0.57	---	---
LP	Pole Canyon Creek (stream station through 2007, downstream of ODA toe)	Benthic Invertebrate	7/22/2004	Wet	16.6	---	---
LP-PD	Pole Canyon Creek (at bypass pipeline discharge, since 2008)	Benthic Invertebrate	8/26/2010	Dry	16.9	---	---

Notes:

LQ = Laboratory Qualifier, VQ = Validation Qualifier

"---" = qualifier not assigned

B qualifier = estimated value reported between the Method Detection Limit and the Practical Quantitation Limit

Table 4. Selenium Concentrations in Surface Water of North Fork Sage Creek

Sample Location	Date	Selenium, Total			Flow (cfs)
		mg/L	LQ	VQ	
NSV-5	6/6/1979	0.01	---	---	---
NSV-5	10/2/1979	0.001	---	---	---
NSV-5	9/16/1997	0.0031	---	---	---
NSV-5	5/1/1998	0.00041	---	---	---
NSV-5	5/19/1998	0.00041	---	---	---
NSV-5	9/15/1999	0.00082	---	---	---
NSV-5	5/15/2002	0.001	U	---	0.08
NSV-5	10/18/2002	0.001	U	U	---
NSV-5	5/24/2003	0.001	U	---	0.01
NSV-5	10/28/2003	0.00032	B	J-	0.08
NSV-5	5/19/2004	0.0003	U	---	---
NSV-5	7/22/2004	0.0013	---	U	0.03
NSV-5	6/19/2008	0.00053	B	---	---
NSV-5	9/16/2008	0.00039	B	---	---
NSV-5	6/2/2009	0.00072	B	---	0.53
NSV-5	10/21/2009	0.0002	U	---	---
NSV-5	6/7/2010	0.0005	B	U	0.21
NSV-5	9/28/2010	0.00026	B	---	---
NSV-5	11/11/2010	0.0003	B	---	---
NSV-5	6/14/2011	0.0444	---	---	2.06
NSV-5	9/20/2011	0.00054	B	---	---
NSV-5	5/11/2012	0.00024	J	---	0.10
NSV-5	9/13/2012	0.00085	J	---	---
NSV-5	11/15/2012	0.00029	J	---	---
NSV-5	5/21/2013	0.00036	J	---	---
NSV-5	9/18/2013	0.00046	J	---	---
NSV-5	11/15/2013	0.00033	J	---	---
NSV-5	5/20/2014	0.0004	J	---	0.21
NSV-5	8/14/2014	0.00037	J	U	0.09
NSV-5	5/8/2015	0.00062	U	---	---
NSV-5	7/21/2015	0.00062	U	---	0.07
NSV-5	9/12/2015	0.00062	U	---	---
NSV-5	11/5/2015	0.00062	U	---	---
NSV-5	5/18/2016	0.00024	U	---	---
NSV-5	7/8/2016	0.00014	J	U	---
NSV-5	11/8/2016	0.0003	J	---	---
NSV-5	5/15/2017	0.0006	J	---	2.16
NSV-5	11/13/2017	0.0004	U	---	---
NSV-5	5/18/2018	0.0002	J	---	0.42
NSV-5	10/22/2018	0.0002	U	---	---

Sample Location	Date	Selenium, Total			Flow (cfs)
		mg/L	LQ	VQ	
NSV-6	6/6/1979	0.01	---	---	---
NSV-6	10/2/1979	0.001	---	---	---
NSV-6	9/16/1997	0.00323	---	---	---
NSV-6	5/1/1998	0.041	---	---	---
NSV-6	5/19/1998	0.041	---	---	---
NSV-6	9/1/1998	0.0019	---	---	---
NSV-6	9/16/1998	0.0019	---	---	---
NSV-6	9/15/1999	0.0019	---	---	---
NSV-6	5/1/2000	0.01	---	---	---
NSV-6	5/16/2000	0.0079	---	---	---
NSV-6	5/15/2002	0.001	B	---	0.82
NSV-6	10/18/2002	0.001	U	U	0.05
NSV-6	5/24/2003	0.001	U	---	0.05
NSV-6	10/28/2003	0.001	---	J-	0.15
NSV-6	5/19/2004	0.0005	B	---	---
NSV-6	7/22/2004	0.00043	B	---	0.27
NSV-6	10/17/2006	0.0013	B	---	0.93
NSV-6	6/19/2008	0.0067	---	---	2.77
NSV-6	9/16/2008	0.0016	B	---	0.46
NSV-6	6/2/2009	0.0061	---	---	7.44
NSV-6	10/21/2009	0.00066	B	---	---
NSV-6	6/7/2010	0.0116	---	---	1.54
NSV-6	8/26/2010	---	---	---	0.20
NSV-6	9/14/2010	0.0012	B	---	0.19
NSV-6	11/11/2010	0.0014	B	---	0.39
NSV-6	6/2/2011	0.006	---	---	---
NSV-6	6/7/2011	0.023	---	---	---
NSV-6	6/12/2011	0.063	---	---	---
NSV-6	6/14/2011	0.043	---	---	7.19
NSV-6	9/20/2011	0.0014	B	---	---
NSV-6	5/11/2012	0.0093	---	---	1.18
NSV-6	9/13/2012	0.0011	J	---	---
NSV-6	11/15/2012	0.0013	J	---	---
NSV-6	5/21/2013	0.0229	---	---	1.74
NSV-6	9/18/2013	0.0012	J	---	---
NSV-6	11/15/2013	0.00078	J	---	---
NSV-6	5/20/2014	0.0104	---	---	1.77
NSV-6	8/14/2014	0.0019	J	U	0.29
NSV-6	5/8/2015	0.0045	---	---	---
NSV-6	7/21/2015	0.0015	J	---	0.56
NSV-6	9/12/2015	0.00062	U	---	0.14
NSV-6	11/5/2015	0.00062	U	---	0.29
NSV-6	5/18/2016	0.0057	---	---	3.72
NSV-6	7/8/2016	0.0019	J	U	0.34
NSV-6	11/8/2016	0.0011	J	---	0.56
NSV-6	5/15/2017	0.0022	---	---	7.57
NSV-6	11/13/2017	0.0004	J	---	0.35
NSV-6	5/18/2018	0.005	---	---	3.78
NSV-6	10/22/2018	0.0004	J	---	0.20
NSV-6	5/21/2019	0.0053	---	---	5.26

Notes:

cfs = cubic feet per second, mg/L = milligrams per liter, LQ = Laboratory Qualifier, VQ = Validation Qualifier

"---" = not analyzed or qualifier not assigned

Laboratory qualifiers: B and J - Estimated value between the Method Detection Limit and Practical Quantitation Limit;

U - Not detected at reported Detection Limit

Table 5. Selenium Concentrations in North Fork Sage Creek Sediment

Sample Location	Location Description	Date	Depth Range (inches)	Selenium[1] (mg/kg)
NSV-5	North Fork Sage Creek (upstream of inflow from Pole Canyon Creek)	9/1/1998	N.A.	0.48
NSV-5	North Fork Sage Creek (upstream of inflow from Pole Canyon Creek)	9/16/1998	N.A.	0.48
NSV-5	North Fork Sage Creek (upstream of inflow from Pole Canyon Creek)	9/15/1999	N.A.	0.77
NSV-5	North Fork Sage Creek (upstream of inflow from Pole Canyon Creek)	7/22/2004	N.A.	0.37
NSV-6	North Fork Sage Creek (downstream of inflow from Pole Canyon Creek)	9/1/1998	N.A.	4.13
NSV-6	North Fork Sage Creek (downstream of inflow from Pole Canyon Creek)	9/16/1998	N.A.	4.1
NSV-6	North Fork Sage Creek (downstream of inflow from Pole Canyon Creek)	9/15/1999	N.A.	3.6
NSV-6	North Fork Sage Creek (downstream of inflow from Pole Canyon Creek)	8/26/2010	0-4	6.5

Notes:

mg/kg = milligrams per killigram, "LQ" = Laboratory Qualifier, "VQ" = Validation Qualifier

"N.A." = not available

[1]Sediment data are presented on a dry weight basis.

Table 6. Selenium Concentrations in Aquatic Biota of North Fork Sage Creek - Macrophytes, Periphyton, Benthic Invertebrates

Sample Location	Location Description	Aquatic Biota Description	Date	Dry vs Wet Basis	Selenium (mg/kg)	LQ	VQ
NSV-5	North Fork Sage Creek (upstream of inflow from Pole Canyon Creek)	Macrophytes (Duckweed)	7/22/2004	Dry	0.65	---	---
NSV-5	North Fork Sage Creek (upstream of inflow from Pole Canyon Creek)	Macrophytes (Juncas)	7/22/2004	Dry	0.18	B	---
NSV-5	North Fork Sage Creek (upstream of inflow from Pole Canyon Creek)	Benthic Invertebrate	7/22/2004	Wet	1.09	---	---
NSV-6	North Fork Sage Creek (downstream of inflow from Pole Canyon Creek)	Benthic Invertebrate	8/26/2010	Dry	11.9	---	---

Notes:

LQ = Laboratory Qualifier, VQ = Validation Qualifier

"---" = qualifier not assigned

B qualifier = estimated value reported between the Method Detection Limit and the Practical Quantitation Limit

Table 7: Monitoring Locations and Monitoring Frequency for Different Environmental Media

Location ID	Location Description	Use/Rationale	Reach Coordinates (upstream and downstream limits) (meters, UTM Zone 12 T)				Monitoring Frequency							
			Upstream		Downstream		Selenium Concentrations and other Chemistry					Population, Community, Habitat		
			X (easting) *decimal degrees*	Y (northing) *decimal degrees*	X (easting) decimal degrees	Y (northing) *decimal degress*	Surface Water	Sediment	Periphyton	Benthos	Fish	Benthos	Fish	Habitat
NSV-5	NFSC upstream of PCC	Existing - background	492271	4724429	492257.11	4724361	S/F	S/F	S/F	S/F	S/F	F	F	F
			42.672294	*-111.094325*	*42.671682*	*-111.094494*								
NSV-6[1]	NFSC downstream of PCC	Existing - influenced by PCC	492101.3985	4722579.526	492148.223	4722528.504	S/F	S/F	S/F	S/F	S/F	F	F	F
			42.655637	*-111.096369*	*42.655178*	*-111.095797*								
NSV-7	NFSC upstream of the confluence with Sage Creek	New - influencd by PCC and all Sage Valley Drainage	491703.7905	4721544.305	491690.0141	4721472.033	S/F	S/F	S/F	S/F	S/F	F	F	F
			42.646310	*-111.101205*	*42.645659*	*-111.101372*								
LP-PD[1]	Lower PCC downstream of the ODA and bypass pipeline discharge	Existing lower PCC stream channel receiving surface water from upstream of ODA	490846.0378	4725163.353	490899.0319	4725151.401	S/F	S/F	S/F	S/F	S/F	F	F	F
			42.678892	*-111.111727*	*42.678785*	*-111.111080*								
LP-PDT	Terminus of PCC flow in Sage Valley	New - influencd by PCC historic flow path and upper Sage Valley drainage	491727.9792	4724296.003	491743.7603	4724267.669	S/F	S/F	S/F	S/F	S/F	F	F	F
			42.671091	*-111.100950*	*42.670836*	*-111.100757*								

Notes:

Coordinates are for upstream and downstream reach limits. Samples to be collected within the defined reach for each location.

S/F - Spring (late May) and Fall (late August early September)

F - Fall

NFSC - North Fork Sage Creek; PCC - Pole Canyon Creek

Table 8. Field Measurement and Chemical Analysis Methods

Parameter	Media	Lab/Instrument	Basis (Dry/Wet)	Analytical Method	MDL/range	MRL/PQL	AWQC[3]/AWRMP[4]	Field Preparation
Discharge	Surface water	Flow Meter or other	NA	NA	---	---	---	NA
Temperature	Surface water	YSI multiprobe sonde	NA	SM 2550 N-2000	- 5 to 70 C	---	---	NA
pH	Surface water	YSI multiprobe sonde	NA	SM 4500-H B-2000	0 to 14 pH units	---	---	NA
Specific conductance	Surface water	YSI multiprobe sonde	NA	SM 2510 N-1997	0 to 500 uS/cm	---	---	NA
Dissolved oxygen	Surface water	YSI multiprobe sonde	NA	SM 2500-O G-2001	0 to 50 mg/L	---	---	NA
Oxidation-Reduction Potential (ORP)	Surface water	YSI multiprobe sonde	NA	SM 2580 B	-1500 to 1500 mV	---	---	NA
Turbidity	Surface water	YSI multiprobe sonde	NA	SM 2130 B	0 to 1000 NTU	---	---	NA
Selenium, dissolved	Surface water	SVL	NA	EPA 6020B ICP-MS[1]	0.00024 mg/L	0.001 mg/L	0.0031 mg/L[3]	Field filter, HNO_3, pH < 2
Selenium, total	Surface water	SVL	NA	EPA 6020B ICP-MS[1]	0.00024 mg/L	0.001 mg/L	---	Raw, HNO_3, pH < 2
Total phosphorus	Surface water	SVL	NA	SM4500-PF	0.00337 mg/L	0.01 mg/L	---	H_2SO_4 to pH < 2, Cool at 4°C
Nitrate +nitrite	Surface water	SVL	NA	EPA 353.2	0.04 mg/L	0.05 mg/L	---	H_2SO_4 to pH < 2, Cool at 4°C
Sulfate	Surface water	SVL	NA	EPA 300.0	0.18 mg/L	0.3 mg/L	---	Raw, Cool at 4°C
Alkalinity	Surface water	SVL	NA	SM 2320B	1 mg/L	---	---	Raw, Cool at 4°C
Hardness	Surface water	SVL	NA	SM 2340B	0.271 mg/L	2.31 mg/L	---	Not Applicable
Dissolved Organic Carbon	Surface water	SVL	NA	SM 5310B	0.489 mg/L	1 mg/L	---	Field Filter, H_2SO_4, pH < 2
Selenium, total[1]	Biotic tissues	ALS	DW	EPA 6020B ICP-MS	0.2[2]	1 [2]	12.5 mg/kg	Cool at 4 C, Freeze within 24-48 hours
Percent solids	Biotic tissues	ALS	WW	EPA 160.3	---[2]	---[2]	---	Cool at 4 C, Freeze within 24-48 hours
Selenium, total	Sediment	SVL	DW	EPA 6020B ICP-MS	0.012 mg/kg	0.1 mg/kg	2.6 mg/kg	Raw, Cool at 4°C
Percent solids	Sediment	SVL	WW	EPA 160.3 or EPA CLP SOW Exhibit D	---	---	---	Raw, Cool at 4°C

Notes:

AWQC - aquatic water quality criteria, AWRMP - Area Wide Risk Management Plan, MDL - method detection limit, MRL/PQL - method reporting limit/practical quantitation limit, mg/kg - milligrams per kilogram, mg/L - milligrams per liter, mm - millimeters, NA - not applicable, NTU - nephelometric turbidity unit

Table 9. Sample Preservation and Holding Times

Sample Type	Parameter	Preservation and Storage	Sample Container	Holding Time (days)
Surface Water	Metals (total or dissolved)	HNO_3 to pH < 2	500mL Plastic Bottle	180
	Selenium (total recoverable)	Raw, HNO_3 to pH < 2	500mL Plastic Bottle	180
	Selenium (dissolved)	HNO_3 to pH < 2	500mL Plastic Bottle	180
	Alkalinity	Cool at 4°C	500mL Plastic Bottle	14
	Nitrate + Nitrite	H_2SO_4, pH < 2	250mL Plastic Bottle	28
	Sulfate	Cool at 4°C	250mL Plastic Bottle	28
	Dissolved Organic Carbon (DOC)	H_2SO_4, pH < 2	40mL Glass Vial	28
	Total phosphorus	H_2SO_4 to pH < 2, Cool at 4°C	250mL Plastic Bottle	28
Sediment	Total Selenium	Cool at 4° C, or freeze at 0°C for storage	1Qt Ziploc Bag	180
Fish Tissue[1]	Total Selenium	Cool at 4°C for transport, freeze at 0°C for storage	1Qt Ziploc Bag	Freeze within 24-48 hours; analyze within 180 days
Periphyton[1]	Total Selenium	Cool at 4°C for transport, freeze at 0°C for storage	250mL Plastic Bottle	Freeze withing 24-48 hours; Dry within 7 days; analyze within 180 days
Benthic Invertebrates[1]	Total Selenium	Lab analysis: Cool at 4°C for transport, freeze at 0°C for storage	5g Glass Vial	Freeze within 24- 48 hrs; analyze within 180 days
		Identification: 70% ethanol for transport and storage	1L Plastic Bottle	

Notes:

[1] All tissue samples will be shipped to the laboratory on dry ice.

TABLE 10. Field Quality Assurance Sample Types and Frequencies

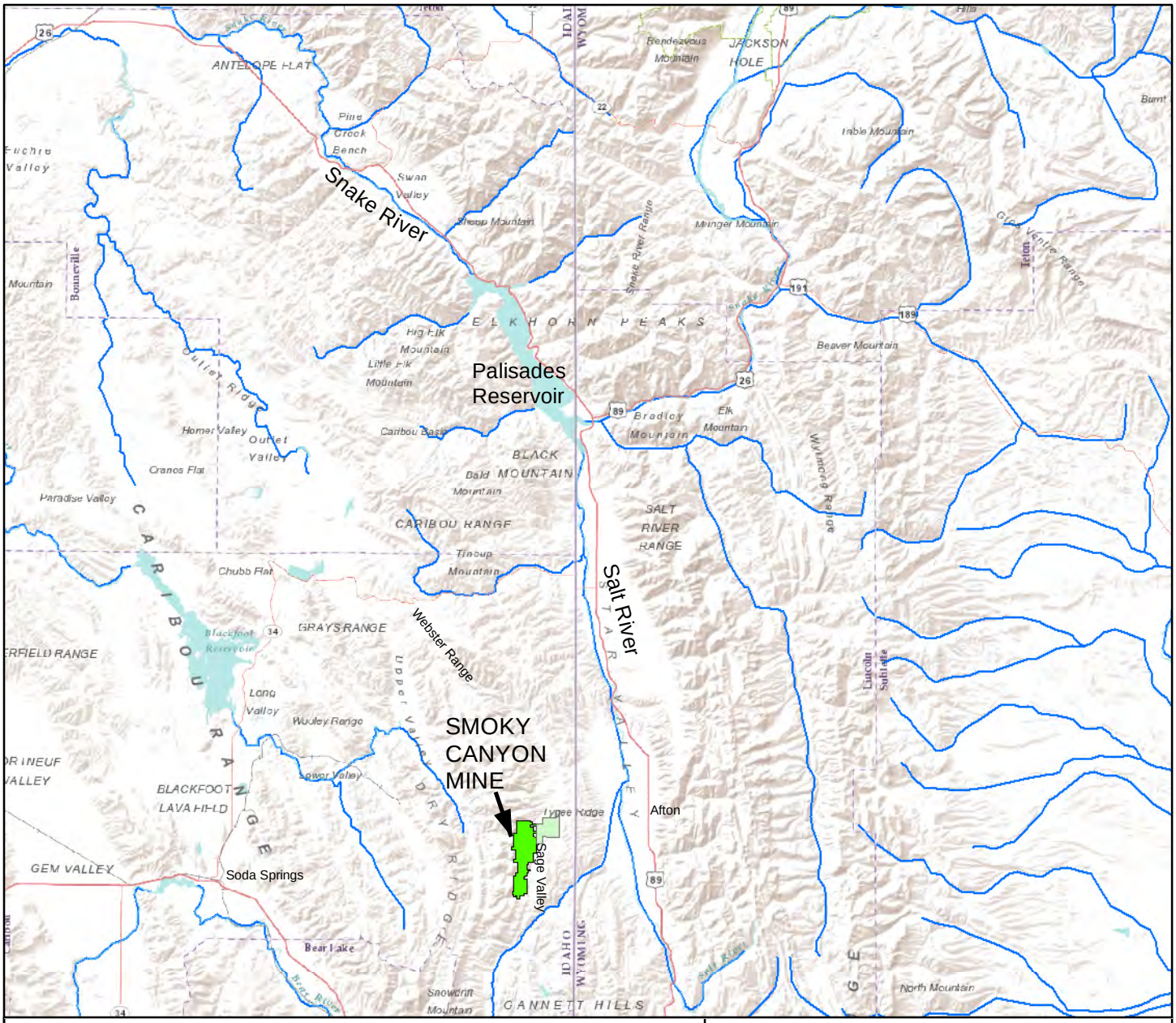
Sample Media	Quality Assurance Sample Type	Collection Requirement	Specified Frequency
Surface Water	Field Duplicate	All sampling events[1]	1 per 10 samples per event or 1 per event when fewer than 10 samples collected
	Equipment Rinsate Blank	When sampling equipment is reused at multiple locations	1 per 20 samples or 1 per event if less than 20 samples collected
Sediment	Field Duplicate	All sampling events	1 per 10 samples or at least 1 per day of sampling
	Equipment Rinsate Blank	When sampling equipment is reused at multiple locations	1 per 20 samples or at least 1 per day of sampling
Other Biological Tissue	Equipment Rinsate Blank	When sampling equipment is reused at multiple locations	1 per 20 samples or at least 1 per day of sampling
Other QC	DI Blank	Once before equipment rinsate blanks are collected using a new source of DI water	2 per year or as needed based on total number of DI water sources
	Filter Blank	Each quarterly sampling event	1 per quarterly event

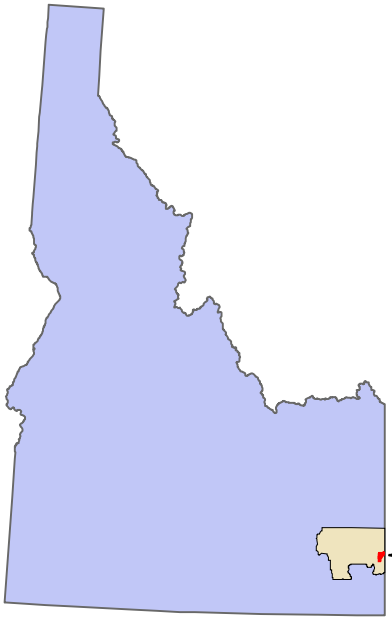
Notes:

DI – Deionized water

QC - Quality Control

REPORT FIGURES





Service Layer Credits: Sources: Esri, USGS, NOAA
Sources: Esri, Garmin, USGS, NPS

0 12 24

Miles

N

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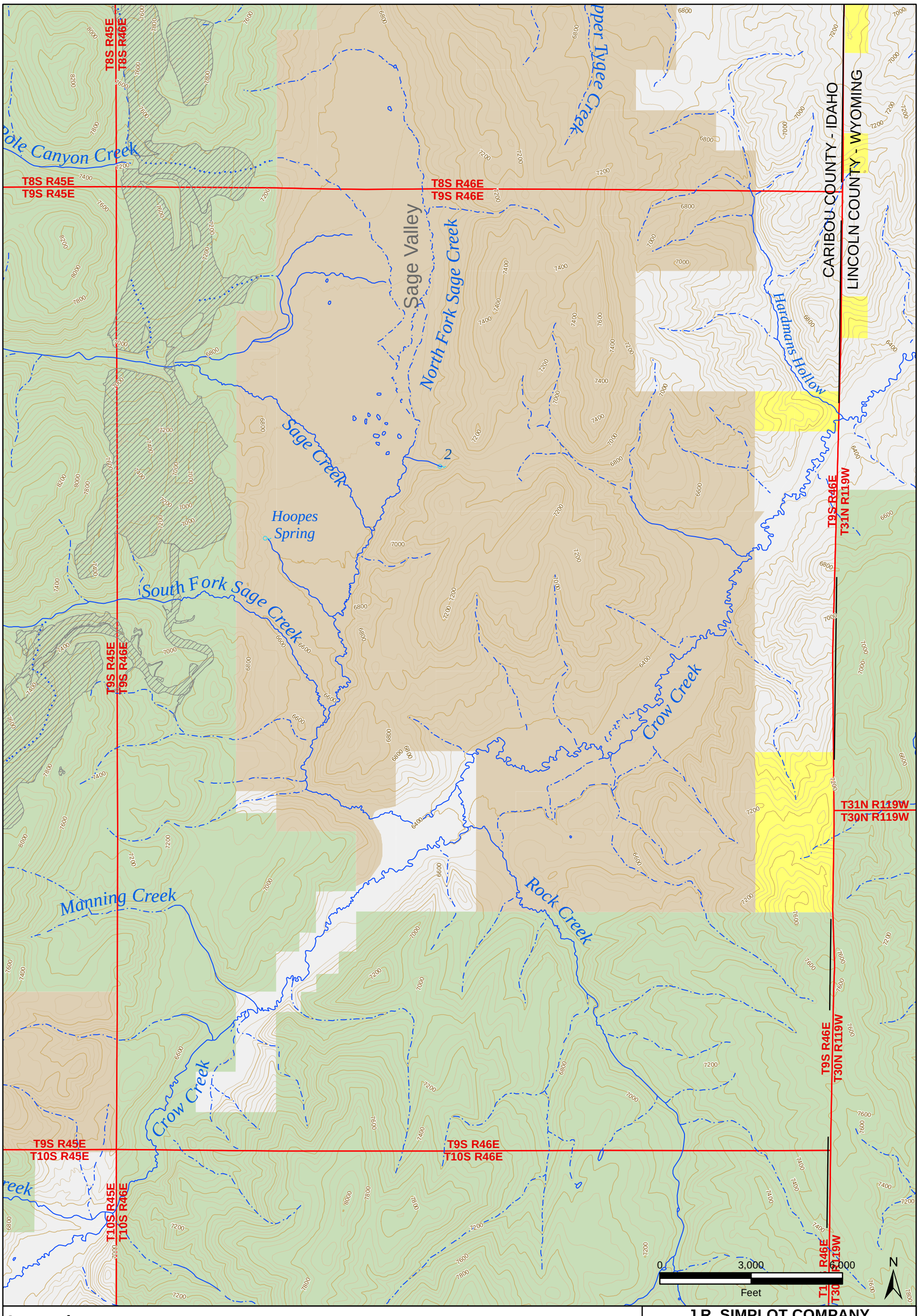
SMOKY CANYON MINE

FIGURE 1

LOCATION OF THE SMOKY CANYON MINE

DATE: MAR 30, 2020	FORMATION ENVIRONMENTAL
BY: CRL	FOR: SMC

S:\GIS\arcprj\20101109\plt\SSSCP\NFSC-PCC_workplan\Fig_01_SCP_region.mxd



Legend

- Mine Disturbance Areas
- Township/Range Boundaries
- J.R. Simplot Co.
- US Forest Service
- BLM
- Other Private

Notes: Mine disturbance area boundary includes a 50-foot buffer.

Topographic surface reflects 2004 conditions in mine disturbance areas.

J.R. SIMPLOT COMPANY

SMOKY CANYON MINE

FIGURE 2

SAGE CREEK AND CROW CREEK DRAINAGES

DATE: MAR 30, 2020

BY: CRL | FOR: SMC

FORMATION ENVIRONMENTAL

S:\GIS\arcpro\20100109\plt\SSSCPINFSC-PCC_workplan\Fig_02_SCP-sw.mxd

Pole Canyon NTCRA Bypass Pipeline

Pipeline Discharge LP-PD

LPT2-2

LPT1-2

LPT3-2

LP-1

LP

Pole Canyon Creek

UP-PD

UP

Infiltration Basin

LPT-6

Irrigation Ditch

LPT-7

NSV-5

LPT-8U

Sage Valley

LPT-8D

LPT-9

North Fork Sage Creek

NSV-6

Sage Creek

Hoopes Spring

South Fork Sage Creek

Legend

- Surface Water or Springs Monitoring Location
- Historic (pre-ODA) Flow Path
- Irrigation Ditch
- Intermittent Stream
- Perennial Stream
- 2006 NTCRA Bypass Pipeline Alignment
- Mine Disturbance Areas
- Pole Canyon ODA Cover Area Boundary
- Reclaimed Dinwoody Borrow Area

0 2,000 4,000

Feet

N

J.R. SIMPLOT COMPANY

SMOKY CANYON MINE

FIGURE 3

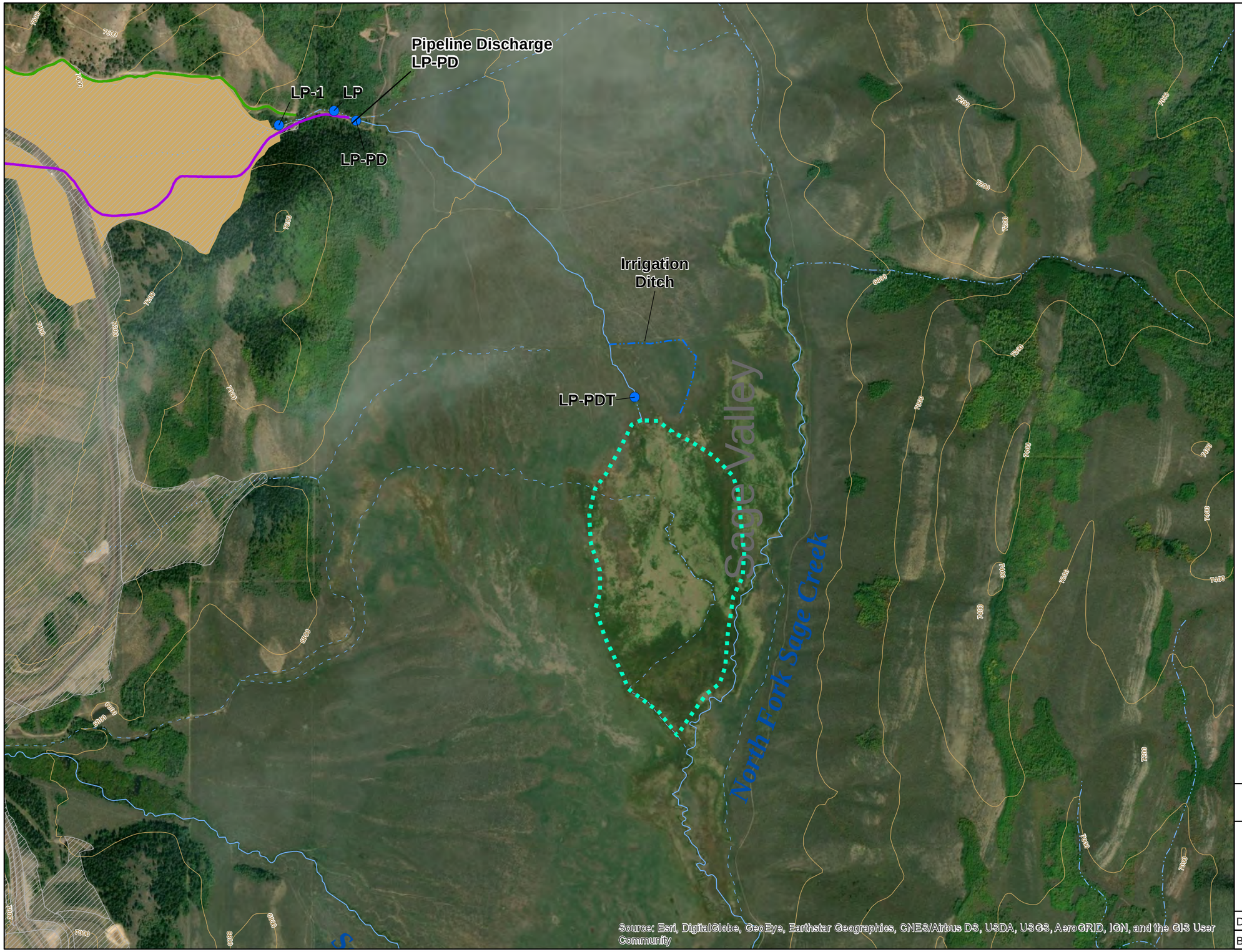
SAMPLE LOCATIONS IN POLE CANYON CREEK AND NORTH FORK SAGE CREEK

DATE: AUG 06, 2020

BY: CRL FOR: SMC

FORMATION ENVIRONMENTAL

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Legend

- Surface Water or Springs Monitoring Location
- Historic (pre-ODA) Flow Path
- Irrigation Ditch
- Intermittent Stream
- Perennial Stream
- 2006 NTCRA Bypass Pipeline Alignment
- 2006 NTCRA Run-on Control Channel
- Alluvial Wet Meadow
- Mine Disturbance Areas
- Pole Canyon ODA Cover Area Boundary

0 1,000 2,000
Feet

N

J.R. SIMPLOT COMPANY

SMOKY CANYON MINE

FIGURE 4

UNIQUE FEATURES OF POLE CANYON CREEK

DATE: AUG 06, 2020

BY: CRL | FOR: SMC

FORMATION ENVIRONMENTAL

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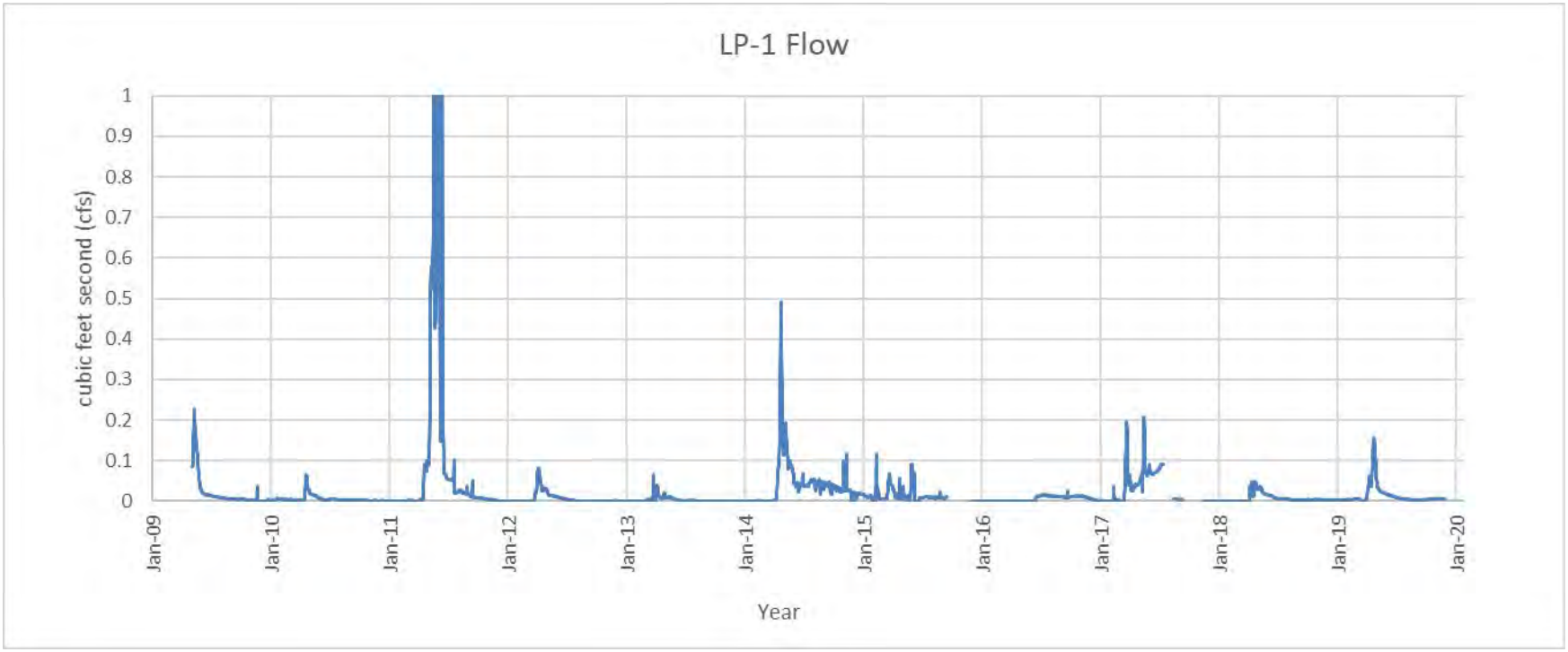


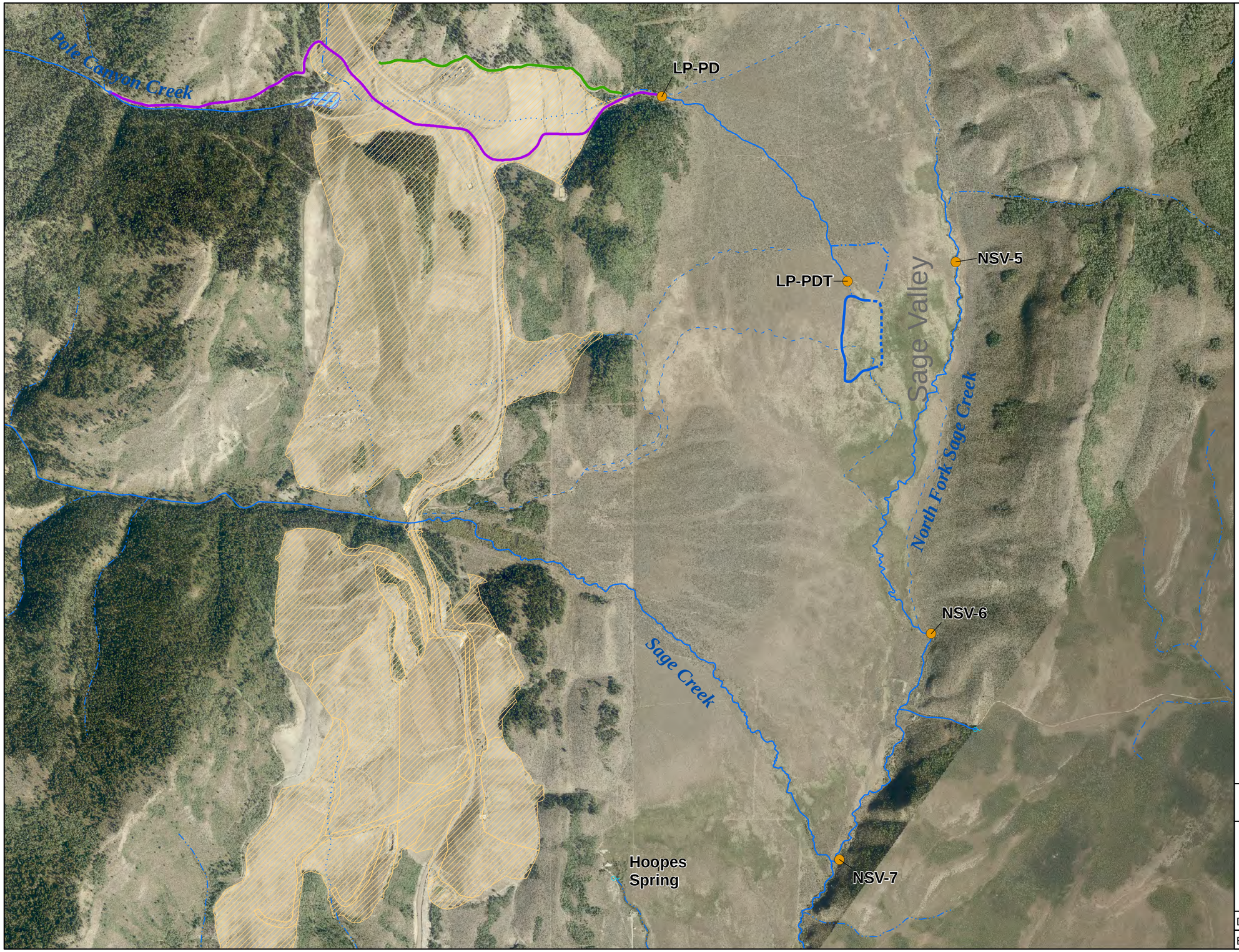
Figure 5

Flow at LP-1 Seep of Pole Canyon

J.R. Simplot Company
Smoky Canyon Mine

DATE: JULY 2020
BY: WSB | CHK: SMC

FORMATION ENVIRONMENTAL



Legend

- Proposed Sample Locations
- Mine Disturbance Areas
- Historic (pre-ODA) Flow Path
- Irrigation Ditch
- Intermittent Stream
- Perennial Stream
- 2006 NTCRA Bypass Pipeline Alignment

Aerial Photo 2019

0 1,500 3,000

Feet

N

J.R. SIMPLOT COMPANY

SMOKY CANYON MINE

FIGURE 6

PROPOSED SAMPLE LOCATIONS FOLLOWING 2019 RECONNAISSANCE

DATE: AUG 06, 2020

BY: CRL | FOR: SMC

FORMATION ENVIRONMENTAL

S:\GIS\arcprj2\101109\plt\SSSCPW\FSC-PCC_workplan\Fig_05_ProposedSampLocs.mxd

APPENDIX A – QUALITY ASSURANCE PROJECT PLAN AND STANDARD OPERATING PROCEDURES

APPENDIX B – PHOTOS OF PROPOSED SAMPLE REACHES



LP-PD at discharge from pipeline bypass



LP-PD mid-reach looking upstream



LP-PD mid-reach looking downstream



LP-PD at downstream end looking downstream



LP-PDT at top of reach looking downstream into valley



LP-PDT mid-reach



LP-PDT looking upstream from downstream end



LP-PDT Substrate



NSV-5 overview



NSV-5 stream standing water



NSV-5 willows in stream



NSV-6 Valley overview looking upstream



NSV-6 downstream end of reach open water



NSV-6 downstream end of reach looking upstream



NSV-6 mid reach



NSV-6 near top end of reach looking upstream



NSV-6 upstream end of reach looking upstream



NSV-6 reach overview



NSV-7 at top of reach looking upstream



NSV-7 reach top of reach looking downstream



NSV-7at downstream end looking upstream



NSV-7 at downstream end looking upstream

APPENDIX B - North Fork Sage Creek and Pole Canyon Creek Data Summary Report

North Fork Sage Creek and Pole Canyon Creek Data Summary Report

Prepared for:

Simplot Company



Prepared by:

Formation Environmental, LLC



MAY 2026

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Attachments

Attachment A - Photo Log
Attachment B - Data

LIST OF ABBREVIATIONS

BAF	Bioaccumulation Factor
BURP	Beneficial Use Reconnaissance Program
CEMPP	Comprehensive Environmental Monitoring Program Plan
cfs	cubic feet per second
DO	Dissolved Oxygen
DOC	Dissolved Organic Carbon
EC10	Effect Concentration
EPA	United States Environmental Protection Agency
EPT	Ephemeroptera, Plecoptera, and Trichoptera
Formation	Formation Environmental, LLC
HBI	Hilsenhoff Biotic Index
IDAPA	Idaho Administrative Procedures Act
IDEQ	Idaho Department of Environmental Quality
µg/L	micrograms per liter
mg/kg dw	milligrams per kilogram dry weight
mg/L	milligrams per liter
mm	millimeter
NFSC	North Fork Sage Creek
NTCRA	Non-Time-Critical Removal Action
NTU	Nephelometric Turbidity Unit
ORP	Oxidation-Reduction Potential
PCC	Pole Canyon Creek
PIT	Passive Integrated Transponder
POR	Period of Record
PQL	Practical Quantitation Limit
QAPP	Quality Assurance Project Plan
SHI	Stream Habitat Index

Simplot	Simplot Company
SMI	Stream Macroinvertebrate Index
SOPs	Standard Operating Procedures
SRI/CSE	Stream Reach Inventory/Channel Stability Evaluation
SSSC	Site-Specific Selenium Criterion
SU	Standard Unit
SWE	Snow-Water Equivalent
TTF	Trophic Transfer Factor
WY	Water Year
YCT	Yellowstone Cutthroat Trout
YOY	Young-of-Year

EXECUTIVE SUMMARY

This report summarizes the data collected per the Work Plan – Field Monitoring Studies for Developing Site-Specific Selenium Criteria in North Fork Sage Creek (NFSC) and Pole Canyon Creek (PCC) (Formation Environmental, LLC [Formation] 2022) at the Simplot Company Smoky Canyon Mine in Idaho. Monitoring described in the final Work Plan was conducted beginning in September 2020 and concluded with sampling in September 2022. Additional sampling continued at a single location (NSV-7) through May 2025. Information collected includes chemical (surface water, sediment, biota) and physical (habitat, aquatic community, substrate) data.

These data confirm that fish are not present in PCC or in NFSC upstream of the confluence with PCC, consistent with historical information. This is likely due to a combination of poor habitat conditions including heavy sedimentation, lack of prey (benthic macroinvertebrates), limited surface water connectivity between PCC and NFSC, and limited water availability. For the purposes of site-specific selenium criterion (SSSC) development, these waterbodies are considered fishless[1]. Downstream of the confluence with PCC, NFSC supports fish populations. Fish were occasionally present at NSV-6 but in limited numbers. Farther downstream in NFSC near the confluence with Sage Creek at the NSV-7 location, a productive fishery is present with multiple age classes of Yellowstone cutthroat trout (YCT) and brown trout.

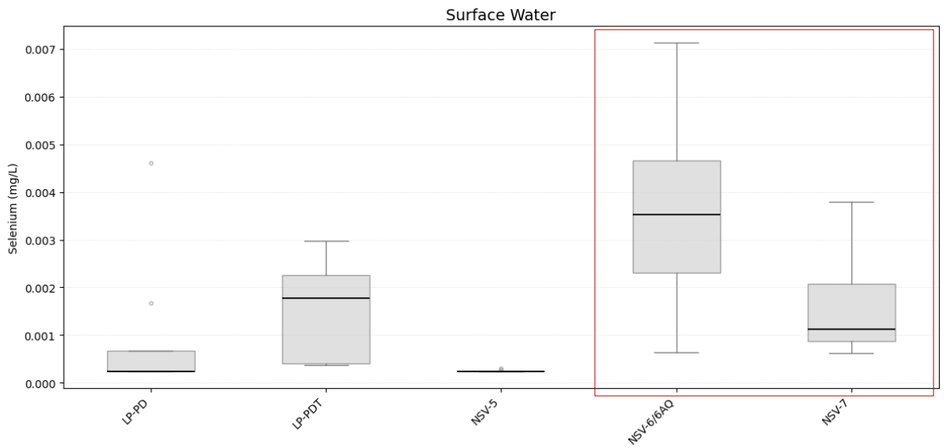
Selenium concentrations from abiotic and biotic media are summarized in Figure ES-1. Concentrations of selenium in sediment and biotic tissues collected during the study period were generally lowest at upstream NFSC location NSV-5 and highest in PCC at LP-PDT. Concentrations of selenium remained elevated in downstream NFSC (NSV-6 and NSV-7), albeit at a lower magnitude than in PCC. Concentrations of dissolved selenium in surface water in PCC were generally below the applicable Idaho Water Quality Standard (IDWQS; 0.0031 milligrams per liter [mg/L]). Dissolved selenium concentrations in NFSC downstream of PCC were highly variable but generally below the IDWQS other than during runoff events. Despite relatively low concentrations of dissolved selenium in surface water, concentrations of selenium in biotic tissues remain somewhat elevated.

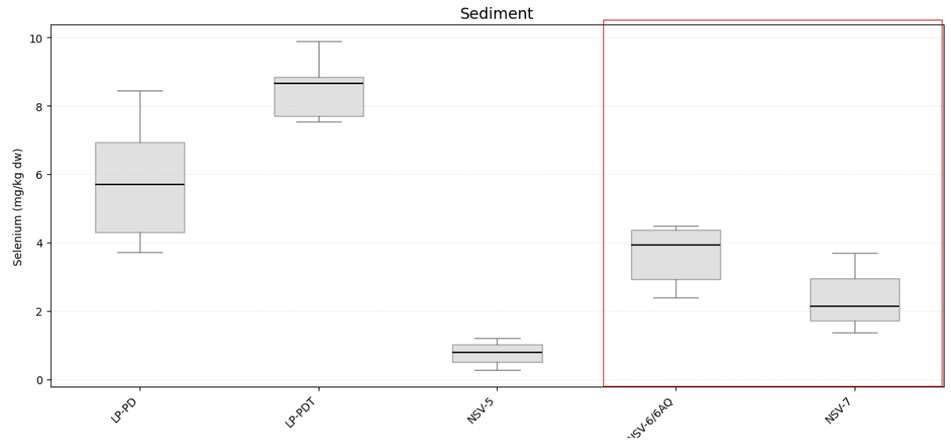
Elevated selenium concentrations are likely attributed to historical alluvial deposition of seleniferous material prior to implementation of the Non-Time-Critical Removal Actions (NTRCAs) at Pole Canyon Creek, from which the current sediment concentrations are an artifact. During runoff, the wet meadow of Sage Valley becomes saturated and may mobilize selenium trapped in these sediments, as well as in organic particulates. Concentrations of selenium in surface water remain relatively low, but during runoff flows these concentrations can be elevated due to the association with sediments described above. Selenium is bioaccumulated from the sediments by primary producers (e.g. periphyton), or transported

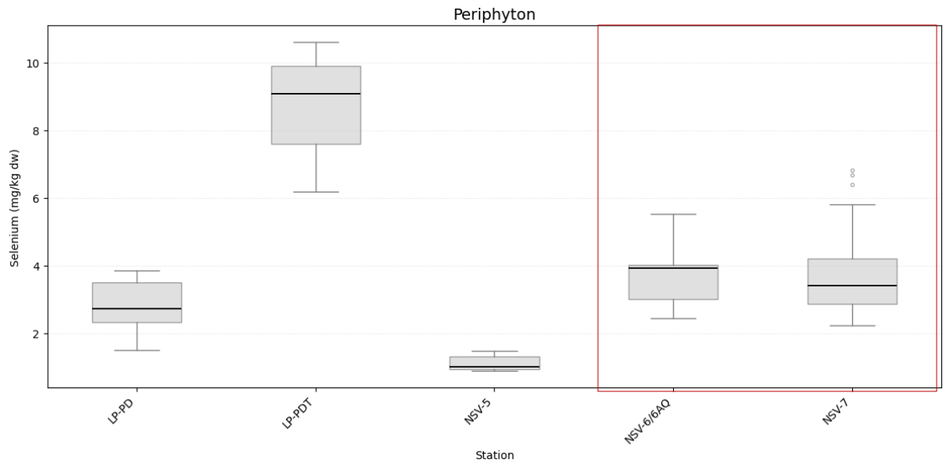
[1] In fishless waters, selenium concentrations in fish from the nearest downstream waters may be used to assess compliance using methods provided in Aquatic Life Ambient Water Quality Criterion for Selenium – Freshwater, EPA-822-R-16-0, Appendix K: Translation of a Selenium Fish Tissue Criterion Element to a Site-Specific Water Column Value (United States Environmental Protection Agency [EPA] 2016).

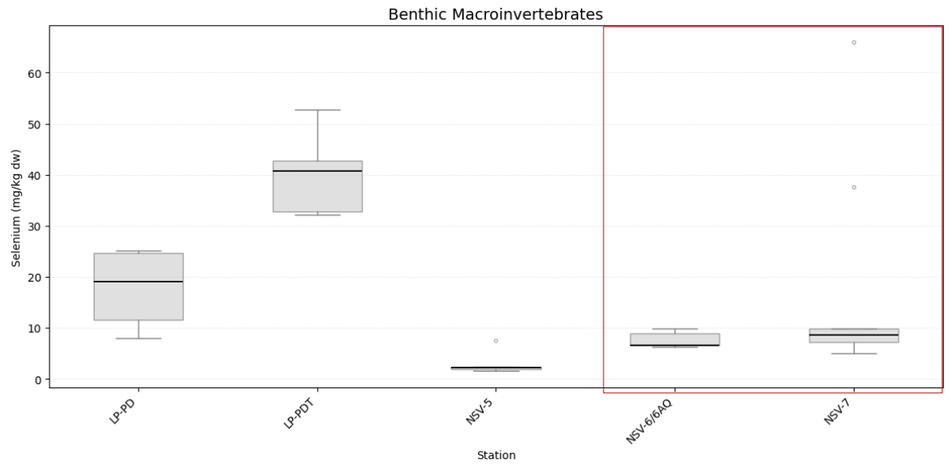
in particulates from upstream, and further bioaccumulated by primary consumers and their predators (e.g. benthic macroinvertebrates and fish).

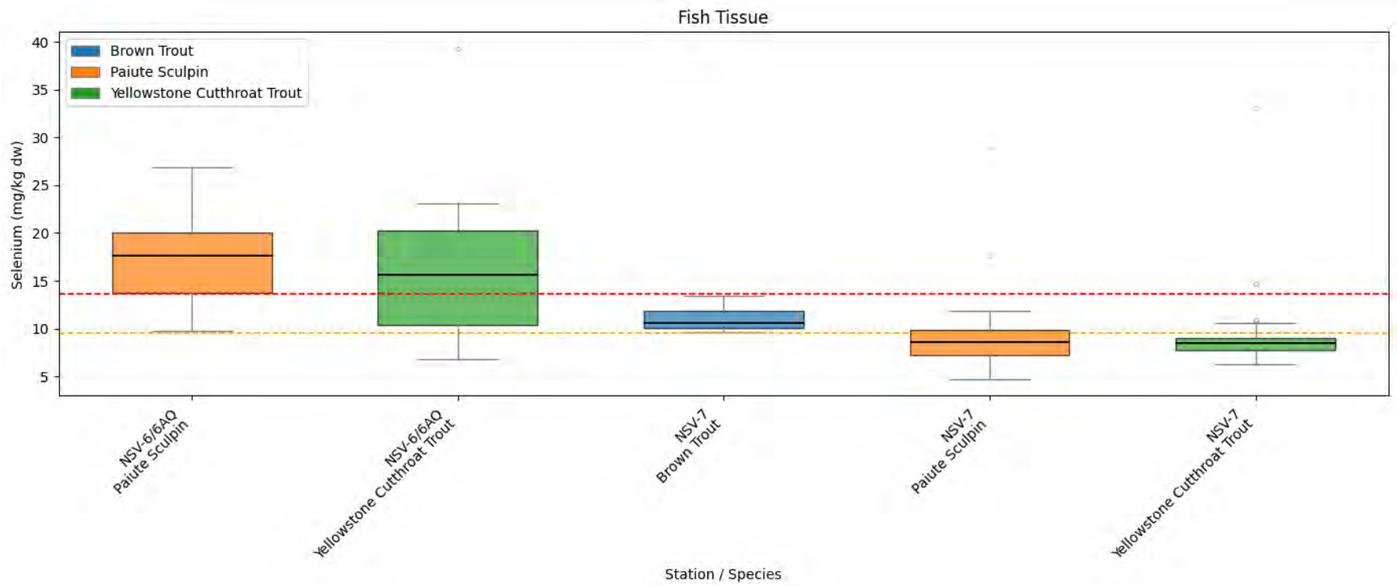
The chemical data provided in this report for NFSC and PCC reflect the seasonal variations that occur for selenium concentrations in different abiotic and biotic media. The physical and biological assessment data reflect the poor conditions present in PCC and provides further evidence about its fishless water status. Collectively, these data will be used in the development of a representative SSSC using EPA-approved methods (i.e., Bioaccumulation Factor [BAF] approach or Mechanistic Modeling using Trophic Transfer Factors [TTF]).











Notes:
1. mg/kg dw = milligrams per kilogram, dry weight
2. mg/L = milligrams per liter
3. The red box indicates locations where fish tissue data were collected

Boxplot components:
- Point- outlier
- Whiskers- 1.5 x IQR
- Box- Interquartile range (IQR)
- Middle line- median (50th percentile

Simplot Company
SMOKY CANYON MINE

FIGURE ES-1

SELENIUM BOX AND WHISKER SUMMARY PLOTS

DATE: MAY 2025

BY: WSB | FOR: SMC

FORMATION

S:\Jobs\Smoky\Aquatic\SSSC\NFSC_PCC\SSSC_ProposalDataTimeseries

1 Introduction

This report summarizes the data collected per the Work Plan – Field Monitoring Studies for Developing Site-Specific Selenium Criteria in North Fork Sage Creek (NFSC) and Pole Canyon Creek (PCC) (Formation Environmental, LLC [Formation] 2022; hereafter referred to as Work Plan) at the Simplot Company (Simplot) Smoky Canyon Mine (mine) in Idaho. Monitoring described in the final Work Plan was conducted beginning in September 2020 and concluded with sampling in September 2022. Additional sampling continued at a single location (NSV-7) through May 2025. Information collected includes chemical (surface water, sediment, biota) and physical (habitat, aquatic community, substrate) data. The monitoring locations and the data collected are described in the following sections.

2 Monitoring Locations and Frequency

The location of the Smoky Canyon Mine is illustrated in Figure B-1. The NFSC and PCC monitoring locations are illustrated in Figure B-2. Existing locations with a long-term water quality monitoring history (LP-PD, NSV-5, and NSV-6) were used in addition to two new locations (LP-PDT and NSV-7). Data from the existing locations provide historical information regarding concentrations of selenium in surface water and other media where available leading up to and influencing concentrations and conditions found during this sampling effort. Exposure considerations of the existing locations were evaluated relative to representativeness of different exposure areas. Rationale for site selection is as follows:

Existing Locations

- LP-PD represents a surface water condition that is upgradient baseline, but sediment and benthos (i.e. periphyton and benthic macroinvertebrates) represent past selenium concentrations that potentially influence bioaccumulation.
- NSV-5 represents upgradient baseline for Sage Valley with low selenium concentrations in surface water (upstream of PCC). Historical data for sediments and biological media suggest low bioaccumulation potential.
- NSV-6 represents exposure downstream of PCC. The large alluvial wet meadow disperses PCC flows; however, reconnaissance confirms that this location is downstream of PCC inputs. Seasonal surface water data indicate spring-time exceedances of the State of Idaho Water Quality Standard (IDWQS; 3.1 micrograms per liter [µg/L]).

New Locations

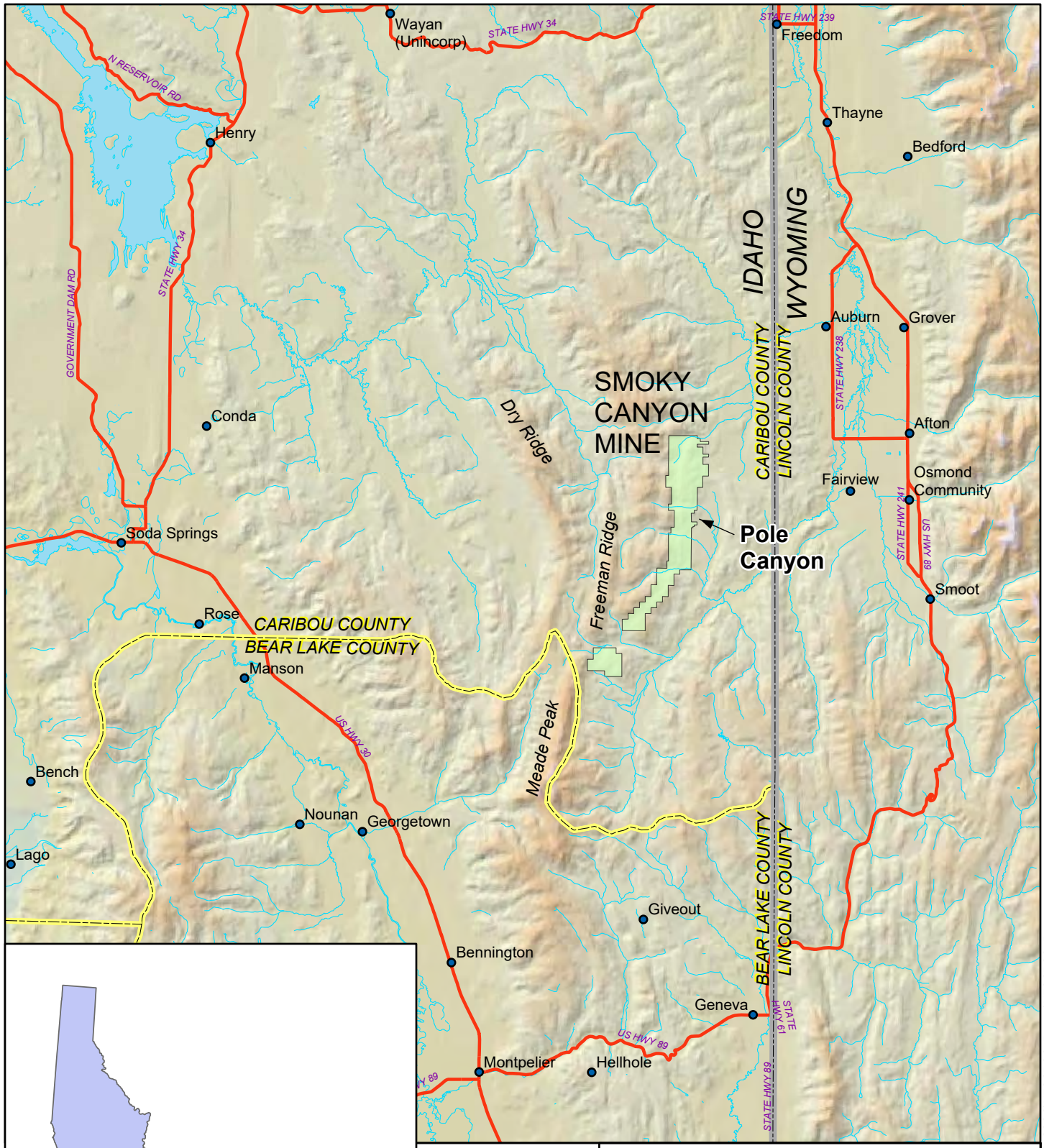
- LP-PDT represents the farthest downgradient location where PCC flows in a confined stream channel before it disperses into a wet meadow. Sampling in the wet meadow would be inconsistent with the approach for sampling flowing stream sections.
- NSV-7 was selected to provide further characterization of selenium in the biotic and abiotic media of NFSC and represents an integrative exposure for lower Sage Valley as the combined drainage of NFSC and PCC before the confluence of NFSC and Sage Creek. Because PCC flow disperses into

a wet meadow and spreads out in Sage Valley, some of the flow may not be captured by the stream at location NSV-6.

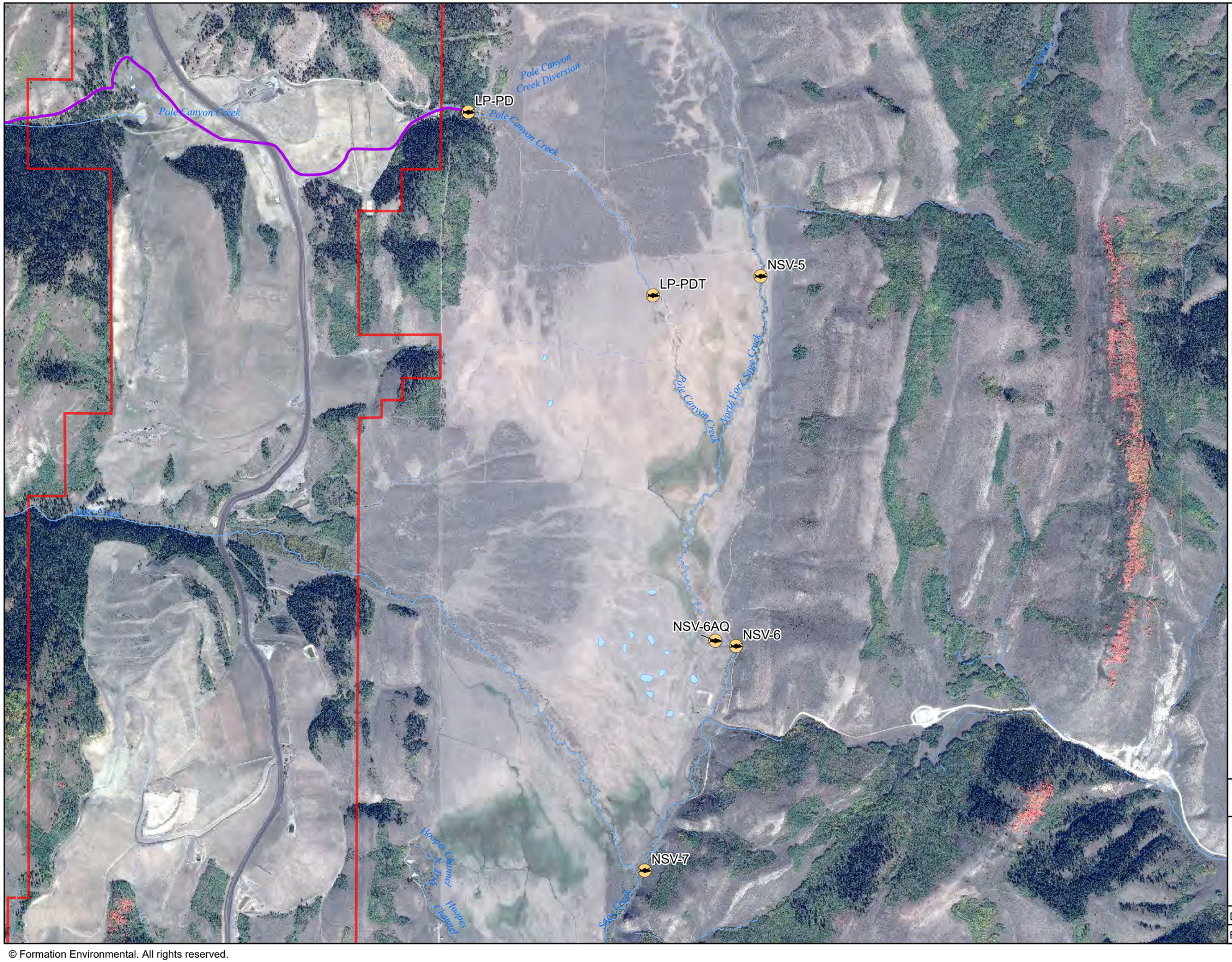
Monitoring was conducted during spring (high flow conditions) and fall (low flow conditions) at each location described above from fall 2020 through fall 2022, consistent with the Work Plan which described two spring and three fall monitoring periods, with monitoring beginning in fall 2020. The fall sampling period selected was within the index period described in the State of Idaho Department of Environmental Quality (IDEQ) Beneficial Use Reconnaissance Program (BURP) Field Manual for Streams (IDEQ 2017). Seasonal periods for sampling were designed to include temporal variation in concentrations/conditions which can affect bioaccumulation. Following September 2022, monitoring was continued during spring and fall at NSV-7 through fall 2025, with the exception of fall 2024, to provide additional data for the derivation of a site-specific selenium criterion (SSSC).

Water, sediment, and biotic tissue chemical sampling were conducted during both the spring and fall monitoring periods. Physical habitat, fish population and community, and benthic community were monitored each fall.

Reaches (i.e., stream segments with definable upstream and downstream boundaries) were defined prior to sampling in September 2020. The stream reach at each location was dependent on the stream width and a number of physical factors. All sampling was conducted within the confines of the reaches. The process for identifying each reach was consistent with BURP recommendations and is described in the Work Plan.



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Legend

- Monitoring Locations

Streams

- Pre-ODA Creek Flow Path
- Irrigation Ditch
- Intermittent Stream
- Perennial Stream
- 2006 NTCRA Bypass Pipeline Alignment

Waterbodies

- Lake/Pond
- Reservoir
- Swamp/Marsh

0 750 1,500 3,000

Feet

N

SIMPLOT COMPANY
SMOKY CANYON MINE
NFSC/PCC REPORT

FIGURE B-2

MONITORING LOCATIONS

DATE: DEC 22, 2025
By: WSB For: SMC

FORMATION

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3 Methods

Idaho's Administrative Code (IDAPA 58.01.02.275.01.b) indicates the following: "[t]o insure that the approach to be used in developing site-specific criteria is scientifically valid, the Department shall be involved early in the planning of any site-specific analyses so that an agreement can be reached concerning the availability of existing data, additional data needs, methods to be used in generating new data, testing procedures to be used, schedules to be followed and quality control and assurance provisions to be used." The NFSC/PCC Work Plan was provided to state and federal agencies for review and approval prior to conducting data collection and analysis.

Previous work conducted for the Hoopes Spring, Sage Creek, and Crow Creek SSSC included site-specific toxicity testing using brown trout and Yellowstone cutthroat trout (YCT) (Covington et al. 2018; 2025). Of these two species, the brown trout was found to be more sensitive. Consistent with EPA (2016; 2021), an egg/ovary criterion was derived (effect concentration EC10 = 20.5 milligram per kilogram dry weight [mg/kg dw]) together with a whole-body criterion (13.6 mg/kg dw) based on the most sensitive species. Both brown trout and YCT are found in NFSC and as the most sensitive species, the brown trout effects endpoint will be used as the basis for water criterion calculations. No additional toxicity testing or egg to whole-body translators are necessary for this waterbody.

The Work Plan outlined the details of the Sampling and Analysis Plan and specified the data to be collected as well as methods for collection and analysis. Data were collected and analyzed in accordance with Simplot's Comprehensive Environmental Monitoring Program Plan (CEMPP) and accompanying Quality Assurance Project Plan (QAPP) and Standard Operating Procedures (SOPs) for data collection (Simplot 2023). Data were reviewed and validated to ensure data quality in accordance with the QAPP and JRS SOP No. 20 (Inorganic Data Validation). These data collection efforts included chemical evaluations of selenium in surface water, sediment, periphyton, benthic macroinvertebrate, and fish tissues. These methods are summarized below.

3.1 Physical Habitat Evaluations

Physical habitat quality and quantity data were collected at each site. Similar to the aquatic community data, habitat data are not needed to derive an SSSC but provide supporting information about the physical characteristics available for the aquatic communities. Physical habitat is a major factor influencing aquatic community characteristics, structure, and function. The quality of trout populations, the carrying capacity of streams, and the aquatic community as a whole are directly related to availability of quality habitat. Physical habitat quality can also play a role in water quality conditions, such as temperature, turbidity, and dissolved oxygen, among other factors.

3.2 Aquatic Community Evaluations

In addition to chemistry data collection, fish population and community, and benthic invertebrate community data, were collected as supporting information to characterize the existing biological

communities. Prior to the NFSC/PCC SSSC sampling efforts, little biological data had been collected in these streams; therefore, while not used to derive the aquatic criteria, it is important to adequately characterize the communities being evaluated. These supporting data provide the information for NFSC and PCC aquatic communities and the species representing the existing food-webs for bioaccumulation. Benthic community data were used to derive the stream macroinvertebrate index (SMI), which is part of the BURP process to assess stream health. As a standardized metric, similar data can be collected in the future to assess potential changes in the benthic community. Fish community and population data were collected to provide data on the species present, abundance, and age and population structure. These types of data for fish communities and populations have become important in quantifying age class structure for certain species.

3.3 Chemical Evaluations

For surface waters, both total and dissolved selenium were measured along with several other constituents: nitrate + nitrite (as N), total phosphorus, dissolved organic carbon (DOC), alkalinity, and sulfate. Additionally, in-situ water quality parameters (temperature, pH, conductivity, oxidation-reduction potential [ORP], dissolved oxygen [DO] and turbidity) were collected at the time of sampling. Selenium in biological tissues was measured with the goal of obtaining selenium concentrations in biotic tissues that are representative of exposure conditions and bioaccumulation to be used in a trophic food web model to derive criteria.

As the primary producers in an aquatic system, periphyton are an important pathway for selenium into the aquatic food chain. Microbial and algal uptake of selenium begins the transformation of inorganic selenates to organic selenium species, which are more bioavailable than the inorganic forms. As the primary consumers, benthic invertebrates are the next step in selenium transfer up the food web.

Because the selenium criterion is based on the response of fish to accumulation and toxicity of selenium, the fish tissue data become an increasingly important component of the data collection effort. Fish tissue was collected from trout and sculpin. For trout, non-spawning-age fish were targeted as younger (~75 to 150 millimeter [mm]) trout are approximately age one and exhibit higher site-fidelity than mature, spawning-age trout. These young trout best represent site exposure. Sculpin were also targeted for fish tissue analysis because (1) they have a small home range (e.g. high site fidelity) and integrate exposure from a relatively localized area, and (2) they serve as prey for adult piscivorous fish.

4 Results

The results of the NFSC/PCC monitoring efforts are described in the following sections. Generally, meteorological conditions were within the range of historical normal during the study period. Water year (WY) 2023 exhibited the highest total precipitation (above-normal) while WY 2021 was the lowest (below-normal). Snow-water equivalent (SWE) exhibited a similar pattern, although the peak SWE in WY 2022 was slightly lower than that of WY 2021. Flows along PCC decreased from LP-PD to LP-PDT where the creek dissipates into the wet meadow. Flows along NFSC were lowest at NSV-5 and increased downstream of the confluence with discharge from the wet meadow. Physical habitat evaluations showed a pattern of

high embeddedness and low overall habitat quality at all sites except for NSV-7 but showed improving conditions at NSV-6 during the study period due to grazing management. NSV-7 was the only site that consistently supported fish populations.

4.1 Meteorological Conditions and Flow

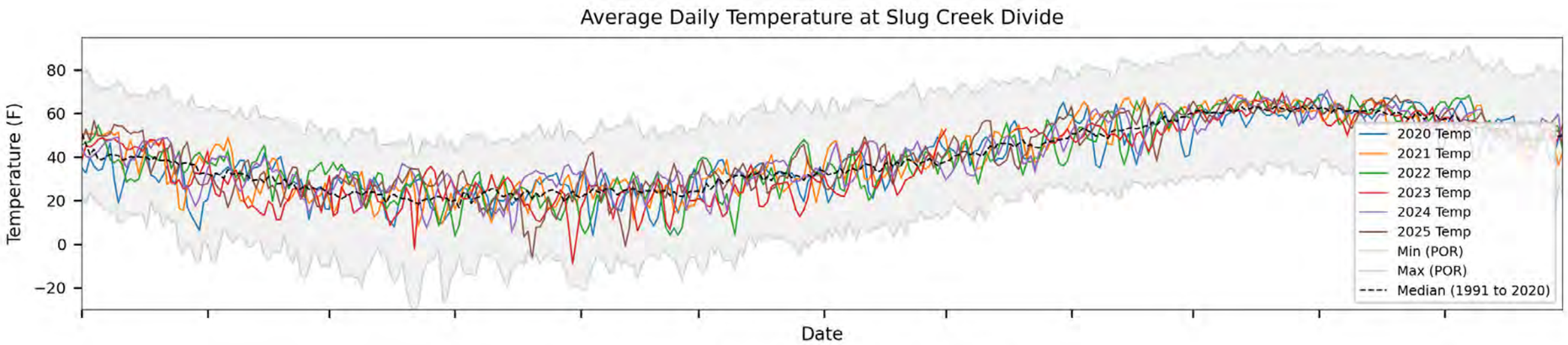
Meteorological conditions for the time period of the study (2020 to 2025) compared to long-term normal[2] are shown in Figure B-2. Median daily temperatures fluctuated around the long-term normal and were within the range of the period of record (POR[3]). Water years[4] 2020, 2023, 2024, and 2025 were above normal with respect to SWE but only 2023 had above-normal total precipitation. WY 2020 and WY 2024 were near the long-term normal with respect to total precipitation. WY 2025 was slightly below-normal for total precipitation. Water years 2021 and 2022 were below normal with respect to SWE and total precipitation. SWE is an important component of the hydrologic conditions at the mine due to the influence of snowpack on spring runoff. Large runoff events contribute to the transport of sediments and organic matter that were deposited during low flow conditions. In Sage Valley, runoff is particularly relevant to selenium concentrations, as connectivity is increased from PCC through the wet meadow and into NFSC.

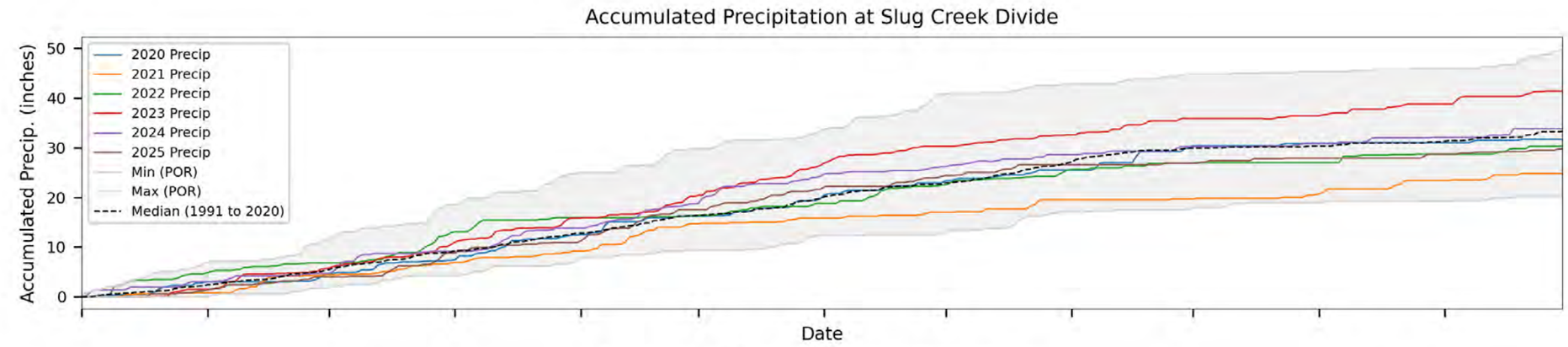
Flow was measured manually during each sampling effort during the study period, and these flow measurements are presented in Table B-1. Additional flow data for LP-PD, NSV-5, and NSV-6 are available for spring and late fall (October/November) collected for other monitoring programs as described in the CEMPP (Simplot 2023). Flows are relatively low at NSV-5 and increase downstream as tributary streams join the mainstem of NFSC in Sage Valley. This increase is especially notable during runoff, as shown by the June 2023 manual flow measurements. During this monitoring effort, flow at NSV-5 was 0.2 cubic feet per second (cfs) and LP-PD was measured at 3.2 cfs. Downstream of PCC at NSV-6, flow was 4.5 cfs, while at NSV-7 flow was nearly three times higher at 13.1 cfs.

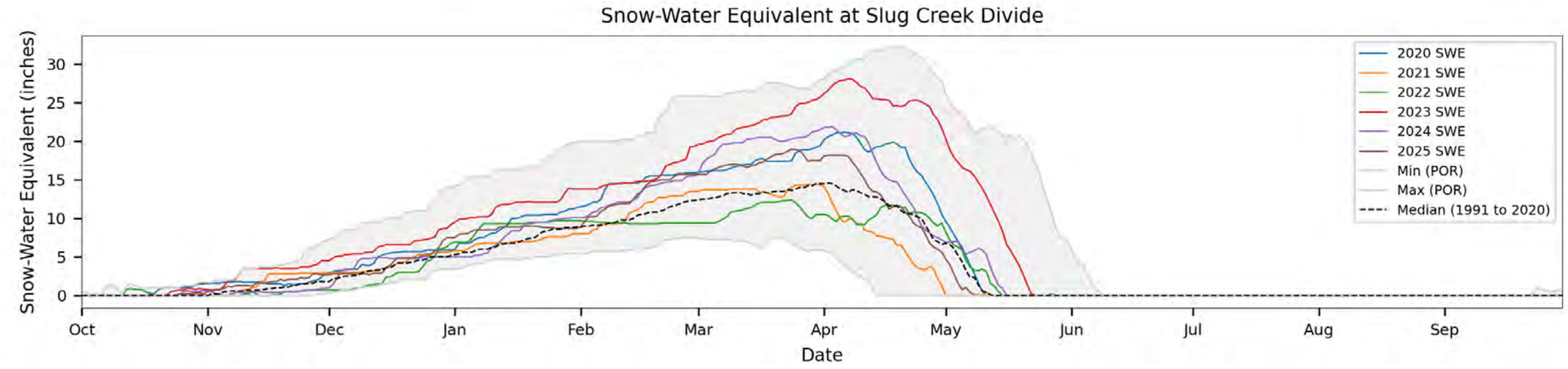
Flow is monitored continuously using pressure transducers at the pipeline inlet (UP-PD) and outlet (LP-PD). This continuous flow data is compared to SWE from WY 2020 through WY 2025 in Figure B-3, to help visualize the influence of snowpack on stream flow during the study period.

WY 2023 generated the largest SWE and corresponding runoff during the study period. WY 2020 and WY 2024 were similar in magnitude and lower than WY 2023. WY 2022 exhibited the lowest peak SWE, followed by WY 2021. Although WY 2022 had the lowest peak SWE, late-spring snowfall maintained SWE into mid-May, leading to an extended runoff period, while SWE in WY 2021 was nearly gone by the beginning of May and generated the smallest runoff measured during the study.

[2] Normal = 30-year median (1991 to 2020)
[3] The period of record for the Slug Creek SNOTEL station begins in 1978
[4] Water Year = October 1st of the previous year through September 30th of the current year







Notes:

1. Precipitation, SWE, and Temperature data from Slug Creek Divide Snowpack Telemetry (SNOTEL) station.
2. Minimum and Maximum data determined from station Period of Record.
3. 30-year Median data determined from 1991 to 2020.
4. POR = Period of Record
5. SWE = Snow-Water Equivalent
6. WY = Water Year

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FIGURE B-3

TEMPERATURE, CUMULATIVE PRECIPITATION, AND SWE - SLUG CREEK DIVIDE SNOTEL

DATE: MAY 2025

BY: WSB | FOR: SMC

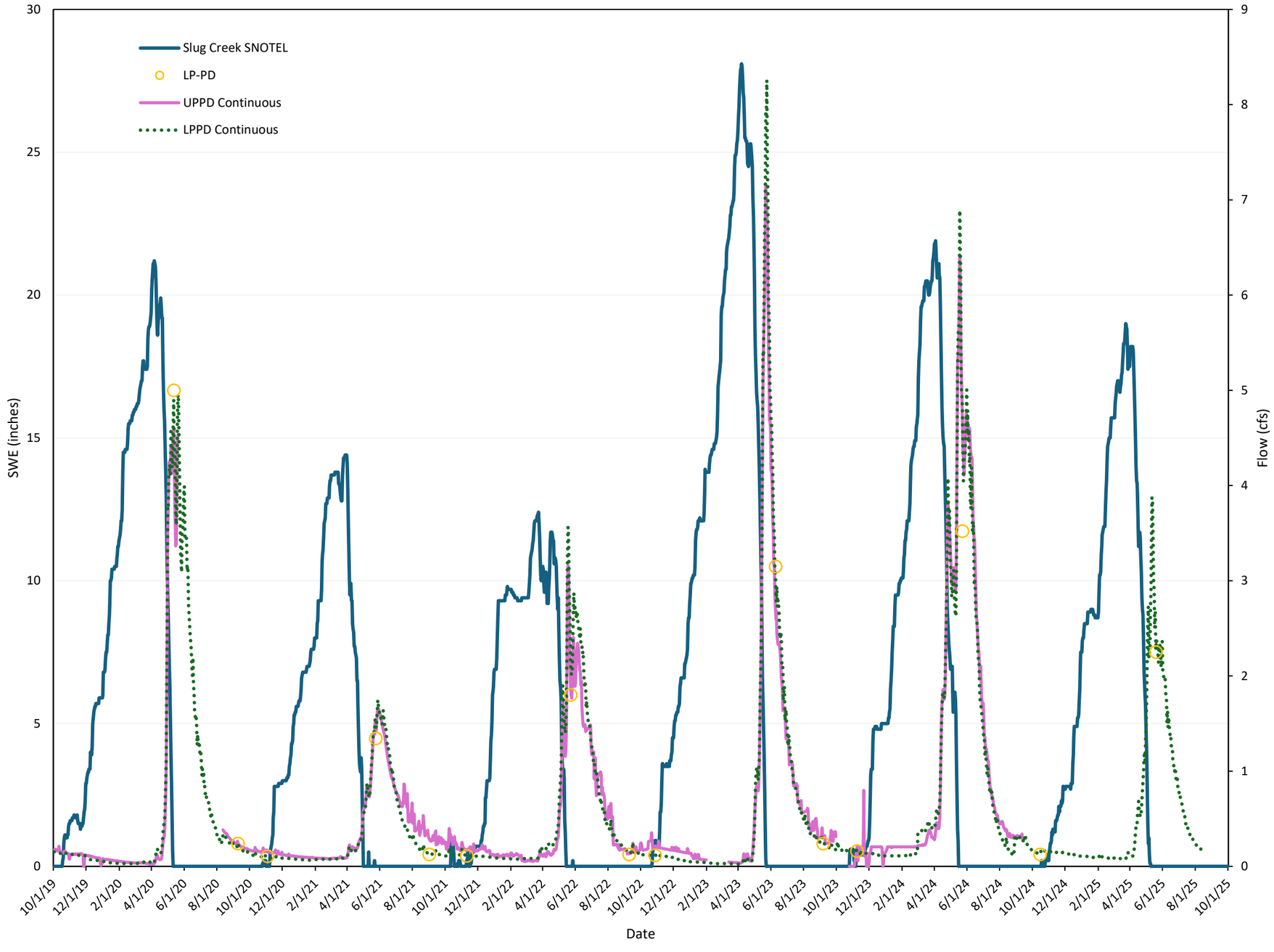
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Table B-1. Manual Flow Measurements (cfs)

Date	Flow (cfs)				
	LP-PD	LP-PDT	NSV-5	NSV-6/6AQ	NSV-7
May 2020	5.0	--	0.89	4.4	--
Sep 2020	0.24	0.19	0.06	0.15	0.7
Nov 2020	0.11	--	0.07	0.14	--
May 2021	1.3	1.6	0.60	2.3	2.9
Sep 2021	0.13	0.10	0.04	0.1	0.33
Nov 2021	0.11	--	0.05	0.24	--
May 2022	1.8	0.30	0.24	0.8	1.6
Sep 2022	0.13	0.15	--	0.04	0.61
Oct 2022	0.12	--	--	0.12	--
Jun 2023	3.2	--	0.23	4.5	13.1
Jul 2023	--	--	--	--	4.0
Sep 2023	0.24	--	--	--	1.5
Nov 2023	0.16	--	0.0002	0.9	--
May 2024	3.5	--	0.51	4.9	6.6
Oct 2024	0.13	--	0.03	0.14	--
May 2025	2.3	--	0.16	1.5	3.8
Minimum	**0.1**	**0.1**	**0.0002**	**0.04**	**0.3**
Maximum	**5.0**	**1.6**	**0.9**	**4.9**	**13.1**
Average	**1.2**	**0.5**	**0.2**	**1.4**	**3.5**

Notes:
cfs = cubic feet per second



Notes:
1. Continuous flow data is collected from the Pole Canyon pipeline at UP-PD and LP-PD using pressure transducers.
2. SWE = Snow-Water Equivalent

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FIGURE B-4

SWE AT THE SLUG CREEK DIVIDE SNOTEL COMPARED TO POLE CANYON FLOW

DATE: MAY 2025
BY: WSB | FOR: SMC

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4.2 Physical Habitat Evaluations

Physical habitat quality and quantity data were collected at each site during the fall of 2020, and at sites with fish present during subsequent fall monitoring efforts. Visual assessments were performed in place of habitat assessment at fishless sites during fall 2021 and fall 2022. Channel stability of each stream reach was assessed using the Stream Reach Inventory and Channel Stability Evaluation (SRI/CSE) procedure developed by Pfankuch (1975). SRI/CSE scores are presented in Table B-2. Channel cross-sectional surveys included collection of data following IDEQ BURP field protocols to derive Stream Habitat Index (SHI) values for each sample location. SHI scores are presented in Table B-3. Additional BURP information is presented in Table B-4. Substrates were assessed using Wolman Pebble Counts and embeddedness observations, and the results are shown in Table B-5. Physical habitat data is discussed in the following subsections.

4.2.1 Stream Reach Inventory and Channel Stability Evaluation

SRI/CSE evaluations were performed at all sites except NSV-5 in 2020. NSV-5 was not scored due to minimal flow, trampled banks, and the absence of fish. In 2020, NSV-6, NSV-7, and LP-PD scored “Fair”, while LP-PDT scored “Good”. NSV-6 and NSV-7 were scored in 2021; NVS-7 received a score of “Good”, while NSV-6 received a score of “Fair”. LP-PD, LP-PDT, and NSV-5 were not scored during 2021 due to the absence of fish. In 2022, NSV-6 and NSV-7 scored “Fair”; again LP-PD, LP-PDT, and NSV-5 were not scored. In 2023, NSV-7 was the only site visited, and received a score of “Good”. The fluctuations in scores at NSV-7 is mostly attributed to variability in lower bank and channel bottom scores involving deposition of sediments.

4.2.2 Stream Habitat Index

SHI was assessed at all five sites in 2020 and resulted in a condition category of 1 (<10th percentile of reference) at all sites. This was largely due to sediment deposition and lack of vegetative cover; both related to grazing. NSV-6 and NSV-7 were assessed again in 2021 and 2022, and only NSV-7 was assessed in 2023. The condition category for both sites remained at 1 during each assessment, although the score increased slightly each year at NSV-6, indicating improvements in habitat quality associated with grazing management.

4.2.3 Substrate

Percent fines and embeddedness scores are summarized at the bottom of Table B-5. and embeddedness. Percent fines is a measure of deposited particles less than 6 mm and relates to the embeddedness occurring in a waterbody. Pebble counts were conducted within riffle habitats, which exhibit the highest flow velocity, so embeddedness observations made during SHI assessments were also used to estimate overall embeddedness of the stream reaches.

In 2020, substrate composition in riffle habitats at LP-PD was low (3.4% fines), while the SHI score suggested higher embeddedness throughout the reach (>75%). LP-PDT was moderately embedded during 2020; 41.3% based on pebble counts, and >75% based on SHI scoring. Pebble counts and SHI assessments were not conducted in subsequent years due to the absence of fish.

Table B-2. Stream Reach Inventory/Channel Stability Evaluation Scores

Site		NSV-6			NSV-7				LP-PDT	LP-PD
Date		2020	2021	2022	2020	2021	2022	2023	2020	2020
Upper Banks										
1	Landform Slope	2	2	2	2	2	2	2	2	4
2	Mass Wasting Hazard	3	3	3	4	3	3	3	4	9
3	Debris Jam Potential	2	2	2	4	4	4	4	2	2
4	Vegetation Cover	6	6	6	6	6	8	6	9	9
Upper Bank Score:		**13**	**13**	**13**	**16**	**15**	**17**	**15**	**17**	**24**
Lower Banks										
5	Channel Capacity	1	2	2	2	2	2	2	1	1
6	Bank Rock Content	8	8	8	8	8	8	8	8	6
7	Flow Obstructors & Deflectors	2	3	3	4	2	3	4	4	3
8	Cutting	5	8	8	8	6	8	8	8	12
9	Deposition	4	6	6	6	4	6	4	4	4
Lower Bank Score:		**20**	**27**	**27**	**28**	**22**	**27**	**26**	**25**	**26**
Channel Bottom										
10	Rock Angularity	2	2	2	2	2	2	2	3	2
11	Brightness	2	2	2	2	2	2	2	3	3
12	Consolidation/Particle Packing	5	6	8	5	4	4	5	5	5
13	Bottom Size Distribution	16	14	14	10	8	10	8	10	10
14	Bed Scour and Deposition	18	18	18	12	12	14	13	6	10
15	Clinging Aquatic Vegetation	2	1	1	2	2	2	2	3	2
Channel Bottom Score:		**45**	**43**	**45**	**33**	**30**	**34**	**32**	**30**	**32**
Overall Rating:		**78**	**83**	**85**	**77**	**67**	**78**	**73**	**72**	**82**
		Fair	**Fair**	**Fair**	**Fair**	**Good**	**Fair**	**Good**	**Good**	**Fair**

Notes:

NSV-7 2020: Grazing evident, banks more tampled than in 2019

Score Ranges: <38 Excellent, 39-76 Good, 77-114 Fair, >115 Poor

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Table B-3. IDEQ Stream Habitat Index Scores

#	Habitat Measure	NSV-5	NSV-6			NSV-7				LP-PDT	LP-PD
		2020	2020	2021	2022	2020	2021	2022	2023	2020	2020
1	% Instream Cover [1]	2	2	7	7	6	7	7	6	3	3
2	# Large Organic Debris	0	0	0	0	1	3	2	1	1	0
3	% Fines	5	0	0	0	10	10	5	7	1	9
4	Embeddedness [1]	3	0	1	1	8	6	6	7	3	6
5	# Wolman Classes	7	0	0	1	1	5	6	7	6	9
6	Channel Shape	7	5	8	9	6	5	5	3	4	5
7	% Bank Vegetation	0	10	9	9	10	10	9	10	5	10
8	% Canopy Cover (riffle)	9	5	2	3	1	0	0	0	2	4
9	Disruptive Pressure [1]	5	8	5	5	5	5	3	8	5	6
10	Zone of Influence [1]	5	7	6	6	2	6	4	4	2	5
	Total Score [2]	43	37	38	41	50	57	47	53	32	57
	Condition Category [3]	1	1	1	1	1	1	1	1	1	1

Notes:

[1] % Cover, embeddedness, disruptive pressure and zone of influence were scored in the field using IDEQ criteria.

[2] Maximum possible score is 100, 10 for each habitat measure.

[3] Condition Categories are for the Northern and Middle Rockies Ecoregion scoring criteria.

1 <58 = <10th percentile of reference

2 58 - 65 = 10th-25th percentile of reference

3 >66 = >25th percentile of reference

NM = Not measured

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Table B-4. BURP Habitat Data

Site	NSV-5	NSV-6			NSV-7				LP-PDT	LP-PD
Date	**2019**	**2020**	**2021**	**2022**	**2020**	**2021**	**2022**	**2023**	**2020**	**2020**
Habitat Measure										
Site Length (ft)	328	328	328	328	328	328	328	328	328	328
Staff	--	--	--	--	--	--	--	--	--	--
Discharge (cfs)	0.07	0.15	0.1	0.04	0.55	0.33	0.61	1.5	0.1	0.24
Mean Bankfull Width (ft)	5.3	5.8	--	--	11.1	--	--	24.0	6.4	9.2
Mean Wetted Width (ft)	2.5	4.5	--	--	4.1	--	--	3.8	2.2	2.5
Mean Bankfull Height (ft)	1.8	1.6	--	--	2.4	--	--	1.6	1.5	1.2
Mean Wetted Depth (ft)	0.2	0.4	--	--	0.4	--	--	0.2	0.2	0.2
*W/D Ratio	25.2	15.7	--	--	27.8	--	--	105.9	30.5	51.1
Extra Wetted Width (ft)	2.6	4.2	3.4	3.6	4	3.3	3.1	NM	2.2	3.2
~Gradient (%)	--	--	--	--	--	--	--	--	--	--
Water Temperature ^{0}F	53.6	58	52	52	45	40	40	50	43	50
(Time)	13:00	14:33	12:30	13:25	10:35	8:50	8:54	10:25	10:00	15:36
Air Temperature ^{0}F	64.4	88	72	83	72	28	30	78	57	72
***Sinuosity Ratio	--	--	--	--	--	--	--	1.4	--	--
**Sinuosity	Mod	Low	High	High	Mod	Mod	Mod	Mod	Low	Mod
Mean Width Undercut Bank (ft)	0.25	0.08	0.48	0.42	0	0.05	0.12	0.00	0.32	0
Habitat Distribution										
% Riffle	--	--	10	--	44	40	40	19%	100	93
% Run	100	100	90	100	22	20	20	59%	--	--
% Glide	--	--	--	--	--	--	--	0%	--	--
% Pool	--	--	--	--	34	40	40	21%	--	7
Mean Pool Data										
Count (#)	0	0	--	0	8	7	6	6	0	2
Maximum Depth (ft)	--	--	--	--	1.96	--	--	1.46	--	0.65
Tail Out Depth (ft)	--	--	--	--	0.3	--	--	0.28	--	0.18
Length (ft)	--	--	--	--	16.5	--	--	14.4	--	11.5
Maximum Width (ft)	--	--	--	--	7.2	--	--	7.6	--	5
Predominant Substrate	--	--	--	--	Gravel	--	--	Small Cobble	--	Gravel
Overhead Cover (%)	--	--	--	--	14	--	--	0%	--	5
Undercut Banks (%)	--	--	--	--	21	--	--	5%	--	27.5
Submerged Cover (%)	--	--	--	--	3.8	--	--	2%	--	7.5

Notes:

NM = Not Measured
NP = No Pools
* Mean Bankfull Width/Mean Wetted Depth
BD Beaver Dam
^^ No tail out on beaver dam pools
~ Gradient (use previous years)
*** New reach DS of old reach

**Sinuosity 1 to 1.3 = low sinuosity
1.3 to 1.7 = moderate sinuosity
> 1.7 = High sinuosity
*** Stream length/Straight length- (use previous years)

Substrate
FG= Fine gravel
CG= Coarse gravel
C= Cobble
SC= Small cobble
LC= Large cobble
B= Boulder

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Table B-5. Wolman Pebble Counts and Embeddedness Observations

Substrate	Size (mm)	2020										2021				2022				2023	
		NSV-5		*NSV-6*		*NSV-7*		*LP-PDT*		*LP-PD*		*NSV-6AQ*		*NSV-7*		*NSV-6AQ*		*NSV-7*		*NSV-7*	
		count	%	count	%	count	%	count	%	count	%	count	%	count	%	count	%	count	%	count	%
Silt/Clay	0-1	20	13.3%	75	50.0%	0	0.0%	48	32.0%	4	2.7%	150	100.0%	3	2.0%	150	100.0%	24	14.5%	4	2.6%
Sand	1.1-2.5	3	2.0%	75	50.0%	0	0.0%	5	3.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	8	5.2%
Very Fine Pebble	2.51-6	14	9.3%	0	0.0%	0	0.0%	9	6.0%	1	0.7%	0	0.0%	0	0.0%	0	0.0%	4	2.4%	6	3.9%
Pebble	6.1-15	47	31.3%	0	0.0%	5	3.3%	20	13.3%	5	3.4%	0	0.0%	8	5.3%	0	0.0%	25	15.2%	24	15.5%
Coarse Pebble	15.1-31	27	18.0%	0	0.0%	39	26.0%	40	26.7%	16	11.0%	0	0.0%	51	34.0%	0	0.0%	56	33.9%	45	29.0%
Very Coarse Pebble	31.1-64	22	14.7%	0	0.0%	80	53.3%	20	13.3%	52	35.6%	0	0.0%	78	52.0%	0	0.0%	50	30.3%	62	40.0%
Small Cobble	64.1-128	13	8.7%	0	0.0%	26	17.3%	8	5.3%	49	33.6%	0	0.0%	10	6.7%	0	0.0%	6	3.6%	6	3.9%
Large Cobble	128.1-256	4	2.7%	0	0.0%	0	0.0%	0	0.0%	17	11.6%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small Boulder	256.1-512	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	0.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Medium Boulder	512.1-1024	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	0.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Large Boulder	> 1024	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Percent Fines[1]			**24.7%**		**100.0%**		**0.0%**		**41.3%**		**3.4%**		**100.0%**		**2.0%**		**100.0%**		**17.0%**		**11.6%**
Embeddedness Score and Percent[2]		**3**	**>75%**	**0**	**>75%**	**8**	**50 - 75%**	**6**	**50 - 75%**	**3**	**>75%**	**1**	**>75%**	**6**	**50 - 75%**	**1**	**>75%**	**6**	**50 - 75%**	**7**	**50 - 75%**

Notes:

[1]Percent fines is a measure of particles less than 6 millimeters (mm) and relates to the embeddedness (or sedimentation) occurring in a waterbody

Score	% Embedded
0-5	>75
6-10	50-75
11-15	25-50
16-20	<25

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During monitoring in 2020, NSV-5 was moderately embedded: 24.7% based on pebble counts, and >75% based on SHI scoring. In 2021 and 2022, substrate at NSV-5 was observed to be entirely composed of fine sediment. For this reason, along with the absence of fish, pebble counts were not conducted. Downstream at NSV-6 the channel was heavily embedded (100% by both measures). Similar conditions were observed at NSV-6 in 2021 and 2022.

Downstream at NSV-7, from 2020 through 2023, fine sediments measured during pebble counts ranged from 0% to 17%, while SHI scoring suggested higher embeddedness throughout the reach (~50-75% embedded). Embeddedness can negatively impact embryo-larval and juvenile life stages of Salmonids (Bolliet et al. 2005; Bolliet and Bardonnet 2017), as well as other aquatic taxa due to reductions in primary production (Henley et al. 2000). The absence of fish at NSV-5 and the low abundance of fish at NSV-6 can be attributed to sedimentation and low flows.

4.3 Aquatic Community Evaluations

Fish population and community and benthic invertebrate community data were collected during the fall of each year of the study period. The results are summarized in the following sections.

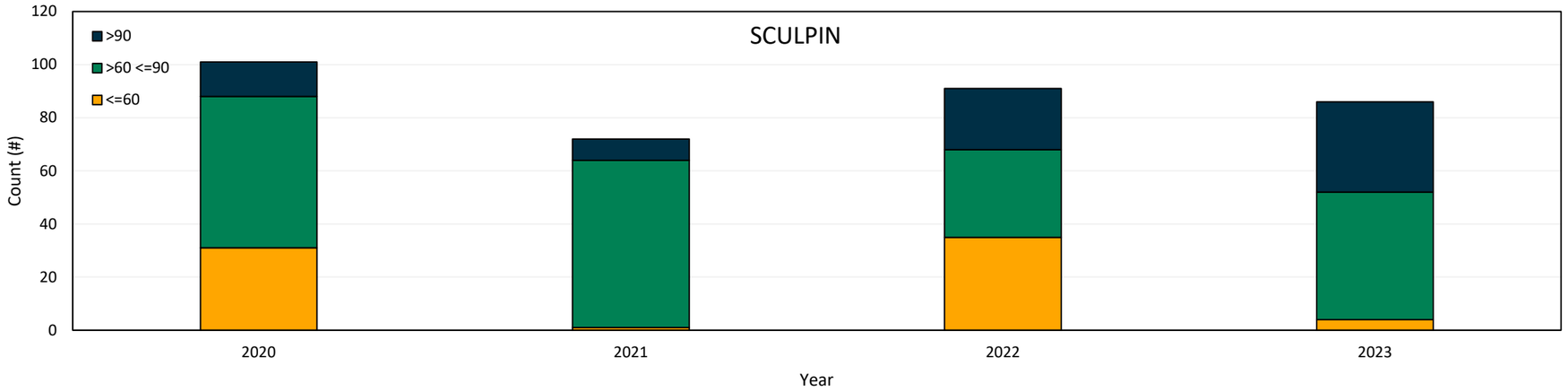
4.3.1 Fish Population and Communities

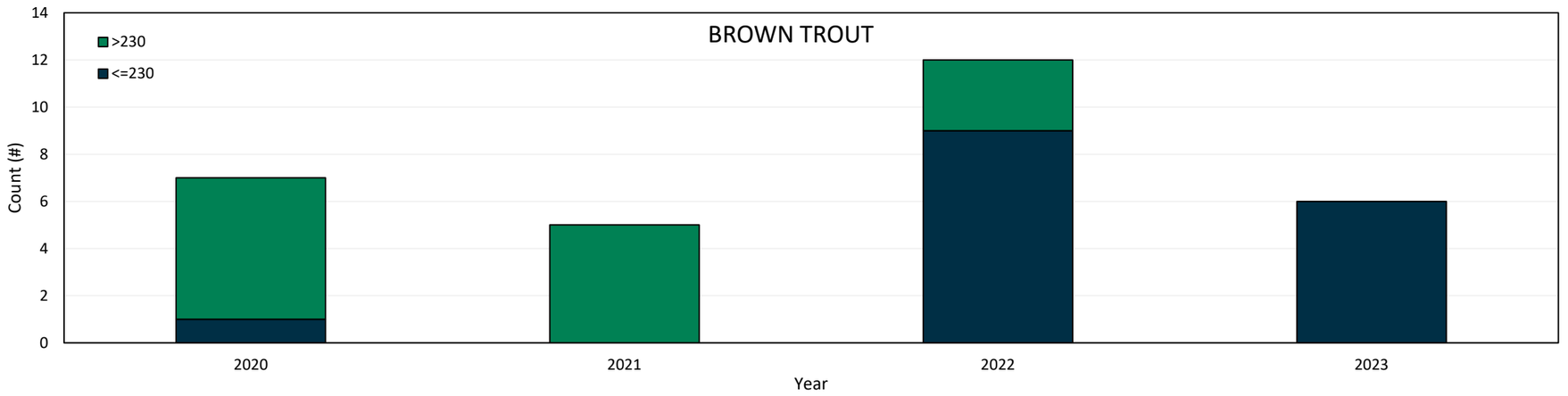
PCC does not directly connect to NFSC via surface flow aside from during large hydrologic events. No fish were captured or observed at either PCC location (LP-PD or LP-PDT) during the duration of this study. Similarly, no fish were found at the upper NFSC location (NSV-5). Surface flow is sustained throughout the year along NFSC, so the absence of fish is likely attributed to habitat quality, particularly sediment deposition.

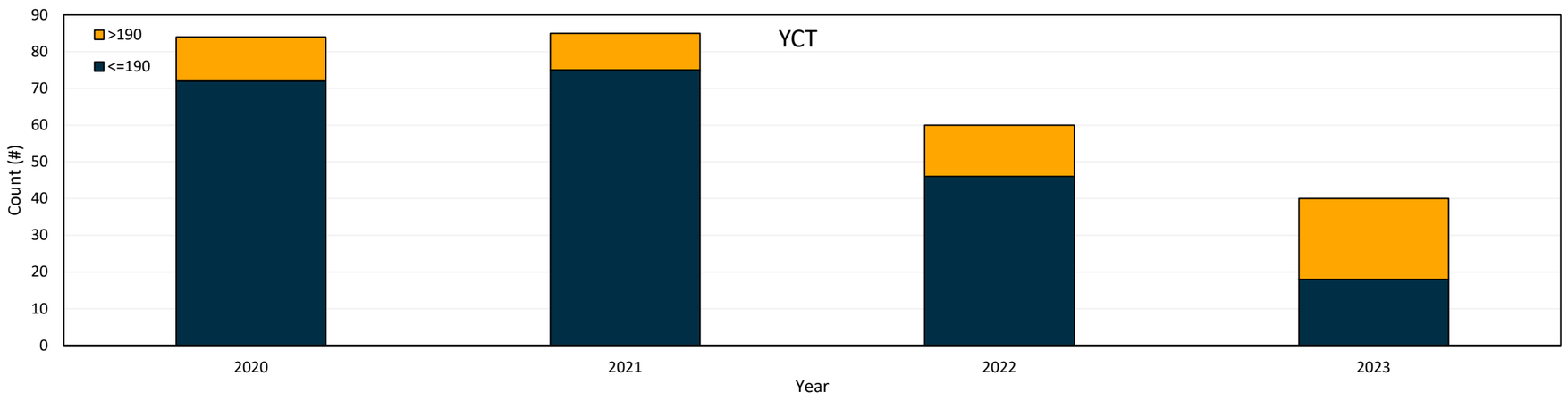
NFSC downstream of the confluence with PCC (NSV-6) exhibits similar habitat quality to the upper reach, although small numbers of Paiute sculpin (*Cottus beldingii*) were found at NSV-6 in fall 2020, 2021, and 2022. Several YCT ranging from 99 to 203 mm in length were found at NSV-6 in fall 2020 and fall 2022. Four larger brown trout (255 – 311 mm) were observed at NSV-6 in fall 2021 only.

Downstream at NSV-7, Paiute sculpin and YCT (*Oncorhynchus clarkii bouvieri*) are abundant, and brown trout (*Salmo trutta*) are present in smaller numbers. Counts and age classes of Paiute sculpin, brown trout, and YCT are shown in Figure B-4[5].

[5] Age class data presented herein is not a complete breakdown of age-length frequency data for each species, but an assessment of recruitment by examining the trends in abundance of younger juvenile and adult reproducing fish. Figure 8, time-series of individual locations are shown comparing two age groups each for YCT and brown trout. For these figures, total count data are used because the population estimate data excludes trout less than 75 mm in length. The length breaks for both species are based on approximate age of sexual maturity. For brown trout, the less than 230 mm trout were ages 3 years or less representing sexually immature juveniles or sub adults while those greater than 230 mm were age 3 years or greater trout that were likely sexually mature adults. For YCT, trout less than about 190 mm are 2 to 3 years old and are not sexually mature, whereas those greater than 190 mm are 3 or more years old and likely sexually mature.







Notes:

1. Sculpin age classes: Age 1-2, <=60mm; age 3-4, >60mm; and age 5+, <=90mm
2. Brown trout age classes: age 1-3, <=230mm; age 3+, >230mm
3. YCT age classes: age 1-3, <=190mm; age 3+, >190mm

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FIGURE B-5

AGE CLASS FREQUENCY OF TROUT AND SCULPIN AT NSV-7

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Paiute sculpin age classes varied by year but often included age 1-2 fish. The majority of brown trout encountered at NSV-7 in 2020 and 2021 were mature (>230 mm). In 2022, nine of twelve brown trout encountered were juveniles (<=230 mm) and in 2023 all six brown trout were juveniles. Juvenile YCT (<190 mm in length) are common at NSV-7, and young-of-year (YOY) YCT are frequently encountered, with ten, five, zero, and four YOY YCT found in 2020, 2021, 2022, and 2023, respectively. Mature YCT, typically female, were consistently encountered, with the exception of fall 2023. Numbers and age classes of trout in this stream vary year to year but generally represent a productive hatchery for YCT.

4.3.2 Trout Mark and Recapture

Trout were tagged using Passive Integrated Transponder (PIT) Tags from 2020 to 2023 at NSV-7. Fish longer than 200 mm were tagged. Trout were only tagged during the fall of each year, coinciding with fish population monitoring. The primary objective of tagging trout was to evaluate site fidelity (i.e. whether the same adult fish return to the site during the same time period each year), particularly with respect to spawning. Of twelve brown trout tagged during the study period, four were recaptured, and two were recaptured repeatedly. Of eleven YCT tagged during the study period, only one was recaptured. Brown trout typically spawn during the fall, when fish population monitoring was conducted. This likely impacted the number of recaptured brown trout. On the other hand, YCT typically spawn in spring/early-summer, meaning spawning fish likely were not present during fish population monitoring. This information along with the large presence of YOY and juvenile trout at this location suggest that NSV-7 provides important spawning habitat for both species, especially YCT.

4.3.3 Benthic Macroinvertebrate Communities

Samples of benthic macroinvertebrate communities were collected from each sampling location in PCC and NFSC from fall 2020 through fall 2022. Benthic community sampling continued at NSV-7 through fall 2023. A summary of the benthic community data collected during the study period is presented in Tables B-6 and B-7, and Figures B-5 through B-7.

The data show that invertebrate density, diversity, and evenness were spatially and temporally variable, but generally highest at NSV-7. The total taxa was highest at NSV-7 (range: 18 to 24), followed by LP-PD (range: 16 to 20). NSV-5 consistently showed the lowest total taxa (range: 4 to 8). Overall, NSV-7 showed the most stable and diverse benthic community. LP-PD exhibited declining conditions from 2020 to 2022. LP-PDT, NSV-5, and NSV-6 had consistently poor conditions.

Overall species composition at NSV-7 was within the range of what is seasonally and biogeographically expected for a stream of this size in the area. Dominant taxa at NSV-7 included a riffle beetle (*Optioservus quadrimaculatus*; Coleoptera), a midge species (Chironomidae), *Malenka* stoneflies (Plecoptera), Baetid mayflies (*Baetis tricaudatus complex*; Ephemeroptera), *Simulium sp*. (Diptera), scuds (*Gammarus sp*. Amphipoda), and freshwater snails (*Physa sp*.; Gastropoda). SMI scores at NSV-7 corresponded to condition category 2 (10^{th} to 25^{th} percentile of reference condition) from 2020 through 2022, and condition category 1 (minimum to 10^{th} percentile of reference condition) in 2023.

Table B-6. SMI Scores and Condition Ratings

Site	Metrics	Total Taxa	Ephemeroptera Taxa	Plecoptera Taxa	Trichoptera Taxa	Percent Plecoptera	Hilsenhoff Biotic Index (HBI)	Percent 5 Dominant Taxa	Scraper Taxa	Clinger Taxa	Score	Condition Rating
	Metric Scoring Formulas >>	100*(Total Taxa)/95th	100*(Ephemeroptera Taxa)/95th	100*(Plecoptera Taxa)/95th	100*(Trichoptera Taxa)/95th	100*(%Plectoptera)/95th	100*(10 - HBI)/(10 - 5th)	100*(100-%5dom)/(100-5th)	100*(Scraper Taxa)/95th	100*(Clinger Taxa)/95th		
	Year											
LPPD	2020	54	50	38	33	20	80	42	50	58	47	1
	2021	51	40	38	33	23	37	50	38	47	40	1
	2022	43	30	25	22	7	62	21	25	37	30	Minimum Threshold
LPPDT	2020	38	30	25	11	14	68	49	25	26	32	Minimum Threshold
	2021	35	10	0	33	0	57	10	38	26	23	Minimum Threshold
	2022	27	20	0	22	0	56	14	25	16	20	Minimum Threshold
NSV5	2020	22	0	13	11	1	70	2	13	16	16	Minimum Threshold
	2021	16	10	0	0	0	53	1	0	11	10	Minimum Threshold
	2022	11	0	0	0	0	53	0	0	0	7	Minimum Threshold
NSV6/6AQ	2020	16	10	0	0	0	74	0	0	5	12	Minimum Threshold
	2021	38	10	0	11	0	65	21	38	26	23	Minimum Threshold
	2022	30	10	0	11	0	40	20	25	26	18	Minimum Threshold
NSV-7	2020	65	50	38	44	41	63	67	50	63	53	2
	2021	65	30	25	33	100	71	55	38	47	52	2
	2022	59	30	13	44	81	72	34	88	58	53	2
	2023	49	40	25	22	10	61	37	50	42	37	1

Notes:
SMI – Stream Macroinvertebrate Index

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Table B-7. Relative Abundance, Diversity and Density

Site	Year	Total Taxa	Diversity (S-W Index)	Evenness	Density (#/1m^2)
Pole Canyon Creek					
LP-PD	2020	20	2.11	0.71	1428.0
	2021	19	2.15	0.73	2755.6
	2022	16	1.62	0.58	4047.2
LP-PDT	2020	14	2.09	0.79	624.3
	2021	13	1.33	0.52	1295.3
	2022	10	1.44	0.63	1801.2
North Fork Sage Creek					
NSV-5	2020	8	1.37	0.66	2152.8
	2021	6	1.1	0.61	2314.2
	2022	4	1.01	0.73	362.4
NSV-6/6AQ	2020	6	0.37	0.21	4363.0
	2021	14	1.51	0.52	1506.9
	2022	11	1.77	0.74	1948.3
NSV-7	2020	24	2.34	0.74	4581.8
	2021	24	2.3	0.72	16084.9
	2022	22	2.03	0.66	10107.3
	2023	18	1.91	0.66	7814.6

Notes:

mg/L - milligrams per liter

(#/1m^2) - number per square meter

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Condition Category	Central and Southern Mountains	Condition Rating
Above the 25th percentile of reference condition	≥59	3
10th to 25th percentile of reference condition	51 – 58	2
Minimum to 10th percentile of reference condition	33 – 50	1
Below minimum of reference condition	<33	Minimum Threshold

Notes:
1. SMI = Stream Macroinvertebrate Index

Simplot Company
SMOKY CANYON MINE

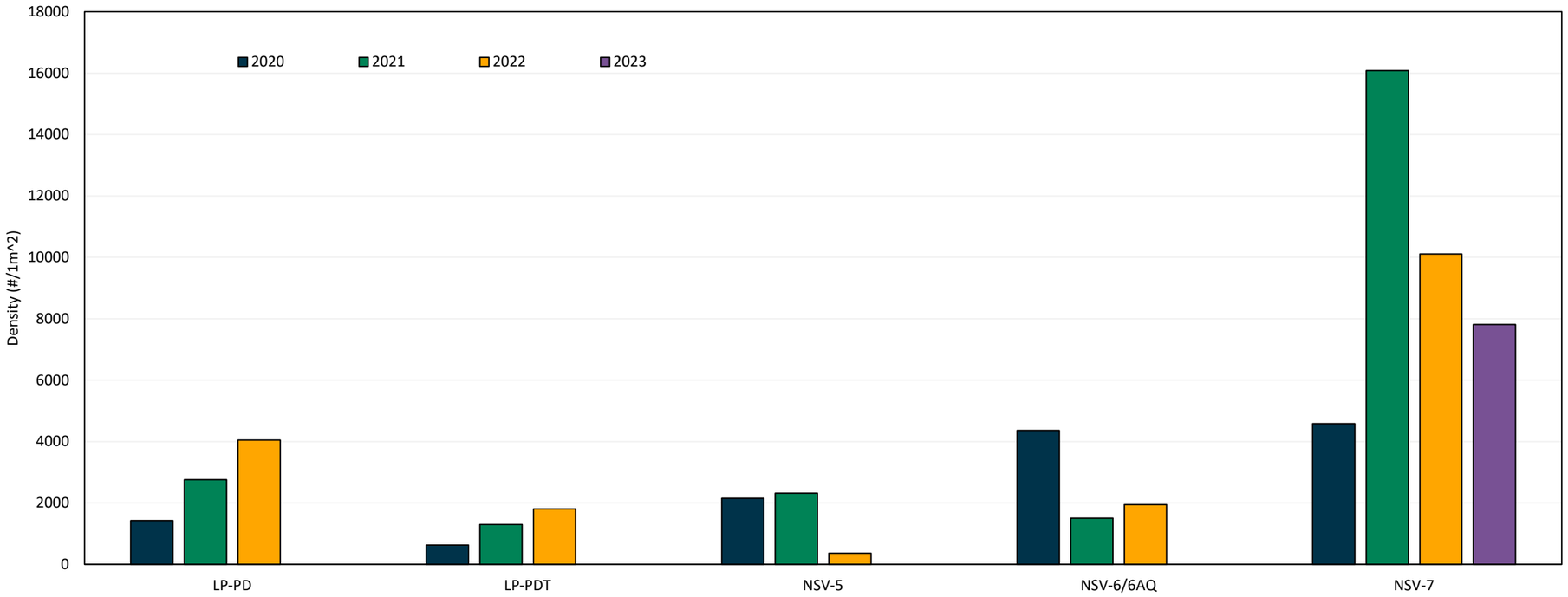
FIGURE B-6

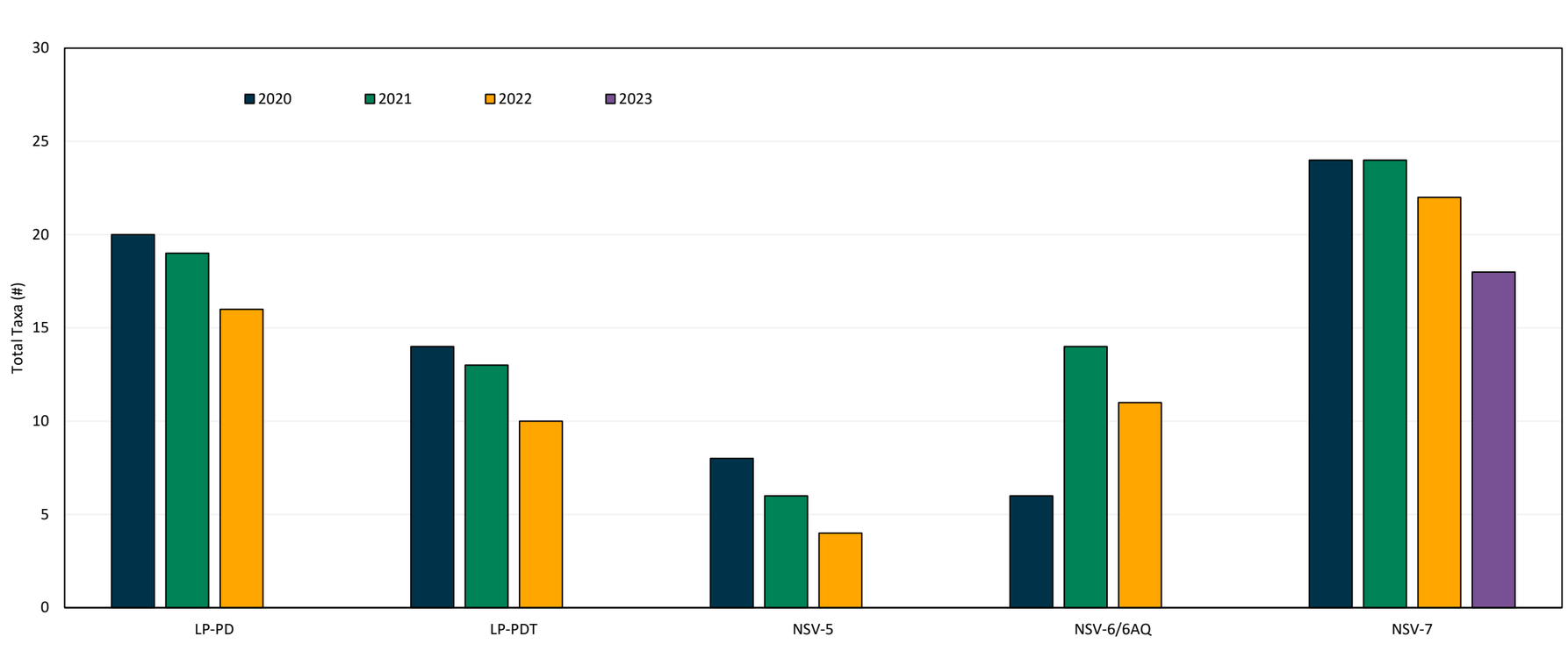
SMI Scoring

DATE: MAY 2025
BY: WSB | FOR: SMC

FORMATION

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Notes:
1. #/m^2 = number per square meter

Simplot Company
SMOKY CANYON MINE

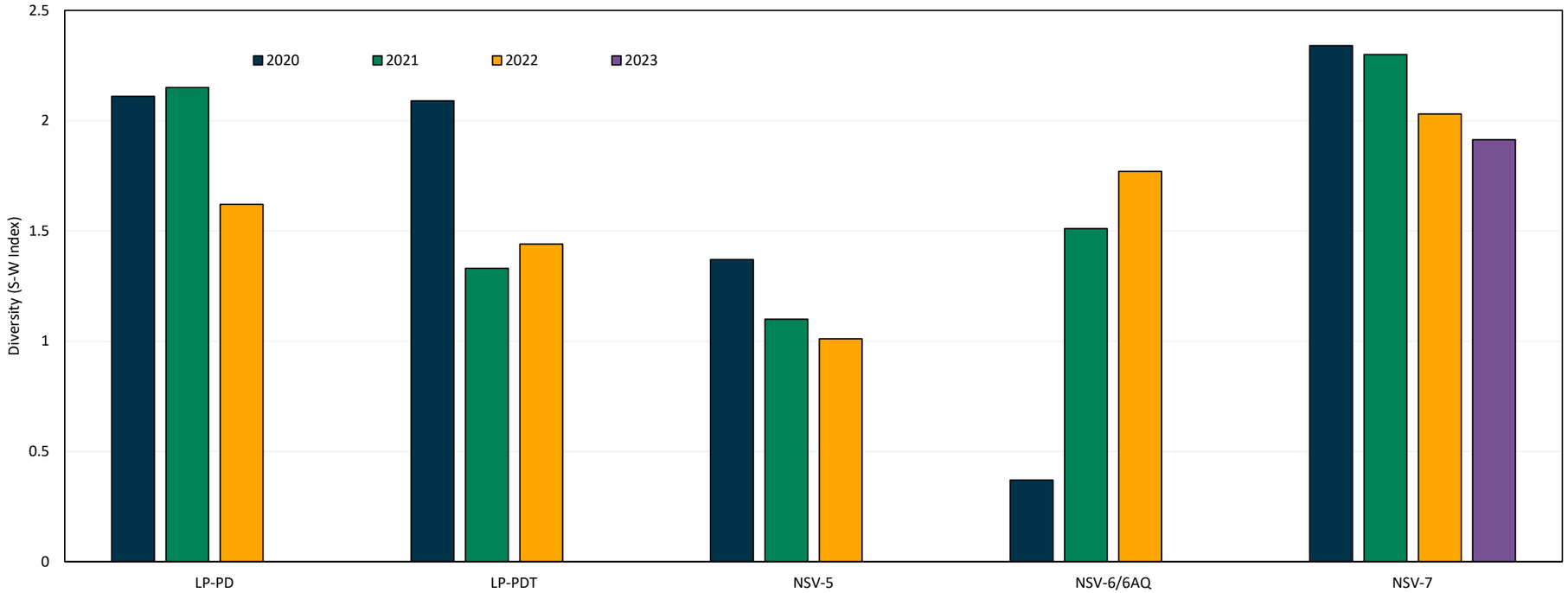
FIGURE B-7

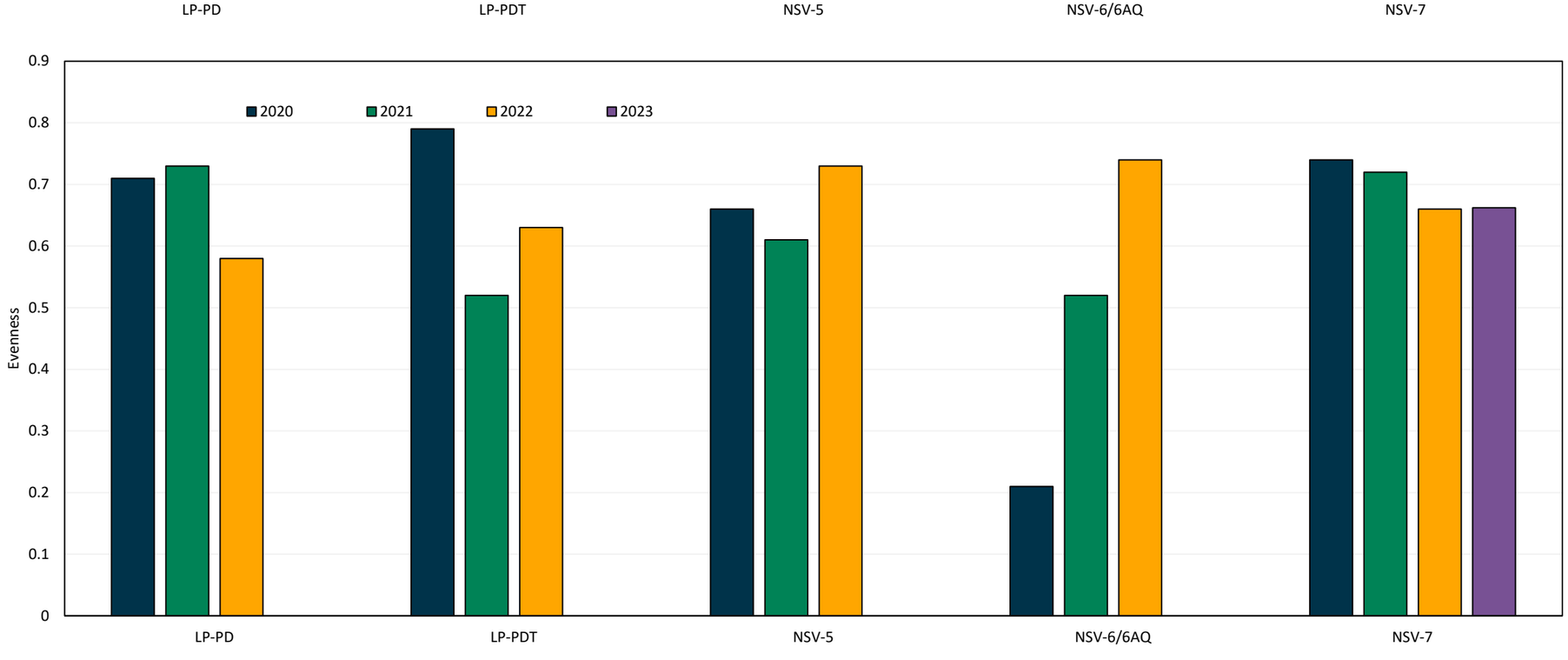
Density And Total Taxa

DATE: MAY 2025
BY: WSB | FOR: SMC

FORMATION

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Notes:
1. SMI = Stream Macroinvertebrate Index

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FIGURE B-8

Diversity and Evenness

DATE: MAY 2025
BY: WSB | FOR: SMC

FORMATION

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The benthic community at LP-PD was dominated by earthworms (Oligochaeta), and Baetid and *Cinygmula* mayflies. SMI scores declined from 2020 to 2022, from condition category 1 to the minimum threshold (below minimum of reference condition).

LP-PDT, NSV-5, and NSV-6 exhibited poor overall benthic community characteristics; low total taxa, low abundance, and little presence of sensitive/ Ephemeroptera, Plecoptera, and Trichoptera (EPT) taxa. The most common taxa included scuds (*Gammarus sp*.; Amphipoda), midges (Chironomidae), and earthworms. SMI scores corresponded to the minimum threshold condition rating at LP-PDT, NSV-5, and NSV-6 from 2020 through 2022.

4.4 Chemical Evaluations

In-situ water quality parameters (temperature, pH, conductivity, ORP, DO and turbidity) were collected at the time of sampling (Table B-8). Surface water samples were analyzed for the following constituents: total and dissolved selenium, nitrate + nitrite (as N), total phosphorus, DOC, alkalinity, and sulfate (Table B-9). Biological tissues were analyzed for selenium and percent solids. The results are summarized in the following sections. Table B-10 contains a summary of selenium concentrations in all media.

4.4.1 Surface Water

Measurement data were typical of mid-elevation mountain streams. DO was typically greater than 7.3 milligrams per liter (mg/L) at all locations, with the exception of NSV-5. DO at NSV-5 ranged from 4.1 to 10 mg/L, with the lowest values occurring during early fall (September) when flows were down and temperatures were still relatively high. The range of pH values measured were all within the acceptable range (6 to 9 standard units [SU]). Stream temperatures were variable, sometimes near or exceeding 20◦C at LP-PDT, NSV-5, and NSV-6. Temperatures at LP-PD and NSV-7 remained relatively cool; generally below 15◦C with the exception of June 2023 at NSV-7 (16.7◦C). Turbidity was generally low (<10 Nephelometric Turbidity Unit [NTU]) during sampling, but occasionally spiked when fine sediments were stirred up by cattle/wildlife. The highest turbidity was measured at LP-PDT (May 2021, 228.3 NTU), followed by NSV-5 (September 2021, 139.22 NTU).

Concentrations of dissolved selenium in surface water for the study period are shown in Figure B-8. Concentrations of selenium in surface water at NSV-5 were low (≤0.00024 mg/L) and typically not detected, similar to historical concentrations. In PCC, concentrations of dissolved selenium in surface water were also below the IDWQS until June 2023 (0.0046 mg/L). In spring and fall 2024, the dissolved selenium concentration (0.0017 and 0.0026 mg/L, respectively) at LP-PD were back below the IDWQS. Prior to PCC diffusing into the wet meadow, concentrations of dissolved selenium were measured at LP-PDT from September 2020 through September 2022. These concentrations remained below IDWQS.

At NSV-6, downstream of PCC, concentrations of dissolved selenium often exceed the IDWQS during spring runoff due to increased surface water connectivity with PCC but were below the IDWQS and typically <0.0005 mg/L during low flow conditions. In 2023, dissolved selenium concentrations at NSV-6 did not exceed the criteria during the spring. This is similar to 2017, which had similarly above-normal

snowpack and concomitant runoff, suggesting that the diluting effect of runoff during these high-flow years outweighs the effects of surface water connectivity of PCC to NFSC.

Farther downstream at NSV-7, concentrations of dissolved selenium in surface water have been measured during spring and fall since the beginning of the study period (September 2020). Concentrations at NSV-7 follow a similar pattern to NSV-6 although the spring spikes are generally of lower magnitude and were below the IDWQS in years with normal or above-normal SWE (2023 through 2025).

Concentrations of dissolved selenium in these streams are generally below the IDWQS, despite historical exceedances, due to the implementation of the Pole Canyon Non-Time-Critical Removal Actions (NTCRAs) (Formation 2025). Occasional exceedances during spring runoff do occur and have been as high as 0.007 mg/L at NSV-6 during the study period.

4.4.2 Sediment

Sediment samples were collected at LP-PD, LP-PDT, NSV-5, NSV-6, and NSV-7 during spring and fall from September 2020 to September 2022. Sediment sampling was continued at NSV-7 through May 2025. Selenium concentrations are shown in Figure B-8. Despite relatively low surface water concentrations at LP-PDT, sediment concentrations are the highest at this location (average = 9.78~~8.4~~ mg/kg dw), likely attributed to historical alluvial deposition of seleniferous material prior to implementation of the NTRCAs. Upstream at LP-PD, selenium concentrations in sediments are slightly lower, averaging 7.26~~6.0~~ mg/kg dw during the study period. The lowest concentrations of selenium in sediment occur at NSV-5, upstream of the influence of PCC. Downstream of PCC in NFSC, selenium concentrations in sediment decrease with distance downstream (NSV-6/6AQ average = 3.63~~3~~ mg/kg dw; NSV-7 average = 2.30~~0~~ mg/kg dw).

4.4.3 Periphyton

Periphyton samples were collected at LP-PD, LP-PDT, NSV-5, NSV-6, and NSV-7 during spring and fall from September 2020 to September 2022. Periphyton sampling continued at NSV-7 through May 2025. Concentrations are shown in Figure B-9. Three replicate samples were collected at NSV-7 during each sampling effort, and the average concentration of the replicate samples with standard deviation for each year is shown. Selenium concentrations in periphyton tissue follow a similar pattern to sediment, with the lowest concentrations measured at NSV-5 (average = 1.1 mg/kg dw), and the highest concentrations measured at LP-PDT (average = 8.7 mg/kg dw). Concentrations at LP-PD are the second lowest (average = 2.8 mg/kg dw). Concentrations in lower NFSC are similar (i.e. not decreasing with distance)[6] (NSV-6 average = 3.8 mg/kg dw; NSV-7 average = 3.8 mg/kg dw).

4.4.4 Benthic Macroinvertebrates

Benthic macroinvertebrate tissue samples were collected at LP-PD, LP-PDT, NSV-5, NSV-6, and NSV-7 during spring and fall from September 2020 to September 2022. Benthic macroinvertebrate tissue sampling continued at NSV-7 through May 2025. Concentrations are shown in Figure B-9. Selenium concentrations in benthic macroinvertebrate tissue follow a similar pattern to sediment and periphyton,

[6] The concentrations of selenium in sediment at NSV-6 and NSV-7 were tested for a statistically significant difference using the Shapiro-Wilk test for normality (p = 0.0402), paired t-test (t = -0.41, p = 0.703), and Wilcoxon Signed-Rank Test (p = 0.813). The results suggest that the concentrations are not significantly different.

with the lowest concentrations measured at NSV-5 (average = 3.1 mg/kg dw), and the highest concentrations measured at LP-PDT (average = 40.2 mg/kg dw), albeit at higher magnitudes. Concentrations at LP-PD are lower than LP-PDT (average = 17.7 mg/kg dw), but higher than the downstream NFSC locations (NSV-6 average = 7.6 mg/kg dw; NSV-7 average = 17.5 mg/kg dw). The concentrations at NSV-6/6AQ and NSV-7 are typically similar, aside from two anomalous concentrations at NSV-7 in September 2023 (37.6 mg/kg dw) and May 2025 (66 mg/kg dw).

4.4.5 Fish Tissue

Fish tissue sample collection was attempted at LP-PD, LP-PDT, NSV-5, NSV-6, and NSV-7 during spring and fall from September 2020 to September 2022, but fish were only found at NSV-6/6AQ and NSV-7. Fish tissue sampling continued at NSV-7 through May 2025. Concentrations in trout (combined) and sculpin are shown in Figure B-9. Concentrations in trout, split by species (YCT and brown trout), are shown in Figure B-10. Generally, brown trout are collected for tissue samples when fish of the appropriate size for tissue sampling are found. This was only the case during July and September 2023. In September 2023, both YCT and brown trout were collected. Otherwise, only YCT were collected for samples. The mean selenium concentration in trout tissue at NSV-6/6AQ exceeded the current fish tissue criteria (Site-Specific Waters Criterion [SSWC]; 9.5 mg/kg dw) during both sampling efforts where trout were sampled, as well as the SSSC for Hoopes/Sage Creek (13.6 mg/kg dw) in YCT tissue in September 2020. Selenium concentrations in sculpin tissues were similar to those in trout and provide supplemental data for NSV-6/6AQ when trout could not be sampled. During three out of the four sampling efforts, the mean selenium concentration in sculpin tissue exceeded the Hoopes/Sage Creek SSSC. The mean selenium concentrations in fish tissue at NSV-7 were typically near or below the SSWC (9.5 mg/kg dw) and did not exceed the Hoopes/Sage Creek SSSC (13.6 mg/kg dw) during any sampling effort.

Table B-8. In-Situ Surface Water Quality Parameters

StationName	SampleDate	SC	ORP	DO	pH	Temp.	Turbidity
LP-PD	9/9/2020	338.1	90.3	9.65	8.4	9.9	10.4
	5/24/2021	345.8	262.2	10.3	8.3	4.5	6.3
	9/1/2021	253.3	122.8	8.83	8.5	12.1	1.8
	5/23/2022	362.9	68.2	10.1	8.4	5.1	4.4
	9/9/2022	339.1	183.1	8.69	8.5	10.3	2.0
	6/9/2023	328.2	168.2	10.2	8.4	6.5	2.7
	9/6/2023	330.4	133.5	8.40	8.5	10.2	1.4
	5/23/2024	361.5	0.9	9.46	7.9	7.2	1.8
	5/19/2025	347.8	139.6	9.97	8.5	4.7	4.7
LP-PDT	9/11/2020	337	66.4	9.91	8.4	6.9	2.1
	5/24/2021	342.9	282.2	9.86	--	5.3	228.3
	9/1/2021	251.1	130	6.89	8.6	22	7.3
	5/23/2022	339.8	52.1	8.33	8.7	15.1	6.3
	9/9/2022	322.3	115.7	7.45	8.7	21.1	10.6
NSV-5	9/11/2020	401.8	96.7	8.53	8.0	11.9	4.8
	5/24/2021	192.1	266.1	8.73	7.8	8.5	9.9
	9/2/2021	401.1	28.8	5.34	7.8	13.7	139.2
	5/23/2022	319.6	53.6	9.97	8.0	5.9	3.6
	9/12/2022	459.3	-29.9	4.13	7.5	10.9	4.3
	6/9/2023	258.9	155.7	7.02	7.8	20.2	8.0
	5/20/2024	354.2	162.8	8.40	7.9	17.6	7.1
	5/21/2025	273.8	149.6	8.69	7.9	11.7	9.6
NSV-6	9/11/2020	507	106.6	11.2	8.2	14.4	5.9
	5/25/2021	421.1	271.9	8.49	8.1	13	--
	5/24/2022	477.6	95.2	10.1	8.2	6.4	3.8
	6/9/2023	388	141.9	9.98	8.2	19.1	5.6
	5/20/2024	373.8	134.8	8.17	7.9	13.6	25.3
	5/21/2025	362.4	201.6	9.42	8.1	7.3	10.2
NSV-7	9/12/2020	514	50.6	9.81	8.3	5.6	1.9
	5/25/2021	440.2	256.6	10.0	8.1	5.6	8.8
	9/4/2021	536	100.9	9.70	8.1	4.6	1.1
	5/24/2022	484.4	111.8	10.4	8.3	6.3	1.7
	9/12/2022	488.8	34.5	9.01	8.0	5.6	5.1
	6/10/2023	395.1	217.7	7.31	8.0	16.7	8.3
	7/13/2023	419.9	47.9	7.85	8.0	10.7	20.3
	9/6/2023	491.8	157.8	7.70	8.0	10	11.3
	5/20/2024	395.1	180.7	9.29	7.9	7.3	8.9
	5/22/2025	424.7	119.7	9.57	8.2	6	9.2

Notes:
Dissolved oxygen (DO) is reported in milligrams/liter (mg/L)
Oxidation reduction potential (ORP) is reported in millivolts (mV)
Log hydrogen ion concentration (pH) is reported as standard units (SU)
Specific conductivity (SC) is reported in microsiemens per centimeter (uS/cm)
Temperature (Temp) is reported in decgrees Celsius
Turbidity is reported in nepholometric turbidity units (NTU)

Table B-9. Surface Water Laboratory Analytical Data

Station	Date	Alkalinity	DOC	Hardness	N	P	Selenium, Dissolved	Selenium, Total	Sulfate	TDS
LP-PD	9/10/20	182	1.33	187	0.064	0.0168 J	0.00024 U	0.00024 U	13.3	
	5/24/21	182	1.47	183	0.066	0.0375	0.00024 U	0.00024 U	10	173 J
	9/1/21	181	1.14	183	0.05 U	0.0237	0.00024 U	0.00024 U	13.5	
	5/23/22	195	1.2	196	0.057	0.0135	0.00024 U	0.00024 U	10.7	
	9/9/22	161	1	184	0.076	0.0133	0.00024 U	0.00024 U	13.6	
	6/9/23			184			0.00461	0.00436	10 J+	200
	5/23/24			188			0.00167 J	0.00024 U	10.6	202
	5/19/25			176			0.00067 J	0.00093 J	9.75	217
LP-PDT	9/11/20	175	1.27	187	0.05 U	0.0242	0.0004 J	0.00041 J	13.4	
	5/24/21	179	1.86	218	0.05 U	1.35	0.00038 J	0.00625	10.4	
	9/1/21	156	1.98	158	0.05 U	0.082	0.00177 J	0.00184 J	12.5	
	5/23/22	182	1.77	186	0.05 U	0.149	0.00226 J	0.00226 J	10.3	
	9/9/22	173	1.97	176	0.05 U	0.116	0.00297	0.00296	12.7	
NSV-5	9/11/20	201	2.46	211	0.05 U	0.0563	0.00024 U	0.00024 U	20.2	
	5/24/21	98.6	14.9	95.5	0.05 U	0.254	0.00024 U	0.00039 J	3.24	123 J
	9/2/21	182	4.13	174	0.05	0.234	0.00024 U	0.00024 U	22.3	
	5/23/22	165	8.48	163	0.05 U	0.164	0.00024 U	0.00024 U	6.74	
	9/12/22	216	5.23	166	0.153	0.423	0.00024 U	0.00024 U	28.1	
	6/9/23			131			0.00027 J	0.00026 J	2.74	178
	5/20/24			182			0.00024 U	0.00024 U	8.44	218
	5/21/25			133			0.0003 U	0.00024 U	6.03	179
NSV-6	9/11/20	277	3.94		0.061	0.085	0.00064 J	0.00058 J	12.2	
	5/25/21			230			0.0049	0.00603	12.3	260
	5/24/22	256	4.58	256	0.05 U	0.0841	0.00713	0.00668	13.5	
	9/12/22	244	3.17	247	0.05 U	0.102	0.00223	0.00227	18.2	
	6/9/23			218			0.00256	0.00255	7.94	241
	5/20/24			207			0.00317	0.00334 J+	9.13	235
	5/21/25			200			0.00394 J+	0.00297 J+	11.4	233
NSV-7	9/12/20	221	1.74	280	0.079	0.0358	0.00087 J	0.00078 J	65.7	
	5/25/21	210	4.35	232	0.06	0.0768	0.00342	0.0035	25.7	
	9/4/21	210	1.73	266	0.055	0.0295	0.00092 J	0.00099 J	74.2	
	5/24/22	230	3.02	254	0.058	0.041	0.00379	0.00349	37.9	
	9/12/22	227	1.28	264	0.091	0.0328	0.00075 J	0.0008 J	47.8	
	6/10/23	203	3.72	211	0.052	0.0819	0.00112 J	0.00117 J	17.4	
	9/6/23	259	3.53	283	0.074	0.0964	0.00062 J	0.00065 J	33.8	
	5/20/24	209	6	216	0.066	0.163	0.00192	0.00201	20	
	5/22/25	205	2.45	168	0.073	0.0379	0.00207	0.00222	23.2	

Notes:

All concentrations are shown in mg/L

P = Phosphorus

N = Nitrate + Nitrite

TDS = Total Dissolved Solids

DOC = Dissolved Organic Carbon

Table B-10. Summary of Selenium Concentrations in all Media

Date	Season	Location	Se non fish media[1]				Trout Tissue (mg/kg dw)				Sculpin Tissue (mg/kg dw)			
			Dissolved Surface	Sediment (mg/kg)	Periphyton (mg/kg)	Invertebrates (mg/kg)	Count	Mean	Min	Max	Count	Mean	Min	Max
Sep 2020	Fall	NSV-5	0.00024 U	0.49	1.01	1.57	No Fish				No Fish			
		NSV-6	0.00064 J	4.38	5.51	9.77	8	***21.5***	15.3	39.3	10	***20.9***	18	27
		NSV-7	0.00087 J	2.1	3.65	9	10	8.92	7.4	10.4	10	***10.12***	7.2	11.9
		LP-PD	0.00024 U	4.3	1.5	19.1	No Fish				No Fish			
		LP-PDT	0.0004 J	9.23	10.6	52.8	No Fish				No Fish			
May 2021	Spring	NSV-5	0.00024 U	1.01	0.93	2.2	No Fish				No Fish			
		NSV-6	***0.0049***	--	--	--	--				--			
		NSV-6AQ	***0.00555***	3.92	2.82	8.83	No Trout				9	***16.09***	12.5	25.7
		NSV-7	***0.00342***	2.43	3.5	11.65	10	7.4	6.24	8.99	10	8.43	6.44	10.3
		LP-PD	0.00024 U	6.62	2.33	24.7	No Fish				No Fish			
		LP-PDT	0.00038 J	8.65	7.59	32.7	No Fish				No Fish			
Sep 2021	Fall	NSV-5	0.00024 U	1.19	0.89	7.46	No Fish				No Fish			
		NSV-6AQ	0.00095 J	4.48	3.93	6.53	No Trout				3	***19.1***	17.5	22
		NSV-7	0.00092 J	3.63	2.99	7.73	10	***11.28***	8.21	33.1	10	9.23	8.31	10.8
		LP-PD	0.00024 U	6.94	3.5	25.2	No Fish				No Fish			
		LP-PDT	0.00177 J	8.83	6.19	32.1	No Fish				No Fish			
May 2022	Spring	NSV-5	0.00024 U	0.784	1.31	2.4	No Fish				No Fish			
		NSV-6	***0.00713***	--	--	--	--				--			
		NSV-6AQ	--	2.38	2.48	6.61	6	***9.53***	6.81	12.5	6	***12.67***	9.79	17.4
		NSV-7	***0.00379***	1.37	4.65	8.27	10	7.98	7.25	8.99	10	8.45	6.27	10.5
		LP-PD	0.00024 U	8.49	2.72	8	No Fish				No Fish			
		LP-PDT	0.00226 J	7.69	9.08	40.7	No Fish				No Fish			
Sep 2022	Fall	NSV-5	0.00024 U	0.66	1.48	1.85	No Fish				No Fish			
		NSV-6	0.00223	--	--	--	--				--			
		NSV-6AQ	--	2.93	4.02	6.25	No Fish				No Fish			
		NSV-7	0.00075 J	2.95	2.41	7.41	10	9.22	7.5	14.7	10	8.71	7.26	10.4
		LP-PD	0.00024 U	9.56	3.86	11.5	No Fish				No Fish			
		LP-PDT	0.00297	14.32	9.9	42.8	No Fish				No Fish			
Jun/Jul 2023	Spring	NSV-5	0.00027 J	Not Sampled			Not Sampled				Not Sampled			
		NSV-6	0.00256	Not Sampled			Not Sampled				Not Sampled			
		NSV-7	0.00112 J	1.49	3.15	4.79	4	***12.05***	10.4	13.4	10	9.073	6.25	17.6
		LP-PD	***0.00461***	Not Sampled			Not Sampled				Not Sampled			
Sep 2023	Fall	NSV-7	0.00062 J	1.71	3.01	37.6	10	9.50	8.61	10.7	10	9.238	8.37	11
May 2024	Spring	NSV-5	0.00024 U	Not Sampled			Not Sampled				Not Sampled			
		NSV-6	***0.00317***	Not Sampled			Not Sampled				Not Sampled			
		NSV-7	0.00192	1.54	4.43	5	5	8.71	7.17	10.6	5	***11.44***	6.35	28.9
		LP-PD	0.00167 J	Not Sampled			Not Sampled				Not Sampled			
May 2025	Spring	NSV-5	0.0003 J	Not Sampled			Not Sampled				Not Sampled			
		NSV-6	***0.00394***	Not Sampled			Not Sampled				Not Sampled			
		NSV-7	0.00207	3.18	6.29	66	5	8.98	8.11	10.5	10	6.12	4.72	10.7
		LP-PD	0.00067 J	Not Sampled			Not Sampled				Not Sampled			

Notes:

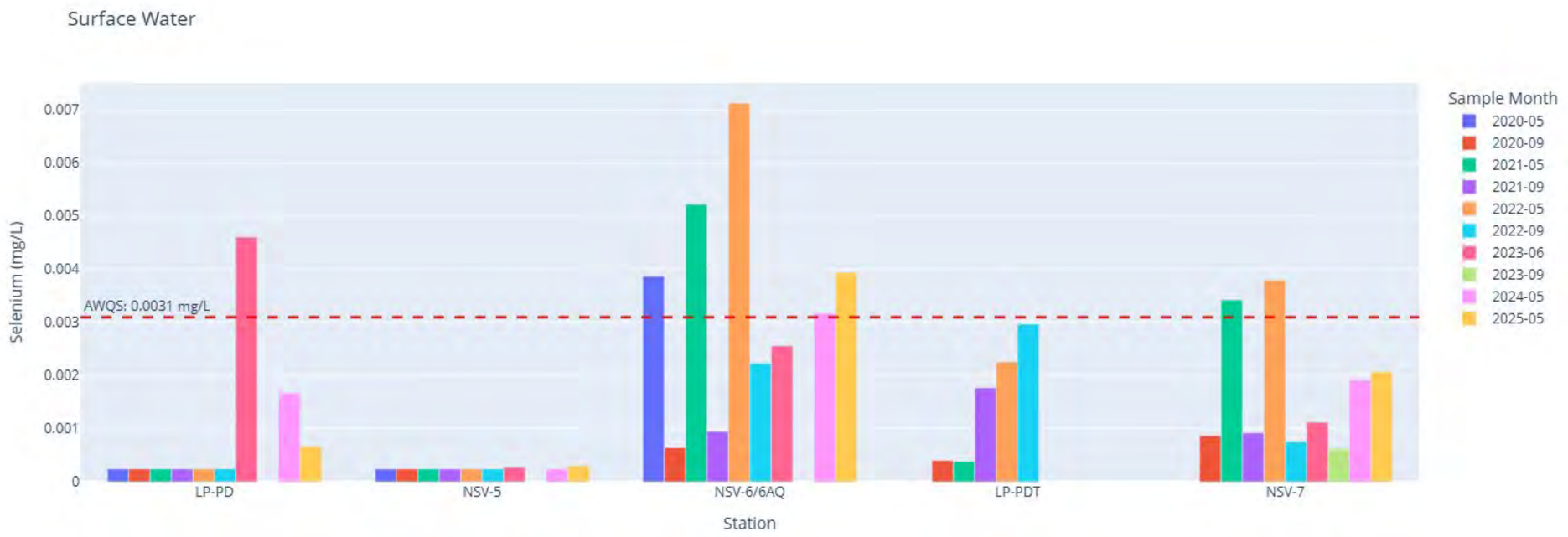
Exceeds state default criteria

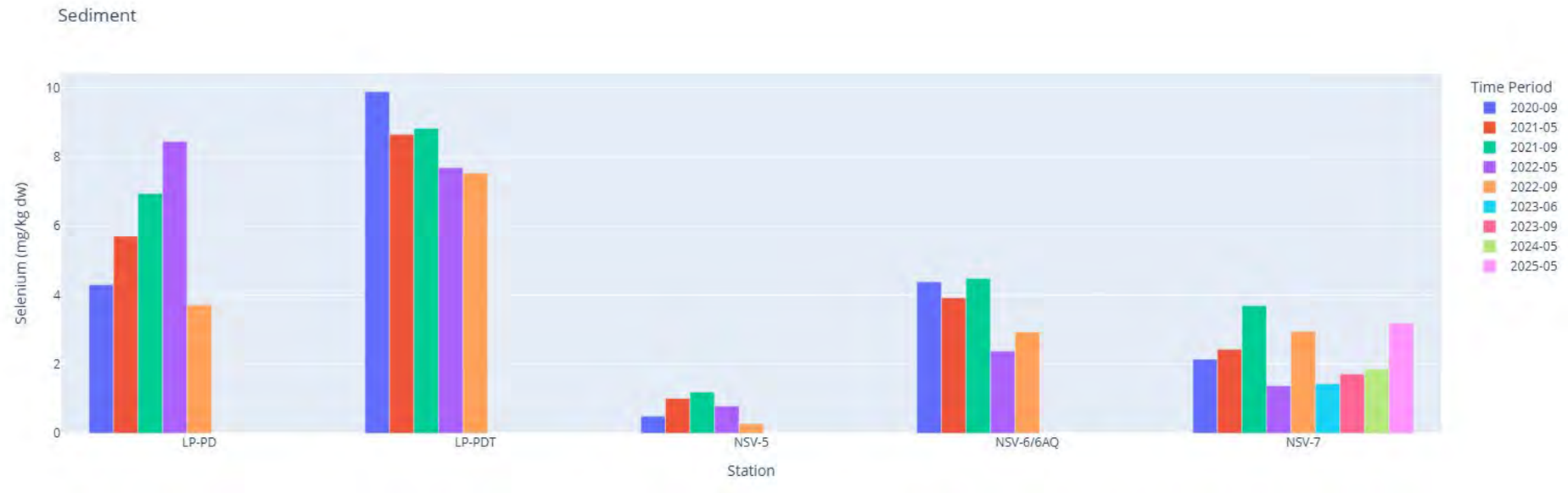
Exceeds SSC- Hoopes/Sage criteria

State Default Criteria Whole Body Fish Tissue	9.5	mg/kg dw
SSSC Hoopes/Sage Whole Body Fish Tissue	13.6	mg/kg dw
State Default Criteria Water	0.0031	mg/L
SSSC Hoopes/Sage Water	0.0167	mg/L

[1]Triplicate and Replicate samples were averaged

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Notes:
1. Mg/L = milligrams per liter
2. Mg/kg dw = milligrams per kilogram, dry weight
3. AWQS = Idaho aquatic life water quality criteria for selenium

Simplot Company
SMOKY CANYON MINE

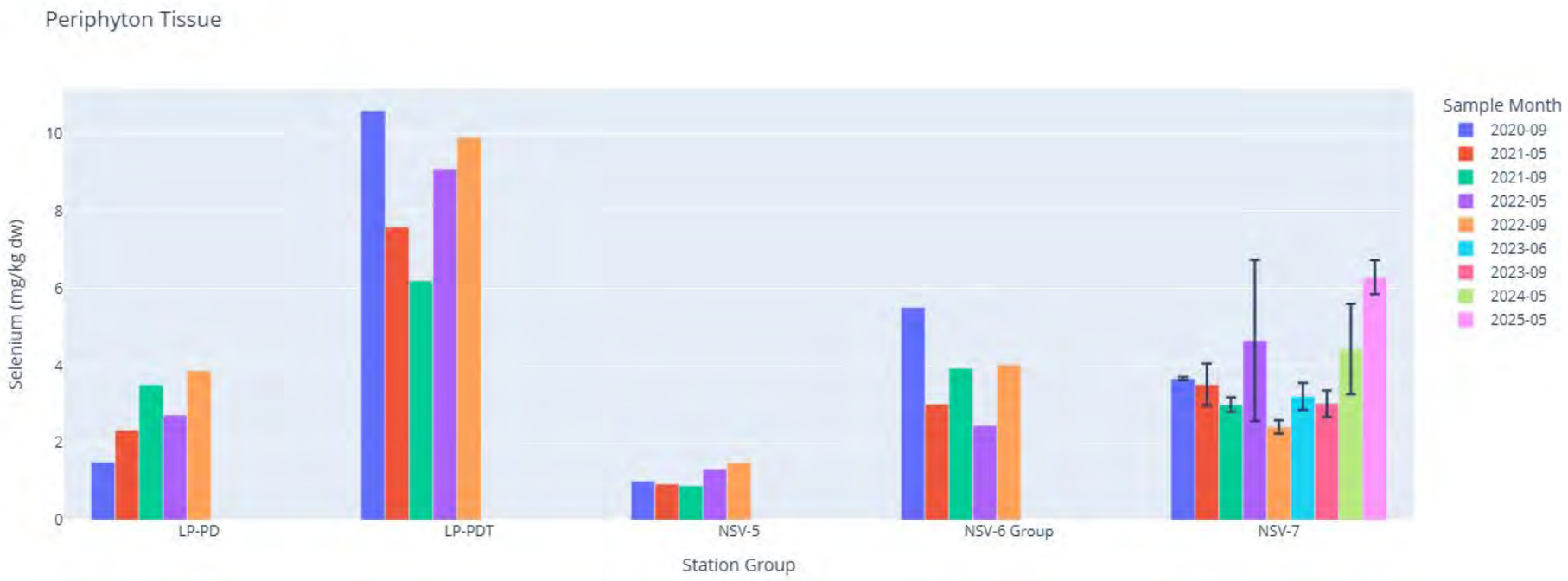
FIGURE B-9

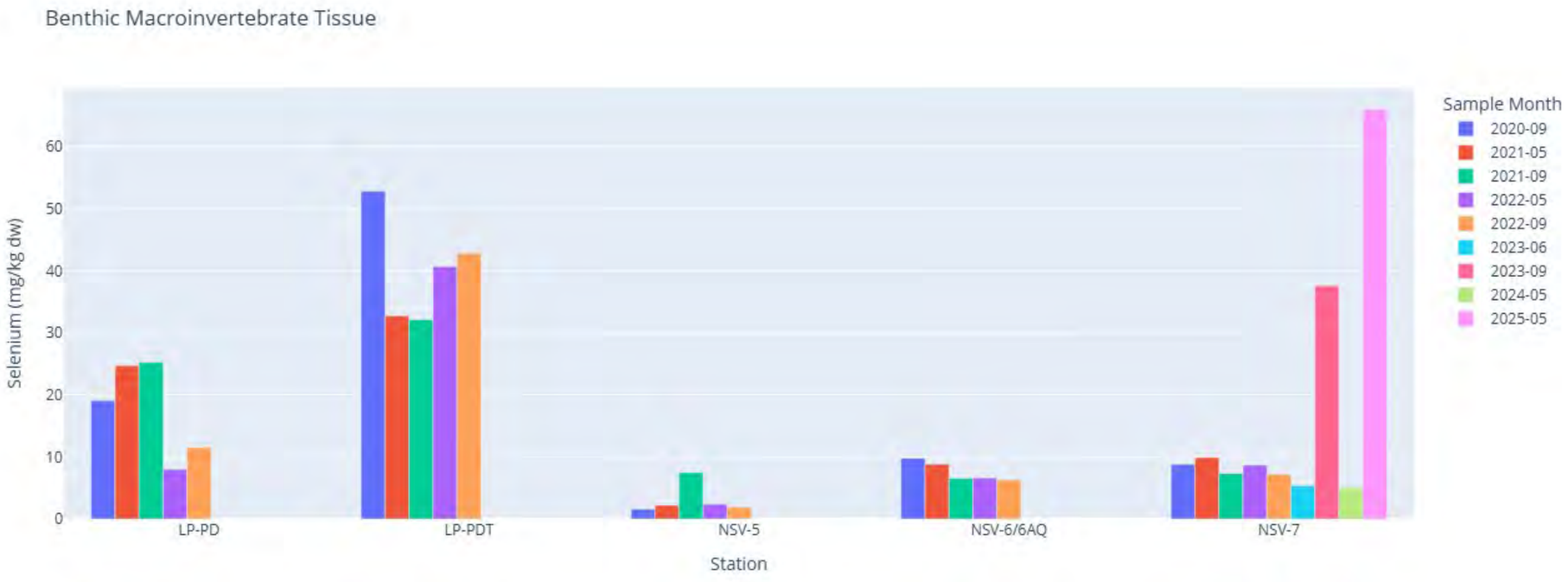
SELENIUM CONCENTRATIONS IN SURFACE WATER AND SEDIMENT

DATE: MAY 2025
BY: WSB | FOR: SMC

FORMATION

S:\Jobs\SmokyAquatic\SSSC\NFSC_PCC\SSSC_Proposal\Appendices\AppB_DataReport\Tbls\Figs\Chem





Notes:
1. Mg/kg dw = milligrams per kilogram, dry weight

Simplot Company
SMOKY CANYON MINE

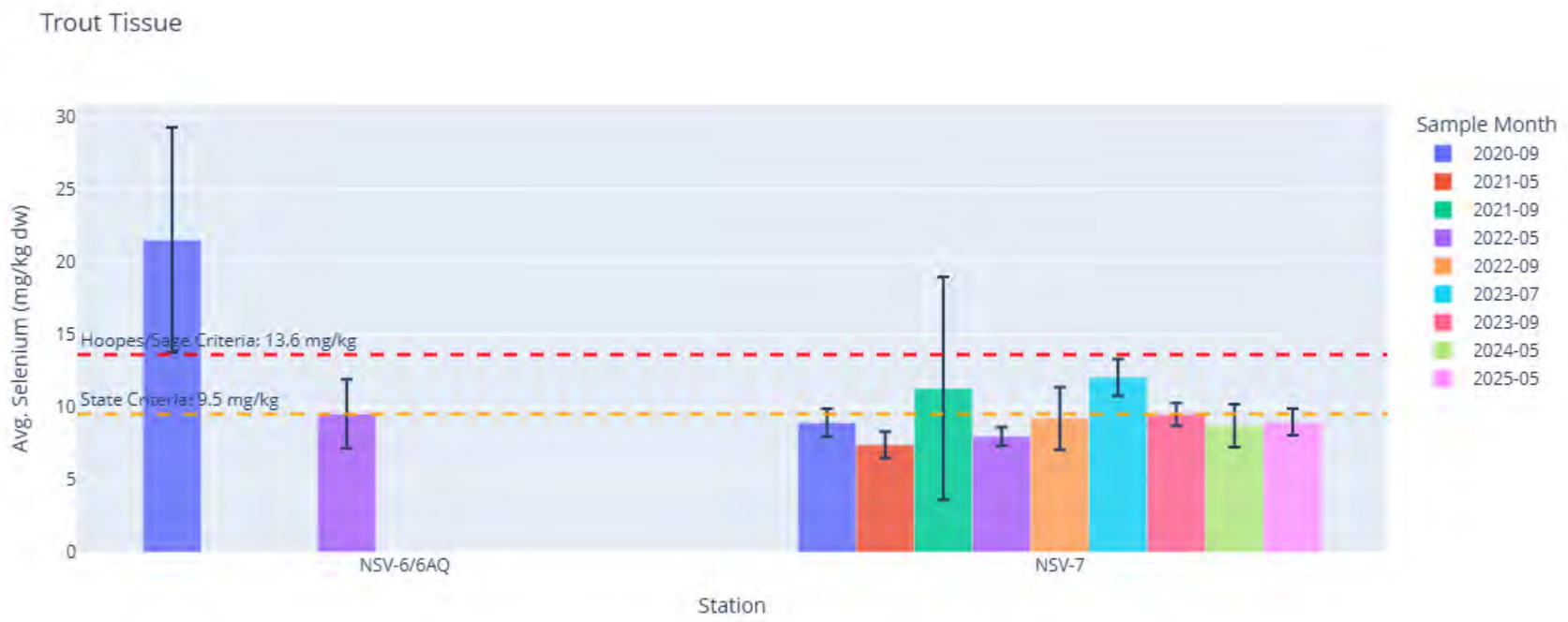
FIGURE B-10

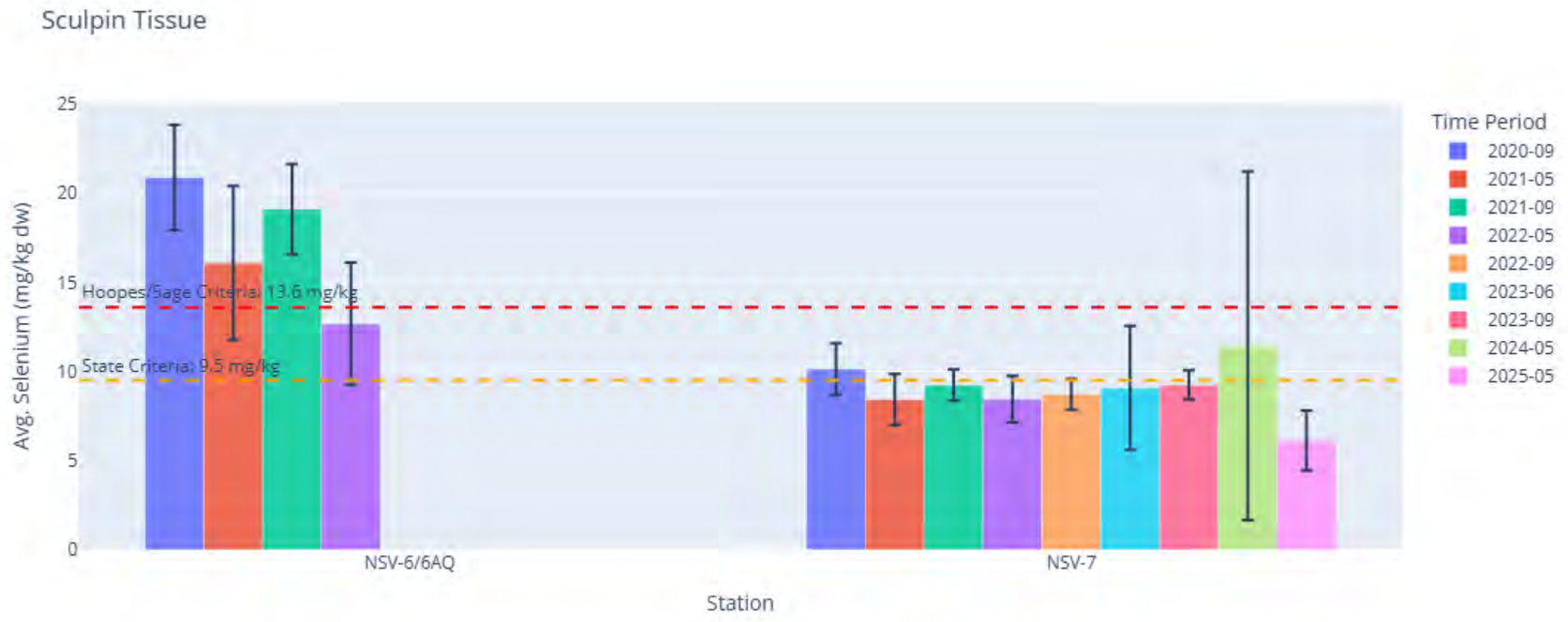
SELENIUM CONCENTRATIONS IN PERIPHYTON AND BENTHIC MACROINVERTEBRATES

DATE: MAY 2025
BY: WSB | FOR: SMC

FORMATION

S:\Jobs\SmokyAquatic\SSSC\NFSC_PCC\SSSC_Proposal\Appendices\AppB_DataReport\Tbls\Figs\Chem





Notes:
1. Mg/kg dw = milligrams per kilogram, dry weight
2. Hoopes/Sage Criteria is site specific (IDAPA 58.01.02)

Simplot Company
SMOKY CANYON MINE

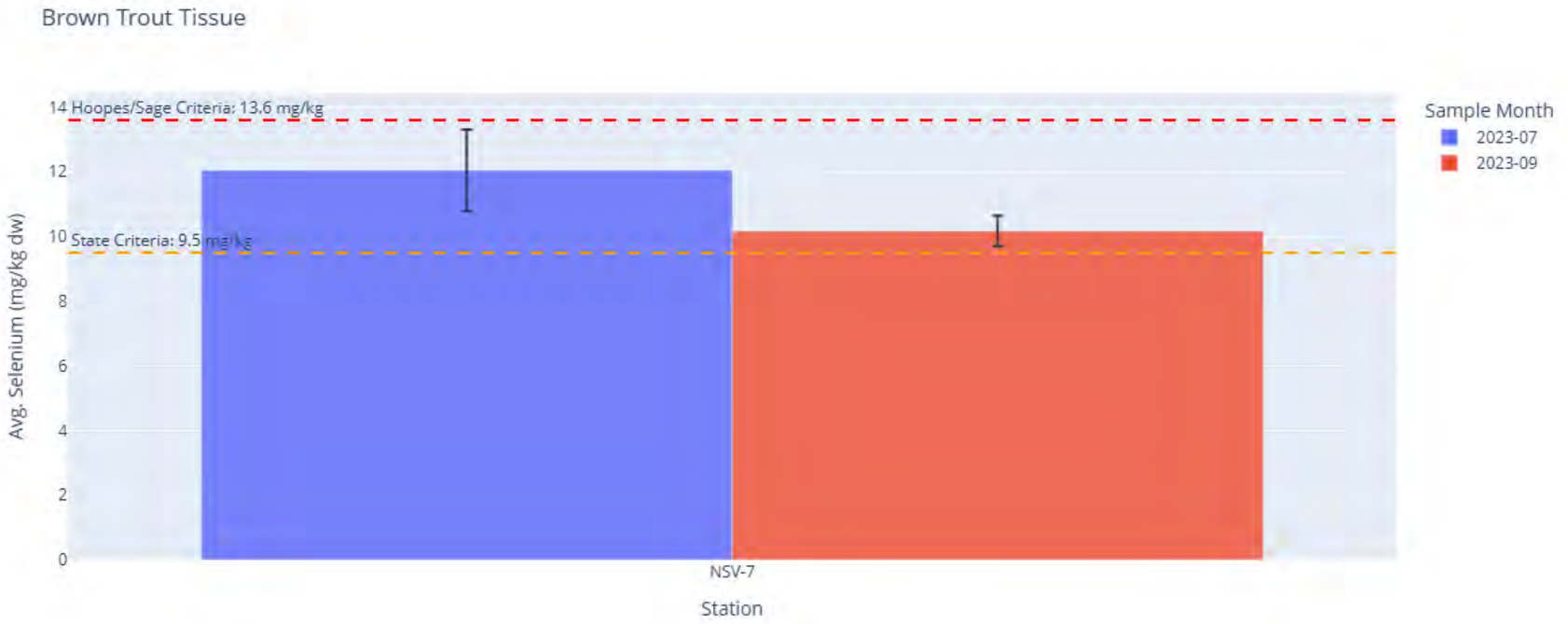
FIGURE B-11

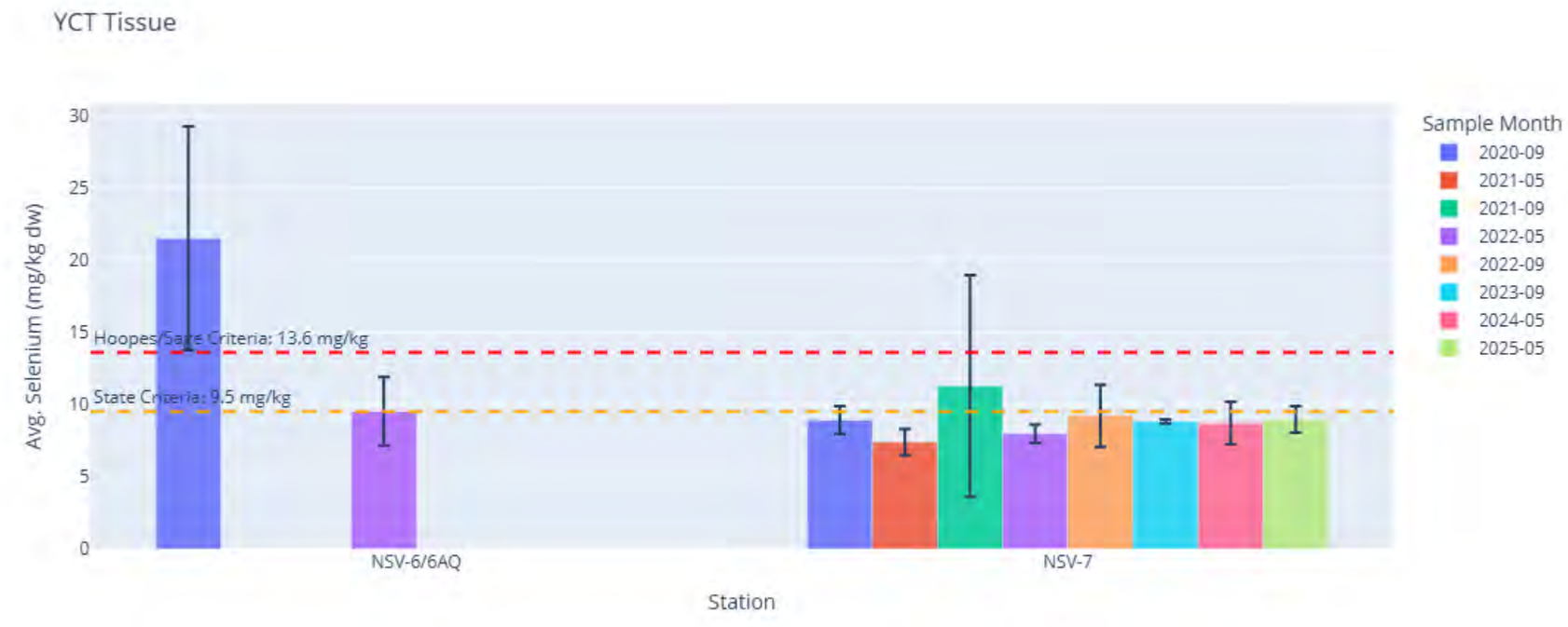
MEAN ANNUAL SELENIUM CONCENTRATIONS IN TROUT AND SCULPIN TISSUES

DATE: MAY 2025
BY: WSB | FOR: SMC

FORMATION

S:\Jobs\SmokyAquatic\SSSC\NFSC_PCC\SSSC_Proposal\AppendicesAppB_DataReport\TblsFigs\Chem





Notes:
1. Mg/kg dw = milligrams per kilogram, dry weight
2. Hoopes/Sage Criteria is site specific (IDAPA 58.01.02)

Simplot Company
SMOKY CANYON MINE

FIGURE B-12

MEAN ANNUAL SELENIUM CONCENTRATIONS IN BROWN AND YELLOWSTONE CUTTHROAT TROUT TISSUE

DATE: MAY 2025

BY: WSB | FOR: SMC

FORMATION

S:\Jobs\Smoky\Aquatic\SSSC\NFSC_PCC\SSSC_Proposal\Appendices\AppB_DataReport\Tbls\Figs\Chem

5 Summary

Data collection efforts indicate that fish are not present in PCC or in NFSC upstream of the confluence with PCC. This is likely due to a combination of poor habitat conditions including heavy sedimentation, lack of prey (benthic macroinvertebrates), and limited surface water connectivity between PCC and NFSC. For the purposes of SSSC development, PCC is considered fishless[7]. Downstream of the confluence with PCC, NFSC supports fish populations. Fish were occasionally present at NSV-6 but in limited numbers. Farther downstream in NFSC near the confluence with Sage Creek at the NSV-7 location, a productive fishery is present with multiple age classes of YCT and brown trout.

Concentrations of selenium in sediment and biotic tissues collected during the study period were generally lowest at upstream NFSC location NSV-5 and highest in PCC at LP-PDT. Concentrations of selenium remained elevated in NFSC farther downstream (NSV-6 and NSV-7), albeit at lower concentrations than PCC. Concentrations of dissolved selenium in surface water in PCC were generally below the IDWQS (0.0031 mg/L). Dissolved selenium concentrations in NFSC downstream of PCC were highly variable but generally below the IDWQS except during runoff events. Despite relatively low concentrations of dissolved selenium in surface water, concentrations of selenium in biotic tissues are somewhat elevated. This is likely attributed to historical alluvial deposition of seleniferous material prior to implementation of the NTRCAs, from which the current sediment concentrations are a likely artifact. During runoff, the wet meadow in Sage Valley becomes saturated and can mobilize selenium trapped in these sediments, as well as in organic particulates. Concentrations of selenium in surface water remain relatively low, but during runoff these concentrations can become elevated due to the association with sediments described above. Selenium is bioaccumulated from the sediments by primary producers (e.g. periphyton), or transported in particulates from upstream, and further bioaccumulated by primary consumers and their predators (e.g. benthic macroinvertebrates and fish).

The chemical data provided in this report for NFSC and PCC reflect the seasonal variations that occur for selenium concentrations in different abiotic and biotic media. The physical and biological assessment data reflect the poor conditions present in PCC and provides further evidence about its fishless water status. Collectively, these data will be used in the development of a representative SSSC using EPA-approved methods (i.e., Bioaccumulation Factor [BAF] approach or Mechanistic Modeling using Trophic Transfer Factors [TTF]).

[7] In fishless waters, selenium concentrations in fish from the nearest downstream waters may be used to assess compliance using methods provided in Aquatic Life Ambient Water Quality Criterion for Selenium – Freshwater, EPA-822-R-16-0, Appendix K: Translation of a Selenium Fish Tissue Criterion Element to a Site-Specific Water Column Value (United States Environmental Protection Agency [EPA] 2016).

6 References

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ATTACHMENT A - PHOTO LOG



Photo 1: Spring 2021 LP-PD Cattle Use

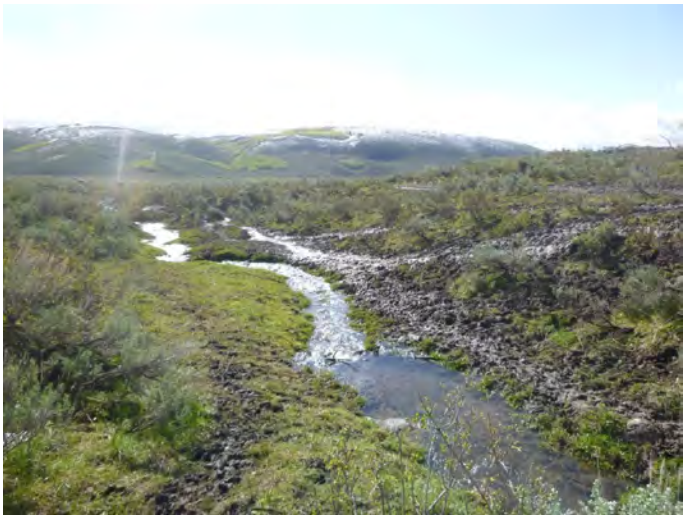


Photo 2: Spring 2021 LP-PD DS Looking DS



Photo 3: Spring 2021 LP-PD DS Looking US



Photo 4: Spring 2021 LP-PD DS Looking DS



Photo 5: Spring 2021 LP-PD DS Looking US



Photo 6: Spring 2021 LP-PD Cattle Use



Photo 7: Spring 2021 LP-PD Cattle Use



Photo 8: Spring 2021 LP-PD Cattle Use



Photo 9: Spring 2021 LP-PD Culvert



Photo 10: Spring 2021 LP-PD US Looking DS



Photo 11: Spring 2021 LP-PD US Looking DS

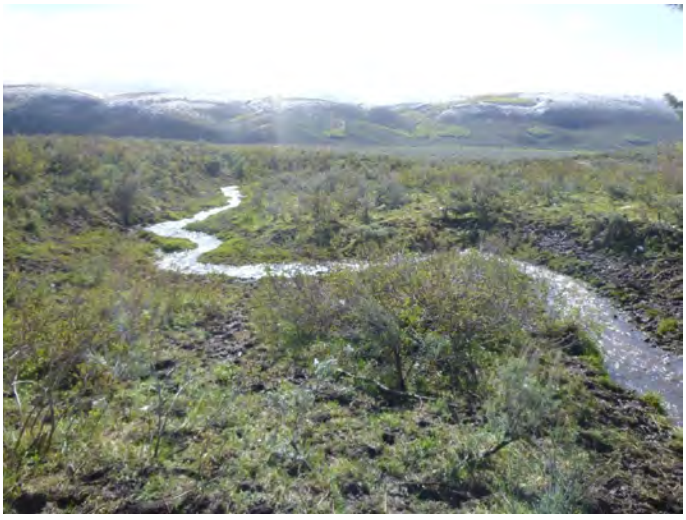


Photo 12: Spring 2021 LP-PD Mid Reach Looking DS



Photo 13: Spring 2021 LP-PD Mid Reach Looking US



Photo 14: Spring 2021 LP-PD Mid Reach Looking US



Photo 15: Spring 2021 LP-PDT US Looking US



Photo 16: Spring 2021 LP-PDT US Looking DS



Photo 17: Spring 2021 LP-PDT US Looking DS



Photo 18: Spring 2021 LP-PDT Mid Reach Looking DS



Photo 19: Spring 2021 LP-PDT Mid Reach Looking US



Photo 20: Spring 2021 LP-PDT US Looking DS



Photo 21: Spring 2021 LP-PDT DS Looking US



Photo 22: Spring 2021 NSV-5 DS Looking DS



Photo 23: Spring 2021 NSV-5 DS Looking US



Photo 24: Spring 2021 NSV-5 Mid Reach Looking DS



Photo 25: Spring 2021 NSV-5 Mid Reach Looking US

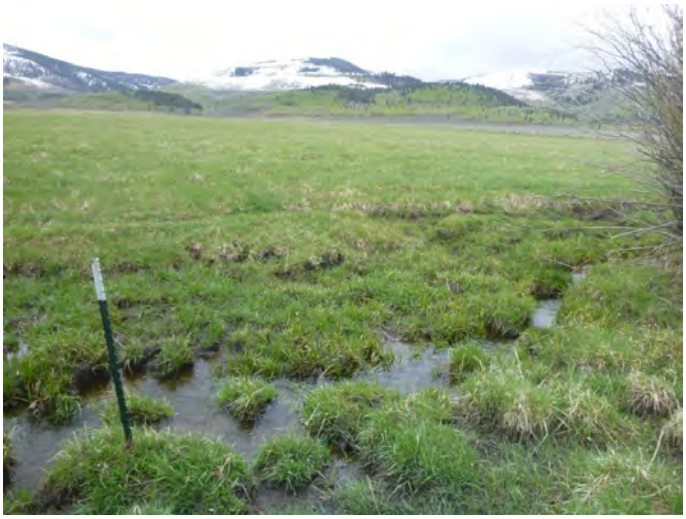


Photo 26: Spring 2021 NSV-5 DS Looking US



Photo 27: Spring 2021 NSV-5 DS Looking DS



Photo 28: Spring 2021 NSV-6AQ DS Looking DS



Photo 29: Spring 2021 NSV-6AQ DS Looking US



Photo 30: Spring 2021 NSV-6AQ Mid Reach Pano



Photo 31: Spring 2021 NSV-6AQ DS Looking US



Photo 32: Spring 2021 NSV-6AQ Pano



Photo 33: Spring 2021 NSV-7 US Looking US



Photo 34: Spring 2021 NSV-7 US Looking DS



Photo 35: Spring 2021 NSV-7 Mid Reach Looking US



Photo 36: Spring 2021 NSV-7 Mid Reach Looking DS



Photo 37: Spring 2021 NSV-7 DS Looking DS



Photo 38: Spring 2021 NSV-7 DS Looking US



Photo 39: Fall 2021 Pole & Sage Confluence



Photo 40: Fall 2021 Pole & Sage Confluence Looking DS



Photo 41: Fall 2021 Confluence Looking US Pole Canyon Creek



Photo 42: Fall 2021 Confluence Looking US Sage Valley Creek



Photo 43: Fall 2021 LP-PD DS Looking DS



Photo 44: Fall 2021 LP-PD DS Looking US



Photo 45: Fall 2021 LP-PD Mid Reach



Photo 46: Fall 2021 LP-PD Mid Reach



Photo 47: Fall 2021 LP-PD US Looking DS



Photo 48: Fall 2021 LP-PD US Looking DS



Photo 49: Fall 2021 LP-PD US Looking DS



Photo 50: Fall 2021 LP-PD US Looking US



Photo 51: Fall 2021 LP-PD Mid Reach Looking DS



Photo 52: Fall 2021 LP-PD Mid Reach Looking US



Photo 53: Fall 2021 LP-PD DS Looking US



Photo 54: Fall 2021 LP-PD DS Looking DS



Photo 55: Fall 2021 LP-PD Mid Reach Looking DS



Photo 56: Fall 2021 LP-PDT US Looking DS



Photo 57: Fall 2021 LP-PDT US Looking US



Photo 58: Fall 2021 LP-PDT US Looking DS



Photo 59: Fall 2021 LP-PDT US Looking DS



Photo 60: Fall 2021 LP-PDT Mid Reach Looking DS



Photo 61: Fall 2021 LP-PDT Cattle



Photo 62: Fall 2021 LP-PDT Mid Reach Looking US



Photo 63: Fall 2021 NSV-5 Pano



Photo 64: Fall 2021 NSV-5 Cattle Trails



Photo 65: Fall 2021 NSV-5 Mid Reach



Photo 66: Fall 2021 NSV-5 Cows



Photo 67: Fall 2021 NSV-5 Cattle Trails



Photo 68: Fall 2021 NSV-5 DS Looking US



Photo 69: Fall 2021 NSV-5 DS Looking DS



Photo 70: Fall 2021 NSV-5 DS Pano



Photo 71: Fall 2021 NSV-5 Mid Reach



Photo 72: Fall 2021 NSV-5 US Looking DS



Photo 73: Fall 2021 NSV-6AQ DS Looking DS



Photo 74: Fall 2021 NSV-6AQ DS Looking US



Photo 75: Fall 2021 NSV-6AQ Mid Reach Looking US



Photo 76: Fall 2021 NSV-6AQ Mid Reach Looking US



Photo 77: Fall 2021 NSV-6AQ US Looking DS



Photo 78: Fall 2021 NSV-6AQ US Looking US



Photo 79: Fall 2021 NSV-6AQ DS Looking US



Photo 80: Fall 2021 NSV-6AQ DS Looking DS



Photo 81: Fall 2021 NSV-6AQ Mid Reach Looking DS



Photo 82: Fall 2021 NSV-6AQ Mid Reach Looking US



Photo 83: Fall 2021 NSV-6AQ US Looking DS



Photo 84: Fall 2021 NSV-6AQ US Looking DS



Photo 85: Fall 2021 NSV-7 US Looking DS



Photo 86: Fall 2021 NSV-7 US Looking US



Photo 87: Fall 2021 NSV-7 Mid Reach Looking DS



Photo 88: Fall 2021 NSV-7 DS Looking US



Photo 89: Fall 2021 NSV-7 DS Looking DS



Photo 90: Fall 2021 NSV-7 DS Looking DS



Photo 91: Fall 2021 NSV-7 DS Looking US



Photo 92: Fall 2021 NSV-7 Mid Reach Looking DS



Photo 93: Fall 2021 NSV-7 Mid Reach Looking US



Photo 94: Fall 2021 NSV-7 Mid Reach Looking US



Photo 95: Fall 2021 NSV-7 Mid Reach Looking DS



Photo 96: Fall 2021 NSV-7 US Looking DS



Photo 97: Fall 2021 NSV-7 US Looking US



Photo 98: Spring 2022 LP-PD Outfall



Photo 99: Spring 2022 LP-PD Outfall Looking DS



Photo 100: Spring 2022 LP-PD Culvert



Photo 101: Spring 2022 LP-PD Low Flow



Photo 102: Spring 2022 LP-PD Looking US



Photo 103: Spring 2022 LP-PD Mid Reach In-flows



Photo 104: Spring 2022 LP-PD Mid Reach Looking DS



Photo 105: Spring 2022 LP-PD Overland Flow



Photo 106: Spring 2022 LP-PD Overland Flow

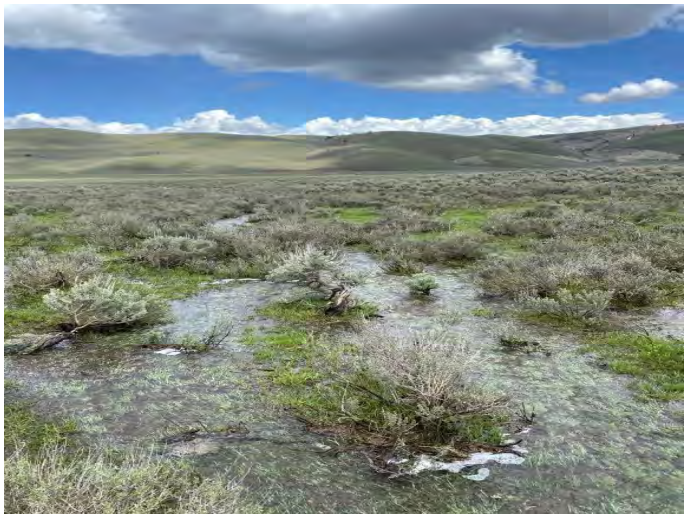


Photo 107: Spring 2022 LP-PD Overland Flow Convergence



Photo 108: Spring 2022 LP-PD Overland Flow Convergence



Photo 109: Spring 2022 LP-PD Overland Flow DS Looking DS



Photo 110: Spring 2022 LP-PD Overland Flow DS Looking US

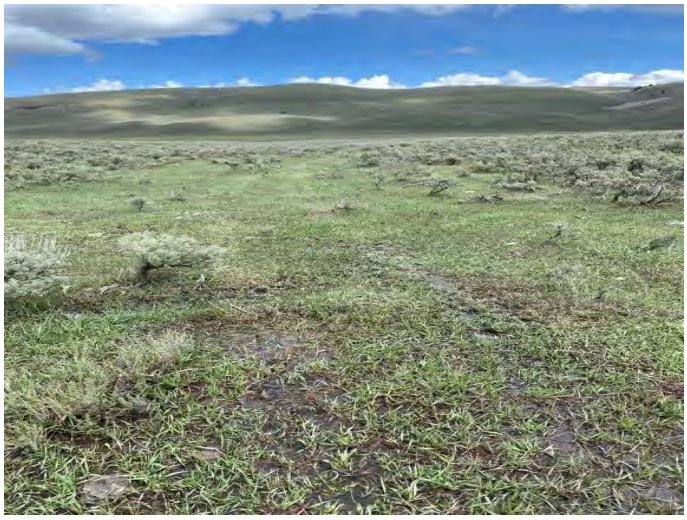


Photo 111: Spring 2022 LP-PD Overland Flow End Looking DS



Photo 112: Spring 2022 LP-PD Overland Flow End Looking US



Photo 113: Spring 2022 LP-PD Road Culvert



Photo 114: Spring 2022 LP-PDT DS Looking DS



Photo 115: Spring 2022 LP-PDT DS Looking US



Photo 116: Spring 2022 LP-PDT Mid Reach Looking US



Photo 117: Spring 2022 LP-PDT Mid Reach Looking DS



Photo 118: Spring 2022 LP-PDT US Looking US



Photo 119: Spring 2022 LP-PDT US Looking DS



Photo 120: Spring 2022 NSV-5 Mid Reach Looking DS



Photo 121: Spring 2022
NSV-5 Mid Reach Looking US



Photo 122: Spring 2022
NSV-5 DS Looking DS



Photo 123: Spring 2022
NSV-5 DS Looking US



Photo 124: Spring 2022
NSV-5 US Looking DS



Photo 125: Spring 2022
NSV-5 US Looking US



Photo 126: Spring 2022
NSV-6 DS Looking DS



Photo 127: Spring 2022
NSV-6 DS Looking US



Photo 128: Spring 2022
NSV-6 DS Looking DS



Photo 129: Spring 2022
NSV-6 DS Looking US



Photo 130: Spring 2022
NSV-6 Mid Reach Looking US



Photo 131: Spring 2022
NSV-6 Mid Reach Looking DS



Photo 132: Spring 2022
NSV-6 US Looking US



Photo 133: Spring 2022
NSV-6 US Looking DS



Photo 134: Spring 2022
NSV-7 US Looking US



Photo 135: Spring 2022
NSV-7 US Looking DS



Photo 136: Fall 2022 LP-PD Pipe Discharge



Photo 137: Fall 2022 LP-PD US Looking DS



Photo 138: Fall 2022 LP-PD US Looking DS



Photo 139: Fall 2022 LP-PD Mid Reach Looking DS



Photo 140: Fall 2022 LP-PD Mid Reach Looking US



Photo 141: Fall 2022 LP-PD DS Looking DS



Photo 142: Fall 2022 LP-PD DS Looking US



Photo 143: Fall 2022 NSV-5 Pano



Photo 144: Fall 2022 NSV-5 Looking US



Photo 145: Fall 2022 NSV-5 Pano



Photo 146: Fall 2022 NSV-5 Cattle Trail



Photo 147: Fall 2022 NSV-5 Pano



Photo 148: Fall 2022 NSV-5 Looking US



Photo 149: Fall 2022 NSV-6AQ DS Looking DS



Photo 150: Fall 2022 NSV-6AQ DS Looking US



Photo 151: Fall 2022 NSV-6AQ Mid Reach Looking DS



Photo 152: Fall 2022 NSV-6AQ Mid Reach Looking US



Photo 153: Fall 2022 NSV-6AQ US Looking DS



Photo 154: Fall 2022 NSV-6AQ US Looking US



Photo 155: Fall 2022 NSV-6AQ DS Looking US



Photo 156: Fall 2022 NSV-6AQ DS Looking DS



Photo 157: Fall 2022 NSV-6AQ Mid Reach Looking US



Photo 158: Fall 2022 NSV-6AQ Mid Reach Looking DS



Photo 159: Fall 2022 NSV-6AQ US Looking US



Photo 160: Fall 2022 NSV-6AQ US Looking DS



Photo 161: Fall 2022 NSV-7 DS Looking DS



Photo 162: Fall 2022 NSV-7 DS Looking US



Photo 163: Fall 2022 NSV-7 Mid Reach Looking DS



Photo 164: Fall 2022 NSV-7 Mid Reach Looking US



Photo 165: Fall 2022 NSV-7 US Looking US



Photo 166: Fall 2022 NSV-7 US Looking DS



Photo 167: Fall 2022 NSV-7 DS Looking US



Photo 168: Fall 2022 NSV-7 DS Looking US



Photo 169: Fall 2022 NSV-7 US Looking DS



Photo 170: Fall 2022 NSV-7 US Looking DS



Photo 171: Spring 2023 LP-PD Culvert



Photo 172: Spring 2023 LP-PD Outfall



Photo 173: Spring 2023 NSV-5 DS Looking US



Photo 174: Spring 2023 NSV-5 DS Looking DS



Photo 175: Spring 2023 NSV-6 DS Looking US



Photo 176: Spring 2023 NSV-6 DS Looking DS



Photo 177: Fall 2023 LP-PD
Outfall



Photo 178: Fall 2023 LP-PD
DS Looking US



Photo 179: Fall 2023 LP-PD
Cattle



Photo 180: Fall 2023 LP-PD
Cattle Use



Photo 181: Fall 2023 LP-PD
Mid Reach Looking DS



Photo 182: Fall 2023 LP-PD
Mid Reach Looking US



Photo 183: Fall 2023 LP-PD
Pipe Discharge



Photo 184: Fall 2023 LP-PD
US Looking US



Photo 185: Fall 2023 NSV-7
Looking DS



Photo 186: Fall 2023 NSV-7
Looking DS



Photo 187: Fall 2023 NSV-7
Looking DS



Photo 188: Fall 2023 NSV-7
Looking US



Photo 189: Fall 2023 NSV-7
Looking DS



Photo 190: Fall 2023 NSV-7
Looking DS



Photo 191: Fall 2023 NSV-7
Looking US



Photo 192: Fall 2023 NSV-7
Looking US



Photo 193: Fall 2023 NSV-7
Looking US



Photo 194: Spring 2024
NSV-5 Looking DS



Photo 195: Spring 2024
NSV-7 Looking US



Photo 196: Spring 2024
NSV-7 Looking DS

ATTACHMENT B - DATA

North Fork Sage Creek Data

StationName	StnDescription	SampleName	SampleDate	SampleTime	Media	Matrix	Species	LabOrField	Analyte	Result	Unit	Basis	FinalQualifier
NSV-5	NFSC, above Pole Creek	SC0919-NSV5-SW001-F	9/12/2019	14:28	SW	Water		Field	Conductivity at 25 C	445.8	umhos/cm		
NSV-5	NFSC, above Pole Creek	SC0919-NSV5-SW001-F	9/12/2019	14:28	SW	Water		Field	ORP	218.3	mV		
NSV-5	NFSC, above Pole Creek	SC0919-NSV5-SW001-F	9/12/2019	14:28	SW	Water		Field	Oxygen, Dissolved	8.48	mg/L		
NSV-5	NFSC, above Pole Creek	SC0919-NSV5-SW001-F	9/12/2019	14:28	SW	Water		Field	pH	8.36	SU		
NSV-5	NFSC, above Pole Creek	SC0919-NSV5-SW001-F	9/12/2019	14:28	SW	Water		Field	Temperature	11.5	C		
NSV-5	NFSC, above Pole Creek	SC0919-NSV5-SW001-F	9/12/2019	14:28	SW	Water		Field	Turbidity	14.83	NTU		
NSV-5	NFSC, above Pole Creek	SC0919-NSV5-SW001-Q	9/12/2019	14:28	SW	Water		Field	Flow	0.07	cfs		
NSV-6	NFSC, below Pole Creek	SC0919-NSV6-SW001-F	9/12/2019	13:15	SW	Water		Field	Conductivity at 25 C	286.1	umhos/cm		
NSV-6	NFSC, below Pole Creek	SC0919-NSV6-SW001-F	9/12/2019	13:15	SW	Water		Field	ORP	167.5	mV		
NSV-6	NFSC, below Pole Creek	SC0919-NSV6-SW001-F	9/12/2019	13:15	SW	Water		Field	Oxygen, Dissolved	9.4	mg/L		
NSV-6	NFSC, below Pole Creek	SC0919-NSV6-SW001-F	9/12/2019	13:15	SW	Water		Field	pH	8.44	SU		
NSV-6	NFSC, below Pole Creek	SC0919-NSV6-SW001-F	9/12/2019	13:15	SW	Water		Field	Temperature	11.2	C		
NSV-6	NFSC, below Pole Creek	SC0919-NSV6-SW001-F	9/12/2019	13:15	SW	Water		Field	Turbidity	145.8	NTU		
NSV-6	NFSC, below Pole Creek	SC0919-NSV6-SW001-Q	9/12/2019	13:15	SW	Water		Field	Flow	0.12	cfs		
NSV-7	NFSC near confluence with Sage Creek	SC0919-NSV7-SW001-F	9/12/2019	12:30	SW	Water		Field	Conductivity at 25 C	535	umhos/cm		
NSV-7	NFSC near confluence with Sage Creek	SC0919-NSV7-SW001-F	9/12/2019	12:30	SW	Water		Field	ORP	178.3	mV		
NSV-7	NFSC near confluence with Sage Creek	SC0919-NSV7-SW001-F	9/12/2019	12:30	SW	Water		Field	Oxygen, Dissolved	9.79	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0919-NSV7-SW001-F	9/12/2019	12:30	SW	Water		Field	pH	8.47	SU		
NSV-7	NFSC near confluence with Sage Creek	SC0919-NSV7-SW001-F	9/12/2019	12:30	SW	Water		Field	Temperature	11.1	C		
NSV-7	NFSC near confluence with Sage Creek	SC0919-NSV7-SW001-F	9/12/2019	12:30	SW	Water		Field	Turbidity	5.35	NTU		
NSV-7	NFSC near confluence with Sage Creek	SC0919-NSV7-SW001-Q	9/12/2019	12:30	SW	Water		Field	Flow	0.78	cfs		
NSV-5	NFSC, above Pole Creek	SC1119-NSV5-SW001	11/7/2019	9:10	SW	Water		Lab	Alkalinity, Total as CaCO3	198	mg/L		
NSV-5	NFSC, above Pole Creek	SC1119-NSV5-SW001	11/7/2019	9:10	SW	Water		Lab	Bicarbonate, as CaCO3	198	mg/L		
NSV-5	NFSC, above Pole Creek	SC1119-NSV5-SW001	11/7/2019	9:10	SW	Water		Lab	Carbonate, as CaCO3	1	mg/L		U
NSV-5	NFSC, above Pole Creek	SC1119-NSV5-SW001	11/7/2019	9:10	SW	Water		Lab	Sulfate	23.2	mg/L		
NSV-5	NFSC, above Pole Creek	SC1119-NSV5-SW001	11/7/2019	9:10	SW	Water		Lab	Selenium, Dissolved	0.0002	mg/L		U
NSV-5	NFSC, above Pole Creek	SC1119-NSV5-SW001	11/7/2019	9:10	SW	Water		Lab	Calcium, Total	58.5	mg/L		
NSV-5	NFSC, above Pole Creek	SC1119-NSV5-SW001	11/7/2019	9:10	SW	Water		Lab	Magnesium, Total	15.1	mg/L		
NSV-5	NFSC, above Pole Creek	SC1119-NSV5-SW001	11/7/2019	9:10	SW	Water		Lab	Selenium, Total	0.0002	mg/L		U
NSV-5	NFSC, above Pole Creek	SC1119-NSV5-SW001	11/7/2019	9:10	SW	Water		Lab	Hardness, Total	208	mg/L		
NSV-5	NFSC, above Pole Creek	SC1119-NSV5-SW001	11/7/2019	9:10	SW	Water		Lab	TDS	279	mg/L		
NSV-5	NFSC, above Pole Creek	SC1119-NSV5-SW001-F	11/7/2019	9:10	SW	Water		Field	Conductivity at 25 C	358.6	umhos/cm		
NSV-5	NFSC, above Pole Creek	SC1119-NSV5-SW001-F	11/7/2019	9:10	SW	Water		Field	ORP	207.4	mV		
NSV-5	NFSC, above Pole Creek	SC1119-NSV5-SW001-F	11/7/2019	9:10	SW	Water		Field	Oxygen, Dissolved	10.6	mg/L		
NSV-5	NFSC, above Pole Creek	SC1119-NSV5-SW001-F	11/7/2019	9:10	SW	Water		Field	pH	7.83	SU		
NSV-5	NFSC, above Pole Creek	SC1119-NSV5-SW001-F	11/7/2019	9:10	SW	Water		Field	Temperature	0	C		
NSV-5	NFSC, above Pole Creek	SC1119-NSV5-SW001-F	11/7/2019	9:10	SW	Water		Field	Turbidity	3.09	NTU		
NSV-5	NFSC, above Pole Creek	SC1119-NSV5-SW001-Q	11/7/2019	9:05	SW	Water		Field	Flow		cfs		
NSV-6	NFSC, below Pole Creek	SC1119-NSV6-SW001	11/7/2019	9:45	SW	Water		Lab	Alkalinity, Total as CaCO3	306	mg/L		
NSV-6	NFSC, below Pole Creek	SC1119-NSV6-SW001	11/7/2019	9:45	SW	Water		Lab	Bicarbonate, as CaCO3	306	mg/L		
NSV-6	NFSC, below Pole Creek	SC1119-NSV6-SW001	11/7/2019	9:45	SW	Water		Lab	Carbonate, as CaCO3	1	mg/L		U
NSV-6	NFSC, below Pole Creek	SC1119-NSV6-SW001	11/7/2019	9:45	SW	Water		Lab	Sulfate	26.7	mg/L		
NSV-6	NFSC, below Pole Creek	SC1119-NSV6-SW001	11/7/2019	9:45	SW	Water		Lab	Selenium, Dissolved	0.0003	mg/L		J
NSV-6	NFSC, below Pole Creek	SC1119-NSV6-SW001	11/7/2019	9:45	SW	Water		Lab	Calcium, Total	100	mg/L		
NSV-6	NFSC, below Pole Creek	SC1119-NSV6-SW001	11/7/2019	9:45	SW	Water		Lab	Magnesium, Total	15.8	mg/L		
NSV-6	NFSC, below Pole Creek	SC1119-NSV6-SW001	11/7/2019	9:45	SW	Water		Lab	Selenium, Total	0.0004	mg/L		J
NSV-6	NFSC, below Pole Creek	SC1119-NSV6-SW001	11/7/2019	9:45	SW	Water		Lab	Hardness, Total	315	mg/L		
NSV-6	NFSC, below Pole Creek	SC1119-NSV6-SW001	11/7/2019	9:45	SW	Water		Lab	TDS	344	mg/L		
NSV-6	NFSC, below Pole Creek	SC1119-NSV6-SW001-F	11/7/2019	9:45	SW	Water		Field	Conductivity at 25 C	498.1	umhos/cm		
NSV-6	NFSC, below Pole Creek	SC1119-NSV6-SW001-F	11/7/2019	9:45	SW	Water		Field	ORP	190.3	mV		
NSV-6	NFSC, below Pole Creek	SC1119-NSV6-SW001-F	11/7/2019	9:45	SW	Water		Field	Oxygen, Dissolved	11.29	mg/L		
NSV-6	NFSC, below Pole Creek	SC1119-NSV6-SW001-F	11/7/2019	9:45	SW	Water		Field	pH	7.87	SU		
NSV-6	NFSC, below Pole Creek	SC1119-NSV6-SW001-F	11/7/2019	9:45	SW	Water		Field	Temperature	0	C		

StationName	StnDescription	SampleName	SampleDate	SampleTime	Media	Matrix	Species	LabOrField	Analyte	Result	Unit	Basis	FinalQualifier
NSV-6	NFSC, below Pole Creek	SC1119-NSV6-SW001-F	11/7/2019	9:45	SW	Water		Field	Turbidity	2.32	NTU		
NSV-6	NFSC, below Pole Creek	SC1119-NSV6-SW001-Q	11/7/2019	9:35	SW	Water		Field	Flow		cfs		
NSV-5	NFSC, above Pole Creek	SC0520-NSV5-SW001	5/14/2020	18:30	SW	Water		Lab	Sulfate	3.47	mg/L		
NSV-5	NFSC, above Pole Creek	SC0520-NSV5-SW001	5/14/2020	18:30	SW	Water		Lab	Selenium, Dissolved	0.00024	mg/L		U
NSV-5	NFSC, above Pole Creek	SC0520-NSV5-SW001	5/14/2020	18:30	SW	Water		Lab	Calcium, Total	33.7	mg/L		
NSV-5	NFSC, above Pole Creek	SC0520-NSV5-SW001	5/14/2020	18:30	SW	Water		Lab	Magnesium, Total	6.2	mg/L		
NSV-5	NFSC, above Pole Creek	SC0520-NSV5-SW001	5/14/2020	18:30	SW	Water		Lab	Selenium, Total	0.00025	mg/L		J
NSV-5	NFSC, above Pole Creek	SC0520-NSV5-SW001	5/14/2020	18:30	SW	Water		Lab	Hardness, Total	110	mg/L		
NSV-5	NFSC, above Pole Creek	SC0520-NSV5-SW001	5/14/2020	18:30	SW	Water		Lab	TDS	182	mg/L		
NSV-5	NFSC, above Pole Creek	SC0520-NSV5-SW001-F	5/14/2020	18:30	SW	Water		Field	Conductivity at 25 C	219	umhos/cm		
NSV-5	NFSC, above Pole Creek	SC0520-NSV5-SW001-F	5/14/2020	18:30	SW	Water		Field	ORP	230.6	mV		
NSV-5	NFSC, above Pole Creek	SC0520-NSV5-SW001-F	5/14/2020	18:30	SW	Water		Field	Oxygen, Dissolved	7.96	mg/L		
NSV-5	NFSC, above Pole Creek	SC0520-NSV5-SW001-F	5/14/2020	18:30	SW	Water		Field	pH	7.37	SU		
NSV-5	NFSC, above Pole Creek	SC0520-NSV5-SW001-F	5/14/2020	18:30	SW	Water		Field	Temperature	9.6	C		
NSV-5	NFSC, above Pole Creek	SC0520-NSV5-SW001-F	5/14/2020	18:30	SW	Water		Field	Turbidity	3.62	NTU		
NSV-5	NFSC, above Pole Creek	SC0520-NSV5-SW001-Q	5/14/2020	18:30	SW	Water		Field	Flow	0.89	cfs		
NSV-6	NFSC, below Pole Creek	SC0520-NSV6-SW001	5/14/2020	17:15	SW	Water		Lab	Sulfate	9.88	mg/L		
NSV-6	NFSC, below Pole Creek	SC0520-NSV6-SW001	5/14/2020	17:15	SW	Water		Lab	Selenium, Dissolved	0.00387	mg/L		
NSV-6	NFSC, below Pole Creek	SC0520-NSV6-SW001	5/14/2020	17:15	SW	Water		Lab	Calcium, Total	63.8	mg/L		
NSV-6	NFSC, below Pole Creek	SC0520-NSV6-SW001	5/14/2020	17:15	SW	Water		Lab	Magnesium, Total	9.69	mg/L		
NSV-6	NFSC, below Pole Creek	SC0520-NSV6-SW001	5/14/2020	17:15	SW	Water		Lab	Selenium, Total	0.00386	mg/L		
NSV-6	NFSC, below Pole Creek	SC0520-NSV6-SW001	5/14/2020	17:15	SW	Water		Lab	Hardness, Total	199	mg/L		
NSV-6	NFSC, below Pole Creek	SC0520-NSV6-SW001	5/14/2020	17:15	SW	Water		Lab	TDS	245	mg/L		
NSV-6	NFSC, below Pole Creek	SC0520-NSV6-SW001-F	5/14/2020	17:15	SW	Water		Field	Conductivity at 25 C	371.1	umhos/cm		
NSV-6	NFSC, below Pole Creek	SC0520-NSV6-SW001-F	5/14/2020	17:15	SW	Water		Field	ORP	206.2	mV		
NSV-6	NFSC, below Pole Creek	SC0520-NSV6-SW001-F	5/14/2020	17:15	SW	Water		Field	Oxygen, Dissolved	8.44	mg/L		
NSV-6	NFSC, below Pole Creek	SC0520-NSV6-SW001-F	5/14/2020	17:15	SW	Water		Field	pH	7.8	SU		
NSV-6	NFSC, below Pole Creek	SC0520-NSV6-SW001-F	5/14/2020	17:15	SW	Water		Field	Temperature	8.9	C		
NSV-6	NFSC, below Pole Creek	SC0520-NSV6-SW001-F	5/14/2020	17:15	SW	Water		Field	Turbidity	3.83	NTU		
NSV-6	NFSC, below Pole Creek	SC0520-NSV6-SW001-Q	5/14/2020	17:15	SW	Water		Field	Flow	4.4	cfs		
NSV-5	NFSC, above Pole Creek	SC0920-NSV5-AVP001	9/11/2020	12:55	Periphyton	Tissue		Lab	Selenium	1.01	mg/kg	Dry	
NSV-5	NFSC, above Pole Creek	SC0920-NSV5-AVP001	9/11/2020	12:55	Periphyton	Tissue		Lab	Moisture Content	66.7	%	Wet	
NSV-5	NFSC, above Pole Creek	SC0920-NSV5-AVP001	9/11/2020	12:55	Periphyton	Tissue		Lab	Solids, Percent	33.3	%	Wet	
NSV-5	NFSC, above Pole Creek	SC0920-NSV5-ITA001	9/11/2020	13:50	Invertebrate	Tissue		Lab	Selenium	1.57	mg/kg	Dry	
NSV-5	NFSC, above Pole Creek	SC0920-NSV5-ITA001	9/11/2020	13:50	Invertebrate	Tissue		Lab	Moisture Content	85.7	%	Wet	
NSV-5	NFSC, above Pole Creek	SC0920-NSV5-ITA001	9/11/2020	13:50	Invertebrate	Tissue		Lab	Solids, Percent	14.3	%	Wet	
NSV-5	NFSC, above Pole Creek	SC0920-NSV5-SD001	9/11/2020	12:35	Sediment	Solid		Lab	Selenium	0.494	mg/kg	Dry	
NSV-5	NFSC, above Pole Creek	SC0920-NSV5-SD001	9/11/2020	12:35	Sediment	Solid		Lab	Solids, Percent	65.2	%	Dry	
NSV-5	NFSC, above Pole Creek	SC0920-NSV5-SW001	9/11/2020	12:30	SW	Water		Lab	Alkalinity, Total as CaCO3	201	mg/L		
NSV-5	NFSC, above Pole Creek	SC0920-NSV5-SW001	9/11/2020	12:30	SW	Water		Lab	Bicarbonate, as CaCO3	201	mg/L		
NSV-5	NFSC, above Pole Creek	SC0920-NSV5-SW001	9/11/2020	12:30	SW	Water		Lab	Carbonate, as CaCO3	1	mg/L		U
NSV-5	NFSC, above Pole Creek	SC0920-NSV5-SW001	9/11/2020	12:30	SW	Water		Lab	Sulfate	20.2	mg/L		
NSV-5	NFSC, above Pole Creek	SC0920-NSV5-SW001	9/11/2020	12:30	SW	Water		Lab	Carbon, Dissolved Organi	2.46	mg/L		
NSV-5	NFSC, above Pole Creek	SC0920-NSV5-SW001	9/11/2020	12:30	SW	Water		Lab	Selenium, Dissolved	0.00024	mg/L		U
NSV-5	NFSC, above Pole Creek	SC0920-NSV5-SW001	9/11/2020	12:30	SW	Water		Lab	Calcium, Total	60.5	mg/L		
NSV-5	NFSC, above Pole Creek	SC0920-NSV5-SW001	9/11/2020	12:30	SW	Water		Lab	Magnesium, Total	14.4	mg/L		
NSV-5	NFSC, above Pole Creek	SC0920-NSV5-SW001	9/11/2020	12:30	SW	Water		Lab	Selenium, Total	0.00024	mg/L		U
NSV-5	NFSC, above Pole Creek	SC0920-NSV5-SW001	9/11/2020	12:30	SW	Water		Lab	Nitrate + Nitrite, as N	0.05	mg/L		U
NSV-5	NFSC, above Pole Creek	SC0920-NSV5-SW001	9/11/2020	12:30	SW	Water		Lab	Phosphorus, Total	0.0563	mg/L		
NSV-5	NFSC, above Pole Creek	SC0920-NSV5-SW001	9/11/2020	12:30	SW	Water		Lab	Hardness, Total	211	mg/L		
NSV-5	NFSC, above Pole Creek	SC0920-NSV5-SW001-F	9/11/2020	12:30	SW	Water		Field	Conductivity at 25 C	401.8	umhos/cm		
NSV-5	NFSC, above Pole Creek	SC0920-NSV5-SW001-F	9/11/2020	12:30	SW	Water		Field	ORP	96.7	mV		
NSV-5	NFSC, above Pole Creek	SC0920-NSV5-SW001-F	9/11/2020	12:30	SW	Water		Field	Oxygen, Dissolved	8.53	mg/L		

North Fork Sage Creek Data

StationName	StnDescription	SampleName	SampleDate	SampleTime	Media	Matrix	Species	LabOrField	Analyte	Result	Unit	Basis	FinalQualifier
NSV-5	NFSC, above Pole Creek	SC0920-NSV5-SW001-F	9/11/2020	12:30	SW	Water		Field	pH	8.03	SU		
NSV-5	NFSC, above Pole Creek	SC0920-NSV5-SW001-F	9/11/2020	12:30	SW	Water		Field	Temperature	11.9	C		
NSV-5	NFSC, above Pole Creek	SC0920-NSV5-SW001-F	9/11/2020	12:30	SW	Water		Field	Turbidity	4.8	NTU		
NSV-5	NFSC, above Pole Creek	SC0920-NSV5-SW001-Q	9/11/2020	12:30	SW	Water		Field	Flow	0.06	cfs		
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-AVP001	9/11/2020	14:47	Periphyton	Tissue		Lab	Selenium	5.51	mg/kg	Dry	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-AVP001	9/11/2020	14:47	Periphyton	Tissue		Lab	Moisture Content	58.4	%	Wet	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-AVP001	9/11/2020	14:47	Periphyton	Tissue		Lab	Solids, Percent	41.6	%	Wet	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT001	9/11/2020	15:52	Fish	Tissue	Paiute Sculpin	Lab	Selenium	18.4	mg/kg	Dry	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT001	9/11/2020	15:52	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	73.6	%	Wet	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT001	9/11/2020	15:52	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	26.4	%	Wet	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT002	9/11/2020	15:52	Fish	Tissue	Paiute Sculpin	Lab	Selenium	19.9	mg/kg	Dry	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT002	9/11/2020	15:52	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	75.5	%	Wet	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT002	9/11/2020	15:52	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	24.5	%	Wet	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT003	9/11/2020	15:52	Fish	Tissue	Paiute Sculpin	Lab	Selenium	23	mg/kg	Dry	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT003	9/11/2020	15:52	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	71.6	%	Wet	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT003	9/11/2020	15:52	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	28.4	%	Wet	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT004	9/11/2020	15:52	Fish	Tissue	Paiute Sculpin	Lab	Selenium	18.8	mg/kg	Dry	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT004	9/11/2020	15:52	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	71.4	%	Wet	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT004	9/11/2020	15:52	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	28.6	%	Wet	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT005	9/11/2020	15:52	Fish	Tissue	Paiute Sculpin	Lab	Selenium	18.3	mg/kg	Dry	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT005	9/11/2020	15:52	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	72.3	%	Wet	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT005	9/11/2020	15:52	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	27.7	%	Wet	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT006	9/11/2020	15:52	Fish	Tissue	Paiute Sculpin	Lab	Selenium	23.7	mg/kg	Dry	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT006	9/11/2020	15:52	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	76.3	%	Wet	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT006	9/11/2020	15:52	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	23.7	%	Wet	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT007	9/11/2020	15:52	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	19.4	mg/kg	Dry	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT007	9/11/2020	15:52	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	74.8	%	Wet	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT007	9/11/2020	15:52	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	25.2	%	Wet	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT008	9/11/2020	15:52	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	39.3	mg/kg	Dry	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT008	9/11/2020	15:52	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	77.2	%	Wet	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT008	9/11/2020	15:52	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	22.8	%	Wet	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT009	9/11/2020	15:52	Fish	Tissue	Paiute Sculpin	Lab	Selenium	26.9	mg/kg	Dry	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT009	9/11/2020	15:52	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	73.5	%	Wet	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT009	9/11/2020	15:52	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	26.5	%	Wet	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT010	9/11/2020	15:52	Fish	Tissue	Paiute Sculpin	Lab	Selenium	22	mg/kg	Dry	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT010	9/11/2020	15:52	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	70.9	%	Wet	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT010	9/11/2020	15:52	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	29.1	%	Wet	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT011	9/11/2020	15:52	Fish	Tissue	Paiute Sculpin	Lab	Selenium	19.8	mg/kg	Dry	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT011	9/11/2020	15:52	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	68.3	%	Wet	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT011	9/11/2020	15:52	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	31.7	%	Wet	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT012	9/11/2020	15:52	Fish	Tissue	Paiute Sculpin	Lab	Selenium	17.9	mg/kg	Dry	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT012	9/11/2020	15:52	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	72.4	%	Wet	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT012	9/11/2020	15:52	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	27.6	%	Wet	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT013	9/11/2020	15:52	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	16.4	mg/kg	Dry	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT013	9/11/2020	15:52	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	75.6	%	Wet	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT013	9/11/2020	15:52	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	24.4	%	Wet	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT014	9/11/2020	15:52	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	15.3	mg/kg	Dry	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT014	9/11/2020	15:52	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	71.5	%	Wet	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT014	9/11/2020	15:52	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	28.5	%	Wet	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT015	9/11/2020	15:52	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	20.6	mg/kg	Dry	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT015	9/11/2020	15:52	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	75.7	%	Wet	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT015	9/11/2020	15:52	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	24.3	%	Wet	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT016	9/11/2020	15:52	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	21.9	mg/kg	Dry	

StationName	StnDescription	SampleName	SampleDate	SampleTime	Media	Matrix	Species	LabOrField	Analyte	Result	Unit	Basis	FinalQualifier
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT016	9/11/2020	15:52	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	73.4	%	Wet	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT016	9/11/2020	15:52	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	26.6	%	Wet	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT017	9/11/2020	15:52	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	23.1	mg/kg	Dry	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT017	9/11/2020	15:52	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	75.5	%	Wet	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT017	9/11/2020	15:52	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	24.5	%	Wet	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT018	9/11/2020	15:52	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	16	mg/kg	Dry	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT018	9/11/2020	15:52	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	75.4	%	Wet	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-FT018	9/11/2020	15:52	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	24.6	%	Wet	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-ITA001	9/11/2020	15:40	Invertebrate	Tissue		Lab	Selenium	9.77	mg/kg	Dry	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-ITA001	9/11/2020	15:40	Invertebrate	Tissue		Lab	Moisture Content	90.4	%	Wet	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-ITA001	9/11/2020	15:40	Invertebrate	Tissue		Lab	Solids, Percent	9.64	%	Wet	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-SD001	9/11/2020	14:45	Sediment	Solid		Lab	Selenium	4.38	mg/kg	Dry	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-SD001	9/11/2020	14:45	Sediment	Solid		Lab	Solids, Percent	52.6	%	Dry	
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-SW001	9/11/2020	11:40	SW	Water		Lab	Alkalinity, Total as CaCO3	277	mg/L		
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-SW001	9/11/2020	11:40	SW	Water		Lab	Bicarbonate, as CaCO3	272	mg/L		
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-SW001	9/11/2020	11:40	SW	Water		Lab	Carbonate, as CaCO3	5.4	mg/L		
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-SW001	9/11/2020	11:40	SW	Water		Lab	Sulfate	12.2	mg/L		
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-SW001	9/11/2020	11:40	SW	Water		Lab	Carbon, Dissolved Organi	3.94	mg/L		
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-SW001	9/11/2020	11:40	SW	Water		Lab	Selenium, Dissolved	0.00064	mg/L		J
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-SW001	9/11/2020	11:40	SW	Water		Lab	Calcium, Total	88.2	mg/L		
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-SW001	9/11/2020	11:40	SW	Water		Lab	Magnesium, Total	15.5	mg/L		
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-SW001	9/11/2020	11:40	SW	Water		Lab	Selenium, Total	0.00058	mg/L		J
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-SW001	9/11/2020	11:40	SW	Water		Lab	Nitrate + Nitrite, as N	0.061	mg/L		
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-SW001	9/11/2020	11:40	SW	Water		Lab	Phosphorus, Total	0.085	mg/L		
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-SW001-F	9/11/2020	14:30	SW	Water		Field	Conductivity at 25 C	507	umhos/cm		
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-SW001-F	9/11/2020	14:30	SW	Water		Field	ORP	106.6	mV		
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-SW001-F	9/11/2020	14:30	SW	Water		Field	Oxygen, Dissolved	11.21	mg/L		
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-SW001-F	9/11/2020	14:30	SW	Water		Field	pH	8.22	SU		
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-SW001-F	9/11/2020	14:30	SW	Water		Field	Temperature	14.4	C		
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-SW001-F	9/11/2020	14:30	SW	Water		Field	Turbidity	5.88	NTU		
NSV-6	NFSC, below Pole Creek	SC0920-NSV6-SW001-Q	9/11/2020	14:30	SW	Water		Field	Flow	0.15	cfs		
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-AVP001	9/12/2020	9:25	Periphyton	Tissue		Lab	Selenium	3.62	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-AVP001	9/12/2020	9:25	Periphyton	Tissue		Lab	Moisture Content	85.6	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-AVP001	9/12/2020	9:25	Periphyton	Tissue		Lab	Solids, Percent	14.4	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-AVP002	9/12/2020	9:25	Periphyton	Tissue		Lab	Selenium	3.69	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-AVP002	9/12/2020	9:25	Periphyton	Tissue		Lab	Moisture Content	87.4	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-AVP002	9/12/2020	9:25	Periphyton	Tissue		Lab	Solids, Percent	12.6	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-AVP003	9/12/2020	9:25	Periphyton	Tissue		Lab	Selenium	3.68	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-AVP003	9/12/2020	9:25	Periphyton	Tissue		Lab	Moisture Content	86.7	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-AVP003	9/12/2020	9:25	Periphyton	Tissue		Lab	Solids, Percent	13.3	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT001	9/12/2020	10:39	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	10.4	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT001	9/12/2020	10:39	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	74.2	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT001	9/12/2020	10:39	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	25.8	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT002	9/12/2020	10:39	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	7.68	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT002	9/12/2020	10:39	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	72.7	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT002	9/12/2020	10:39	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	27.3	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT003	9/12/2020	10:39	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	8.98	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT003	9/12/2020	10:39	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	74.9	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT003	9/12/2020	10:39	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	25.1	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT004	9/12/2020	10:39	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	9.02	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT004	9/12/2020	10:39	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	74.3	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT004	9/12/2020	10:39	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	25.7	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT005	9/12/2020	10:39	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	7.39	mg/kg	Dry	

North Fork Sage Creek Data

StationName	StnDescription	SampleName	SampleDate	SampleTime	Media	Matrix	Species	LabOrField	Analyte	Result	Unit	Basis	FinalQualifier
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT005	9/12/2020	10:39	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	71.8	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT005	9/12/2020	10:39	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	28.2	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT006	9/12/2020	10:39	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	9.55	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT006	9/12/2020	10:39	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	73.1	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT006	9/12/2020	10:39	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	26.9	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT007	9/12/2020	10:39	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	9.16	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT007	9/12/2020	10:39	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	75.2	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT007	9/12/2020	10:39	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	24.8	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT008	9/12/2020	10:39	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	8.04	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT008	9/12/2020	10:39	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	74.4	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT008	9/12/2020	10:39	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	25.6	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT009	9/12/2020	10:39	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	9.99	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT009	9/12/2020	10:39	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	74.5	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT009	9/12/2020	10:39	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	25.5	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT010	9/12/2020	10:39	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	8.99	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT010	9/12/2020	10:39	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	74.4	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT010	9/12/2020	10:39	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	25.6	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT011	9/12/2020	10:39	Fish	Tissue	Paiute Sculpin	Lab	Selenium	11.2	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT011	9/12/2020	10:39	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	74.7	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT011	9/12/2020	10:39	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	25.3	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT012	9/12/2020	10:39	Fish	Tissue	Paiute Sculpin	Lab	Selenium	7.17	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT012	9/12/2020	10:39	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	71.5	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT012	9/12/2020	10:39	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	28.5	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT013	9/12/2020	10:39	Fish	Tissue	Paiute Sculpin	Lab	Selenium	10.4	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT013	9/12/2020	10:39	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	72.1	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT013	9/12/2020	10:39	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	27.9	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT014	9/12/2020	10:39	Fish	Tissue	Paiute Sculpin	Lab	Selenium	11.9	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT014	9/12/2020	10:39	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	71.8	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT014	9/12/2020	10:39	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	28.2	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT015	9/12/2020	10:39	Fish	Tissue	Paiute Sculpin	Lab	Selenium	10.6	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT015	9/12/2020	10:39	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	73.2	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT015	9/12/2020	10:39	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	26.8	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT016	9/12/2020	10:39	Fish	Tissue	Paiute Sculpin	Lab	Selenium	9.89	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT016	9/12/2020	10:39	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	71.8	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT016	9/12/2020	10:39	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	28.2	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT017	9/12/2020	10:39	Fish	Tissue	Paiute Sculpin	Lab	Selenium	9.63	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT017	9/12/2020	10:39	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	70.9	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT017	9/12/2020	10:39	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	29.1	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT018	9/12/2020	10:39	Fish	Tissue	Paiute Sculpin	Lab	Selenium	11.5	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT018	9/12/2020	10:39	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	73.1	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT018	9/12/2020	10:39	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	26.9	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT019	9/12/2020	10:39	Fish	Tissue	Paiute Sculpin	Lab	Selenium	8.34	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT019	9/12/2020	10:39	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	74.4	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT019	9/12/2020	10:39	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	25.6	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT020	9/12/2020	10:39	Fish	Tissue	Paiute Sculpin	Lab	Selenium	10.6	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT020	9/12/2020	10:39	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	70.7	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-FT020	9/12/2020	10:39	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	29.3	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-ITA001	9/12/2020	10:50	Invertebrate	Tissue		Lab	Selenium	8.8	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-ITA001	9/12/2020	10:50	Invertebrate	Tissue		Lab	Moisture Content	82.5	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-ITA001	9/12/2020	10:50	Invertebrate	Tissue		Lab	Solids, Percent	17.5	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-SD001	9/12/2020	9:45	Sediment	Solid		Lab	Selenium	2.14	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-SD001	9/12/2020	9:45	Sediment	Solid		Lab	Solids, Percent	57.8	%	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-SW001	9/12/2020	9:20	SW	Water		Lab	Alkalinity, Total as CaCO3	221	mg/L		

StationName	StnDescription	SampleName	SampleDate	SampleTime	Media	Matrix	Species	LabOrField	Analyte	Result	Unit	Basis	FinalQualifier
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-SW001	9/12/2020	9:20	SW	Water		Lab	Bicarbonate, as CaCO3	221	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-SW001	9/12/2020	9:20	SW	Water		Lab	Carbonate, as CaCO3	1	mg/L		U
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-SW001	9/12/2020	9:20	SW	Water		Lab	Sulfate	65.7	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-SW001	9/12/2020	9:20	SW	Water		Lab	Carbon, Dissolved Organi	1.74	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-SW001	9/12/2020	9:20	SW	Water		Lab	Selenium, Dissolved	0.00087	mg/L		J
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-SW001	9/12/2020	9:20	SW	Water		Lab	Calcium, Total	79.3	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-SW001	9/12/2020	9:20	SW	Water		Lab	Magnesium, Total	19.9	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-SW001	9/12/2020	9:20	SW	Water		Lab	Selenium, Total	0.00078	mg/L		J
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-SW001	9/12/2020	9:20	SW	Water		Lab	Nitrate + Nitrite, as N	0.079	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-SW001	9/12/2020	9:20	SW	Water		Lab	Phosphorus, Total	0.0358	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-SW001	9/12/2020	9:20	SW	Water		Lab	Hardness, Total	280	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-SW001-F	9/12/2020	8:45	SW	Water		Field	Conductivity at 25 C	514	umhos/cm		
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-SW001-F	9/12/2020	8:45	SW	Water		Field	ORP	50.6	mV		
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-SW001-F	9/12/2020	8:45	SW	Water		Field	Oxygen, Dissolved	9.81	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-SW001-F	9/12/2020	8:45	SW	Water		Field	pH	8.26	SU		
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-SW001-F	9/12/2020	8:45	SW	Water		Field	Temperature	5.6	C		
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-SW001-F	9/12/2020	8:45	SW	Water		Field	Turbidity	1.89	NTU		
NSV-7	NFSC near confluence with Sage Creek	SC0920-NSV7-SW001-Q	9/12/2020	9:50	SW	Water		Field	Flow	0.65	cfs		
NSV-5	NFSC, above Pole Creek	SC1120-NSV5-SW001	11/3/2020	14:20	SW	Water		Lab	Sulfate	20.6	mg/L		
NSV-5	NFSC, above Pole Creek	SC1120-NSV5-SW001	11/3/2020	14:20	SW	Water		Lab	Selenium, Dissolved	0.00024	mg/L		U
NSV-5	NFSC, above Pole Creek	SC1120-NSV5-SW001	11/3/2020	14:20	SW	Water		Lab	Calcium, Total	64	mg/L		
NSV-5	NFSC, above Pole Creek	SC1120-NSV5-SW001	11/3/2020	14:20	SW	Water		Lab	Magnesium, Total	13.3	mg/L		
NSV-5	NFSC, above Pole Creek	SC1120-NSV5-SW001	11/3/2020	14:20	SW	Water		Lab	Selenium, Total	0.00024	mg/L		U
NSV-5	NFSC, above Pole Creek	SC1120-NSV5-SW001	11/3/2020	14:20	SW	Water		Lab	Hardness, Total	214	mg/L		
NSV-5	NFSC, above Pole Creek	SC1120-NSV5-SW001	11/3/2020	14:20	SW	Water		Lab	TDS	233	mg/L		
NSV-5	NFSC, above Pole Creek	SC1120-NSV5-SW001-F	11/3/2020	14:20	SW	Water		Field	Conductivity at 25 C	418.3	umhos/cm		
NSV-5	NFSC, above Pole Creek	SC1120-NSV5-SW001-F	11/3/2020	14:20	SW	Water		Field	ORP	112.4	mV		
NSV-5	NFSC, above Pole Creek	SC1120-NSV5-SW001-F	11/3/2020	14:20	SW	Water		Field	Oxygen, Dissolved	8.88	mg/L		
NSV-5	NFSC, above Pole Creek	SC1120-NSV5-SW001-F	11/3/2020	14:20	SW	Water		Field	pH	8.45	SU		
NSV-5	NFSC, above Pole Creek	SC1120-NSV5-SW001-F	11/3/2020	14:20	SW	Water		Field	Temperature	7.9	C		
NSV-5	NFSC, above Pole Creek	SC1120-NSV5-SW001-F	11/3/2020	14:20	SW	Water		Field	Turbidity	9.33	NTU		
NSV-5	NFSC, above Pole Creek	SC1120-NSV5-SW001-Q	11/3/2020	14:20	SW	Water		Field	Flow	0.07	cfs		
NSV-6	NFSC, below Pole Creek	SC1120-NSV6-SW001	11/3/2020	13:25	SW	Water		Lab	Sulfate	18.2	mg/L		
NSV-6	NFSC, below Pole Creek	SC1120-NSV6-SW001	11/3/2020	13:25	SW	Water		Lab	Selenium, Dissolved	0.00031	mg/L		J
NSV-6	NFSC, below Pole Creek	SC1120-NSV6-SW001	11/3/2020	13:25	SW	Water		Lab	Calcium, Total	92.4	mg/L		
NSV-6	NFSC, below Pole Creek	SC1120-NSV6-SW001	11/3/2020	13:25	SW	Water		Lab	Magnesium, Total	14.6	mg/L		
NSV-6	NFSC, below Pole Creek	SC1120-NSV6-SW001	11/3/2020	13:25	SW	Water		Lab	Selenium, Total	0.00042	mg/L		J
NSV-6	NFSC, below Pole Creek	SC1120-NSV6-SW001	11/3/2020	13:25	SW	Water		Lab	Hardness, Total	291	mg/L		
NSV-6	NFSC, below Pole Creek	SC1120-NSV6-SW001	11/3/2020	13:25	SW	Water		Lab	TDS	286	mg/L		
NSV-6	NFSC, below Pole Creek	SC1120-NSV6-SW001-F	11/3/2020	13:25	SW	Water		Field	Conductivity at 25 C	528	umhos/cm		
NSV-6	NFSC, below Pole Creek	SC1120-NSV6-SW001-F	11/3/2020	13:25	SW	Water		Field	ORP	115.7	mV		
NSV-6	NFSC, below Pole Creek	SC1120-NSV6-SW001-F	11/3/2020	13:25	SW	Water		Field	Oxygen, Dissolved	11.66	mg/L		
NSV-6	NFSC, below Pole Creek	SC1120-NSV6-SW001-F	11/3/2020	13:25	SW	Water		Field	pH	8.61	SU		
NSV-6	NFSC, below Pole Creek	SC1120-NSV6-SW001-F	11/3/2020	13:25	SW	Water		Field	Temperature	2.4	C		
NSV-6	NFSC, below Pole Creek	SC1120-NSV6-SW001-F	11/3/2020	13:25	SW	Water		Field	Turbidity	6.62	NTU		
NSV-6	NFSC, below Pole Creek	SC1120-NSV6-SW001-Q	11/3/2020	13:25	SW	Water		Field	Flow	0.14	cfs		
NSV-5	NFSC, above Pole Creek	SC0521-NSV5-AVP001	5/24/2021	14:25	Periphyton	Tissue		Lab	Selenium	0.93	mg/kg	Dry	J
NSV-5	NFSC, above Pole Creek	SC0521-NSV5-AVP001	5/24/2021	14:25	Periphyton	Tissue		Lab	Moisture Content	76.9	%	Wet	
NSV-5	NFSC, above Pole Creek	SC0521-NSV5-AVP001	5/24/2021	14:25	Periphyton	Tissue		Lab	Solids, Percent	23.1	%	Wet	
NSV-5	NFSC, above Pole Creek	SC0521-NSV5-ITA001	5/24/2021	14:00	Invertebrate	Tissue		Lab	Selenium	2.2	mg/kg	Dry	
NSV-5	NFSC, above Pole Creek	SC0521-NSV5-ITA001	5/24/2021	14:00	Invertebrate	Tissue		Lab	Moisture Content	87.3	%	Wet	
NSV-5	NFSC, above Pole Creek	SC0521-NSV5-ITA001	5/24/2021	14:00	Invertebrate	Tissue		Lab	Solids, Percent	12.7	%	Wet	
NSV-5	NFSC, above Pole Creek	SC0521-NSV5-SD001	5/24/2021	13:35	Sediment	Solid		Lab	Selenium	1.01	mg/kg		

StationName	StnDescription	SampleName	SampleDate	SampleTime	Media	Matrix	Species	LabOrField	Analyte	Result	Unit	Basis	FinalQualifier
NSV-5	NFSC, above Pole Creek	SC0521-NSV5-SD001	5/24/2021	13:35	Sediment	Solid		Lab	Solids, Percent	99.4	%	Wet	
NSV-5	NFSC, above Pole Creek	SC0521-NSV5-SW001	5/24/2021	13:35	SW	Water		Lab	Alkalinity, Total as CaCO3	98.6	mg/L		
NSV-5	NFSC, above Pole Creek	SC0521-NSV5-SW001	5/24/2021	13:35	SW	Water		Lab	Bicarbonate, as CaCO3	98.6	mg/L		
NSV-5	NFSC, above Pole Creek	SC0521-NSV5-SW001	5/24/2021	13:35	SW	Water		Lab	Carbonate, as CaCO3	1	mg/L		U
NSV-5	NFSC, above Pole Creek	SC0521-NSV5-SW001	5/24/2021	13:35	SW	Water		Lab	Sulfate	3.24	mg/L		
NSV-5	NFSC, above Pole Creek	SC0521-NSV5-SW001	5/24/2021	13:35	SW	Water		Lab	Carbon, Dissolved Organi	14.9	mg/L		
NSV-5	NFSC, above Pole Creek	SC0521-NSV5-SW001	5/24/2021	13:35	SW	Water		Lab	Selenium, Dissolved	0.00024	mg/L		U
NSV-5	NFSC, above Pole Creek	SC0521-NSV5-SW001	5/24/2021	13:35	SW	Water		Lab	Calcium, Total	28.6	mg/L		
NSV-5	NFSC, above Pole Creek	SC0521-NSV5-SW001	5/24/2021	13:35	SW	Water		Lab	Magnesium, Total	5.83	mg/L		
NSV-5	NFSC, above Pole Creek	SC0521-NSV5-SW001	5/24/2021	13:35	SW	Water		Lab	Selenium, Total	0.00039	mg/L		J
NSV-5	NFSC, above Pole Creek	SC0521-NSV5-SW001	5/24/2021	13:35	SW	Water		Lab	Nitrate + Nitrite, as N	0.05	mg/L		U
NSV-5	NFSC, above Pole Creek	SC0521-NSV5-SW001	5/24/2021	13:35	SW	Water		Lab	Phosphorus, Total	0.254	mg/L		
NSV-5	NFSC, above Pole Creek	SC0521-NSV5-SW001	5/24/2021	13:35	SW	Water		Lab	Hardness, Total	95.5	mg/L		
NSV-5	NFSC, above Pole Creek	SC0521-NSV5-SW001	5/24/2021	13:35	SW	Water		Lab	TDS	123	mg/L		J
NSV-5	NFSC, above Pole Creek	SC0521-NSV5-SW001-F	5/24/2021	13:35	SW	Water		Field	Conductivity at 25 C	192.1	umhos/cm		
NSV-5	NFSC, above Pole Creek	SC0521-NSV5-SW001-F	5/24/2021	13:35	SW	Water		Field	ORP	266.1	mV		
NSV-5	NFSC, above Pole Creek	SC0521-NSV5-SW001-F	5/24/2021	13:35	SW	Water		Field	Oxygen, Dissolved	8.73	mg/L		
NSV-5	NFSC, above Pole Creek	SC0521-NSV5-SW001-F	5/24/2021	13:35	SW	Water		Field	pH	7.83	SU		
NSV-5	NFSC, above Pole Creek	SC0521-NSV5-SW001-F	5/24/2021	13:35	SW	Water		Field	Temperature	8.5	C		
NSV-5	NFSC, above Pole Creek	SC0521-NSV5-SW001-F	5/24/2021	13:35	SW	Water		Field	Turbidity	9.9	NTU		
NSV-5	NFSC, above Pole Creek	SC0521-NSV5-SW001-Q	5/24/2021	13:35	SW	Water		Field	Flow	0.6	cfs		
NSV-6	NFSC, below Pole Creek	SC0521-NSV6-SW001	5/25/2021	13:35	SW	Water		Lab	Sulfate	12.3	mg/L		
NSV-6	NFSC, below Pole Creek	SC0521-NSV6-SW001	5/25/2021	13:35	SW	Water		Lab	Selenium, Dissolved	0.0049	mg/L		
NSV-6	NFSC, below Pole Creek	SC0521-NSV6-SW001	5/25/2021	13:35	SW	Water		Lab	Calcium, Total	72.8	mg/L		
NSV-6	NFSC, below Pole Creek	SC0521-NSV6-SW001	5/25/2021	13:35	SW	Water		Lab	Magnesium, Total	11.7	mg/L		
NSV-6	NFSC, below Pole Creek	SC0521-NSV6-SW001	5/25/2021	13:35	SW	Water		Lab	Selenium, Total	0.00603	mg/L		
NSV-6	NFSC, below Pole Creek	SC0521-NSV6-SW001	5/25/2021	13:35	SW	Water		Lab	Hardness, Total	230	mg/L		
NSV-6	NFSC, below Pole Creek	SC0521-NSV6-SW001	5/25/2021	13:35	SW	Water		Lab	TDS	260	mg/L		
NSV-6	NFSC, below Pole Creek	SC0521-NSV6-SW001-F	5/25/2021	14:10	SW	Water		Field	Conductivity at 25 C	421.1	umhos/cm		
NSV-6	NFSC, below Pole Creek	SC0521-NSV6-SW001-F	5/25/2021	14:10	SW	Water		Field	ORP	271.9	mV		
NSV-6	NFSC, below Pole Creek	SC0521-NSV6-SW001-F	5/25/2021	14:10	SW	Water		Field	Oxygen, Dissolved	8.49	mg/L		
NSV-6	NFSC, below Pole Creek	SC0521-NSV6-SW001-F	5/25/2021	14:10	SW	Water		Field	pH	8.08	SU		
NSV-6	NFSC, below Pole Creek	SC0521-NSV6-SW001-F	5/25/2021	14:10	SW	Water		Field	Temperature	13	C		
NSV-6	NFSC, below Pole Creek	SC0521-NSV6-SW001-Q	5/25/2021	14:15	SW	Water		Field	Flow	2.19	cfs		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-AVP001	5/25/2021	13:20	Periphyton	Tissue		Lab	Selenium	3	mg/kg	Dry	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-AVP001	5/25/2021	13:20	Periphyton	Tissue		Lab	Moisture Content	74.1	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-AVP001	5/25/2021	13:20	Periphyton	Tissue		Lab	Solids, Percent	25.9	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-FT001	5/25/2021	14:20	Fish	Tissue	Paiute Sculpin	Lab	Selenium	17	mg/kg	Dry	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-FT001	5/25/2021	14:20	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	75.6	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-FT001	5/25/2021	14:20	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	24.4	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-FT002	5/25/2021	14:20	Fish	Tissue	Paiute Sculpin	Lab	Selenium	25.7	mg/kg	Dry	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-FT002	5/25/2021	14:20	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	74.8	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-FT002	5/25/2021	14:20	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	25.2	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-FT003	5/25/2021	14:20	Fish	Tissue	Paiute Sculpin	Lab	Selenium	12.5	mg/kg	Dry	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-FT003	5/25/2021	14:20	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	72.6	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-FT003	5/25/2021	14:20	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	27.4	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-FT004	5/25/2021	14:20	Fish	Tissue	Paiute Sculpin	Lab	Selenium	20.3	mg/kg	Dry	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-FT004	5/25/2021	14:20	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	75.9	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-FT004	5/25/2021	14:20	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	24.1	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-FT005	5/25/2021	14:20	Fish	Tissue	Paiute Sculpin	Lab	Selenium	14	mg/kg	Dry	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-FT005	5/25/2021	14:20	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	75.7	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-FT005	5/25/2021	14:20	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	24.3	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-FT006	5/25/2021	14:20	Fish	Tissue	Paiute Sculpin	Lab	Selenium	14.4	mg/kg	Dry	

StationName	StnDescription	SampleName	SampleDate	SampleTime	Media	Matrix	Species	LabOrField	Analyte	Result	Unit	Basis	FinalQualifier
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-FT006	5/25/2021	14:20	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	79	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-FT006	5/25/2021	14:20	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	21	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-FT007	5/25/2021	14:20	Fish	Tissue	Paiute Sculpin	Lab	Selenium	13.7	mg/kg	Dry	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-FT007	5/25/2021	14:20	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	71.2	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-FT007	5/25/2021	14:20	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	28.8	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-FT008	5/25/2021	14:20	Fish	Tissue	Paiute Sculpin	Lab	Selenium	13.5	mg/kg	Dry	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-FT008	5/25/2021	14:20	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	74.7	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-FT008	5/25/2021	14:20	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	25.3	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-FT009	5/25/2021	14:20	Fish	Tissue	Paiute Sculpin	Lab	Selenium	13.7	mg/kg	Dry	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-FT009	5/25/2021	14:20	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	75.7	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-FT009	5/25/2021	14:20	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	24.3	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-ITA001	5/25/2021	13:25	Invertebrate	Tissue		Lab	Selenium	8.83	mg/kg	Dry	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-ITA001	5/25/2021	13:25	Invertebrate	Tissue		Lab	Moisture Content	85.9	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-ITA001	5/25/2021	13:25	Invertebrate	Tissue		Lab	Solids, Percent	14.1	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-SD001	5/25/2021	13:55	Sediment	Solid		Lab	Selenium	3.92	mg/kg		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-SD001	5/25/2021	13:55	Sediment	Solid		Lab	Solids, Percent	99.1	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-SW001	5/25/2021	13:10	SW	Water		Lab	Alkalinity, Total as CaCO3	194	mg/L		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-SW001	5/25/2021	13:10	SW	Water		Lab	Bicarbonate, as CaCO3	194	mg/L		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-SW001	5/25/2021	13:10	SW	Water		Lab	Carbonate, as CaCO3	1	mg/L		U
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-SW001	5/25/2021	13:10	SW	Water		Lab	Sulfate	12.6	mg/L		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-SW001	5/25/2021	13:10	SW	Water		Lab	Carbon, Dissolved Organi	5.35	mg/L		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-SW001	5/25/2021	13:10	SW	Water		Lab	Selenium, Dissolved	0.00555	mg/L		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-SW001	5/25/2021	13:10	SW	Water		Lab	Calcium, Total	75	mg/L		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-SW001	5/25/2021	13:10	SW	Water		Lab	Magnesium, Total	12.1	mg/L		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-SW001	5/25/2021	13:10	SW	Water		Lab	Selenium, Total	0.00626	mg/L		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-SW001	5/25/2021	13:10	SW	Water		Lab	Nitrate + Nitrite, as N	0.05	mg/L		U
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-SW001	5/25/2021	13:10	SW	Water		Lab	Phosphorus, Total	0.342	mg/L		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-SW001	5/25/2021	13:10	SW	Water		Lab	Hardness, Total	237	mg/L		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-SW001-F	5/25/2021	13:10	SW	Water		Field	Conductivity at 25 C	418.2	umhos/cm		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-SW001-F	5/25/2021	13:10	SW	Water		Field	ORP	262.6	mV		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-SW001-F	5/25/2021	13:10	SW	Water		Field	Oxygen, Dissolved	8.69	mg/L		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-SW001-F	5/25/2021	13:10	SW	Water		Field	pH	8.08	SU		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-SW001-F	5/25/2021	13:10	SW	Water		Field	Temperature	11.4	C		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-SW001-F	5/25/2021	13:10	SW	Water		Field	Turbidity	10.81	NTU		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0521-NSV6AQ-SW001-Q	5/25/2021	13:10	SW	Water		Field	Flow	2.26	cfs		
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-AVP001	5/25/2021	9:50	Periphyton	Tissue		Lab	Selenium	2.9	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-AVP001	5/25/2021	9:50	Periphyton	Tissue		Lab	Moisture Content	77.1	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-AVP001	5/25/2021	9:50	Periphyton	Tissue		Lab	Solids, Percent	22.9	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-AVP002	5/25/2021	9:50	Periphyton	Tissue		Lab	Selenium	3.96	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-AVP002	5/25/2021	9:50	Periphyton	Tissue		Lab	Moisture Content	83.1	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-AVP002	5/25/2021	9:50	Periphyton	Tissue		Lab	Solids, Percent	16.9	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-AVP003	5/25/2021	9:50	Periphyton	Tissue		Lab	Selenium	3.65	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-AVP003	5/25/2021	9:50	Periphyton	Tissue		Lab	Moisture Content	79.9	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-AVP003	5/25/2021	9:50	Periphyton	Tissue		Lab	Solids, Percent	20.1	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT001	5/25/2021	10:35	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	8.1	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT001	5/25/2021	10:35	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	76.8	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT001	5/25/2021	10:35	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	23.2	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT002	5/25/2021	10:35	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	6.66	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT002	5/25/2021	10:35	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	74.3	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT002	5/25/2021	10:35	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	25.7	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT003	5/25/2021	10:35	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	7.22	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT003	5/25/2021	10:35	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	75.3	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT003	5/25/2021	10:35	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	24.7	%	Wet	

StationName	StnDescription	SampleName	SampleDate	SampleTime	Media	Matrix	Species	LabOrField	Analyte	Result	Unit	Basis	FinalQualifier
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT004	5/25/2021	10:35	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	8.44	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT004	5/25/2021	10:35	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	75.8	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT004	5/25/2021	10:35	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	24.2	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT005	5/25/2021	10:35	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	6.24	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT005	5/25/2021	10:35	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	74.9	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT005	5/25/2021	10:35	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	25.1	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT006	5/25/2021	10:35	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	7.73	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT006	5/25/2021	10:35	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	75.5	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT006	5/25/2021	10:35	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	24.5	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT007	5/25/2021	10:35	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	7.35	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT007	5/25/2021	10:35	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	78.5	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT007	5/25/2021	10:35	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	21.5	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT008	5/25/2021	10:35	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	6.87	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT008	5/25/2021	10:35	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	72.4	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT008	5/25/2021	10:35	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	27.6	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT009	5/25/2021	10:35	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	8.99	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT009	5/25/2021	10:35	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	75.5	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT009	5/25/2021	10:35	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	24.5	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT010	5/25/2021	10:35	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	6.44	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT010	5/25/2021	10:35	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	73.2	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT010	5/25/2021	10:35	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	26.8	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT011	5/25/2021	10:35	Fish	Tissue	Paiute Sculpin	Lab	Selenium	7.68	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT011	5/25/2021	10:35	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	73.3	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT011	5/25/2021	10:35	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	26.7	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT012	5/25/2021	10:35	Fish	Tissue	Paiute Sculpin	Lab	Selenium	10.3	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT012	5/25/2021	10:35	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	74.8	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT012	5/25/2021	10:35	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	25.2	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT013	5/25/2021	10:35	Fish	Tissue	Paiute Sculpin	Lab	Selenium	7.93	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT013	5/25/2021	10:35	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	70.9	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT013	5/25/2021	10:35	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	29.1	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT014	5/25/2021	10:35	Fish	Tissue	Paiute Sculpin	Lab	Selenium	10	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT014	5/25/2021	10:35	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	88.9	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT014	5/25/2021	10:35	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	11.1	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT015	5/25/2021	10:35	Fish	Tissue	Paiute Sculpin	Lab	Selenium	8.28	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT015	5/25/2021	10:35	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	73.6	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT015	5/25/2021	10:35	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	26.4	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT016	5/25/2021	10:35	Fish	Tissue	Paiute Sculpin	Lab	Selenium	6.79	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT016	5/25/2021	10:35	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	71.9	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT016	5/25/2021	10:35	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	28.1	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT017	5/25/2021	10:35	Fish	Tissue	Paiute Sculpin	Lab	Selenium	10.2	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT017	5/25/2021	10:35	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	73.7	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT017	5/25/2021	10:35	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	26.3	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT018	5/25/2021	10:35	Fish	Tissue	Paiute Sculpin	Lab	Selenium	7.38	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT018	5/25/2021	10:35	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	73.8	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT018	5/25/2021	10:35	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	26.2	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT019	5/25/2021	10:35	Fish	Tissue	Paiute Sculpin	Lab	Selenium	9.3	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT019	5/25/2021	10:35	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	73.2	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT019	5/25/2021	10:35	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	26.8	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT020	5/25/2021	10:35	Fish	Tissue	Paiute Sculpin	Lab	Selenium	6.44	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT020	5/25/2021	10:35	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	78.9	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-FT020	5/25/2021	10:35	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	21.1	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-ITA001	5/25/2021	10:15	Invertebrate	Tissue		Lab	Selenium	9.89	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-ITA001	5/25/2021	10:15	Invertebrate	Tissue		Lab	Moisture Content	85.2	%	Wet	

StationName	StnDescription	SampleName	SampleDate	SampleTime	Media	Matrix	Species	LabOrField	Analyte	Result	Unit	Basis	FinalQualifier
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-ITA001	5/25/2021	10:15	Invertebrate	Tissue		Lab	Solids, Percent	14.8	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-SD001	5/25/2021	10:35	Sediment	Solid		Lab	Selenium	2.43	mg/kg		
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-SD001	5/25/2021	10:35	Sediment	Solid		Lab	Solids, Percent	99.4	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-SW001	5/25/2021	9:15	SW	Water		Lab	Alkalinity, Total as CaCO3	210	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-SW001	5/25/2021	9:15	SW	Water		Lab	Bicarbonate, as CaCO3	210	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-SW001	5/25/2021	9:15	SW	Water		Lab	Carbonate, as CaCO3	1	mg/L		U
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-SW001	5/25/2021	9:15	SW	Water		Lab	Sulfate	25.7	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-SW001	5/25/2021	9:15	SW	Water		Lab	Carbon, Dissolved Organi	4.35	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-SW001	5/25/2021	9:15	SW	Water		Lab	Selenium, Dissolved	0.00342	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-SW001	5/25/2021	9:15	SW	Water		Lab	Calcium, Total	71.3	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-SW001	5/25/2021	9:15	SW	Water		Lab	Magnesium, Total	13	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-SW001	5/25/2021	9:15	SW	Water		Lab	Selenium, Total	0.0035	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-SW001	5/25/2021	9:15	SW	Water		Lab	Nitrate + Nitrite, as N	0.06	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-SW001	5/25/2021	9:15	SW	Water		Lab	Phosphorus, Total	0.0768	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-SW001	5/25/2021	9:15	SW	Water		Lab	Hardness, Total	232	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-SW001-F	5/25/2021	9:15	SW	Water		Field	Conductivity at 25 C	440.2	umhos/cm		
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-SW001-F	5/25/2021	9:15	SW	Water		Field	ORP	256.6	mV		
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-SW001-F	5/25/2021	9:15	SW	Water		Field	Oxygen, Dissolved	10.02	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-SW001-F	5/25/2021	9:15	SW	Water		Field	pH	8.1	SU		
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-SW001-F	5/25/2021	9:15	SW	Water		Field	Temperature	5.6	C		
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-SW001-F	5/25/2021	9:15	SW	Water		Field	Turbidity	8.82	NTU		
NSV-7	NFSC near confluence with Sage Creek	SC0521-NSV7-SW001-Q	5/25/2021	9:15	SW	Water		Field	Flow	2.92	cfs		
NSV-5	NFSC, above Pole Creek	SC0821-NSV5-AVP001	9/2/2021	15:20	Periphyton	Tissue		Lab	Selenium	0.89	mg/kg	Dry	J
NSV-5	NFSC, above Pole Creek	SC0821-NSV5-AVP001	9/2/2021	15:20	Periphyton	Tissue		Lab	Moisture Content	62.9	%	Wet	
NSV-5	NFSC, above Pole Creek	SC0821-NSV5-AVP001	9/2/2021	15:20	Periphyton	Tissue		Lab	Solids, Percent	37.1	%	Wet	
NSV-5	NFSC, above Pole Creek	SC0821-NSV5-ITA001	9/2/2021	15:45	Invertebrate	Tissue		Lab	Selenium	7.46	mg/kg	Dry	
NSV-5	NFSC, above Pole Creek	SC0821-NSV5-ITA001	9/2/2021	15:45	Invertebrate	Tissue		Lab	Moisture Content	87.6	%	Wet	
NSV-5	NFSC, above Pole Creek	SC0821-NSV5-ITA001	9/2/2021	15:45	Invertebrate	Tissue		Lab	Solids, Percent	12.4	%	Wet	
NSV-5	NFSC, above Pole Creek	SC0821-NSV5-SD001	9/2/2021	15:30	Sediment	Solid		Lab	Selenium	1.19	mg/kg		
NSV-5	NFSC, above Pole Creek	SC0821-NSV5-SD001	9/2/2021	15:30	Sediment	Solid		Lab	Solids, Percent	23.9	%	Wet	
NSV-5	NFSC, above Pole Creek	SC0821-NSV5-SW001	9/2/2021	15:15	SW	Water		Lab	Alkalinity, Total as CaCO3	182	mg/L		
NSV-5	NFSC, above Pole Creek	SC0821-NSV5-SW001	9/2/2021	15:15	SW	Water		Lab	Bicarbonate, as CaCO3	182	mg/L		
NSV-5	NFSC, above Pole Creek	SC0821-NSV5-SW001	9/2/2021	15:15	SW	Water		Lab	Carbonate, as CaCO3	1	mg/L		U
NSV-5	NFSC, above Pole Creek	SC0821-NSV5-SW001	9/2/2021	15:15	SW	Water		Lab	Sulfate	22.3	mg/L		
NSV-5	NFSC, above Pole Creek	SC0821-NSV5-SW001	9/2/2021	15:15	SW	Water		Lab	Carbon, Dissolved Organi	4.13	mg/L		
NSV-5	NFSC, above Pole Creek	SC0821-NSV5-SW001	9/2/2021	15:15	SW	Water		Lab	Selenium, Dissolved	0.00024	mg/L		U
NSV-5	NFSC, above Pole Creek	SC0821-NSV5-SW001	9/2/2021	15:15	SW	Water		Lab	Calcium, Total	47.1	mg/L		
NSV-5	NFSC, above Pole Creek	SC0821-NSV5-SW001	9/2/2021	15:15	SW	Water		Lab	Magnesium, Total	13.7	mg/L		
NSV-5	NFSC, above Pole Creek	SC0821-NSV5-SW001	9/2/2021	15:15	SW	Water		Lab	Selenium, Total	0.00024	mg/L		U
NSV-5	NFSC, above Pole Creek	SC0821-NSV5-SW001	9/2/2021	15:15	SW	Water		Lab	Nitrate + Nitrite, as N	0.05	mg/L		
NSV-5	NFSC, above Pole Creek	SC0821-NSV5-SW001	9/2/2021	15:15	SW	Water		Lab	Phosphorus, Total	0.234	mg/L		
NSV-5	NFSC, above Pole Creek	SC0821-NSV5-SW001	9/2/2021	15:15	SW	Water		Lab	Hardness, Total	174	mg/L		
NSV-5	NFSC, above Pole Creek	SC0821-NSV5-SW001-F	9/2/2021	14:58	SW	Water		Field	Conductivity at 25 C	401.1	umhos/cm		
NSV-5	NFSC, above Pole Creek	SC0821-NSV5-SW001-F	9/2/2021	14:58	SW	Water		Field	ORP	28.8	mV		
NSV-5	NFSC, above Pole Creek	SC0821-NSV5-SW001-F	9/2/2021	14:58	SW	Water		Field	Oxygen, Dissolved	5.34	mg/L		
NSV-5	NFSC, above Pole Creek	SC0821-NSV5-SW001-F	9/2/2021	14:58	SW	Water		Field	pH	7.79	SU		
NSV-5	NFSC, above Pole Creek	SC0821-NSV5-SW001-F	9/2/2021	14:58	SW	Water		Field	Temperature	13.7	C		
NSV-5	NFSC, above Pole Creek	SC0821-NSV5-SW001-F	9/2/2021	14:58	SW	Water		Field	Turbidity	139.22	NTU		
NSV-5	NFSC, above Pole Creek	SC0821-NSV5-SW001-Q	9/2/2021	14:58	SW	Water		Field	Flow	0.043	cfs		
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-ITA001	9/2/2021	10:00	Invertebrate	Tissue		Lab	Selenium	7.32	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-ITA001	9/2/2021	10:00	Invertebrate	Tissue		Lab	Moisture Content	91.2	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-ITA001	9/2/2021	10:00	Invertebrate	Tissue		Lab	Solids, Percent	8.85	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0821-NSV6AQ-AVP001	9/4/2021	12:30	Periphyton	Tissue		Lab	Selenium	3.93	mg/kg	Dry	

StationName	StnDescription	SampleName	SampleDate	SampleTime	Media	Matrix	Species	LabOrField	Analyte	Result	Unit	Basis	FinalQualifier
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0821-NSV6AQ-AVP001	9/4/2021	12:30	Periphyton	Tissue		Lab	Moisture Content	78.9	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0821-NSV6AQ-AVP001	9/4/2021	12:30	Periphyton	Tissue		Lab	Solids, Percent	21.1	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0821-NSV6AQ-FT001	9/4/2021	14:00	Fish	Tissue	Paiute Sculpin	Lab	Selenium	17.5	mg/kg	Dry	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0821-NSV6AQ-FT001	9/4/2021	14:00	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	73.3	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0821-NSV6AQ-FT001	9/4/2021	14:00	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	26.7	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0821-NSV6AQ-FT002	9/4/2021	14:00	Fish	Tissue	Paiute Sculpin	Lab	Selenium	17.8	mg/kg	Dry	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0821-NSV6AQ-FT002	9/4/2021	14:00	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	74.8	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0821-NSV6AQ-FT002	9/4/2021	14:00	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	25.2	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0821-NSV6AQ-FT003	9/4/2021	14:00	Fish	Tissue	Paiute Sculpin	Lab	Selenium	22	mg/kg	Dry	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0821-NSV6AQ-FT003	9/4/2021	14:00	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	74.6	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0821-NSV6AQ-FT003	9/4/2021	14:00	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	25.4	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0821-NSV6AQ-ITA001	9/4/2021	13:20	Invertebrate	Tissue		Lab	Selenium	6.53	mg/kg	Dry	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0821-NSV6AQ-ITA001	9/4/2021	13:20	Invertebrate	Tissue		Lab	Moisture Content	86.5	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0821-NSV6AQ-ITA001	9/4/2021	13:20	Invertebrate	Tissue		Lab	Solids, Percent	13.5	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0821-NSV6AQ-SD001	9/4/2021	12:30	Sediment	Solid		Lab	Selenium	4.48	mg/kg		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0821-NSV6AQ-SD001	9/4/2021	12:30	Sediment	Solid		Lab	Solids, Percent	28.6	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0821-NSV6AQ-SW001	9/4/2021	12:25	SW	Water		Lab	Alkalinity, Total as CaCO3	312	mg/L		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0821-NSV6AQ-SW001	9/4/2021	12:25	SW	Water		Lab	Bicarbonate, as CaCO3	303	mg/L		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0821-NSV6AQ-SW001	9/4/2021	12:25	SW	Water		Lab	Carbonate, as CaCO3	8.6	mg/L		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0821-NSV6AQ-SW001	9/4/2021	12:25	SW	Water		Lab	Sulfate	9.82	mg/L		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0821-NSV6AQ-SW001	9/4/2021	12:25	SW	Water		Lab	Carbon, Dissolved Organi	6.05	mg/L		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0821-NSV6AQ-SW001	9/4/2021	12:25	SW	Water		Lab	Selenium, Dissolved	0.00095	mg/L		J
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0821-NSV6AQ-SW001	9/4/2021	12:25	SW	Water		Lab	Calcium, Total	89.1	mg/L		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0821-NSV6AQ-SW001	9/4/2021	12:25	SW	Water		Lab	Magnesium, Total	17	mg/L		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0821-NSV6AQ-SW001	9/4/2021	12:25	SW	Water		Lab	Selenium, Total	0.00096	mg/L		J
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0821-NSV6AQ-SW001	9/4/2021	12:25	SW	Water		Lab	Nitrate + Nitrite, as N	0.05	mg/L		U
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0821-NSV6AQ-SW001	9/4/2021	12:25	SW	Water		Lab	Phosphorus, Total	0.0952	mg/L		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0821-NSV6AQ-SW001	9/4/2021	12:25	SW	Water		Lab	Hardness, Total	292	mg/L		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0821-NSV6AQ-SW001-F	9/4/2021	12:15	SW	Water		Field	Conductivity at 25 C	558	umhos/cm		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0821-NSV6AQ-SW001-F	9/4/2021	12:15	SW	Water		Field	ORP	134.9	mV		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0821-NSV6AQ-SW001-F	9/4/2021	12:15	SW	Water		Field	Oxygen, Dissolved	13.43	mg/L		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0821-NSV6AQ-SW001-F	9/4/2021	12:15	SW	Water		Field	pH	8.47	SU		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0821-NSV6AQ-SW001-F	9/4/2021	12:15	SW	Water		Field	Temperature	10.9	C		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0821-NSV6AQ-SW001-F	9/4/2021	12:15	SW	Water		Field	Turbidity	3.24	NTU		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0821-NSV6AQ-SW001-Q	9/4/2021	12:15	SW	Water		Field	Flow	0.07	cfs		
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-AVP001	9/4/2021	8:45	Periphyton	Tissue		Lab	Selenium	2.91	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-AVP001	9/4/2021	8:45	Periphyton	Tissue		Lab	Moisture Content	85	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-AVP001	9/4/2021	8:45	Periphyton	Tissue		Lab	Solids, Percent	15	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-AVP002	9/4/2021	8:45	Periphyton	Tissue		Lab	Selenium	3.2	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-AVP002	9/4/2021	8:45	Periphyton	Tissue		Lab	Moisture Content	83	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-AVP002	9/4/2021	8:45	Periphyton	Tissue		Lab	Solids, Percent	17	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-AVP003	9/4/2021	8:45	Periphyton	Tissue		Lab	Selenium	2.85	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-AVP003	9/4/2021	8:45	Periphyton	Tissue		Lab	Moisture Content	82	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-AVP003	9/4/2021	8:45	Periphyton	Tissue		Lab	Solids, Percent	18	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT001	9/4/2021	9:15	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	9.16	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT001	9/4/2021	9:15	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	75.5	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT001	9/4/2021	9:15	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	24.5	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT002	9/4/2021	9:15	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	8.52	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT002	9/4/2021	9:15	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	75.4	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT002	9/4/2021	9:15	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	24.6	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT003	9/4/2021	9:15	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	9	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT003	9/4/2021	9:15	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	75.2	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT003	9/4/2021	9:15	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	24.8	%	Wet	

North Fork Sage Creek Data

StationName	StnDescription	SampleName	SampleDate	SampleTime	Media	Matrix	Species	LabOrField	Analyte	Result	Unit	Basis	FinalQualifier
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT004	9/4/2021	9:15	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	9.36	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT004	9/4/2021	9:15	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	75.3	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT004	9/4/2021	9:15	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	24.7	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT005	9/4/2021	9:15	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	9.8	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT005	9/4/2021	9:15	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	73.1	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT005	9/4/2021	9:15	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	26.9	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT006	9/4/2021	9:15	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	8.66	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT006	9/4/2021	9:15	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	73.5	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT006	9/4/2021	9:15	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	26.5	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT007	9/4/2021	9:15	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	33.1	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT007	9/4/2021	9:15	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	70.3	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT007	9/4/2021	9:15	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	29.7	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT008	9/4/2021	9:15	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	8.21	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT008	9/4/2021	9:15	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	74.2	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT008	9/4/2021	9:15	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	25.8	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT009	9/4/2021	9:15	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	8.32	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT009	9/4/2021	9:15	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	74.3	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT009	9/4/2021	9:15	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	25.7	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT010	9/4/2021	9:15	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	8.67	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT010	9/4/2021	9:15	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	74.7	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT010	9/4/2021	9:15	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	25.3	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT011	9/4/2021	9:15	Fish	Tissue	Paiute Sculpin	Lab	Selenium	9.4	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT011	9/4/2021	9:15	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	71.9	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT011	9/4/2021	9:15	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	28.1	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT012	9/4/2021	9:15	Fish	Tissue	Paiute Sculpin	Lab	Selenium	8.97	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT012	9/4/2021	9:15	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	72.4	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT012	9/4/2021	9:15	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	27.6	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT013	9/4/2021	9:15	Fish	Tissue	Paiute Sculpin	Lab	Selenium	10.6	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT013	9/4/2021	9:15	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	70.3	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT013	9/4/2021	9:15	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	29.7	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT014	9/4/2021	9:15	Fish	Tissue	Paiute Sculpin	Lab	Selenium	9.18	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT014	9/4/2021	9:15	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	69.5	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT014	9/4/2021	9:15	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	30.5	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT015	9/4/2021	9:15	Fish	Tissue	Paiute Sculpin	Lab	Selenium	8.54	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT015	9/4/2021	9:15	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	70.6	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT015	9/4/2021	9:15	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	29.4	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT016	9/4/2021	9:15	Fish	Tissue	Paiute Sculpin	Lab	Selenium	10.8	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT016	9/4/2021	9:15	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	72.1	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT016	9/4/2021	9:15	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	27.9	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT017	9/4/2021	9:15	Fish	Tissue	Paiute Sculpin	Lab	Selenium	9.56	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT017	9/4/2021	9:15	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	71.8	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT017	9/4/2021	9:15	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	28.2	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT018	9/4/2021	9:15	Fish	Tissue	Paiute Sculpin	Lab	Selenium	8.31	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT018	9/4/2021	9:15	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	70.1	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT018	9/4/2021	9:15	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	29.9	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT019	9/4/2021	9:15	Fish	Tissue	Paiute Sculpin	Lab	Selenium	8.58	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT019	9/4/2021	9:15	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	71.5	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT019	9/4/2021	9:15	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	28.5	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT020	9/4/2021	9:15	Fish	Tissue	Paiute Sculpin	Lab	Selenium	8.4	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT020	9/4/2021	9:15	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	72	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-FT020	9/4/2021	9:15	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	28	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-SD001	9/4/2021	9:17	Sediment	Solid		Lab	Selenium	3.69	mg/kg		
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-SD001	9/4/2021	9:17	Sediment	Solid		Lab	Solids, Percent	19.5	%	Wet	

North Fork Sage Creek Data

StationName	StnDescription	SampleName	SampleDate	SampleTime	Media	Matrix	Species	LabOrField	Analyte	Result	Unit	Basis	FinalQualifier
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-SW001	9/4/2021	8:30	SW	Water		Lab	Alkalinity, Total as CaCO3	210	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-SW001	9/4/2021	8:30	SW	Water		Lab	Bicarbonate, as CaCO3	210	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-SW001	9/4/2021	8:30	SW	Water		Lab	Carbonate, as CaCO3	1	mg/L		U
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-SW001	9/4/2021	8:30	SW	Water		Lab	Sulfate	74.2	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-SW001	9/4/2021	8:30	SW	Water		Lab	Carbon, Dissolved Organi	1.73	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-SW001	9/4/2021	8:30	SW	Water		Lab	Selenium, Dissolved	0.00092	mg/L		J
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-SW001	9/4/2021	8:30	SW	Water		Lab	Calcium, Total	72.4	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-SW001	9/4/2021	8:30	SW	Water		Lab	Magnesium, Total	20.6	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-SW001	9/4/2021	8:30	SW	Water		Lab	Selenium, Total	0.00099	mg/L		J
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-SW001	9/4/2021	8:30	SW	Water		Lab	Nitrate + Nitrite, as N	0.055	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-SW001	9/4/2021	8:30	SW	Water		Lab	Phosphorus, Total	0.0295	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-SW001	9/4/2021	8:30	SW	Water		Lab	Hardness, Total	266	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-SW001-F	9/4/2021	8:30	SW	Water		Field	Conductivity at 25 C	536	umhos/cm		
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-SW001-F	9/4/2021	8:30	SW	Water		Field	ORP	100.9	mV		
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-SW001-F	9/4/2021	8:30	SW	Water		Field	Oxygen, Dissolved	9.7	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-SW001-F	9/4/2021	8:30	SW	Water		Field	pH	8.14	SU		
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-SW001-F	9/4/2021	8:30	SW	Water		Field	Temperature	4.6	C		
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-SW001-F	9/4/2021	8:30	SW	Water		Field	Turbidity	1.05	NTU		
NSV-7	NFSC near confluence with Sage Creek	SC0821-NSV7-SW001-Q	9/4/2021	8:30	SW	Water		Field	Flow	0.33	cfs		
NSV-5	NFSC, above Pole Creek	SC1121-NSV5-SW001	11/9/2021	16:35	SW	Water		Lab	Sulfate	21.1	mg/L		
NSV-5	NFSC, above Pole Creek	SC1121-NSV5-SW001	11/9/2021	16:35	SW	Water		Lab	Selenium, Dissolved	0.00024	mg/L		U
NSV-5	NFSC, above Pole Creek	SC1121-NSV5-SW001	11/9/2021	16:35	SW	Water		Lab	Calcium, Total	63.8	mg/L		
NSV-5	NFSC, above Pole Creek	SC1121-NSV5-SW001	11/9/2021	16:35	SW	Water		Lab	Magnesium, Total	15.2	mg/L		
NSV-5	NFSC, above Pole Creek	SC1121-NSV5-SW001	11/9/2021	16:35	SW	Water		Lab	Selenium, Total	0.00024	mg/L		U
NSV-5	NFSC, above Pole Creek	SC1121-NSV5-SW001	11/9/2021	16:35	SW	Water		Lab	Hardness, Total	222	mg/L		
NSV-5	NFSC, above Pole Creek	SC1121-NSV5-SW001	11/9/2021	16:35	SW	Water		Lab	TDS	163	mg/L		
NSV-5	NFSC, above Pole Creek	SC1121-NSV5-SW001-F	11/9/2021	16:35	SW	Water		Field	Conductivity at 25 C	427.2	umhos/cm		
NSV-5	NFSC, above Pole Creek	SC1121-NSV5-SW001-F	11/9/2021	16:35	SW	Water		Field	ORP	230.1	mV		
NSV-5	NFSC, above Pole Creek	SC1121-NSV5-SW001-F	11/9/2021	16:35	SW	Water		Field	Oxygen, Dissolved	10	mg/L		
NSV-5	NFSC, above Pole Creek	SC1121-NSV5-SW001-F	11/9/2021	16:35	SW	Water		Field	pH	8.31	SU		
NSV-5	NFSC, above Pole Creek	SC1121-NSV5-SW001-F	11/9/2021	16:35	SW	Water		Field	Temperature	3.6	C		
NSV-5	NFSC, above Pole Creek	SC1121-NSV5-SW001-F	11/9/2021	16:35	SW	Water		Field	Turbidity	2.41	NTU		
NSV-5	NFSC, above Pole Creek	SC1121-NSV5-SW001-Q	11/9/2021	16:35	SW	Water		Field	Flow	0.049	cfs		
NSV-6	NFSC, below Pole Creek	SC1121-NSV6-SW001	11/9/2021	16:10	SW	Water		Lab	Sulfate	25.5	mg/L		
NSV-6	NFSC, below Pole Creek	SC1121-NSV6-SW001	11/9/2021	16:10	SW	Water		Lab	Selenium, Dissolved	0.00024	mg/L		U
NSV-6	NFSC, below Pole Creek	SC1121-NSV6-SW001	11/9/2021	16:10	SW	Water		Lab	Calcium, Total	91.5	mg/L		
NSV-6	NFSC, below Pole Creek	SC1121-NSV6-SW001	11/9/2021	16:10	SW	Water		Lab	Magnesium, Total	15.6	mg/L		
NSV-6	NFSC, below Pole Creek	SC1121-NSV6-SW001	11/9/2021	16:10	SW	Water		Lab	Selenium, Total	0.00032	mg/L		J
NSV-6	NFSC, below Pole Creek	SC1121-NSV6-SW001	11/9/2021	16:10	SW	Water		Lab	Hardness, Total	293	mg/L		
NSV-6	NFSC, below Pole Creek	SC1121-NSV6-SW001	11/9/2021	16:10	SW	Water		Lab	TDS	246	mg/L		
NSV-6	NFSC, below Pole Creek	SC1121-NSV6-SW001-F	11/9/2021	16:10	SW	Water		Field	Conductivity at 25 C	520	umhos/cm		
NSV-6	NFSC, below Pole Creek	SC1121-NSV6-SW001-F	11/9/2021	16:10	SW	Water		Field	ORP	266.8	mV		
NSV-6	NFSC, below Pole Creek	SC1121-NSV6-SW001-F	11/9/2021	16:10	SW	Water		Field	Oxygen, Dissolved	11.67	mg/L		
NSV-6	NFSC, below Pole Creek	SC1121-NSV6-SW001-F	11/9/2021	16:10	SW	Water		Field	pH	8.55	SU		
NSV-6	NFSC, below Pole Creek	SC1121-NSV6-SW001-F	11/9/2021	16:10	SW	Water		Field	Temperature	1.9	C		
NSV-6	NFSC, below Pole Creek	SC1121-NSV6-SW001-F	11/9/2021	16:10	SW	Water		Field	Turbidity	0.81	NTU		
NSV-6	NFSC, below Pole Creek	SC1121-NSV6-SW001-Q	11/9/2021	16:10	SW	Water		Field	Flow	0.24	cfs		
NSV-5	NFSC, above Pole Creek	SC0522-NSV5-AVP001	5/23/2022	10:40	Periphyton	Tissue		Lab	Selenium	1.31	mg/kg	Dry	
NSV-5	NFSC, above Pole Creek	SC0522-NSV5-AVP001	5/23/2022	10:40	Periphyton	Tissue		Lab	Moisture Content	89.1	%	Wet	
NSV-5	NFSC, above Pole Creek	SC0522-NSV5-AVP001	5/23/2022	10:40	Periphyton	Tissue		Lab	Solids, Percent	10.9	%	Wet	
NSV-5	NFSC, above Pole Creek	SC0522-NSV5-ITA001	5/23/2022	10:30	Invertebrate	Tissue		Lab	Selenium	2.4	mg/kg	Dry	
NSV-5	NFSC, above Pole Creek	SC0522-NSV5-ITA001	5/23/2022	10:30	Invertebrate	Tissue		Lab	Moisture Content	87.3	%	Wet	
NSV-5	NFSC, above Pole Creek	SC0522-NSV5-ITA001	5/23/2022	10:30	Invertebrate	Tissue		Lab	Solids, Percent	12.7	%	Wet	

StationName	StnDescription	SampleName	SampleDate	SampleTime	Media	Matrix	Species	LabOrField	Analyte	Result	Unit	Basis	FinalQualifier
NSV-5	NFSC, above Pole Creek	SC0522-NSV5-SD001	5/23/2022	10:40	Sediment	Solid		Lab	Selenium	0.784	mg/kg	Dry	J
NSV-5	NFSC, above Pole Creek	SC0522-NSV5-SD001	5/23/2022	10:40	Sediment	Solid		Lab	Solids, Percent	43.2	%	Dry	
NSV-5	NFSC, above Pole Creek	SC0522-NSV5-SW001	5/23/2022	10:15	SW	Water		Lab	Alkalinity, Total as CaCO3	165	mg/L		
NSV-5	NFSC, above Pole Creek	SC0522-NSV5-SW001	5/23/2022	10:15	SW	Water		Lab	Bicarbonate, as CaCO3	165	mg/L		
NSV-5	NFSC, above Pole Creek	SC0522-NSV5-SW001	5/23/2022	10:15	SW	Water		Lab	Carbonate, as CaCO3	1	mg/L		U
NSV-5	NFSC, above Pole Creek	SC0522-NSV5-SW001	5/23/2022	10:15	SW	Water		Lab	Sulfate	6.74	mg/L		
NSV-5	NFSC, above Pole Creek	SC0522-NSV5-SW001	5/23/2022	10:15	SW	Water		Lab	Carbon, Dissolved Organi	8.48	mg/L		
NSV-5	NFSC, above Pole Creek	SC0522-NSV5-SW001	5/23/2022	10:15	SW	Water		Lab	Selenium, Dissolved	0.00024	mg/L		U
NSV-5	NFSC, above Pole Creek	SC0522-NSV5-SW001	5/23/2022	10:15	SW	Water		Lab	Calcium, Total	50.4	mg/L		
NSV-5	NFSC, above Pole Creek	SC0522-NSV5-SW001	5/23/2022	10:15	SW	Water		Lab	Magnesium, Total	8.91	mg/L		
NSV-5	NFSC, above Pole Creek	SC0522-NSV5-SW001	5/23/2022	10:15	SW	Water		Lab	Selenium, Total	0.00024	mg/L		U
NSV-5	NFSC, above Pole Creek	SC0522-NSV5-SW001	5/23/2022	10:15	SW	Water		Lab	Nitrate + Nitrite, as N	0.05	mg/L		U
NSV-5	NFSC, above Pole Creek	SC0522-NSV5-SW001	5/23/2022	10:15	SW	Water		Lab	Phosphorus, Total	0.164	mg/L		
NSV-5	NFSC, above Pole Creek	SC0522-NSV5-SW001	5/23/2022	10:15	SW	Water		Lab	Hardness, Total	163	mg/L		
NSV-5	NFSC, above Pole Creek	SC0522-NSV5-SW001-F	5/23/2022	9:45	SW	Water		Field	Conductivity at 25 C	319.6	umhos/cm		
NSV-5	NFSC, above Pole Creek	SC0522-NSV5-SW001-F	5/23/2022	9:45	SW	Water		Field	ORP	53.6	mV		
NSV-5	NFSC, above Pole Creek	SC0522-NSV5-SW001-F	5/23/2022	9:45	SW	Water		Field	Oxygen, Dissolved	9.97	mg/L		
NSV-5	NFSC, above Pole Creek	SC0522-NSV5-SW001-F	5/23/2022	9:45	SW	Water		Field	pH	7.96	SU		
NSV-5	NFSC, above Pole Creek	SC0522-NSV5-SW001-F	5/23/2022	9:45	SW	Water		Field	Temperature	5.9	C		
NSV-5	NFSC, above Pole Creek	SC0522-NSV5-SW001-F	5/23/2022	9:45	SW	Water		Field	Turbidity	3.57	NTU		
NSV-5	NFSC, above Pole Creek	SC0522-NSV5-SW001-Q	5/23/2022	9:45	SW	Water		Field	Flow	0.235	cfs		
NSV-6	NFSC, below Pole Creek	SC0522-NSV6-SW001	5/24/2022	11:40	SW	Water		Lab	Alkalinity, Total as CaCO3	256	mg/L		
NSV-6	NFSC, below Pole Creek	SC0522-NSV6-SW001	5/24/2022	11:40	SW	Water		Lab	Bicarbonate, as CaCO3	256	mg/L		
NSV-6	NFSC, below Pole Creek	SC0522-NSV6-SW001	5/24/2022	11:40	SW	Water		Lab	Carbonate, as CaCO3	1	mg/L		U
NSV-6	NFSC, below Pole Creek	SC0522-NSV6-SW001	5/24/2022	11:40	SW	Water		Lab	Sulfate	13.5	mg/L		
NSV-6	NFSC, below Pole Creek	SC0522-NSV6-SW001	5/24/2022	11:40	SW	Water		Lab	Carbon, Dissolved Organi	4.58	mg/L		
NSV-6	NFSC, below Pole Creek	SC0522-NSV6-SW001	5/24/2022	11:40	SW	Water		Lab	Selenium, Dissolved	0.00713	mg/L		
NSV-6	NFSC, below Pole Creek	SC0522-NSV6-SW001	5/24/2022	11:40	SW	Water		Lab	Calcium, Total	81.6	mg/L		
NSV-6	NFSC, below Pole Creek	SC0522-NSV6-SW001	5/24/2022	11:40	SW	Water		Lab	Magnesium, Total	12.6	mg/L		
NSV-6	NFSC, below Pole Creek	SC0522-NSV6-SW001	5/24/2022	11:40	SW	Water		Lab	Selenium, Total	0.00668	mg/L		
NSV-6	NFSC, below Pole Creek	SC0522-NSV6-SW001	5/24/2022	11:40	SW	Water		Lab	Nitrate + Nitrite, as N	0.05	mg/L		U
NSV-6	NFSC, below Pole Creek	SC0522-NSV6-SW001	5/24/2022	11:40	SW	Water		Lab	Phosphorus, Total	0.0841	mg/L		
NSV-6	NFSC, below Pole Creek	SC0522-NSV6-SW001	5/24/2022	11:40	SW	Water		Lab	Hardness, Total	256	mg/L		
NSV-6	NFSC, below Pole Creek	SC0522-NSV6AQ-SW001-F	5/24/2022	11:30	SW	Water		Field	Conductivity at 25 C	477.6	umhos/cm		
NSV-6	NFSC, below Pole Creek	SC0522-NSV6AQ-SW001-F	5/24/2022	11:30	SW	Water		Field	ORP	95.2	mV		
NSV-6	NFSC, below Pole Creek	SC0522-NSV6AQ-SW001-F	5/24/2022	11:30	SW	Water		Field	Oxygen, Dissolved	10.12	mg/L		
NSV-6	NFSC, below Pole Creek	SC0522-NSV6AQ-SW001-F	5/24/2022	11:30	SW	Water		Field	pH	8.18	SU		
NSV-6	NFSC, below Pole Creek	SC0522-NSV6AQ-SW001-F	5/24/2022	11:30	SW	Water		Field	Temperature	6.4	C		
NSV-6	NFSC, below Pole Creek	SC0522-NSV6AQ-SW001-F	5/24/2022	11:30	SW	Water		Field	Turbidity	3.78	NTU		
NSV-6	NFSC, below Pole Creek	SC0522-NSV6AQ-SW001-Q	5/24/2022	11:30	SW	Water		Field	Flow	0.83	cfs		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-AVP001	5/24/2022	12:20	Periphyton	Tissue		Lab	Selenium	2.45	mg/kg	Dry	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-AVP001	5/24/2022	12:20	Periphyton	Tissue		Lab	Moisture Content	80.7	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-AVP001	5/24/2022	12:20	Periphyton	Tissue		Lab	Solids, Percent	19.3	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-FT001	5/24/2022	12:40	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	12.1	mg/kg	Dry	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-FT001	5/24/2022	12:40	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	78.6	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-FT001	5/24/2022	12:40	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	21.4	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-FT002	5/24/2022	12:40	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	7.78	mg/kg	Dry	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-FT002	5/24/2022	12:40	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	76	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-FT002	5/24/2022	12:40	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	24	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-FT003	5/24/2022	12:40	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	6.81	mg/kg	Dry	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-FT003	5/24/2022	12:40	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	78.1	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-FT003	5/24/2022	12:40	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	21.9	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-FT004	5/24/2022	12:40	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	9.88	mg/kg	Dry	

StationName	StnDescription	SampleName	SampleDate	SampleTime	Media	Matrix	Species	LabOrField	Analyte	Result	Unit	Basis	FinalQualifier
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-FT004	5/24/2022	12:40	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	78.2	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-FT004	5/24/2022	12:40	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	21.8	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-FT005	5/24/2022	12:40	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	8.12	mg/kg	Dry	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-FT005	5/24/2022	12:40	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	74.2	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-FT005	5/24/2022	12:40	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	25.8	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-FT006	5/24/2022	12:40	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	12.5	mg/kg	Dry	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-FT006	5/24/2022	12:40	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	79.9	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-FT006	5/24/2022	12:40	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	20.1	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-FT007	5/24/2022	14:00	Fish	Tissue	Paiute Sculpin	Lab	Selenium	9.79	mg/kg	Dry	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-FT007	5/24/2022	14:00	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	74.8	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-FT007	5/24/2022	14:00	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	25.2	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-FT008	5/24/2022	14:00	Fish	Tissue	Paiute Sculpin	Lab	Selenium	16.7	mg/kg	Dry	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-FT008	5/24/2022	14:00	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	75.6	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-FT008	5/24/2022	14:00	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	24.4	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-FT009	5/24/2022	14:00	Fish	Tissue	Paiute Sculpin	Lab	Selenium	11.3	mg/kg	Dry	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-FT009	5/24/2022	14:00	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	75.2	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-FT009	5/24/2022	14:00	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	24.8	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-FT010	5/24/2022	14:00	Fish	Tissue	Paiute Sculpin	Lab	Selenium	10.6	mg/kg	Dry	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-FT010	5/24/2022	14:00	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	76.2	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-FT010	5/24/2022	14:00	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	23.8	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-FT011	5/24/2022	14:00	Fish	Tissue	Paiute Sculpin	Lab	Selenium	17.4	mg/kg	Dry	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-FT011	5/24/2022	14:00	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	75.9	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-FT011	5/24/2022	14:00	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	24.1	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-FT012	5/24/2022	14:00	Fish	Tissue	Paiute Sculpin	Lab	Selenium	10.2	mg/kg	Dry	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-FT012	5/24/2022	14:00	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	76.4	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-FT012	5/24/2022	14:00	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	23.6	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-ITA001	5/24/2022	12:30	Invertebrate	Tissue		Lab	Selenium	6.61	mg/kg	Dry	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-ITA001	5/24/2022	12:30	Invertebrate	Tissue		Lab	Moisture Content	88.2	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-ITA001	5/24/2022	12:30	Invertebrate	Tissue		Lab	Solids, Percent	11.8	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-SD001	5/24/2022	12:50	Sediment	Solid		Lab	Selenium	2.38	mg/kg	Dry	J
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0522-NSV6AQ-SD001	5/24/2022	12:50	Sediment	Solid		Lab	Solids, Percent	45.9	%	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-AVP001	5/24/2022	11:00	Periphyton	Tissue		Lab	Selenium	4.48	mg/kg	Dry	J
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-AVP001	5/24/2022	11:00	Periphyton	Tissue		Lab	Moisture Content	92.3	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-AVP001	5/24/2022	11:00	Periphyton	Tissue		Lab	Solids, Percent	7.71	%	Wet	J
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-AVP002	5/24/2022	11:00	Periphyton	Tissue		Lab	Selenium	6.81	mg/kg	Dry	J
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-AVP002	5/24/2022	11:00	Periphyton	Tissue		Lab	Moisture Content	95.9	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-AVP002	5/24/2022	11:00	Periphyton	Tissue		Lab	Solids, Percent	4.1	%	Wet	J
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-AVP003	5/24/2022	11:00	Periphyton	Tissue		Lab	Selenium	2.65	mg/kg	Dry	J
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-AVP003	5/24/2022	11:00	Periphyton	Tissue		Lab	Moisture Content	83.6	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-AVP003	5/24/2022	11:00	Periphyton	Tissue		Lab	Solids, Percent	16.4	%	Wet	J
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT001	5/24/2022	10:20	Fish	Tissue	Paiute Sculpin	Lab	Selenium	7.99	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT001	5/24/2022	10:20	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	75.8	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT001	5/24/2022	10:20	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	24.2	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT002	5/24/2022	10:20	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	8.99	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT002	5/24/2022	10:20	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	78.3	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT002	5/24/2022	10:20	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	21.7	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT003	5/24/2022	10:20	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	8.3	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT003	5/24/2022	10:20	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	78.1	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT003	5/24/2022	10:20	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	21.9	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT004	5/24/2022	10:20	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	8.79	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT004	5/24/2022	10:20	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	77.4	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT004	5/24/2022	10:20	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	22.6	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT005	5/24/2022	10:20	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	7.35	mg/kg	Dry	

StationName	StnDescription	SampleName	SampleDate	SampleTime	Media	Matrix	Species	LabOrField	Analyte	Result	Unit	Basis	FinalQualifier
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT005	5/24/2022	10:20	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	79	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT005	5/24/2022	10:20	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	21	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT006	5/24/2022	10:20	Fish	Tissue	Paiute Sculpin	Lab	Selenium	7.24	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT006	5/24/2022	10:20	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	71.5	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT006	5/24/2022	10:20	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	28.5	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT007	5/24/2022	10:20	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	7.37	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT007	5/24/2022	10:20	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	78.7	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT007	5/24/2022	10:20	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	21.3	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT008	5/24/2022	10:20	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	8.01	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT008	5/24/2022	10:20	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	78.4	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT008	5/24/2022	10:20	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	21.6	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT009	5/24/2022	10:20	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	7.47	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT009	5/24/2022	10:20	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	78.9	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT009	5/24/2022	10:20	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	21.1	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT010	5/24/2022	10:20	Fish	Tissue	Paiute Sculpin	Lab	Selenium	10.5	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT010	5/24/2022	10:20	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	76.1	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT010	5/24/2022	10:20	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	23.9	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT011	5/24/2022	10:20	Fish	Tissue	Paiute Sculpin	Lab	Selenium	9.85	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT011	5/24/2022	10:20	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	75.2	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT011	5/24/2022	10:20	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	24.8	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT012	5/24/2022	10:20	Fish	Tissue	Paiute Sculpin	Lab	Selenium	8.83	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT012	5/24/2022	10:20	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	74.3	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT012	5/24/2022	10:20	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	25.7	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT013	5/24/2022	10:20	Fish	Tissue	Paiute Sculpin	Lab	Selenium	8.9	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT013	5/24/2022	10:20	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	74.6	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT013	5/24/2022	10:20	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	25.4	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT014	5/24/2022	10:20	Fish	Tissue	Paiute Sculpin	Lab	Selenium	6.27	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT014	5/24/2022	10:20	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	75.6	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT014	5/24/2022	10:20	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	24.4	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT015	5/24/2022	10:20	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	8.46	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT015	5/24/2022	10:20	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	78.3	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT015	5/24/2022	10:20	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	21.7	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT016	5/24/2022	10:20	Fish	Tissue	Paiute Sculpin	Lab	Selenium	9.34	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT016	5/24/2022	10:20	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	75.5	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT016	5/24/2022	10:20	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	24.5	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT017	5/24/2022	10:20	Fish	Tissue	Paiute Sculpin	Lab	Selenium	8.44	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT017	5/24/2022	10:20	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	74.7	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT017	5/24/2022	10:20	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	25.3	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT018	5/24/2022	10:20	Fish	Tissue	Paiute Sculpin	Lab	Selenium	7.09	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT018	5/24/2022	10:20	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	74.1	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT018	5/24/2022	10:20	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	25.9	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT019	5/24/2022	10:20	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	7.25	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT019	5/24/2022	10:20	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	79.3	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT019	5/24/2022	10:20	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	20.7	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT020	5/24/2022	10:20	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	7.8	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT020	5/24/2022	10:20	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	77.5	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-FT020	5/24/2022	10:20	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	22.5	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-ITA001	5/24/2022	10:30	Invertebrate	Tissue		Lab	Selenium	8.66	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-ITA001	5/24/2022	10:30	Invertebrate	Tissue		Lab	Moisture Content	84.1	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-ITA001	5/24/2022	10:30	Invertebrate	Tissue		Lab	Solids, Percent	15.9	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-SD001	5/24/2022	10:55	Sediment	Solid		Lab	Selenium	1.37	mg/kg	Dry	J
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-SD001	5/24/2022	10:55	Sediment	Solid		Lab	Solids, Percent	35.4	%	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-SW001	5/24/2022	9:55	SW	Water		Lab	Alkalinity, Total as CaCO3	230	mg/L		

StationName	StnDescription	SampleName	SampleDate	SampleTime	Media	Matrix	Species	LabOrField	Analyte	Result	Unit	Basis	FinalQualifier
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-SW001	5/24/2022	9:55	SW	Water		Lab	Bicarbonate, as CaCO3	230	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-SW001	5/24/2022	9:55	SW	Water		Lab	Carbonate, as CaCO3	1	mg/L		U
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-SW001	5/24/2022	9:55	SW	Water		Lab	Sulfate	37.9	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-SW001	5/24/2022	9:55	SW	Water		Lab	Carbon, Dissolved Organi	3.02	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-SW001	5/24/2022	9:55	SW	Water		Lab	Selenium, Dissolved	0.00379	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-SW001	5/24/2022	9:55	SW	Water		Lab	Calcium, Total	76.6	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-SW001	5/24/2022	9:55	SW	Water		Lab	Magnesium, Total	15.1	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-SW001	5/24/2022	9:55	SW	Water		Lab	Selenium, Total	0.00349	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-SW001	5/24/2022	9:55	SW	Water		Lab	Nitrate + Nitrite, as N	0.058	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-SW001	5/24/2022	9:55	SW	Water		Lab	Phosphorus, Total	0.041	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-SW001	5/24/2022	9:55	SW	Water		Lab	Hardness, Total	254	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-SW001-F	5/24/2022	9:35	SW	Water		Field	Conductivity at 25 C	484.4	umhos/cm		
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-SW001-F	5/24/2022	9:35	SW	Water		Field	ORP	111.8	mV		
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-SW001-F	5/24/2022	9:35	SW	Water		Field	Oxygen, Dissolved	10.36	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-SW001-F	5/24/2022	9:35	SW	Water		Field	pH	8.32	SU		
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-SW001-F	5/24/2022	9:35	SW	Water		Field	Temperature	6.3	C		
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-SW001-F	5/24/2022	9:35	SW	Water		Field	Turbidity	1.72	NTU		
NSV-7	NFSC near confluence with Sage Creek	SC0522-NSV7-SW001-Q	5/24/2022	9:35	SW	Water		Field	Flow	1.58	cfs		
NSV-5	NFSC, above Pole Creek	SC0922-NSV5-AVP001	9/12/2022	15:20	Periphyton	Tissue		Lab	Selenium	1.48	mg/kg	Dry	
NSV-5	NFSC, above Pole Creek	SC0922-NSV5-AVP001	9/12/2022	15:20	Periphyton	Tissue		Lab	Moisture Content	94.7	%	Wet	
NSV-5	NFSC, above Pole Creek	SC0922-NSV5-AVP001	9/12/2022	15:20	Periphyton	Tissue		Lab	Solids, Percent	5.32	%	Wet	
NSV-5	NFSC, above Pole Creek	SC0922-NSV5-ITA001	9/12/2022	15:45	Invertebrate	Tissue		Lab	Selenium	1.85	mg/kg	Dry	
NSV-5	NFSC, above Pole Creek	SC0922-NSV5-ITA001	9/12/2022	15:45	Invertebrate	Tissue		Lab	Moisture Content	84.6	%	Wet	
NSV-5	NFSC, above Pole Creek	SC0922-NSV5-ITA001	9/12/2022	15:45	Invertebrate	Tissue		Lab	Solids, Percent	15.4	%	Wet	
NSV-5	NFSC, above Pole Creek	SC0922-NSV5-SD001	9/12/2022	15:20	Sediment	Solid		Lab	Solids, Percent	40.7	%	Wet	
NSV-5	NFSC, above Pole Creek	SC0922-NSV5-SD001	9/12/2022	15:20	Sediment	Solid		Lab	Selenium	0.66	mg/kg	Dry	J
NSV-5	NFSC, above Pole Creek	SC0922-NSV5-SW001	9/12/2022	15:10	SW	Water		Lab	Alkalinity, Total as CaCO3	216	mg/L		
NSV-5	NFSC, above Pole Creek	SC0922-NSV5-SW001	9/12/2022	15:10	SW	Water		Lab	Bicarbonate, as CaCO3	216	mg/L		
NSV-5	NFSC, above Pole Creek	SC0922-NSV5-SW001	9/12/2022	15:10	SW	Water		Lab	Carbonate, as CaCO3	1	mg/L		U
NSV-5	NFSC, above Pole Creek	SC0922-NSV5-SW001	9/12/2022	15:10	SW	Water		Lab	Sulfate	28.1	mg/L		
NSV-5	NFSC, above Pole Creek	SC0922-NSV5-SW001	9/12/2022	15:10	SW	Water		Lab	Carbon, Dissolved Organi	5.23	mg/L		
NSV-5	NFSC, above Pole Creek	SC0922-NSV5-SW001	9/12/2022	15:10	SW	Water		Lab	Selenium, Dissolved	0.00024	mg/L		U
NSV-5	NFSC, above Pole Creek	SC0922-NSV5-SW001	9/12/2022	15:10	SW	Water		Lab	Calcium, Total	43.2	mg/L		
NSV-5	NFSC, above Pole Creek	SC0922-NSV5-SW001	9/12/2022	15:10	SW	Water		Lab	Magnesium, Total	14	mg/L		
NSV-5	NFSC, above Pole Creek	SC0922-NSV5-SW001	9/12/2022	15:10	SW	Water		Lab	Selenium, Total	0.00024	mg/L		U
NSV-5	NFSC, above Pole Creek	SC0922-NSV5-SW001	9/12/2022	15:10	SW	Water		Lab	Nitrate + Nitrite, as N	0.153	mg/L		
NSV-5	NFSC, above Pole Creek	SC0922-NSV5-SW001	9/12/2022	15:10	SW	Water		Lab	Phosphorus, Total	0.423	mg/L		
NSV-5	NFSC, above Pole Creek	SC0922-NSV5-SW001	9/12/2022	15:10	SW	Water		Lab	Hardness, Total	166	mg/L		
NSV-5	NFSC, above Pole Creek	SC0922-NSV5-SW001-F	9/12/2022	15:10	SW	Water		Field	Conductivity at 25 C	459.3	umhos/cm		
NSV-5	NFSC, above Pole Creek	SC0922-NSV5-SW001-F	9/12/2022	15:10	SW	Water		Field	ORP	-29.9	mV		
NSV-5	NFSC, above Pole Creek	SC0922-NSV5-SW001-F	9/12/2022	15:10	SW	Water		Field	Oxygen, Dissolved	4.13	mg/L		
NSV-5	NFSC, above Pole Creek	SC0922-NSV5-SW001-F	9/12/2022	15:10	SW	Water		Field	pH	7.53	SU		
NSV-5	NFSC, above Pole Creek	SC0922-NSV5-SW001-F	9/12/2022	15:10	SW	Water		Field	Temperature	10.9	C		
NSV-5	NFSC, above Pole Creek	SC0922-NSV5-SW001-F	9/12/2022	15:10	SW	Water		Field	Turbidity	4.32	NTU		
NSV-5	NFSC, above Pole Creek	SC0922-NSV5-SW001-Q	9/12/2022	15:10	SW	Water		Field	Flow		cfs		
NSV-6	NFSC, below Pole Creek	SC0922-NSV6-SW001	9/12/2022	13:15	SW	Water		Lab	Alkalinity, Total as CaCO3	244	mg/L		
NSV-6	NFSC, below Pole Creek	SC0922-NSV6-SW001	9/12/2022	13:15	SW	Water		Lab	Bicarbonate, as CaCO3	244	mg/L		
NSV-6	NFSC, below Pole Creek	SC0922-NSV6-SW001	9/12/2022	13:15	SW	Water		Lab	Carbonate, as CaCO3	1	mg/L		U
NSV-6	NFSC, below Pole Creek	SC0922-NSV6-SW001	9/12/2022	13:15	SW	Water		Lab	Sulfate	18.2	mg/L		
NSV-6	NFSC, below Pole Creek	SC0922-NSV6-SW001	9/12/2022	13:15	SW	Water		Lab	Carbon, Dissolved Organi	3.17	mg/L		
NSV-6	NFSC, below Pole Creek	SC0922-NSV6-SW001	9/12/2022	13:15	SW	Water		Lab	Selenium, Dissolved	0.00223	mg/L		
NSV-6	NFSC, below Pole Creek	SC0922-NSV6-SW001	9/12/2022	13:15	SW	Water		Lab	Calcium, Total	76.6	mg/L		
NSV-6	NFSC, below Pole Creek	SC0922-NSV6-SW001	9/12/2022	13:15	SW	Water		Lab	Magnesium, Total	13.6	mg/L		

North Fork Sage Creek Data

StationName	StnDescription	SampleName	SampleDate	SampleTime	Media	Matrix	Species	LabOrField	Analyte	Result	Unit	Basis	FinalQualifier
NSV-6	NFSC, below Pole Creek	SC0922-NSV6-SW001	9/12/2022	13:15	SW	Water		Lab	Selenium, Total	0.00227	mg/L		
NSV-6	NFSC, below Pole Creek	SC0922-NSV6-SW001	9/12/2022	13:15	SW	Water		Lab	Nitrate + Nitrite, as N	0.05	mg/L		U
NSV-6	NFSC, below Pole Creek	SC0922-NSV6-SW001	9/12/2022	13:15	SW	Water		Lab	Phosphorus, Total	0.102	mg/L		
NSV-6	NFSC, below Pole Creek	SC0922-NSV6-SW001	9/12/2022	13:15	SW	Water		Lab	Hardness, Total	247	mg/L		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0922-DSNSV6AQ-SW001	9/12/2022	15:35	SW	Water		Field	Flow	0.04	cfs		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0922-NSV6AQ-AVP001	9/12/2022	13:30	Periphyton	Tissue		Lab	Selenium	4.02	mg/kg	Dry	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0922-NSV6AQ-AVP001	9/12/2022	13:30	Periphyton	Tissue		Lab	Moisture Content	70.1	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0922-NSV6AQ-AVP001	9/12/2022	13:30	Periphyton	Tissue		Lab	Solids, Percent	29.9	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0922-NSV6AQ-ITA001	9/12/2022	14:10	Invertebrate	Tissue		Lab	Selenium	6.25	mg/kg	Dry	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0922-NSV6AQ-ITA001	9/12/2022	14:10	Invertebrate	Tissue		Lab	Moisture Content	87.7	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0922-NSV6AQ-ITA001	9/12/2022	14:10	Invertebrate	Tissue		Lab	Solids, Percent	12.3	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0922-NSV6AQ-SD001	9/12/2022	13:15	Sediment	Solid		Lab	Solids, Percent	52.2	%	Wet	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0922-NSV6AQ-SD001	9/12/2022	13:15	Sediment	Solid		Lab	Selenium	2.93	mg/kg	Dry	
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0922-NSV6AQ-SW001-F	9/12/2022	13:15	SW	Water		Field	Conductivity at 25 C	449.1	umhos/cm		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0922-NSV6AQ-SW001-F	9/12/2022	13:15	SW	Water		Field	ORP	69.4	mV		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0922-NSV6AQ-SW001-F	9/12/2022	13:15	SW	Water		Field	Oxygen, Dissolved	13.43	mg/L		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0922-NSV6AQ-SW001-F	9/12/2022	13:15	SW	Water		Field	pH	8.35	SU		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0922-NSV6AQ-SW001-F	9/12/2022	13:15	SW	Water		Field	Temperature	12	C		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0922-NSV6AQ-SW001-F	9/12/2022	13:15	SW	Water		Field	Turbidity	5.22	NTU		
NSV-6AQ	NFSC, below Pole Creek. Upstream of NSV-6	SC0922-NSV6AQ-SW001-Q	9/12/2022	13:15	SW	Water		Field	Flow		cfs		
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-AVP001	9/12/2022	9:35	Periphyton	Tissue		Lab	Selenium	2.23	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-AVP001	9/12/2022	9:35	Periphyton	Tissue		Lab	Moisture Content	86.4	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-AVP001	9/12/2022	9:35	Periphyton	Tissue		Lab	Solids, Percent	13.6	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-AVP002	9/12/2022	9:35	Periphyton	Tissue		Lab	Selenium	2.56	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-AVP002	9/12/2022	9:35	Periphyton	Tissue		Lab	Moisture Content	88.7	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-AVP002	9/12/2022	9:35	Periphyton	Tissue		Lab	Solids, Percent	11.3	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-AVP003	9/12/2022	9:35	Periphyton	Tissue		Lab	Selenium	2.44	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-AVP003	9/12/2022	9:35	Periphyton	Tissue		Lab	Moisture Content	91.1	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-AVP003	9/12/2022	9:35	Periphyton	Tissue		Lab	Solids, Percent	8.93	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT001	9/12/2022	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	8.24	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT001	9/12/2022	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	76.4	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT001	9/12/2022	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	23.6	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT002	9/12/2022	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	8	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT002	9/12/2022	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	76	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT002	9/12/2022	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	24	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT003	9/12/2022	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	8.05	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT003	9/12/2022	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	76.4	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT003	9/12/2022	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	23.6	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT004	9/12/2022	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	9.4	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT004	9/12/2022	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	77.5	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT004	9/12/2022	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	22.5	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT005	9/12/2022	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	10.9	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT005	9/12/2022	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	77	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT005	9/12/2022	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	23	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT006	9/12/2022	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	7.5	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT006	9/12/2022	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	76.5	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT006	9/12/2022	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	23.5	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT007	9/12/2022	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	9.02	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT007	9/12/2022	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	76.4	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT007	9/12/2022	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	23.6	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT008	9/12/2022	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	8.18	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT008	9/12/2022	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	77.3	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT008	9/12/2022	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	22.7	%	Wet	

StationName	StnDescription	SampleName	SampleDate	SampleTime	Media	Matrix	Species	LabOrField	Analyte	Result	Unit	Basis	FinalQualifier
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT009	9/12/2022	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	8.16	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT009	9/12/2022	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	75.6	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT009	9/12/2022	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	24.4	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT010	9/12/2022	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	14.7	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT010	9/12/2022	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	77.8	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT010	9/12/2022	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	22.2	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT011	9/12/2022	10:30	Fish	Tissue	Paiute Sculpin	Lab	Selenium	8.48	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT011	9/12/2022	10:30	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	75.3	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT011	9/12/2022	10:30	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	24.7	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT012	9/12/2022	10:30	Fish	Tissue	Paiute Sculpin	Lab	Selenium	9.2	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT012	9/12/2022	10:30	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	73.2	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT012	9/12/2022	10:30	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	26.8	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT013	9/12/2022	10:30	Fish	Tissue	Paiute Sculpin	Lab	Selenium	7.26	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT013	9/12/2022	10:30	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	73.1	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT013	9/12/2022	10:30	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	26.9	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT014	9/12/2022	10:30	Fish	Tissue	Paiute Sculpin	Lab	Selenium	8.46	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT014	9/12/2022	10:30	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	74.6	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT014	9/12/2022	10:30	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	25.4	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT015	9/12/2022	10:30	Fish	Tissue	Paiute Sculpin	Lab	Selenium	8.45	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT015	9/12/2022	10:30	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	72.1	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT015	9/12/2022	10:30	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	27.9	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT016	9/12/2022	10:30	Fish	Tissue	Paiute Sculpin	Lab	Selenium	7.93	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT016	9/12/2022	10:30	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	72.7	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT016	9/12/2022	10:30	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	27.3	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT017	9/12/2022	10:30	Fish	Tissue	Paiute Sculpin	Lab	Selenium	8.46	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT017	9/12/2022	10:30	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	74.8	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT017	9/12/2022	10:30	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	25.2	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT018	9/12/2022	10:30	Fish	Tissue	Paiute Sculpin	Lab	Selenium	10.4	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT018	9/12/2022	10:30	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	72.1	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT018	9/12/2022	10:30	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	27.9	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT019	9/12/2022	10:30	Fish	Tissue	Paiute Sculpin	Lab	Selenium	9.63	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT019	9/12/2022	10:30	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	72.2	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT019	9/12/2022	10:30	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	27.8	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT020	9/12/2022	10:30	Fish	Tissue	Paiute Sculpin	Lab	Selenium	8.86	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT020	9/12/2022	10:30	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	73.4	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-FT020	9/12/2022	10:30	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	26.6	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-ITA001	9/12/2022	10:30	Invertebrate	Tissue		Lab	Selenium	7.2	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-ITA001	9/12/2022	10:30	Invertebrate	Tissue		Lab	Moisture Content	86.9	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-ITA001	9/12/2022	10:30	Invertebrate	Tissue		Lab	Solids, Percent	13.1	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-SD001	9/12/2022	9:00	Sediment	Solid		Lab	Solids, Percent	29.2	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-SD001	9/12/2022	9:00	Sediment	Solid		Lab	Selenium	2.866	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-SW001	9/12/2022	8:50	SW	Water		Lab	Alkalinity, Total as CaCO3	227	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-SW001	9/12/2022	8:50	SW	Water		Lab	Bicarbonate, as CaCO3	227	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-SW001	9/12/2022	8:50	SW	Water		Lab	Carbonate, as CaCO3	1	mg/L		U
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-SW001	9/12/2022	8:50	SW	Water		Lab	Sulfate	47.8	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-SW001	9/12/2022	8:50	SW	Water		Lab	Carbon, Dissolved Organi	1.28	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-SW001	9/12/2022	8:50	SW	Water		Lab	Selenium, Dissolved	0.00075	mg/L		J
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-SW001	9/12/2022	8:50	SW	Water		Lab	Calcium, Total	77	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-SW001	9/12/2022	8:50	SW	Water		Lab	Magnesium, Total	17.5	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-SW001	9/12/2022	8:50	SW	Water		Lab	Selenium, Total	0.0008	mg/L		J
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-SW001	9/12/2022	8:50	SW	Water		Lab	Nitrate + Nitrite, as N	0.091	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-SW001	9/12/2022	8:50	SW	Water		Lab	Phosphorus, Total	0.0328	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-SW001	9/12/2022	8:50	SW	Water		Lab	Hardness, Total	264	mg/L		

StationName	StnDescription	SampleName	SampleDate	SampleTime	Media	Matrix	Species	LabOrField	Analyte	Result	Unit	Basis	FinalQualifier
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-SW001-F	9/12/2022	8:50	SW	Water		Field	Conductivity at 25 C	488.8	umhos/cm		
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-SW001-F	9/12/2022	8:50	SW	Water		Field	ORP	34.5	mV		
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-SW001-F	9/12/2022	8:50	SW	Water		Field	Oxygen, Dissolved	9.01	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-SW001-F	9/12/2022	8:50	SW	Water		Field	pH	7.95	SU		
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-SW001-F	9/12/2022	8:50	SW	Water		Field	Temperature	5.6	C		
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-SW001-F	9/12/2022	8:50	SW	Water		Field	Turbidity	5.1	NTU		
NSV-7	NFSC near confluence with Sage Creek	SC0922-NSV7-SW001-Q	9/12/2022	8:50	SW	Water		Field	Flow	0.61	cfs		
NSV-5	NFSC, above Pole Creek	SC1022-NSV5-SW001	10/28/2022	9:45	SW	Water		Lab	Sulfate	26.5	mg/L		
NSV-5	NFSC, above Pole Creek	SC1022-NSV5-SW001	10/28/2022	9:45	SW	Water		Lab	Selenium, Dissolved	0.00024	mg/L		U
NSV-5	NFSC, above Pole Creek	SC1022-NSV5-SW001	10/28/2022	9:45	SW	Water		Lab	Calcium, Total	78.8	mg/L		
NSV-5	NFSC, above Pole Creek	SC1022-NSV5-SW001	10/28/2022	9:45	SW	Water		Lab	Magnesium, Total	17.5	mg/L		
NSV-5	NFSC, above Pole Creek	SC1022-NSV5-SW001	10/28/2022	9:45	SW	Water		Lab	Selenium, Total	0.00024	mg/L		U
NSV-5	NFSC, above Pole Creek	SC1022-NSV5-SW001	10/28/2022	9:45	SW	Water		Lab	Hardness, Total	269	mg/L		
NSV-5	NFSC, above Pole Creek	SC1022-NSV5-SW001	10/28/2022	9:45	SW	Water		Lab	TDS	332	mg/L		
NSV-5	NFSC, above Pole Creek	SCM1022-NSV5-SW001-F	10/28/2022	9:45	SW	Water		Field	Conductivity at 25 C	545	umhos/cm		
NSV-5	NFSC, above Pole Creek	SCM1022-NSV5-SW001-F	10/28/2022	9:45	SW	Water		Field	ORP	134.3	mV		
NSV-5	NFSC, above Pole Creek	SCM1022-NSV5-SW001-F	10/28/2022	9:45	SW	Water		Field	Oxygen, Dissolved	7.45	mg/L		
NSV-5	NFSC, above Pole Creek	SCM1022-NSV5-SW001-F	10/28/2022	9:45	SW	Water		Field	pH	7.78	SU		
NSV-5	NFSC, above Pole Creek	SCM1022-NSV5-SW001-F	10/28/2022	9:45	SW	Water		Field	Temperature	0.1	C		
NSV-5	NFSC, above Pole Creek	SCM1022-NSV5-SW001-F	10/28/2022	9:45	SW	Water		Field	Turbidity	14.9	NTU		
NSV-5	NFSC, above Pole Creek	SCM1022-NSV5-SW001-Q	10/28/2022	9:45	SW	Water		Field	Flow		cfs		
NSV-6	NFSC, below Pole Creek	SC1022-NSV6-SW001	10/28/2022	9:30	SW	Water		Lab	Sulfate	40.3	mg/L		
NSV-6	NFSC, below Pole Creek	SC1022-NSV6-SW001	10/28/2022	9:30	SW	Water		Lab	Selenium, Dissolved	0.00053	mg/L		J
NSV-6	NFSC, below Pole Creek	SC1022-NSV6-SW001	10/28/2022	9:30	SW	Water		Lab	Calcium, Total	112	mg/L		
NSV-6	NFSC, below Pole Creek	SC1022-NSV6-SW001	10/28/2022	9:30	SW	Water		Lab	Magnesium, Total	18.2	mg/L		
NSV-6	NFSC, below Pole Creek	SC1022-NSV6-SW001	10/28/2022	9:30	SW	Water		Lab	Selenium, Total	0.00076	mg/L		J
NSV-6	NFSC, below Pole Creek	SC1022-NSV6-SW001	10/28/2022	9:30	SW	Water		Lab	Hardness, Total	356	mg/L		
NSV-6	NFSC, below Pole Creek	SC1022-NSV6-SW001	10/28/2022	9:30	SW	Water		Lab	TDS	377	mg/L		
NSV-6	NFSC, below Pole Creek	SCM1022-NSV6-SW001-F	10/28/2022	9:30	SW	Water		Field	Conductivity at 25 C	637	umhos/cm		
NSV-6	NFSC, below Pole Creek	SCM1022-NSV6-SW001-F	10/28/2022	9:30	SW	Water		Field	ORP	142.1	mV		
NSV-6	NFSC, below Pole Creek	SCM1022-NSV6-SW001-F	10/28/2022	9:30	SW	Water		Field	Oxygen, Dissolved	9.86	mg/L		
NSV-6	NFSC, below Pole Creek	SCM1022-NSV6-SW001-F	10/28/2022	9:30	SW	Water		Field	pH	8	SU		
NSV-6	NFSC, below Pole Creek	SCM1022-NSV6-SW001-F	10/28/2022	9:30	SW	Water		Field	Temperature	0.1	C		
NSV-6	NFSC, below Pole Creek	SCM1022-NSV6-SW001-F	10/28/2022	9:30	SW	Water		Field	Turbidity	22.5	NTU		
NSV-6	NFSC, below Pole Creek	SCM1022-NSV6-SW001-Q	10/28/2022	9:30	SW	Water		Field	Flow	0.118	cfs		
NSV-5	NFSC, above Pole Creek	SC0623-NSV5-SW001	6/9/2023	13:50	SW	Water		Lab	Sulfate	2.74	mg/L		
NSV-5	NFSC, above Pole Creek	SC0623-NSV5-SW001	6/9/2023	13:50	SW	Water		Lab	Selenium, Dissolved	0.00027	mg/L		J
NSV-5	NFSC, above Pole Creek	SC0623-NSV5-SW001	6/9/2023	13:50	SW	Water		Lab	Calcium, Total	39.6	mg/L		
NSV-5	NFSC, above Pole Creek	SC0623-NSV5-SW001	6/9/2023	13:50	SW	Water		Lab	Magnesium, Total	7.75	mg/L		
NSV-5	NFSC, above Pole Creek	SC0623-NSV5-SW001	6/9/2023	13:50	SW	Water		Lab	Selenium, Total	0.00026	mg/L		J
NSV-5	NFSC, above Pole Creek	SC0623-NSV5-SW001	6/9/2023	13:50	SW	Water		Lab	Hardness, Total	131	mg/L		
NSV-5	NFSC, above Pole Creek	SC0623-NSV5-SW001	6/9/2023	13:50	SW	Water		Lab	TDS	178	mg/L		
NSV-5	NFSC, above Pole Creek	SC0623-NSV5-SW001-F	6/9/2023	13:50	SW	Water		Field	Conductivity at 25 C	258.9	umhos/cm		
NSV-5	NFSC, above Pole Creek	SC0623-NSV5-SW001-F	6/9/2023	13:50	SW	Water		Field	ORP	155.7	mV		
NSV-5	NFSC, above Pole Creek	SC0623-NSV5-SW001-F	6/9/2023	13:50	SW	Water		Field	Oxygen, Dissolved	7.02	mg/L		
NSV-5	NFSC, above Pole Creek	SC0623-NSV5-SW001-F	6/9/2023	13:50	SW	Water		Field	pH	7.78	SU		
NSV-5	NFSC, above Pole Creek	SC0623-NSV5-SW001-F	6/9/2023	13:50	SW	Water		Field	Temperature	20.2	C		
NSV-5	NFSC, above Pole Creek	SC0623-NSV5-SW001-F	6/9/2023	13:50	SW	Water		Field	Turbidity	8.01	NTU		
NSV-5	NFSC, above Pole Creek	SC0623-NSV5-SW001-Q	6/9/2023	13:50	SW	Water		Field	Flow	0.23	cfs		
NSV-6	NFSC, below Pole Creek	SC0623-NSV6-SW001	6/9/2023	14:20	SW	Water		Lab	Sulfate	7.94	mg/L		
NSV-6	NFSC, below Pole Creek	SC0623-NSV6-SW001	6/9/2023	14:20	SW	Water		Lab	Selenium, Dissolved	0.00256	mg/L		
NSV-6	NFSC, below Pole Creek	SC0623-NSV6-SW001	6/9/2023	14:20	SW	Water		Lab	Calcium, Total	70.8	mg/L		
NSV-6	NFSC, below Pole Creek	SC0623-NSV6-SW001	6/9/2023	14:20	SW	Water		Lab	Magnesium, Total	10.1	mg/L		

StationName	StnDescription	SampleName	SampleDate	SampleTime	Media	Matrix	Species	LabOrField	Analyte	Result	Unit	Basis	FinalQualifier
NSV-6	NFSC, below Pole Creek	SC0623-NSV6-SW001	6/9/2023	14:20	SW	Water		Lab	Selenium, Total	0.00255	mg/L		
NSV-6	NFSC, below Pole Creek	SC0623-NSV6-SW001	6/9/2023	14:20	SW	Water		Lab	Hardness, Total	218	mg/L		
NSV-6	NFSC, below Pole Creek	SC0623-NSV6-SW001	6/9/2023	14:20	SW	Water		Lab	TDS	241	mg/L		
NSV-6	NFSC, below Pole Creek	SC0623-NSV6-SW001-F	6/9/2023	14:20	SW	Water		Field	Conductivity at 25 C	388	umhos/cm		
NSV-6	NFSC, below Pole Creek	SC0623-NSV6-SW001-F	6/9/2023	14:20	SW	Water		Field	ORP	141.9	mV		
NSV-6	NFSC, below Pole Creek	SC0623-NSV6-SW001-F	6/9/2023	14:20	SW	Water		Field	Oxygen, Dissolved	9.98	mg/L		
NSV-6	NFSC, below Pole Creek	SC0623-NSV6-SW001-F	6/9/2023	14:20	SW	Water		Field	pH	8.24	SU		
NSV-6	NFSC, below Pole Creek	SC0623-NSV6-SW001-F	6/9/2023	14:20	SW	Water		Field	Temperature	19.1	C		
NSV-6	NFSC, below Pole Creek	SC0623-NSV6-SW001-F	6/9/2023	14:20	SW	Water		Field	Turbidity	5.61	NTU		
NSV-6	NFSC, below Pole Creek	SC0623-NSV6-SW001-Q	6/9/2023	14:20	SW	Water		Field	Flow	4.45	cfs		
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-AVP001	6/10/2023	17:00	Periphyton	Tissue		Lab	Selenium	2.8	mg/kg	Dry	J
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-AVP001	6/10/2023	17:00	Periphyton	Tissue		Lab	Moisture Content	91.5	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-AVP002	6/10/2023	17:00	Periphyton	Tissue		Lab	Selenium	3.4	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-AVP002	6/10/2023	17:00	Periphyton	Tissue		Lab	Moisture Content	89.8	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-AVP003	6/10/2023	17:00	Periphyton	Tissue		Lab	Selenium	3.4	mg/kg	Dry	J
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-AVP003	6/10/2023	17:00	Periphyton	Tissue		Lab	Moisture Content	91.3	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-FT001	6/10/2023	17:20	Fish	Tissue	Paiute Sculpin	Lab	Selenium	6.33	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-FT001	6/10/2023	17:20	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	71.9	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-FT002	6/10/2023	17:20	Fish	Tissue	Paiute Sculpin	Lab	Selenium	7.22	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-FT002	6/10/2023	17:20	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	71.4	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-FT003	6/10/2023	17:20	Fish	Tissue	Paiute Sculpin	Lab	Selenium	7.77	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-FT003	6/10/2023	17:20	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	73.3	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-FT004	6/10/2023	17:20	Fish	Tissue	Paiute Sculpin	Lab	Selenium	6.57	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-FT004	6/10/2023	17:20	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	72.8	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-FT005	6/10/2023	17:20	Fish	Tissue	Paiute Sculpin	Lab	Selenium	11.2	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-FT005	6/10/2023	17:20	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	75.3	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-FT006	6/10/2023	17:20	Fish	Tissue	Paiute Sculpin	Lab	Selenium	6.25	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-FT006	6/10/2023	17:20	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	74.5	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-FT007	6/10/2023	17:20	Fish	Tissue	Paiute Sculpin	Lab	Selenium	17.6	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-FT007	6/10/2023	17:20	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	76.5	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-FT008	6/10/2023	17:20	Fish	Tissue	Paiute Sculpin	Lab	Selenium	8.9	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-FT008	6/10/2023	17:20	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	73.8	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-FT009	6/10/2023	17:20	Fish	Tissue	Paiute Sculpin	Lab	Selenium	10.9	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-FT009	6/10/2023	17:20	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	73.3	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-FT010	6/10/2023	17:20	Fish	Tissue	Paiute Sculpin	Lab	Selenium	7.99	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-FT010	6/10/2023	17:20	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	74.3	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-ITA001	6/10/2023	17:05	Invertebrate	Tissue		Lab	Selenium	5.33	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-ITA001	6/10/2023	17:05	Invertebrate	Tissue		Lab	Moisture Content	92.4	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-SD001	6/10/2023	16:45	Sediment	Solid		Lab	Selenium	1.43	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-SD001	6/10/2023	16:45	Sediment	Solid		Lab	Solids, Percent	58.6	%	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-SW001	6/10/2023	16:15	SW	Water		Lab	Alkalinity, Total as CaCO3	203	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-SW001	6/10/2023	16:15	SW	Water		Lab	Bicarbonate, as CaCO3	203	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-SW001	6/10/2023	16:15	SW	Water		Lab	Carbonate, as CaCO3	1	mg/L		U
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-SW001	6/10/2023	16:15	SW	Water		Lab	Sulfate	17.4	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-SW001	6/10/2023	16:15	SW	Water		Lab	Carbon, Dissolved Organi	3.72	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-SW001	6/10/2023	16:15	SW	Water		Lab	Selenium, Dissolved	0.00112	mg/L		J
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-SW001	6/10/2023	16:15	SW	Water		Lab	Calcium, Total	65.3	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-SW001	6/10/2023	16:15	SW	Water		Lab	Magnesium, Total	11.6	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-SW001	6/10/2023	16:15	SW	Water		Lab	Selenium, Total	0.00117	mg/L		J
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-SW001	6/10/2023	16:15	SW	Water		Lab	Nitrate + Nitrite, as N	0.052	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-SW001	6/10/2023	16:15	SW	Water		Lab	Phosphorus, Total	0.0819	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-SW001	6/10/2023	16:15	SW	Water		Lab	Hardness, Total	211	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-SW001-F	6/10/2023	16:15	SW	Water		Field	Conductivity at 25 C	395.1	umhos/cm		

North Fork Sage Creek Data

StationName	StnDescription	SampleName	SampleDate	SampleTime	Media	Matrix	Species	LabOrField	Analyte	Result	Unit	Basis	FinalQualifier
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-SW001-F	6/10/2023	16:15	SW	Water		Field	ORP	217.7	mV		
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-SW001-F	6/10/2023	16:15	SW	Water		Field	Oxygen, Dissolved	7.31	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-SW001-F	6/10/2023	16:15	SW	Water		Field	pH	7.95	SU		
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-SW001-F	6/10/2023	16:15	SW	Water		Field	Temperature	16.7	C		
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-SW001-F	6/10/2023	16:15	SW	Water		Field	Turbidity	8.33	NTU		
NSV-7	NFSC near confluence with Sage Creek	SC0623-NSV7-SW001-Q	6/10/2023	16:15	SW	Water		Field	Flow	13.13	cfs		
NSV-7	NFSC near confluence with Sage Creek	SC0723-NSV7-FT001	7/13/2023	10:45	Fish	Tissue	Brown Trout	Lab	Selenium	13.4	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0723-NSV7-FT001	7/13/2023	10:45	Fish	Tissue	Brown Trout	Lab	Moisture Content	77.3	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0723-NSV7-FT001	7/13/2023	10:45	Fish	Tissue	Brown Trout	Lab	Solids, Percent	22.7	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0723-NSV7-FT002	7/13/2023	10:45	Fish	Tissue	Brown Trout	Lab	Selenium	12.5	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0723-NSV7-FT002	7/13/2023	10:45	Fish	Tissue	Brown Trout	Lab	Moisture Content	78.2	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0723-NSV7-FT002	7/13/2023	10:45	Fish	Tissue	Brown Trout	Lab	Solids, Percent	21.8	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0723-NSV7-FT003	7/13/2023	10:45	Fish	Tissue	Brown Trout	Lab	Selenium	10.4	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0723-NSV7-FT003	7/13/2023	10:45	Fish	Tissue	Brown Trout	Lab	Moisture Content	75.9	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0723-NSV7-FT003	7/13/2023	10:45	Fish	Tissue	Brown Trout	Lab	Solids, Percent	24.1	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0723-NSV7-FT004	7/13/2023	10:45	Fish	Tissue	Brown Trout	Lab	Selenium	11.9	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0723-NSV7-FT004	7/13/2023	10:45	Fish	Tissue	Brown Trout	Lab	Moisture Content	73.2	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0723-NSV7-FT004	7/13/2023	10:45	Fish	Tissue	Brown Trout	Lab	Solids, Percent	26.8	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0723-NSV7-SW001-F	7/13/2023	10:00	SW	Water		Field	Conductivity at 25 C	419.9	umhos/cm		
NSV-7	NFSC near confluence with Sage Creek	SC0723-NSV7-SW001-F	7/13/2023	10:00	SW	Water		Field	ORP	47.9	mV		
NSV-7	NFSC near confluence with Sage Creek	SC0723-NSV7-SW001-F	7/13/2023	10:00	SW	Water		Field	Oxygen, Dissolved	7.85	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0723-NSV7-SW001-F	7/13/2023	10:00	SW	Water		Field	pH	8.03	SU		
NSV-7	NFSC near confluence with Sage Creek	SC0723-NSV7-SW001-F	7/13/2023	10:00	SW	Water		Field	Temperature	10.7	C		
NSV-7	NFSC near confluence with Sage Creek	SC0723-NSV7-SW001-F	7/13/2023	10:00	SW	Water		Field	Turbidity	20.31	NTU		
NSV-7	NFSC near confluence with Sage Creek	SC0723-NSV7-SW001-Q	7/13/2023	10:00	SW	Water		Field	Flow	4	cfs		
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-AVP001	9/6/2023	10:30	Periphyton	Tissue		Lab	Selenium	2.99	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-AVP001	9/6/2023	10:30	Periphyton	Tissue		Lab	Solids, Percent	19.9	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-AVP002	9/6/2023	10:30	Periphyton	Tissue		Lab	Selenium	2.68	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-AVP002	9/6/2023	10:30	Periphyton	Tissue		Lab	Solids, Percent	18.4	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-AVP003	9/6/2023	10:30	Periphyton	Tissue		Lab	Selenium	3.37	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-AVP003	9/6/2023	10:30	Periphyton	Tissue		Lab	Solids, Percent	19.2	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-FT001	9/6/2023	12:15	Fish	Tissue	Brown Trout	Lab	Selenium	9.68	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-FT001	9/6/2023	12:15	Fish	Tissue	Brown Trout	Lab	Solids, Percent	23.9	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-FT002	9/6/2023	12:15	Fish	Tissue	Brown Trout	Lab	Selenium	10.6	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-FT002	9/6/2023	12:15	Fish	Tissue	Brown Trout	Lab	Solids, Percent	23.9	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-FT003	9/6/2023	12:15	Fish	Tissue	Paiute Sculpin	Lab	Selenium	8.6	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-FT003	9/6/2023	12:15	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	25.4	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-FT004	9/6/2023	12:15	Fish	Tissue	Paiute Sculpin	Lab	Selenium	9.35	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-FT004	9/6/2023	12:15	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	26.9	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-FT005	9/6/2023	12:15	Fish	Tissue	Paiute Sculpin	Lab	Selenium	8.58	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-FT005	9/6/2023	12:15	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	25.6	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-FT006	9/6/2023	12:15	Fish	Tissue	Paiute Sculpin	Lab	Selenium	8.83	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-FT006	9/6/2023	12:15	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	28.4	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-FT007	9/6/2023	12:15	Fish	Tissue	Paiute Sculpin	Lab	Selenium	9.41	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-FT007	9/6/2023	12:15	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	26.7	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-FT008	9/6/2023	12:15	Fish	Tissue	Paiute Sculpin	Lab	Selenium	11	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-FT008	9/6/2023	12:15	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	27.1	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-FT009	9/6/2023	12:15	Fish	Tissue	Paiute Sculpin	Lab	Selenium	9.5	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-FT009	9/6/2023	12:15	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	26.1	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-FT010	9/6/2023	12:15	Fish	Tissue	Paiute Sculpin	Lab	Selenium	10.1	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-FT010	9/6/2023	12:15	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	25	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-FT011	9/6/2023	12:15	Fish	Tissue	Paiute Sculpin	Lab	Selenium	8.64	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-FT011	9/6/2023	12:15	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	25.9	%	Wet	

StationName	StnDescription	SampleName	SampleDate	SampleTime	Media	Matrix	Species	LabOrField	Analyte	Result	Unit	Basis	FinalQualifier
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-FT012	9/6/2023	12:15	Fish	Tissue	Paiute Sculpin	Lab	Selenium	8.37	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-FT012	9/6/2023	12:15	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	27.2	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-FT013	9/6/2023	12:15	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	8.61	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-FT013	9/6/2023	12:15	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	25	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-FT014	9/6/2023	12:15	Fish	Tissue	Brown Trout	Lab	Selenium	10.7	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-FT014	9/6/2023	12:15	Fish	Tissue	Brown Trout	Lab	Solids, Percent	22.8	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-FT015	9/6/2023	12:15	Fish	Tissue	Brown Trout	Lab	Selenium	9.75	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-FT015	9/6/2023	12:15	Fish	Tissue	Brown Trout	Lab	Solids, Percent	24.1	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-FT016	9/6/2023	12:15	Fish	Tissue	Brown Trout	Lab	Selenium	10.1	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-FT016	9/6/2023	12:15	Fish	Tissue	Brown Trout	Lab	Solids, Percent	23.5	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-FT017	9/6/2023	12:15	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	8.97	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-FT017	9/6/2023	12:15	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	25	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-FT018	9/6/2023	12:15	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	8.81	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-FT018	9/6/2023	12:15	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	23.8	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-FT019	9/6/2023	12:15	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	8.97	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-FT019	9/6/2023	12:15	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	21.5	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-FT020	9/6/2023	12:15	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	8.8	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-FT020	9/6/2023	12:15	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	25.5	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-ITA001	9/6/2023	10:55	Invertebrate	Tissue		Lab	Selenium	37.6	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-ITA001	9/6/2023	10:55	Invertebrate	Tissue		Lab	Solids, Percent	13.2	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-SD001	9/6/2023	10:30	Sediment	Solid		Lab	Selenium	1.71	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-SD001	9/6/2023	10:30	Sediment	Solid		Lab	Solids, Percent	38.3	%	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-SW001	9/6/2023	10:22	SW	Water		Lab	Alkalinity, Total as CaCO3	259	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-SW001	9/6/2023	10:22	SW	Water		Lab	Bicarbonate, as CaCO3	259	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-SW001	9/6/2023	10:22	SW	Water		Lab	Carbonate, as CaCO3	1	mg/L		U
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-SW001	9/6/2023	10:22	SW	Water		Lab	Sulfate	33.8	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-SW001	9/6/2023	10:22	SW	Water		Lab	Carbon, Dissolved Organi	3.53	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-SW001	9/6/2023	10:22	SW	Water		Lab	Selenium, Dissolved	0.00062	mg/L		J
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-SW001	9/6/2023	10:22	SW	Water		Lab	Calcium, Total	86.6	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-SW001	9/6/2023	10:22	SW	Water		Lab	Magnesium, Total	16.2	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-SW001	9/6/2023	10:22	SW	Water		Lab	Selenium, Total	0.00065	mg/L		J
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-SW001	9/6/2023	10:22	SW	Water		Lab	Nitrate + Nitrite, as N	0.074	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-SW001	9/6/2023	10:22	SW	Water		Lab	Phosphorus, Total	0.0964	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-SW001	9/6/2023	10:22	SW	Water		Lab	Hardness, Total	283	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-SW001-F	9/6/2023	10:22	SW	Water		Field	Conductivity at 25 C	491.8	umhos/cm		
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-SW001-F	9/6/2023	10:22	SW	Water		Field	D.O. Saturation	68.8	%		
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-SW001-F	9/6/2023	10:22	SW	Water		Field	ORP	157.8	mV		
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-SW001-F	9/6/2023	10:22	SW	Water		Field	Oxygen, Dissolved	7.7	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-SW001-F	9/6/2023	10:22	SW	Water		Field	pH	8.03	SU		
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-SW001-F	9/6/2023	10:22	SW	Water		Field	Temperature	10	C		
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-SW001-F	9/6/2023	10:22	SW	Water		Field	Turbidity	11.3	NTU		
NSV-7	NFSC near confluence with Sage Creek	SC0923-NSV7-SW001-Q	9/6/2023	10:22	SW	Water		Field	Flow	1.49	cfs		
NSV-5	NFSC, above Pole Creek	SC1123-NSV5-SW001	11/8/2023	15:10	SW	Water		Lab	Sulfate	15.6	mg/L		
NSV-5	NFSC, above Pole Creek	SC1123-NSV5-SW001	11/8/2023	15:10	SW	Water		Lab	Selenium, Dissolved	0.00024	mg/L		U
NSV-5	NFSC, above Pole Creek	SC1123-NSV5-SW001	11/8/2023	15:10	SW	Water		Lab	Calcium, Total	57.5	mg/L		
NSV-5	NFSC, above Pole Creek	SC1123-NSV5-SW001	11/8/2023	15:10	SW	Water		Lab	Magnesium, Total	11.9	mg/L		
NSV-5	NFSC, above Pole Creek	SC1123-NSV5-SW001	11/8/2023	15:10	SW	Water		Lab	Selenium, Total	0.00024	mg/L		U
NSV-5	NFSC, above Pole Creek	SC1123-NSV5-SW001	11/8/2023	15:10	SW	Water		Lab	Hardness, Total	193	mg/L		
NSV-5	NFSC, above Pole Creek	SC1123-NSV5-SW001	11/8/2023	15:10	SW	Water		Lab	TDS	286	mg/L		
NSV-5	NFSC, above Pole Creek	SC1123-NSV5-SW001-F	11/8/2023	15:10	SW	Water		Field	Conductivity at 25 C	346.8	umhos/cm		
NSV-5	NFSC, above Pole Creek	SC1123-NSV5-SW001-F	11/8/2023	15:10	SW	Water		Field	ORP	112.2	mV		
NSV-5	NFSC, above Pole Creek	SC1123-NSV5-SW001-F	11/8/2023	15:10	SW	Water		Field	Oxygen, Dissolved	9.2	mg/L		
NSV-5	NFSC, above Pole Creek	SC1123-NSV5-SW001-F	11/8/2023	15:10	SW	Water		Field	pH	7.92	SU		

StationName	StnDescription	SampleName	SampleDate	SampleTime	Media	Matrix	Species	LabOrField	Analyte	Result	Unit	Basis	FinalQualifier
NSV-5	NFSC, above Pole Creek	SC1123-NSV5-SW001-F	11/8/2023	15:10	SW	Water		Field	Temperature	4.1	C		
NSV-5	NFSC, above Pole Creek	SC1123-NSV5-SW001-F	11/8/2023	15:10	SW	Water		Field	Turbidity	26.4	NTU		
NSV-5	NFSC, above Pole Creek	SC1123-NSV5-SW001-Q	11/8/2023	15:10	SW	Water		Field	Flow	0.0002	cfs		
NSV-6	NFSC, below Pole Creek	SC1123-NSV6-SW001	11/8/2023	15:45	SW	Water		Lab	Sulfate	11.9	mg/L		
NSV-6	NFSC, below Pole Creek	SC1123-NSV6-SW001	11/8/2023	15:45	SW	Water		Lab	Selenium, Dissolved	0.00051	mg/L		J
NSV-6	NFSC, below Pole Creek	SC1123-NSV6-SW001	11/8/2023	15:45	SW	Water		Lab	Calcium, Total	88.4	mg/L		
NSV-6	NFSC, below Pole Creek	SC1123-NSV6-SW001	11/8/2023	15:45	SW	Water		Lab	Magnesium, Total	13.4	mg/L		
NSV-6	NFSC, below Pole Creek	SC1123-NSV6-SW001	11/8/2023	15:45	SW	Water		Lab	Selenium, Total	0.00056	mg/L		J
NSV-6	NFSC, below Pole Creek	SC1123-NSV6-SW001	11/8/2023	15:45	SW	Water		Lab	Hardness, Total	276	mg/L		
NSV-6	NFSC, below Pole Creek	SC1123-NSV6-SW001	11/8/2023	15:45	SW	Water		Lab	TDS	370	mg/L		
NSV-6	NFSC, below Pole Creek	SC1123-NSV6-SW001-F	11/8/2023	15:45	SW	Water		Field	Conductivity at 25 C	420.8	umhos/cm		
NSV-6	NFSC, below Pole Creek	SC1123-NSV6-SW001-F	11/8/2023	15:45	SW	Water		Field	ORP	113.8	mV		
NSV-6	NFSC, below Pole Creek	SC1123-NSV6-SW001-F	11/8/2023	15:45	SW	Water		Field	Oxygen, Dissolved	9.79	mg/L		
NSV-6	NFSC, below Pole Creek	SC1123-NSV6-SW001-F	11/8/2023	15:45	SW	Water		Field	pH	7.84	SU		
NSV-6	NFSC, below Pole Creek	SC1123-NSV6-SW001-F	11/8/2023	15:45	SW	Water		Field	Temperature	3.4	C		
NSV-6	NFSC, below Pole Creek	SC1123-NSV6-SW001-F	11/8/2023	15:45	SW	Water		Field	Turbidity	14.6	NTU		
NSV-6	NFSC, below Pole Creek	SC1123-NSV6-SW001-Q	11/8/2023	15:45	SW	Water		Field	Flow	0.86	cfs		
NSV-5	NFSC, above Pole Creek	SC0524-NSV5-SW001	5/20/2024	15:25	SW	Water		Lab	Sulfate	8.44	mg/L		
NSV-5	NFSC, above Pole Creek	SC0524-NSV5-SW001	5/20/2024	15:25	SW	Water		Lab	Selenium, Dissolved	0.00024	mg/L		U
NSV-5	NFSC, above Pole Creek	SC0524-NSV5-SW001	5/20/2024	15:25	SW	Water		Lab	Calcium, Total	56.7	mg/L		
NSV-5	NFSC, above Pole Creek	SC0524-NSV5-SW001	5/20/2024	15:25	SW	Water		Lab	Magnesium, Total	9.69	mg/L		
NSV-5	NFSC, above Pole Creek	SC0524-NSV5-SW001	5/20/2024	15:25	SW	Water		Lab	Selenium, Total	0.00024	mg/L		U
NSV-5	NFSC, above Pole Creek	SC0524-NSV5-SW001	5/20/2024	15:25	SW	Water		Lab	Hardness, Total	182	mg/L		
NSV-5	NFSC, above Pole Creek	SC0524-NSV5-SW001	5/20/2024	15:25	SW	Water		Lab	TDS	218	mg/L		
NSV-5	NFSC, above Pole Creek	SC0524-NSV5-SW001-F	5/20/2024	15:25	SW	Water		Field	Conductivity at 25 C	354.2	umhos/cm		
NSV-5	NFSC, above Pole Creek	SC0524-NSV5-SW001-F	5/20/2024	15:25	SW	Water		Field	ORP	162.8	mV		
NSV-5	NFSC, above Pole Creek	SC0524-NSV5-SW001-F	5/20/2024	15:25	SW	Water		Field	Oxygen, Dissolved	8.4	mg/L		
NSV-5	NFSC, above Pole Creek	SC0524-NSV5-SW001-F	5/20/2024	15:25	SW	Water		Field	pH	7.88	SU		
NSV-5	NFSC, above Pole Creek	SC0524-NSV5-SW001-F	5/20/2024	15:25	SW	Water		Field	Temperature	17.6	C		
NSV-5	NFSC, above Pole Creek	SC0524-NSV5-SW001-F	5/20/2024	15:25	SW	Water		Field	Turbidity	7.09	NTU		
NSV-5	NFSC, above Pole Creek	SC0524-NSV5-SW001-Q	5/20/2024	15:25	SW	Water		Field	Flow	0.51	cfs		
NSV-6	NFSC, below Pole Creek	SC0524-NSV6-SW001	5/20/2024	14:30	SW	Water		Lab	Sulfate	9.13	mg/L		
NSV-6	NFSC, below Pole Creek	SC0524-NSV6-SW001	5/20/2024	14:30	SW	Water		Lab	Selenium, Dissolved	0.00317	mg/L		
NSV-6	NFSC, below Pole Creek	SC0524-NSV6-SW001	5/20/2024	14:30	SW	Water		Lab	Calcium, Total	66.5	mg/L		
NSV-6	NFSC, below Pole Creek	SC0524-NSV6-SW001	5/20/2024	14:30	SW	Water		Lab	Magnesium, Total	10	mg/L		
NSV-6	NFSC, below Pole Creek	SC0524-NSV6-SW001	5/20/2024	14:30	SW	Water		Lab	Selenium, Total	0.00334	mg/L		J+
NSV-6	NFSC, below Pole Creek	SC0524-NSV6-SW001	5/20/2024	14:30	SW	Water		Lab	Hardness, Total	207	mg/L		
NSV-6	NFSC, below Pole Creek	SC0524-NSV6-SW001	5/20/2024	14:30	SW	Water		Lab	TDS	235	mg/L		
NSV-6	NFSC, below Pole Creek	SC0524-NSV6-SW001-F	5/20/2024	14:30	SW	Water		Field	Conductivity at 25 C	373.8	umhos/cm		
NSV-6	NFSC, below Pole Creek	SC0524-NSV6-SW001-F	5/20/2024	14:30	SW	Water		Field	ORP	134.8	mV		
NSV-6	NFSC, below Pole Creek	SC0524-NSV6-SW001-F	5/20/2024	14:30	SW	Water		Field	Oxygen, Dissolved	8.17	mg/L		
NSV-6	NFSC, below Pole Creek	SC0524-NSV6-SW001-F	5/20/2024	14:30	SW	Water		Field	pH	7.94	SU		
NSV-6	NFSC, below Pole Creek	SC0524-NSV6-SW001-F	5/20/2024	14:30	SW	Water		Field	Temperature	13.6	C		
NSV-6	NFSC, below Pole Creek	SC0524-NSV6-SW001-F	5/20/2024	14:30	SW	Water		Field	Turbidity	25.3	NTU		
NSV-6	NFSC, below Pole Creek	SC0524-NSV6-SW001-Q	5/20/2024	14:30	SW	Water		Field	Flow	4.89	cfs		
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-AVP001	5/20/2024	10:50	Periphyton	Tissue		Lab	Selenium	3.24	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-AVP001	5/20/2024	10:50	Periphyton	Tissue		Lab	Moisture Content	99.1	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-AVP001	5/20/2024	10:50	Periphyton	Tissue		Lab	Solids, Percent	0.92	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-AVP002	5/20/2024	10:50	Periphyton	Tissue		Lab	Selenium	4.46	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-AVP002	5/20/2024	10:50	Periphyton	Tissue		Lab	Moisture Content	99.8	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-AVP002	5/20/2024	10:50	Periphyton	Tissue		Lab	Solids, Percent	0.21	%	Wet	J
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-AVP003	5/20/2024	10:50	Periphyton	Tissue		Lab	Selenium	5.58	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-AVP003	5/20/2024	10:50	Periphyton	Tissue		Lab	Moisture Content	99.8	%	Wet	

North Fork Sage Creek Data

StationName	StnDescription	SampleName	SampleDate	SampleTime	Media	Matrix	Species	LabOrField	Analyte	Result	Unit	Basis	FinalQualifier
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-AVP003	5/20/2024	10:50	Periphyton	Tissue		Lab	Solids, Percent	0.2	%	Wet	J
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-FT001	5/20/2024	10:50	Fish	Tissue	Paiute Sculpin	Lab	Selenium	6.35	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-FT001	5/20/2024	10:50	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	74	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-FT001	5/20/2024	10:50	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	25.96	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-FT002	5/20/2024	10:50	Fish	Tissue	Paiute Sculpin	Lab	Selenium	28.9	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-FT002	5/20/2024	10:50	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	75.9	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-FT002	5/20/2024	10:50	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	24.14	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-FT003	5/20/2024	10:50	Fish	Tissue	Paiute Sculpin	Lab	Selenium	6.98	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-FT003	5/20/2024	10:50	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	75.3	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-FT003	5/20/2024	10:50	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	24.72	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-FT004	5/20/2024	10:50	Fish	Tissue	Paiute Sculpin	Lab	Selenium	7.59	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-FT004	5/20/2024	10:50	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	75.8	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-FT004	5/20/2024	10:50	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	24.19	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-FT005	5/20/2024	10:50	Fish	Tissue	Paiute Sculpin	Lab	Selenium	7.36	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-FT005	5/20/2024	10:50	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	76.1	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-FT005	5/20/2024	10:50	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	23.9	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-FT006	5/20/2024	10:50	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	7.58	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-FT006	5/20/2024	10:50	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	78.6	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-FT006	5/20/2024	10:50	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	21.43	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-FT007	5/20/2024	10:50	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	10.6	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-FT007	5/20/2024	10:50	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	77.4	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-FT007	5/20/2024	10:50	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	22.58	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-FT008	5/20/2024	10:50	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	9.89	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-FT008	5/20/2024	10:50	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	78.1	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-FT008	5/20/2024	10:50	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	21.85	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-FT009	5/20/2024	10:50	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	8.29	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-FT009	5/20/2024	10:50	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	76.6	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-FT009	5/20/2024	10:50	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	23.41	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-FT010	5/20/2024	10:50	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	7.17	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-FT010	5/20/2024	10:50	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	78.9	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-FT010	5/20/2024	10:50	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	21.13	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-ITA001	5/20/2024	10:50	Invertebrate	Tissue		Lab	Selenium	5	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-ITA001	5/20/2024	10:50	Invertebrate	Tissue		Lab	Moisture Content	73.7	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-ITA001	5/20/2024	10:50	Invertebrate	Tissue		Lab	Solids, Percent	26.25	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-SD001	5/20/2024	10:50	Sediment	Solid		Lab	Selenium	1.85	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-SD001	5/20/2024	10:50	Sediment	Solid		Lab	Solids, Percent	30.8	%	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-SW001	5/20/2024	10:50	SW	Water		Lab	Alkalinity, Total as CaCO3	209	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-SW001	5/20/2024	10:50	SW	Water		Lab	Bicarbonate, as CaCO3	209	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-SW001	5/20/2024	10:50	SW	Water		Lab	Carbonate, as CaCO3	1	mg/L		U
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-SW001	5/20/2024	10:50	SW	Water		Lab	Sulfate	20	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-SW001	5/20/2024	10:50	SW	Water		Lab	Carbon, Dissolved Organi	6	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-SW001	5/20/2024	10:50	SW	Water		Lab	Selenium, Dissolved	0.00192	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-SW001	5/20/2024	10:50	SW	Water		Lab	Calcium, Total	66.4	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-SW001	5/20/2024	10:50	SW	Water		Lab	Magnesium, Total	12.1	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-SW001	5/20/2024	10:50	SW	Water		Lab	Selenium, Total	0.00201	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-SW001	5/20/2024	10:50	SW	Water		Lab	Nitrate + Nitrite, as N	0.066	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-SW001	5/20/2024	10:50	SW	Water		Lab	Phosphorus, Total	0.163	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-SW001	5/20/2024	10:50	SW	Water		Lab	Hardness, Total	216	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-SW001-F	5/20/2024	10:50	SW	Water		Field	Conductivity at 25 C	395.1	umhos/cm		
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-SW001-F	5/20/2024	10:50	SW	Water		Field	ORP	180.7	mV		
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-SW001-F	5/20/2024	10:50	SW	Water		Field	Oxygen, Dissolved	9.29	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-SW001-F	5/20/2024	10:50	SW	Water		Field	pH	7.94	SU		
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-SW001-F	5/20/2024	10:50	SW	Water		Field	Temperature	7.3	C		

North Fork Sage Creek Data

StationName	StnDescription	SampleName	SampleDate	SampleTime	Media	Matrix	Species	LabOrField	Analyte	Result	Unit	Basis	FinalQualifier
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-SW001-F	5/20/2024	10:50	SW	Water		Field	Turbidity	8.86	NTU		
NSV-7	NFSC near confluence with Sage Creek	SC0524-NSV7-SW001-Q	5/20/2024	10:50	SW	Water		Field	Flow	6.5817	cfs		
NSV-5	NFSC, above Pole Creek	SC1024-NSV5-SW001	10/15/2024	16:30	SW	Water		Lab	Sulfate	21.5	mg/L		
NSV-5	NFSC, above Pole Creek	SC1024-NSV5-SW001	10/15/2024	16:30	SW	Water		Lab	Selenium, Dissolved	0.0006	mg/L		J
NSV-5	NFSC, above Pole Creek	SC1024-NSV5-SW001	10/15/2024	16:30	SW	Water		Lab	Calcium, Total	55.7	mg/L		
NSV-5	NFSC, above Pole Creek	SC1024-NSV5-SW001	10/15/2024	16:30	SW	Water		Lab	Magnesium, Total	13.7	mg/L		
NSV-5	NFSC, above Pole Creek	SC1024-NSV5-SW001	10/15/2024	16:30	SW	Water		Lab	Selenium, Total	0.00061	mg/L		J
NSV-5	NFSC, above Pole Creek	SC1024-NSV5-SW001	10/15/2024	16:30	SW	Water		Lab	Hardness, Total	195	mg/L		
NSV-5	NFSC, above Pole Creek	SC1024-NSV5-SW001	10/15/2024	16:30	SW	Water		Lab	TDS	252	mg/L		
NSV-5	NFSC, above Pole Creek	SC1024-NSV5-SW001-F	10/15/2024	16:30	SW	Water		Field	Conductivity at 25 C	401.7	umhos/cm		
NSV-5	NFSC, above Pole Creek	SC1024-NSV5-SW001-F	10/15/2024	16:30	SW	Water		Field	ORP	156.5	mV		
NSV-5	NFSC, above Pole Creek	SC1024-NSV5-SW001-F	10/15/2024	16:30	SW	Water		Field	Oxygen, Dissolved	7.14	mg/L		
NSV-5	NFSC, above Pole Creek	SC1024-NSV5-SW001-F	10/15/2024	16:30	SW	Water		Field	pH	8.09	SU		
NSV-5	NFSC, above Pole Creek	SC1024-NSV5-SW001-F	10/15/2024	16:30	SW	Water		Field	Temperature	12.4	C		
NSV-5	NFSC, above Pole Creek	SC1024-NSV5-SW001-F	10/15/2024	16:30	SW	Water		Field	Turbidity	5.56	NTU		
NSV-5	NFSC, above Pole Creek	SC1024-NSV5-SW001-Q	10/15/2024	16:30	SW	Water		Field	Flow	0.031	cfs		
NSV-6	NFSC, below Pole Creek	SC1024-NSV6-SW001	10/15/2024	16:50	SW	Water		Lab	Sulfate	17.7	mg/L		
NSV-6	NFSC, below Pole Creek	SC1024-NSV6-SW001	10/15/2024	16:50	SW	Water		Lab	Selenium, Dissolved	0.00215	mg/L		
NSV-6	NFSC, below Pole Creek	SC1024-NSV6-SW001	10/15/2024	16:50	SW	Water		Lab	Calcium, Total	68.1	mg/L		
NSV-6	NFSC, below Pole Creek	SC1024-NSV6-SW001	10/15/2024	16:50	SW	Water		Lab	Magnesium, Total	11.8	mg/L		
NSV-6	NFSC, below Pole Creek	SC1024-NSV6-SW001	10/15/2024	16:50	SW	Water		Lab	Selenium, Total	0.00225	mg/L		
NSV-6	NFSC, below Pole Creek	SC1024-NSV6-SW001	10/15/2024	16:50	SW	Water		Lab	Hardness, Total	219	mg/L		
NSV-6	NFSC, below Pole Creek	SC1024-NSV6-SW001	10/15/2024	16:50	SW	Water		Lab	TDS	255	mg/L		
NSV-6	NFSC, below Pole Creek	SC1024-NSV6-SW001-F	10/15/2024	16:50	SW	Water		Field	Conductivity at 25 C	418.4	umhos/cm		
NSV-6	NFSC, below Pole Creek	SC1024-NSV6-SW001-F	10/15/2024	16:50	SW	Water		Field	ORP	138	mV		
NSV-6	NFSC, below Pole Creek	SC1024-NSV6-SW001-F	10/15/2024	16:50	SW	Water		Field	Oxygen, Dissolved	8.67	mg/L		
NSV-6	NFSC, below Pole Creek	SC1024-NSV6-SW001-F	10/15/2024	16:50	SW	Water		Field	pH	8.57	SU		
NSV-6	NFSC, below Pole Creek	SC1024-NSV6-SW001-F	10/15/2024	16:50	SW	Water		Field	Temperature	12.7	C		
NSV-6	NFSC, below Pole Creek	SC1024-NSV6-SW001-F	10/15/2024	16:50	SW	Water		Field	Turbidity	31.92	NTU		
NSV-6	NFSC, below Pole Creek	SC1024-NSV6-SW001-Q	10/15/2024	16:50	SW	Water		Field	Flow	0.137	cfs		
NSV-5	NFSC, above Pole Creek	SC0525-NSV5-SW001	5/21/2025	11:30	SW	Water		Lab	Sulfate	6.03	mg/L		
NSV-5	NFSC, above Pole Creek	SC0525-NSV5-SW001	5/21/2025	11:30	SW	Water		Lab	Selenium, Dissolved	0.0003	mg/L		U
NSV-5	NFSC, above Pole Creek	SC0525-NSV5-SW001	5/21/2025	11:30	SW	Water		Lab	Calcium, Total	40.7	mg/L		
NSV-5	NFSC, above Pole Creek	SC0525-NSV5-SW001	5/21/2025	11:30	SW	Water		Lab	Magnesium, Total	7.62	mg/L		
NSV-5	NFSC, above Pole Creek	SC0525-NSV5-SW001	5/21/2025	11:30	SW	Water		Lab	Selenium, Total	0.00024	mg/L		U
NSV-5	NFSC, above Pole Creek	SC0525-NSV5-SW001	5/21/2025	11:30	SW	Water		Lab	Hardness, Total	133	mg/L		
NSV-5	NFSC, above Pole Creek	SC0525-NSV5-SW001	5/21/2025	11:30	SW	Water		Lab	TDS	179	mg/L		
NSV-5	NFSC, above Pole Creek	SC0525-NSV5-SW001-F	5/21/2025	11:30	SW	Water		Field	Conductivity at 25 C	273.8	umhos/cm		
NSV-5	NFSC, above Pole Creek	SC0525-NSV5-SW001-F	5/21/2025	11:30	SW	Water		Field	ORP	149.6	mV		
NSV-5	NFSC, above Pole Creek	SC0525-NSV5-SW001-F	5/21/2025	11:30	SW	Water		Field	Oxygen, Dissolved	8.69	mg/L		
NSV-5	NFSC, above Pole Creek	SC0525-NSV5-SW001-F	5/21/2025	11:30	SW	Water		Field	pH	7.94	SU		
NSV-5	NFSC, above Pole Creek	SC0525-NSV5-SW001-F	5/21/2025	11:30	SW	Water		Field	Temperature	11.7	C		
NSV-5	NFSC, above Pole Creek	SC0525-NSV5-SW001-F	5/21/2025	11:30	SW	Water		Field	Turbidity	9.64	NTU		
NSV-5	NFSC, above Pole Creek	SC0525-NSV5-SW001-Q	5/21/2025	11:30	SW	Water		Field	Flow	0.159	cfs		
NSV-6	NFSC, below Pole Creek	SC0525-NSV6-SW001	5/21/2025	11:15	SW	Water		Lab	Sulfate	11.4	mg/L		
NSV-6	NFSC, below Pole Creek	SC0525-NSV6-SW001	5/21/2025	11:15	SW	Water		Lab	Selenium, Dissolved	0.00394	mg/L		J+
NSV-6	NFSC, below Pole Creek	SC0525-NSV6-SW001	5/21/2025	11:15	SW	Water		Lab	Calcium, Total	63.6	mg/L		
NSV-6	NFSC, below Pole Creek	SC0525-NSV6-SW001	5/21/2025	11:15	SW	Water		Lab	Magnesium, Total	9.95	mg/L		
NSV-6	NFSC, below Pole Creek	SC0525-NSV6-SW001	5/21/2025	11:15	SW	Water		Lab	Selenium, Total	0.00297	mg/L		J+
NSV-6	NFSC, below Pole Creek	SC0525-NSV6-SW001	5/21/2025	11:15	SW	Water		Lab	Hardness, Total	200	mg/L		
NSV-6	NFSC, below Pole Creek	SC0525-NSV6-SW001	5/21/2025	11:15	SW	Water		Lab	TDS	233	mg/L		
NSV-6	NFSC, below Pole Creek	SC0525-NSV6-SW001-F	5/21/2025	11:15	SW	Water		Field	Conductivity at 25 C	362.4	umhos/cm		
NSV-6	NFSC, below Pole Creek	SC0525-NSV6-SW001-F	5/21/2025	11:15	SW	Water		Field	ORP	201.6	mV		

StationName	StnDescription	SampleName	SampleDate	SampleTime	Media	Matrix	Species	LabOrField	Analyte	Result	Unit	Basis	FinalQualifier
NSV-6	NFSC, below Pole Creek	SC0525-NSV6-SW001-F	5/21/2025	11:15	SW	Water		Field	Oxygen, Dissolved	9.42	mg/L		
NSV-6	NFSC, below Pole Creek	SC0525-NSV6-SW001-F	5/21/2025	11:15	SW	Water		Field	pH	8.14	SU		
NSV-6	NFSC, below Pole Creek	SC0525-NSV6-SW001-F	5/21/2025	11:15	SW	Water		Field	Temperature	7.3	C		
NSV-6	NFSC, below Pole Creek	SC0525-NSV6-SW001-F	5/21/2025	11:15	SW	Water		Field	Turbidity	10.22	NTU		
NSV-6	NFSC, below Pole Creek	SC0525-NSV6-SW001-Q	5/22/2025	9:57	SW	Water		Field	Flow	1.48	cfs		
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-AVP001	5/22/2025	9:30	Periphyton	Tissue		Lab	Selenium	6.38	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-AVP001	5/22/2025	9:30	Periphyton	Tissue		Lab	Moisture Content	94.4	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-AVP001	5/22/2025	9:30	Periphyton	Tissue		Lab	Solids, Percent	5.57	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-AVP002	5/22/2025	9:35	Periphyton	Tissue		Lab	Selenium	6.67	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-AVP002	5/22/2025	9:35	Periphyton	Tissue		Lab	Moisture Content	96.2	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-AVP002	5/22/2025	9:35	Periphyton	Tissue		Lab	Solids, Percent	3.85	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-AVP003	5/22/2025	9:40	Periphyton	Tissue		Lab	Selenium	5.81	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-AVP003	5/22/2025	9:40	Periphyton	Tissue		Lab	Moisture Content	93	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-AVP003	5/22/2025	9:40	Periphyton	Tissue		Lab	Solids, Percent	7.02	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT001	5/22/2025	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	9.08	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT001	5/22/2025	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	78.2	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT001	5/22/2025	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	21.81	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT002	5/22/2025	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	10.5	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT002	5/22/2025	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	79.6	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT002	5/22/2025	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	20.44	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT003	5/22/2025	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	8.54	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT003	5/22/2025	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	75.6	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT003	5/22/2025	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	24.39	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT004	5/22/2025	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	8.67	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT004	5/22/2025	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	77.7	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT004	5/22/2025	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	22.31	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT005	5/22/2025	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Selenium	8.11	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT005	5/22/2025	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Moisture Content	76.9	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT005	5/22/2025	10:30	Fish	Tissue	Yellowstone Cutthroat	Lab	Solids, Percent	23.12	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT006	5/22/2025	10:30	Fish	Tissue	Paiute Sculpin	Lab	Selenium	5.87	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT006	5/22/2025	10:30	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	74.7	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT006	5/22/2025	10:30	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	25.33	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT007	5/22/2025	10:30	Fish	Tissue	Paiute Sculpin	Lab	Selenium	6.59	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT007	5/22/2025	10:30	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	74	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT007	5/22/2025	10:30	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	26.02	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT008	5/22/2025	10:30	Fish	Tissue	Paiute Sculpin	Lab	Selenium	5.82	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT008	5/22/2025	10:30	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	74.3	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT008	5/22/2025	10:30	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	25.74	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT009	5/22/2025	10:30	Fish	Tissue	Paiute Sculpin	Lab	Selenium	4.72	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT009	5/22/2025	10:30	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	75.1	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT009	5/22/2025	10:30	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	24.93	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT010	5/22/2025	10:30	Fish	Tissue	Paiute Sculpin	Lab	Selenium	5.56	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT010	5/22/2025	10:30	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	75.5	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT010	5/22/2025	10:30	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	24.51	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT011	5/22/2025	10:30	Fish	Tissue	Paiute Sculpin	Lab	Selenium	5.41	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT011	5/22/2025	10:30	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	74.7	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT011	5/22/2025	10:30	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	25.28	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT012	5/22/2025	10:30	Fish	Tissue	Paiute Sculpin	Lab	Selenium	5.56	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT012	5/22/2025	10:30	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	66	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT012	5/22/2025	10:30	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	33.96	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT013	5/22/2025	10:30	Fish	Tissue	Paiute Sculpin	Lab	Selenium	5.59	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT013	5/22/2025	10:30	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	74.5	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT013	5/22/2025	10:30	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	25.51	%	Wet	

StationName	StnDescription	SampleName	SampleDate	SampleTime	Media	Matrix	Species	LabOrField	Analyte	Result	Unit	Basis	FinalQualifier
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT014	5/22/2025	10:30	Fish	Tissue	Paiute Sculpin	Lab	Selenium	5.34	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT014	5/22/2025	10:30	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	74.3	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT014	5/22/2025	10:30	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	25.71	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT015	5/22/2025	10:30	Fish	Tissue	Paiute Sculpin	Lab	Selenium	10.7	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT015	5/22/2025	10:30	Fish	Tissue	Paiute Sculpin	Lab	Moisture Content	74.1	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-FT015	5/22/2025	10:30	Fish	Tissue	Paiute Sculpin	Lab	Solids, Percent	25.86	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-ITA001	5/22/2025	10:00	Invertebrate	Tissue		Lab	Selenium	66	mg/kg	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-ITA001	5/22/2025	10:00	Invertebrate	Tissue		Lab	Moisture Content	80.7	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-ITA001	5/22/2025	10:00	Invertebrate	Tissue		Lab	Solids, Percent	19.28	%	Wet	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-SD001	5/22/2025	9:25	Sediment	Solid		Lab	Selenium	3.18	mg/kg	Dry	J-
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-SD001	5/22/2025	9:25	Sediment	Solid		Lab	Solids, Percent	59.3	%	Dry	
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-SW001	5/22/2025	9:30	SW	Water		Lab	Alkalinity, Total as CaCO3	205	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-SW001	5/22/2025	9:30	SW	Water		Lab	Bicarbonate, as CaCO3	205	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-SW001	5/22/2025	9:30	SW	Water		Lab	Carbonate, as CaCO3	1	mg/L		U
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-SW001	5/22/2025	9:30	SW	Water		Lab	Sulfate	23.2	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-SW001	5/22/2025	9:30	SW	Water		Lab	Carbon, Dissolved Organi	2.45	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-SW001	5/22/2025	9:30	SW	Water		Lab	Selenium, Dissolved	0.00207	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-SW001	5/22/2025	9:30	SW	Water		Lab	Calcium, Total	67.3	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-SW001	5/22/2025	9:30	SW	Water		Lab	Magnesium, Total	12.3	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-SW001	5/22/2025	9:30	SW	Water		Lab	Selenium, Total	0.00222	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-SW001	5/22/2025	9:30	SW	Water		Lab	Nitrate + Nitrite, as N	0.073	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-SW001	5/22/2025	9:30	SW	Water		Lab	Phosphorus, Total	0.0379	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-SW001	5/22/2025	9:30	SW	Water		Lab	Hardness, Total	168	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-SW001-F	5/22/2025	9:00	SW	Water		Field	Conductivity at 25 C	424.7	umhos/cm		
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-SW001-F	5/22/2025	9:00	SW	Water		Field	ORP	119.7	mV		
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-SW001-F	5/22/2025	9:00	SW	Water		Field	Oxygen, Dissolved	9.57	mg/L		
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-SW001-F	5/22/2025	9:00	SW	Water		Field	pH	8.17	SU		
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-SW001-F	5/22/2025	9:00	SW	Water		Field	Temperature	6	C		
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-SW001-F	5/22/2025	9:00	SW	Water		Field	Turbidity	9.16	NTU		
NSV-7	NFSC near confluence with Sage Creek	SC0525-NSV7-SW001-Q	5/22/2025	9:19	SW	Water		Field	Flow	3.833	cfs		

APPENDIX C - Site Specific Adult Reproduction Studies

APPENDIX A – SUMMARY OF TROUT REPRODUCTION STUDIES

1.0 Site-Specific Studies

To develop the science necessary for the proposed Site-Specific Selenium Criterion (SSSC), the Simplot Company (Simplot) completed a series of field studies that characterized (1) aquatic species, communities, and populations, (2) selenium exposure concentrations in water, sediment, dietary items, and (3) physical quality of the Study Area streams. Laboratory studies were conducted to assess responses of two primary management species to selenium exposure and maternal transfer.

The laboratory studies using brown trout and Yellowstone cutthroat trout (YCT) provided the selenium-toxicity response data necessary to derive the SSSC for Hoopes Spring, Sage Creek, and South Fork Sage Creek. Field monitoring studies provided for characterization of the exposure environment, the condition of the aquatic community, and the physical habitat. While the findings of the field monitoring studies are not used directly in the derivation of the proposed SSSC, they do provide additional support for the criterion.

Simplot conducted three laboratory studies to assess the effects of selenium in trout species present in the Study Area. Two reproduction studies evaluated maternal transfer of selenium and its effects on developing young brown trout and YCT. A third study early life stage (ELS) study evaluated the effects of selenium from aqueous and dietary exposure to developing young YCT that had no maternal selenium transfer. A brief description of the brown trout and YCT maternal transfer studies are provided below because of the importance of these studies in developing an SSSC.

The maternal transfer studies evaluated adult reproduction of wild trout from the Study Area and effects on developing young in a controlled laboratory setting. These studies were conducted independently, with one study using brown trout and the second using YCT. Trout were collected from different locations within the Study Area, covering a range of selenium exposure conditions during respective species spawning times. Eggs from females were fertilized in the field and transported to the laboratory for rearing. Method controls for the study were hatchery-raised fish. The full methods and results of these investigations are reported in the *Technical Support Document* (TSD)*: Proposed Site-Specific Selenium Criterion, Sage and Crow Creeks, Idaho* (Formation 2012) and AECOM (2009 and 2012) and summarized in EPA (2021):

- Final Brown Trout Laboratory Reproduction Studies Conducted in Support of Development of a Site-Specific Selenium Criterion (Formation 2011a).
- Yellowstone Cutthroat Trout Adult Laboratory Reproduction Studies for Developing a Site-Specific Criterion (Formation 2011b).
- AECOM - Reproductive Success Study with Brown Trout (Salmo trutta). Data Quality Assurance Report. Final. December 2012.

For both species, the effects of maternal selenium transfer in wild trout were evaluated by collecting eggs from females and milt from adult males from different locations representing a range of selenium exposure. Eggs were fertilized in the field and sent to the laboratory for rearing. Effects analyses evaluated egg selenium concentration versus survival, deformity (abnormalities), and growth endpoints. Data from both studies were submitted to EPA for use in their derivation of the National Criterion (EPA 2021).

While growth was examined, it proved to be an endpoint with minimal relation to egg selenium concentrations. Survival was assessed in both studies for hatch to swim up and hatch to test termination (15 days post swimup) as two phases of each study were implemented. Survival was based on simple counts of live organisms versus the starting number of organisms for each egg batch.

Deformity data were assessed as proportions and developed for dose-response analyses including the following conditions: graduated severity index (GSI) (0) the proportion of fry with no abnormalities (i.e., normal), GSI (0/1) the proportion of fry with GSI scores of zero or one across each of the abnormality categories, and GSI (0/1, ≤1) the proportion of fry with GSI scores of zero or one, with only a single abnormality from one of the four categories. These categories were developed because binary categorization of fry as normal vs. non-normal does not account for baseline levels of abnormalities that occur even at low, background levels of Se exposure when minor abnormalities may exist that do not affect an individual organism's ability to survive or reproduce. When normal fry were considered only those with zero abnormalities, the non-normal rate due to maternal Se exposure is likely overestimated because even at low Se exposure, the abnormality rate is greater than zero.

These studies were published in peer reviewed journals with the brown trout study being published in Covington et al. (2018) and the YCT data being published in Covington et al. (2025).

1.1 Brown Trout

Simplot's brown trout studies were thoroughly vetted through numerous and rigorous evaluations. Analysis of the brown trout data by Simplot (Formation 2017) and EPA (2016)

yielded EC10s for survival of 20.5 and 21.0 milligrams per kilogram dry weight (mg/kg dw) egg/ovary, respectively, using slightly different data sets.[1] Covington et al (2018) published the brown trout study results. The brown trout study utilized over 18,000 fertilized embryos from 12 hatchery maternal parents and 26 wild trout maternal parents. The survival hatch to test termination provided the data set with the best model fit resulting in an EC10 of 20.5 mg/kg dw. Both the GSI (0/1) and (0/1, ≤1) provided reasonable and similar model predictions that indicate the EC10 for deformities is likely between 21.1 and 21.8 mg/kg dw. The predicted EC10 for survival was the more conservative effects threshold and was selected as the primary effects endpoint.

1.2 YCT

Simplot's initial assessment of the effects of selenium exposure on survival and deformities for YCT were concluded to be at some concentration greater than 25 mg/kg dw in eggs. The EPA National Criterion (2021) suggested that the YCT data were highly variable and therefore a clear effect value could not be calculated from these data. EPA (2021) only looked at the data for the survival and deformities endpoints, each independently for the hatch to test end dataset. In their assessment of these data, a no observed effects concentration (NOEC) was suggested based on the individual endpoints up to 30 mg/kg dw in eggs with one treatment or egg batch showing 100 percent mortality at 40 mg/kg dw.

A reassessment of the YCT data was conducted in Covington et al. (2025). Both larval survival and frequency of abnormalities (e.g., deformities) were evaluated from over 17,000 fertilized embryos from either the Henry's Lake Hatchery maternal parent (n= 16) or wild site exposed maternal parents (n = 13). The log-logistic model provided best fit overall for the survival data resulting in a hatch to swim-up EC10 of 35.1 mg/kg dw. The best fit model for abnormalities was a log-logistic model from the hatch to test termination phase (GSI = 0/1) of the study which resulted in an EC10 of 35.24 mg/kg dw. In summary, the best dose-response model for the two endpoints assessed was based on survival (EC10 of 35.1 mg/kg dw). In the abnormality assessment, the importance of accounting for the baseline abnormality rates in control and test populations to avoid bias toward overestimating effect thresholds was uncovered. Use of more biologically relevant and meaningful metrics (i.e., GSI (0/1 or 0/1≤1) allowed for representative dose-response relationships to be developed without overestimating the resulting EC10s derived from the dose-response analyses.

[1] EPA (2021) used the brown trout survival hatch to swim up portion of the data set, while Simplot's reevaluation of the data, using similar methods as EPA but using the survival to test termination portion of the dataset resulted in a slightly lower EC10. Both EPA (2021) and Simplot's reanalysis of the brown trout data utilized EPA's Toxicity Relationship Analysis Program (TRAP) (version 1.30a) (EPA 2013).

1.3 Summary

These analyses indicate that brown trout and YCT responses to selenium exposure are different yet the survival and deformities/abnormalities endpoints yield very similar effects thresholds for each respective species. Brown trout are more sensitive in their response to maternally accumulated selenium and its effects on developing young than are YCT. This finding is consistent with studies that have utilized several different trout species indicating sensitivity differences among similar species (e.g., Hardy 2005, Hardy et al. 2010, Rudolph et al. 2008, Nautilus Environmental 2011, Holm et al. 2005).

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