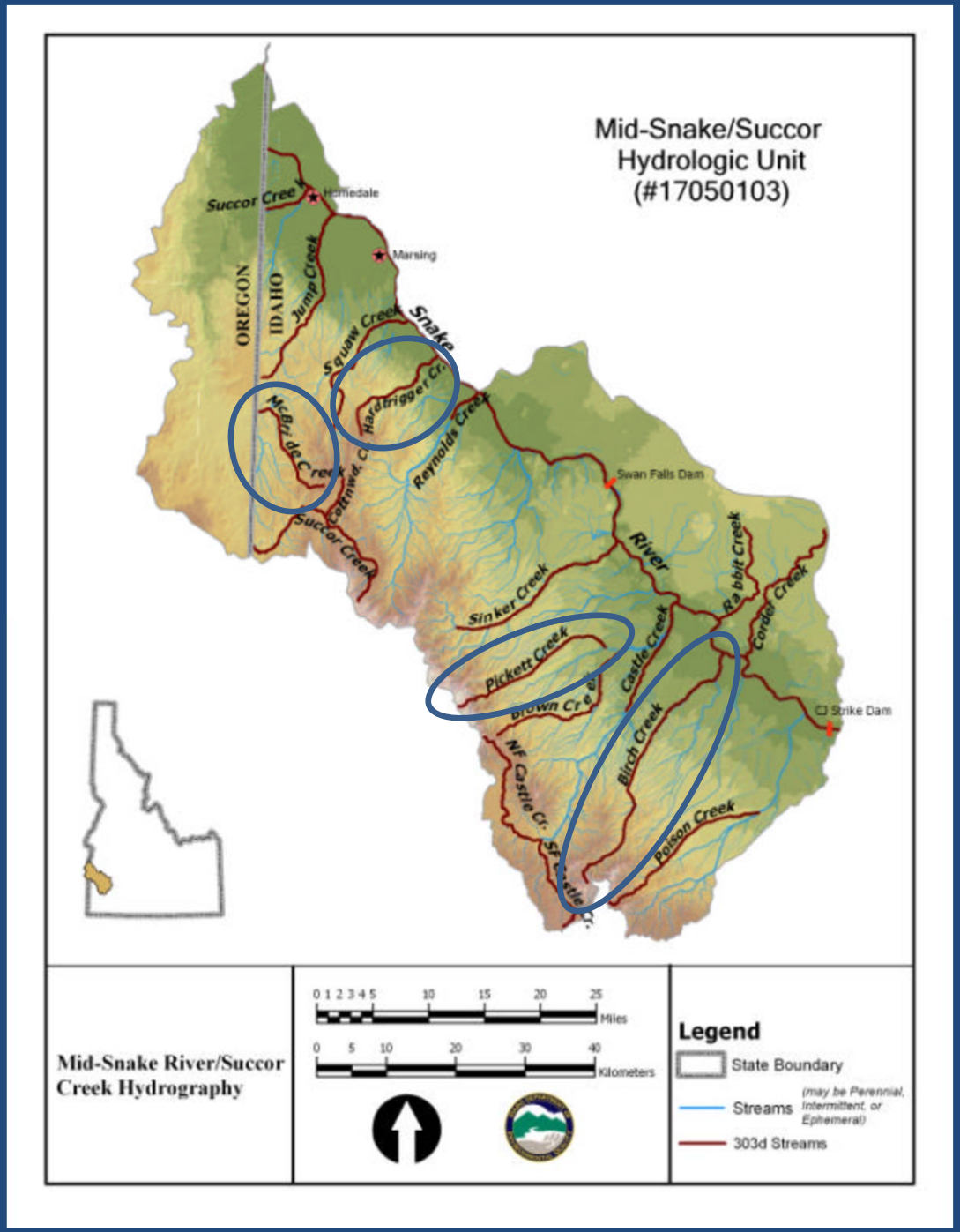
Mid Snake River/Succor Creek Watershed Advisory Group Meeting February 6, 2013

TMDL Development for Birch, Hardtrigger, McBride, Pickett Creeks, and Vinson Wash


Mid-Snake/Succor
Hydrologic Unit
(#17050103)
OREGON
IDAHO
Succor Creek
Homedale
Marsing
Jump Creek
Squaw Creek
Snake
Hardtrigger Cr.
McBride Creek
Cottonwood Cr.
Reynolds Creek
Swan Falls Dam
Succor Creek
River
Rabbit Creek
Cordel Creek
Sinker Creek
Pickett Creek
Castle Creek
Brown Cr.
CJ Strike Dam
NF Castle Cr.
Birch Creek
Poison Creek
Mid-Snake River/Succor
Creek Hydrography
0 1 2 3 4 5 10 15 20 25
Miles
0 5 10 20 30 40
Kilometers
Legend
State Boundary
Streams
(may be Perennial, Intermittent, or Ephemeral)
303d Streams

WAG Participation in TMDL Process

- DEQ develops a strategy paper and ***updates the WAG***.
- DEQ requests WQ data, if necessary, and ***shares WQ data with WAG***.
- DEQ drafts the SBA with ***WAG input***.
- DEQ develops WQ targets, TMDL load analysis, and with ***WAG input***.
- DEQ provides draft TMDL to ***WAG for review***.
- DEQ considers/incorporates/responds to ***WAG comments***.
- Tech Editing
- EPA review
- ***WAG Review*** - If WAG is not in agreement with an SBA/TMDL, the position and the basis for it will be documented in the notice of public availability.
- ***Public Comment*** opportunity
- If the WAG still disagrees with the SBA/TMDL after public comments have been considered and incorporated, ***DEQ must incorporate the WAG's dissenting opinion*** in the TMDL that is submitted to U.S. EPA.
- DEQ submits TMDL to the U.S. EPA for approval.
- ***DEQ and WAG develop an implementation plan*** for goals of the TMDL.

Assessment Units & Pollutants

Birch Creek

Assessment Unit	Beneficial Use	Pollutant(s)
ID17050103SW021_~~02~~, _03, & _04 Headwaters to the Snake River	COLD	Sedimentation/Siltation

Hardtrigger Creek

Assessment Unit	Beneficial Use	Pollutant(s)
ID17050103SW008_02 Headwaters to the Snake River	COLD	Sedimentation/Siltation

McBride Creek

Assessment Unit	Beneficial Use	Pollutant(s)
ID17050103SW004_02 & _03 Headwaters to the Oregon State Line	COLD	Sedimentation/Siltation

Pickett Creek

Assessment Unit	Beneficial Use	Pollutant(s)
ID17050103SW016 _03 Headwaters to Catherine Creek	COLD	Sedimentation/Siltation

Vinson Wash

NEW

Assessment Unit	Beneficial Use	Pollutant(s)
ID17050103SW023_03 Headwaters to Catherine Creek	COLD	Sedimentation/Siltation

Idaho Water Quality Standards

- **08. Sediment**. *Sediment shall not exceed quantities* specified in Sections 250 and 252, or, in the absence of specific sediment criteria, quantities *which impair designated beneficial uses*. Determinations of impairment shall be based on water quality monitoring and surveillance and the information.
    - **250.02.e (Cold Water Aquatic Life) –** Turbidity, below any applicable mixing zone set by the Department, shall not exceed background turbidity by more than fifty (50) NTU instantaneously or more than twenty-five (25) NTU for more than ten (10) consecutive days.
    - **252.01.b.1 (Water Supply Use) –** Increased by more than five (5) NTU above natural background, measured at a location upstream from or not influenced by any human induced nonpoint source activity, when background turbidity is fifty (50) NTU or less.
    - **252.01.b.2 (Water Supply Use) –** Increased by more than ten percent (10%) above natural background, measured at a location upstream from or not influenced by any human induced nonpoint source activity, not to exceed twenty-five (25) NTU, when background turbidity is greater than fifty (50) NTU.

Streams Proposed for Delisting in the 2012 Integrated Report

Delisted for sediment based on bank stability analyses

- ID17050103SW024_03 Shoofly Creek
- ID17050103SW016_02 Pickett Creek
- ID17050103SW025_02 Corder Creek
- ID17050103SW026_02 Rabbit Creek
- ID17050103SW019_02, 03, 04 Brown Creek
- ID17050103SW021_02 Birch Creek
- ID17050103SW005_02 Jump Creek

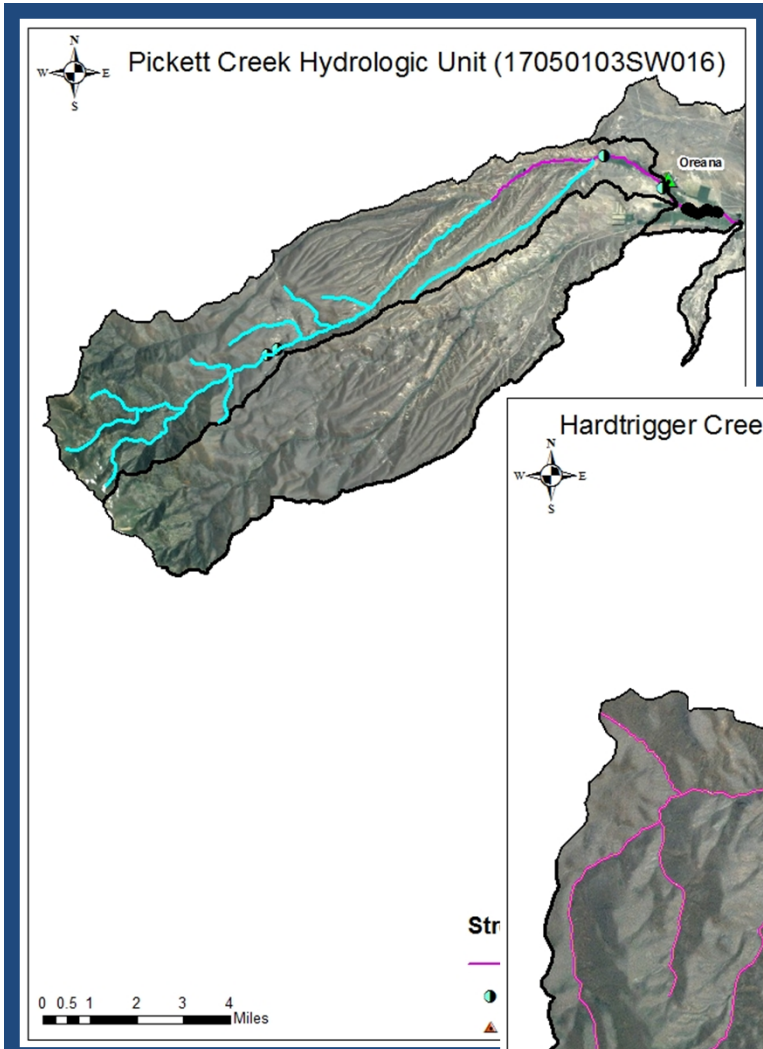
Delisted for temperature based on a thermograph data

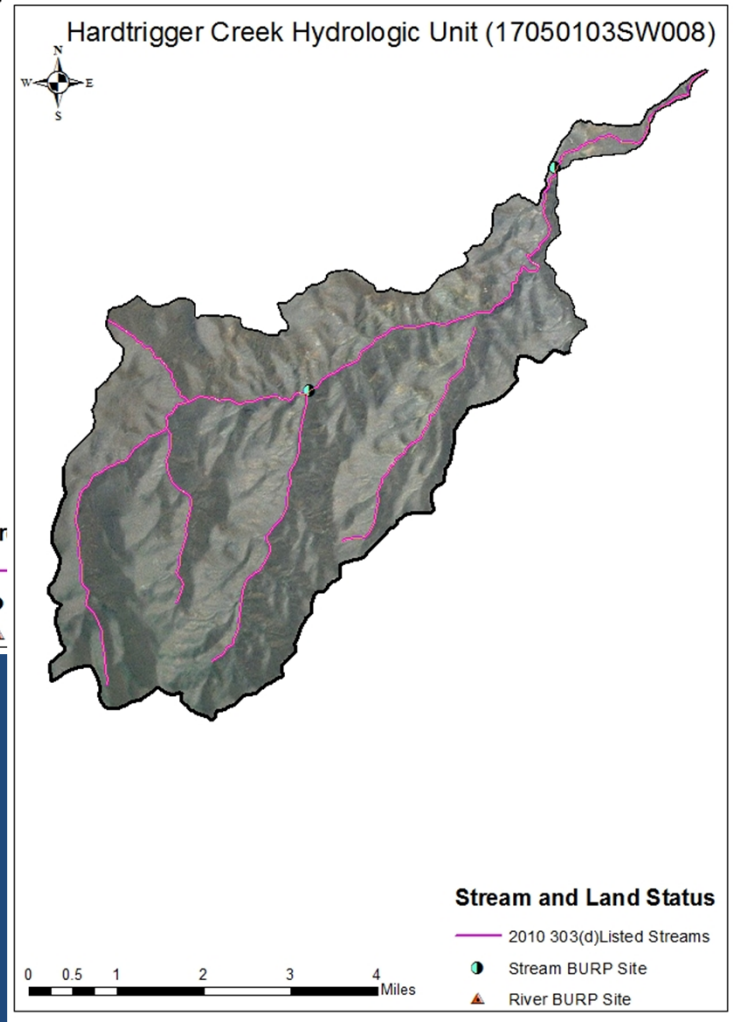
- ID17050103SW004_02 McBride Creek (2nd order)

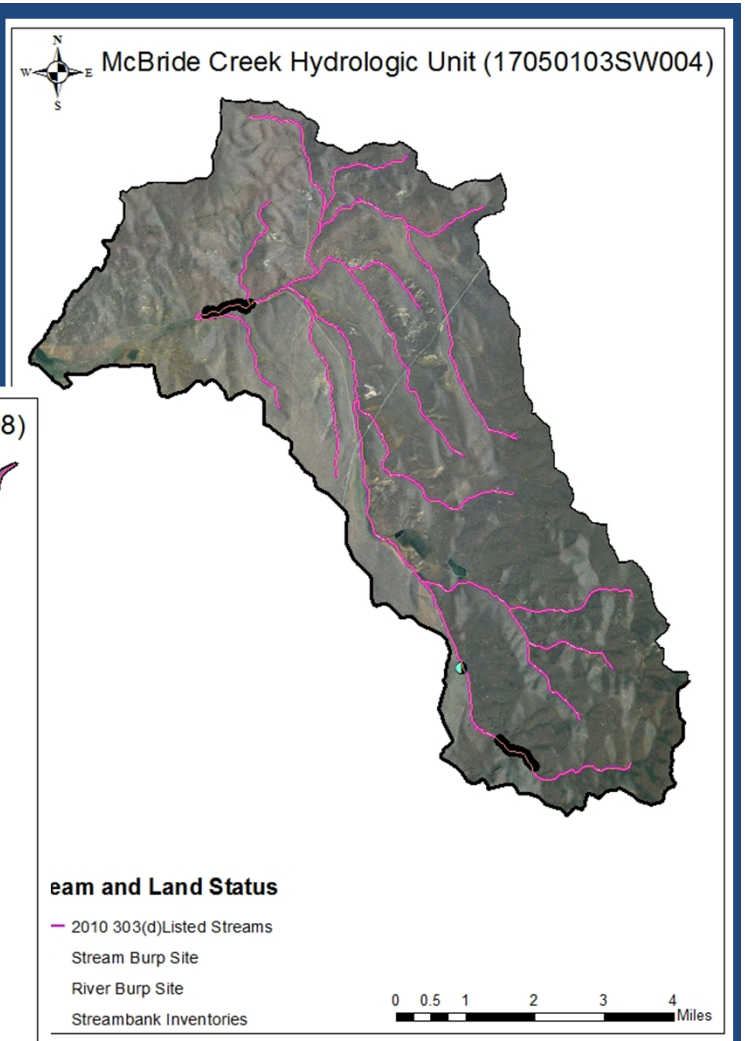
Protection for Cold Water Aquatic Life Beneficial Uses

Approach 1: Hardtrigger, McBride, Pickett

- Bank stability $\geq$ 80% & Lateral Recession $\leq$ 0.05
- Year Round Targets

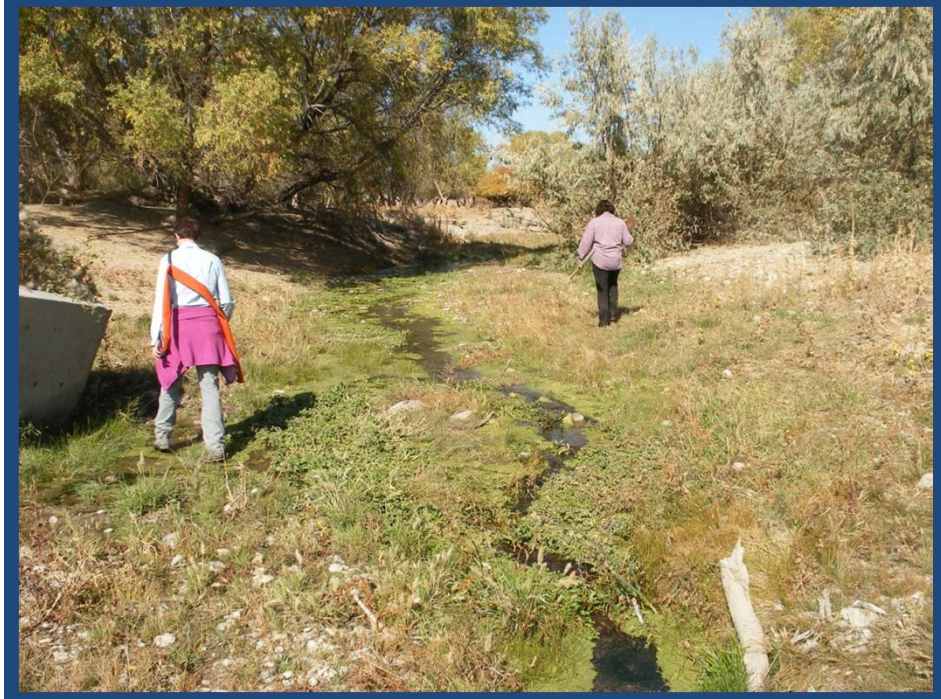

Pickett Creek Hydrologic Unit (17050103SW016)
Oreana
0 0.5 1 2 3 4
Miles


Hardtrigger Creek Hydrologic Unit (17050103SW008)
Stream and Land Status
2010 303(d)Listed Streams
Stream BURP Site
River BURP Site
0 0.5 1 2 3 4
Miles


McBride Creek Hydrologic Unit (17050103SW004)
eam and Land Status
2010 303(d)Listed Streams
Stream Burp Site
River Burp Site
Streambank Inventories
0 0.5 1 2 3 4
Miles

Bank Stability/Erosion

- Low Erosion/High Stability



- High Erosion/Low Stability

Bank Erosion Calculations

Erosion Rate at Sampled Reach (E): $E = [A_E * R_{LR} * D_B]/2000$

where: A_E = eroding area (ft^2)

R_{LR} = lateral recession rate (ft/year)

D_B = bulk density of bank material (lps/ft^3)

Bank Erosion Rate (ER) of total segment length: $E_R = E/L_{BB}$

where: E_R = bank erosion rate (tons/mile/year)

E = bank erosion over sampled reach

L_{BB} = bank to bank stream length over sampled reach

Inventory Results

Target

80% Bank Stability and 0.05 Lateral Recession

	McBride – Lower (03)	McBride – Upper (02)	Pickett (03)
Bank Stability	61%	52%	80%
Lateral Recession Rate	0.135	0.04	0.15

Water Body	Current Load - Erosion Rate (tons/mile/year)	Current Load - Total Erosion (tons/year)	Load Capacity -Target Erosion Rate (tons/mile/year)	Load Capacity - Target Total Erosion (tons/year)	Load Reduction (tons/year; %)
Hardtrigger Creek (AU 008_02)	~~63~~	~~1380~~	~~3~~	~~773~~	~~607 tons/year 44 %~~
McBride - Lower (AU 004_03)	85	1400	16	267	1133 tons/year 81%
McBride - Upper (AU 004_02)	41	706	21	366	340 tons/year 48%
Pickett Creek (AU 016_03)	34	217	12	74	143 tons/year 66%

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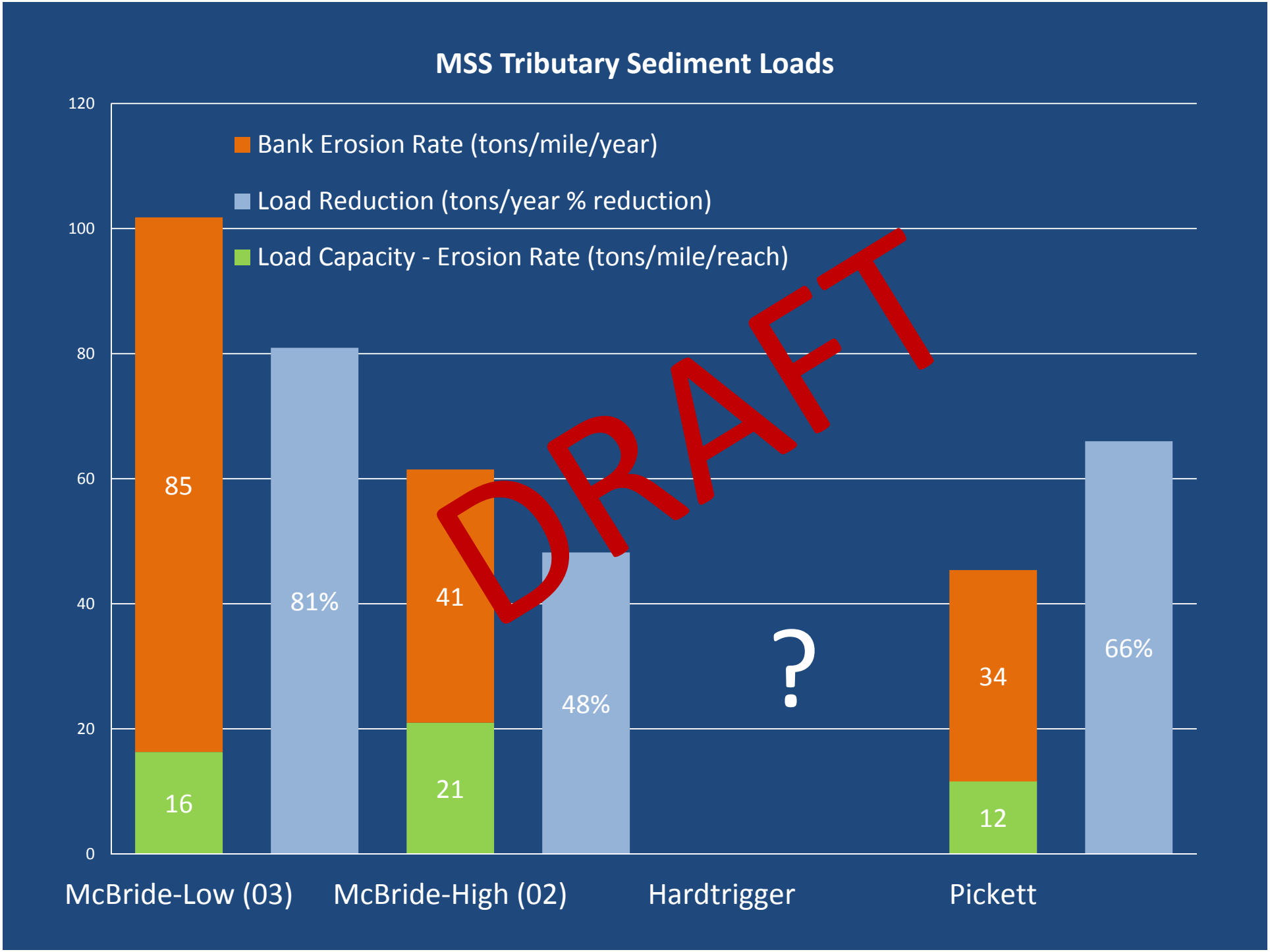

MSS Tributary Sediment Loads
120
100
80
60
40
20
0
Bank Erosion Rate (tons/mile/year)
Load Reduction (tons/year % reduction)
Load Capacity - Erosion Rate (tons/mile/reach)
DRAFT
85
16
81%
41
21
48%
?
34
12
66%
McBride-Low (03)
McBride-High (02)
Hardtrigger
Pickett

Hardtrigger Creek

Hardtrigger Creek streambank stability data collected by the BLM.

Year	Streambank Stability
2005	68%
2006	94%
2007	91%
2008	72%
2009	46%
2010	30%
2011	88%
2012	81%

Hardtrigger Creek data collected by DEQ in 2011:
Streambank Stability ~60 – 80%...need to verify

Support for Bank Stability Approach

Focus on Source of Impairment (Instream Erosion)

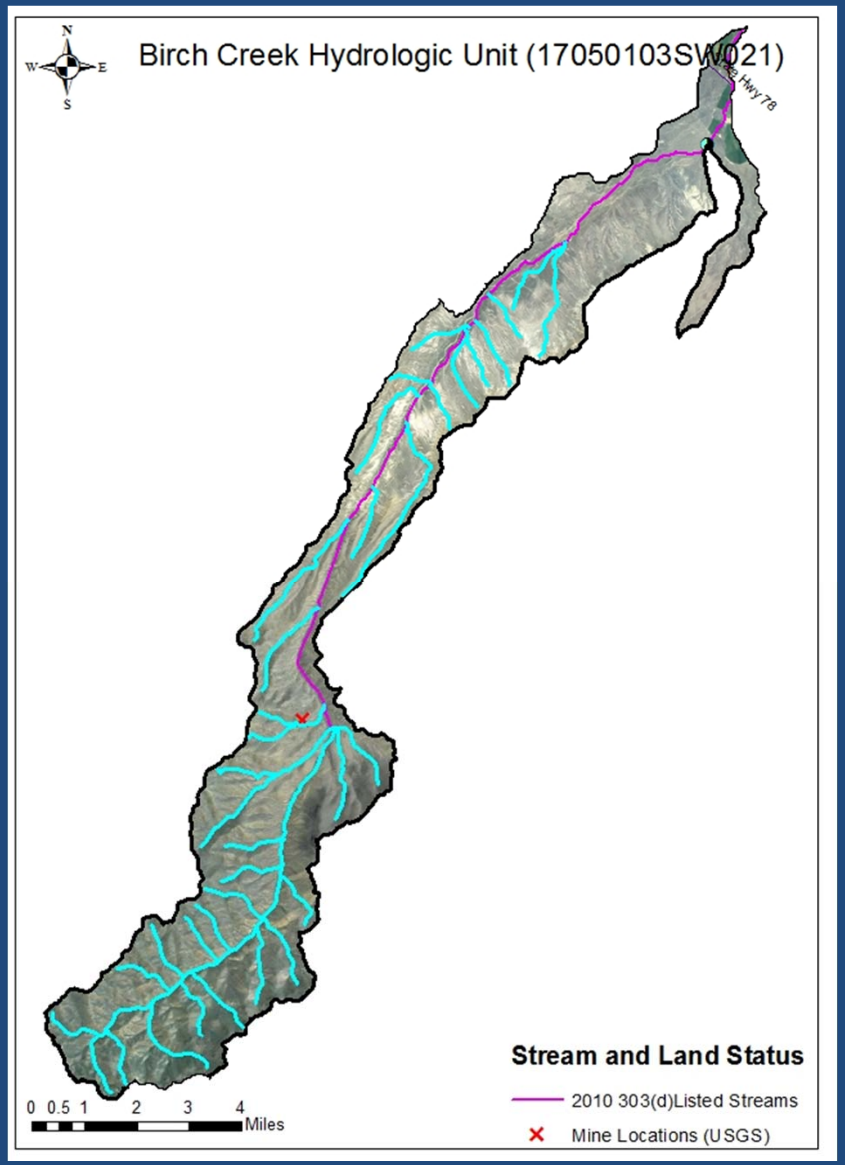
- 2013 – Proposed Integrated Report Delistings
- 2003 – Mid Snake River/Succor Creek TMDL
- 2001 – Pahsimeroi and Blackfoot TMDLs
- 1999 – Lemhi River Subbasin Assessment and TMDL

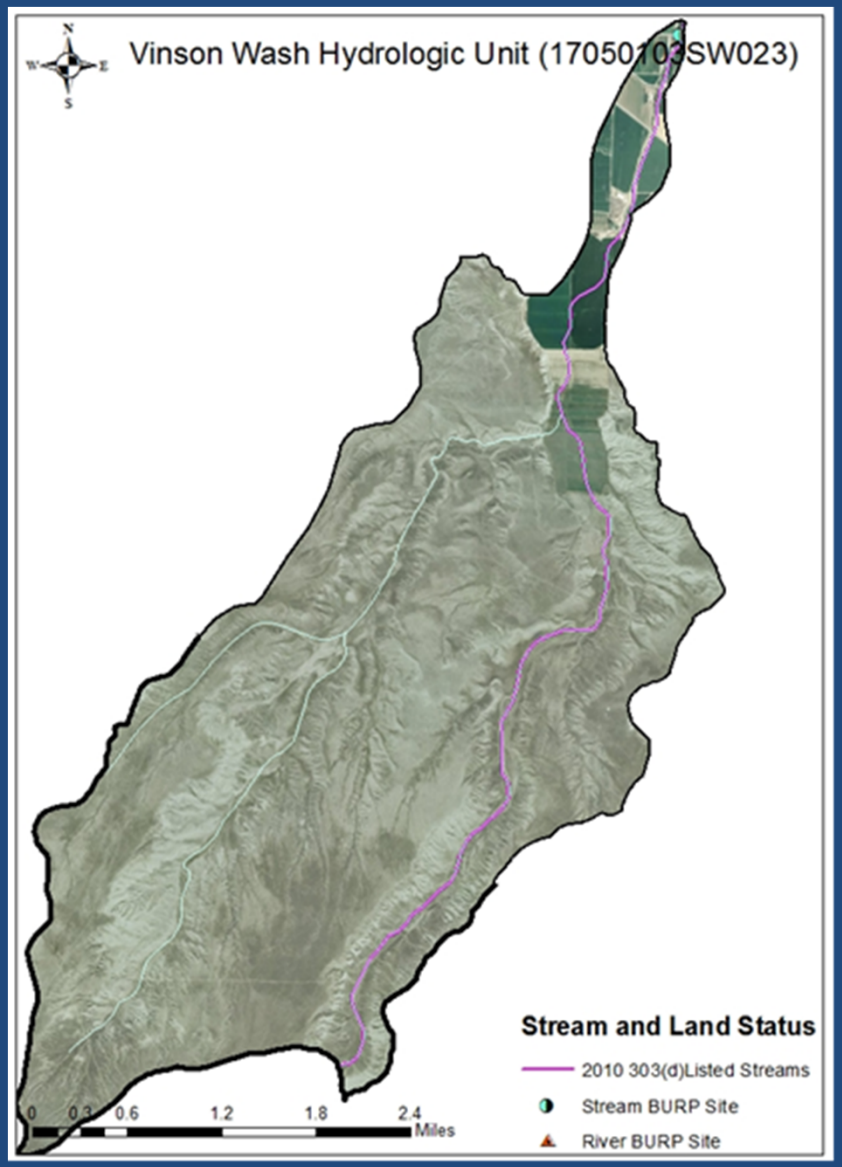
Protection for Cold Water Aquatic Life Beneficial Uses

Approach 2: Birch Creek & Vinson Wash

- 20 mg/L TSS 4-month average
- Critical Period (April 1 – September 30)

Sediment Concentration



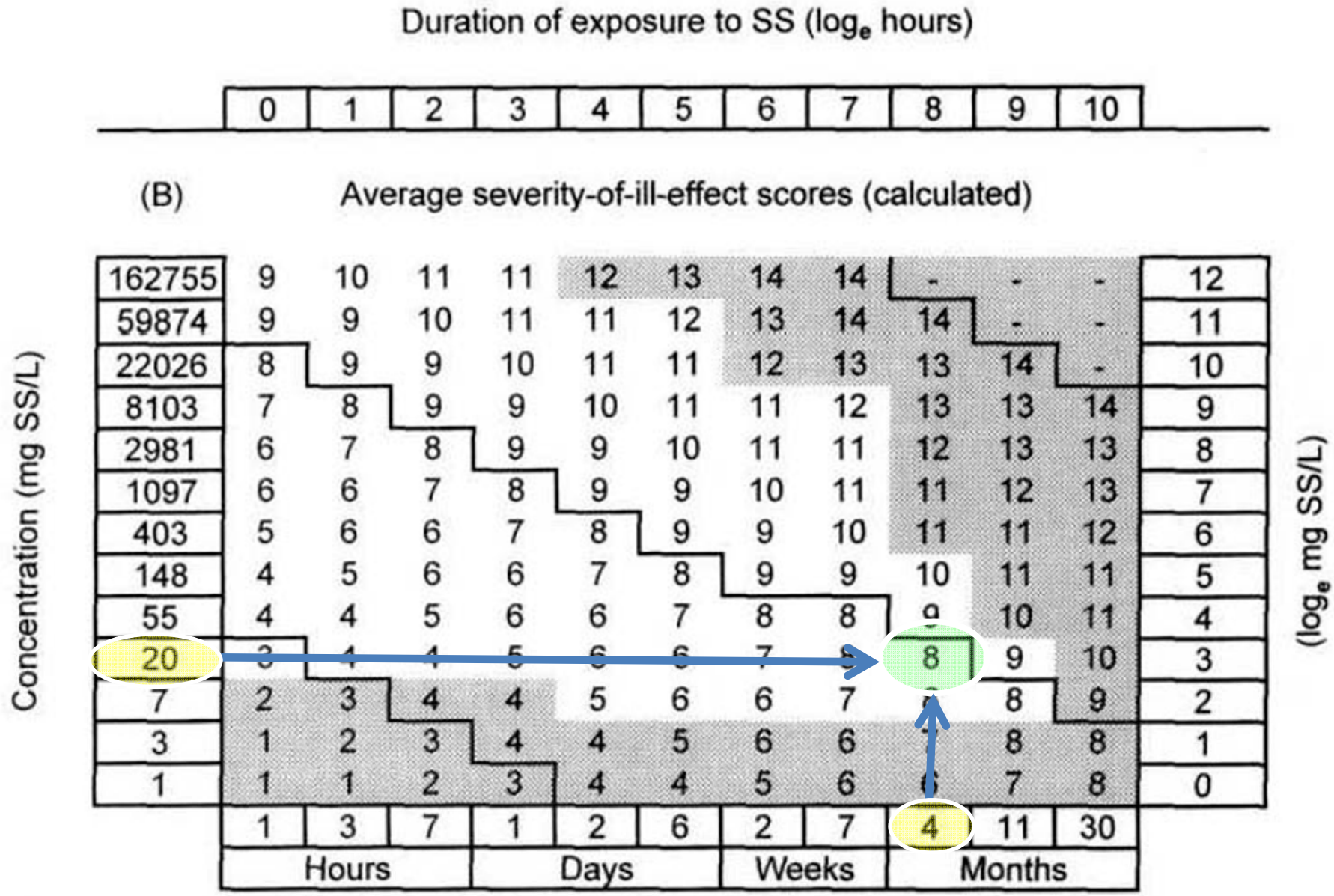


Sediment and Aquatic Life

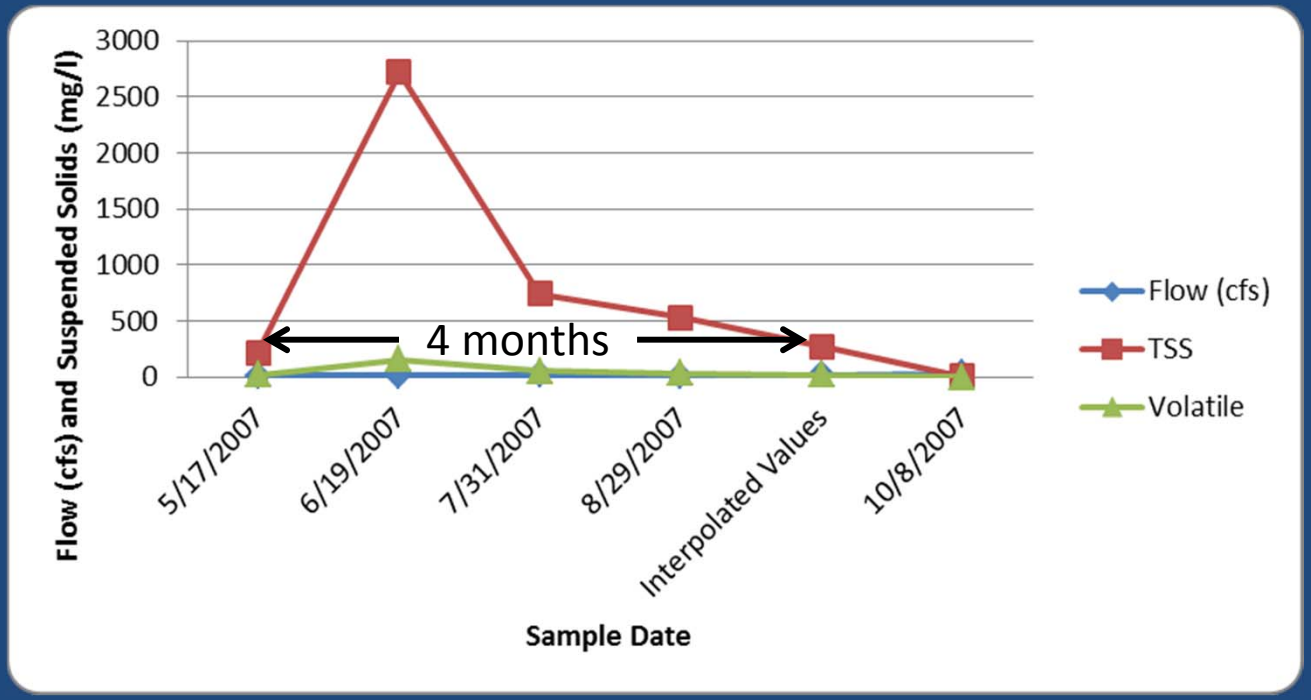
- Newcombe and Jensen (1996)
  - Meta-analysis: 80 studies
  - How does sediment affect fish?
    - Grouping of fish
    - Concentration of sediment
    - Duration of sediment

➢ 1 Answer = Severity of Effect on fish

Juvenile Salmonids



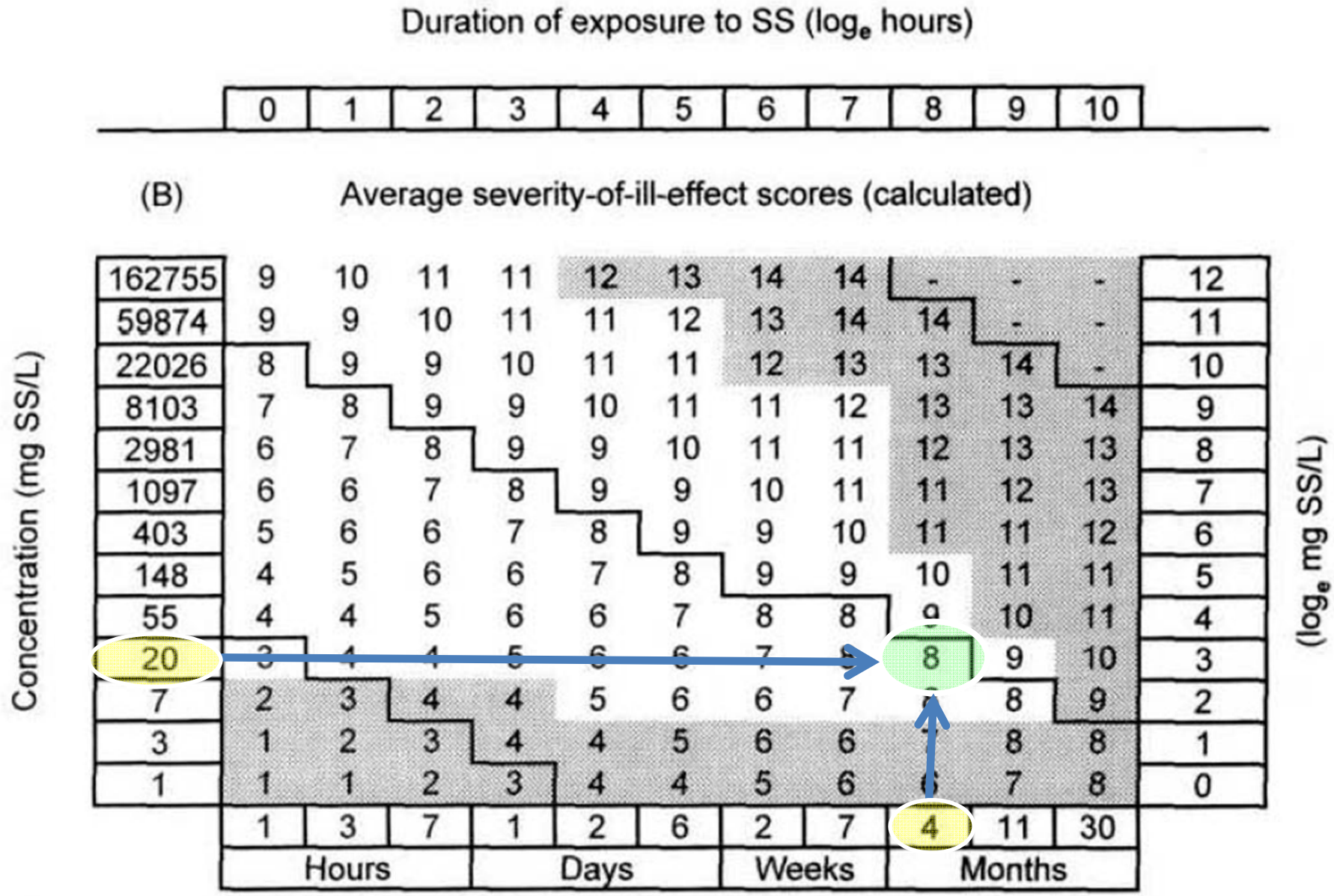
Sediment Concentration



Date	Flow (cfs)	Suspended Solids (mg/L)	
		Total	Volatile
5/17/2007	15.4	217	18
6/19/2007	15.3	2720	155
7/31/2007	18.8	742	56
8/29/2007	16.2	531	38
10/8/2007	32.3	10	3

Birch Creek data collected by Idaho Power in 2007.

Juvenile Salmonids



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Month	Flow (cfs)	TSS Concentration (mg/L)	TSS Load (tons/day)	Load Capacity at 20 mg/L (tons/day)	Load Reduction
May	15.4	217	9.1	0.8	8.2 tons/day; 91%
June	15.3	2720	112.4	0.8	111.5 tons/day; 99%
July	18.8	742	37.7	1.0	36.6 tons/day; 97%
August	16.2	531	23.2	0.9	23.4 tons/day; 96%
September	24.3	271	17.8	1.3	16.5 tons/day; 93%
October	32.3	10	0.9	1.7	0 tons/day; 0%

Support for Sediment Concentration Approach

Focus on Sediment Source - Agriculture Return Water

- 1999 Lower Boise River (LBR) Sediment TMDL
  - Newcombe and Jensen metadata analysis
- 2013 Little Willow Creek & LBR Tributaries Sediment TMDLs (in progress)
  - 20 mg/L for 4 month average
- 2003 Succor Creek and Bissel Creek Sediment TMDLs
  - 22 mg/L April - September

Proposed Timeline

- ✓ ***October 2012:*** Present TMDL strategy to WAG
- ✓ ***Nov. – Dec. 2012*:** Determine bank stabilization/ sediment targets
- ✓ ***Jan. – Feb. 2013:*** Develop TMDL analysis
- ✓ ***Feb. 2013:*** Discuss TMDL analysis with WAG
- ***March 2013*:** Draft TMDL review by WAG
  *Exception of Hardtrigger Creek – pending streambank data
- ***April 2013:*** Draft TMDL review by WAG
  *Hardtrigger Creek
- ***May 2013*:** Public Comment
- ***June 2013*:** Finalize TMDL

Comments/Questions????

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