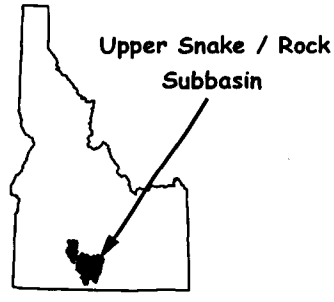
TMDL Executive Summary
Upper Snake / Rock Subbasin TMDL
July 2000

TMDL AT A GLANCE:

Subbasin:	*Upper Snake / Rock*
Key Resource:	*Cold Water Biota*
Uses Affected:	*Salmonid Spawning*
	Primary / Secondary Contact Recreation
Pollutants:	*Sediment*
	Phosphorus
	Fecal Coliform Bacteria
Sources Considered:	*PS - Aquaculture, Municipal, Industrial*
	NPS - Agriculture, Forestry,
	Grazing, Construction, Urban,
	Animal Feeding Operations



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This document summarizes the Upper Snake / Rock Subbasin TMDL submitted by the State of Idaho Division of Environmental Quality (IDEQ). This summary is organized to follow the *"checklist"* of TMDL elements required by law and regulation. This document also contains other information considered in the TMDL review process. In addition, the Upper Snake/Rock TMDL supplants the Billingsley Creek TMDL and the Mid-Snake TMDL previously submitted to the USEPA. These early TMDLs will eventually be summarized as components of the Upper Snake/Rock TMDL.

1. SUBMITTAL LETTER

Idaho IDEQ submitted the Upper Snake / Rock Subbasin TMDL via letter dated December 28, 1999 from David Mabe (State Water Quality Program Administrator) to Randall Smith (EPA Region 10 Office of Water Director). The letter, received by EPA Region 10 on January 3, 2000, also encloses *"The Upper Snake Rock Watershed Management Plan" (USRWMP).* The letter explicitly states that the entire package constitutes IDEQ's formal submission to EPA of a TMDL addressing thirty-one (31) §303(d) listed waters in the Upper Snake / Rock Subbasin. A listing of these waters and their pollutants or stressors is attached to the letter.

The State believes that the Upper Snake / Rock Subbasin TMDL meets all the requirements under the federal Clean Water Act [§303(d)], the Idaho Administrative Procedures Act [IDAPA §16.01.02], Idaho Code [IC §39-3601 *et seq.*], and the Idaho Nutrient Management Act [IDAPA §16.01.16]. The State of Idaho also believes that, as such, the Upper Snake / Rock Watershed Management Plan updates, as a component, the Idaho State Water Quality Management Plan in accordance with the Clean Water Act [§205, §208, and §303] and IC §39-3612.

2. SCOPE OF TMDL

The description of the waterbodies, the locations, and the pollutants / stressors of concern are attached to the submittal letter. This information also appears in the enclosed document *"The Upper Snake Rock Watershed Management Plan" (see Table 22, page 61).* The TMDL covers those waterbodies that are on Idaho's 1996 §303(d) list within the USGS subbasin or Hydrologic Unit Code (HUC) 17040212 *(Table 1).* Development of this TMDL grouped §303(d) segments into analysis units which are also identified in Table 1. The priority ranking was determined by the schedule submitted to the Court in 1997. Pollutants covered by the TMDL (through specific allocations) include total suspended solids (TSS), total phosphorus, and fecal coliform.

Important factors considered in development of the TMDL are described at length in the USRWMP *(see Section 2, pages 5-149).* The TMDL covers 93 miles of the Snake River including 28 named tributaries to the *"Mid Snake" (see Section 2.1.3.6, page 27).* Over 95% of the Upper Snake / Rock subbasin is in the Snake River / High Desert Ecoregion. Topography consists of tablelands with medium to high relief. Natural vegetation is predominantly a sagebrush / grass zone. The advent of large scale irrigation in the subbasin has changed large areas of the sagebrush / grass to agricultural crops and pastureland. Current land use in the 2,438 square mile subbasin is approximately 54% rangeland and 41% agriculture. Population in the subbasin is estimated to be about 85,000 (year 2000).

Table 1a. §303(d) Waterbodies and Pollutants Covered by Upper Snake / Rock Subbasin TMDL

Unit[1]	Stream Name	PNRS	Boundaries		Pollutants		
					Sed	*Nutr.*	*Path*
			Tributaries				
1	Dry Creek, West Fork	411.0	Headwaters to Dry Creek		X	X	X
	Dry Creek	409.0	Headwaters to Medley Creek		X	X	
	Dry Creek	408.0	Medley Creek to Snake River	*(630.6)*	X	X	X
	Vinyard Creek	407.0	Headwaters to Snake River	*(617.9)*	X	X	
2	Alpheus Creek	405.0	Headwaters to Snake River	*(610.5)*	X	X	
	Rock Creek	400.0	Rock Creek (town) to Snake River	*(606.4)*	X	X	X
	Ellison Creek	399.0	Headwaters to Snake River	*(605.0)*	X	X	
	Crystal Springs	398.0	Headwaters to Snake River	*(600.4)*	X	X	
3	Cedar Draw[2]	397.0	Headwaters to Snake River	*(599.1)*	X	X	X
	Clear Springs	395.0	Headwaters to Snake River	*(593.0)*	X	X	
	Mud Creek[2]	394.0	Low Line Canal to Snake River	*(591.5)*	X	X	X
	Deep Creek[2]	392.0	High Line Canal to Snake River	*(591.4)*	X	X	X
	McMullen Creek	404.0	Headwaters to Cottonwood Creek		X	X	X
	Cottonwood Creek	403.0	Headwaters to Rock Creek		X	X	X
	Blind Canyon Creek	389.0	Headwaters to Snake River	*(588.1)*	X	X	X
4	Thousand Springs Cr.	386.0	Headwaters to Snake River	*(584.4)*	X	X	
	Riley Creek	385.0	Headwaters to Snake River	*(582.9)*	X	X	X
5	Billingsley Creek	384.0	Headwaters to Snake River	*(573.8)*	X	X	X
6	Pioneer Reservoir[3]	380.0			X	X	
	Clover Creek	379.0	Pioneer Reservoir to Snake River	*(547.6)*	X	X	X

Notes:

[1]Because of the size and complexity of the Upper Snake / Rock subbasin, development of the TMDL grouped §303(d) segments into analysis units.

[2] Cedar Draw, Mud Creek, and Deep Creek are included in the 1998 §303(d) amended list (May 1, 2000) and were originally intended for inclusion in the TMDL due to water quality information that verified their proposed listing.

[3] Reservoir boundaries include the entire reservoir from its upper reaches to its lower reaches.

Table 1b. §303(d) Waterbodies and Pollutants Covered by Upper Snake / Rock Subbasin TMDL

Unit[1]	Stream Name	PNRS	Boundaries	Pollutants		
				Sed	*Nutr.*	*Path*
Mainstem Snake River (RM 638.5 to RM 545.0)						
1	Snake River	378.0	Milner Dam to Murtaugh *(638.5 -> 630.5)*	X	X	
	Snake River	377.0	Murtaugh to Twin Falls Reservoir *(617.5)*	X	X	
	Shoshone Falls Res.[2]	375.0	*(614.7)*	X	X	
2	Snake River	374.1	Shoshone Falls to Rock Creek *(606.4)*	X	X	
	Snake River	374.0d	Rock Creek to Cedar Draw *(599.1)*	X	X	
3	Snake River	374.0c	Cedar Draw to Clear Lakes Bridge *(593.0)*	X	X	
	Snake River	374.0b	Clear Lakes Bridge to Mud Creek *(591.5)*	X	X	
	Snake River	374.0a	Mud Creek to Deep Creek *(591.4)*	X	X	
4	Upper Salmon Falls Res.[2]	373.0	*(581.4)*	X	X	
5	Lower Salmon Falls Res.[2]	372.0	*(573.0)*	X	X	
	Snake River	371.0	Lower Salmon Falls to Bliss Res. *(565.8)*	X	X	
6	Bliss Reservoir[2]	370.0	*(559.9)*	X	X	
	Snake River	369.0b	Bliss Bridge to Big Pilgrim *(556.6)*	X	X	
	Snake River	369.0a	Big Pilgrim to King Hill *(545.0)*	X	X	

Notes:
[1]Development of the TMDL grouped §303(d) segments into analysis units (described previously).
[2] Reservoir boundaries include the entire reservoir from its upper reaches to its lower reaches.

A summary of water quality for §303(d) streams in the subbasin is presented in the USRWMP *(see Section 2.2.2, pages 64-89)*. In general, the Middle Snake River and its tributaries are affected by runoff from irrigated crop production, rangeland, pastureland, animal holding areas, feedlots, fish hatcheries, municipal discharges, hydrologic modification, and urban runoff. In addition, large springs and seeps contribute significant flow. The Middle Snake River is a managed water system where normal flow regimes (e.g. spring flush) are no longer present. As a consequence, the absence of normal high spring flows allows excess sediment to accumulate which exacerbates the growth of aquatic macrophytes during low flow years.

Point and nonpoint sources are described in the USRWMP *(see Section 2.2.1, pages 62-64)*. Point sources include NPDES permitted facilities for aquaculture, food processors, municipalities, confined animal feeding operations, and industrial sources. Nonpoint sources include unconfined animal feeding operations, irrigated agriculture, grazing, forestry, recreation, urban runoff / storm sewers, construction, and hydrologic modification (i.e. irrigation diversions and FERC permitted hydroelectric

impoundments). In addition, the USRWMP includes a pollutant source inventory which describes point and nonpoint sources associated with segments on Idaho's 1998 §303(d) list in the Upper Snake / Rock subbasin *(see Section 2.3, pages 130-49).*

3. APPLICABLE WATER QUALITY STANDARDS

"The Upper Snake Rock Watershed Management Plan" includes a description of the applicable water quality standards *(see Section 2.2.3, pages 89-111).* Designated uses not currently being protected are described starting on page 89 and include cold water biota, salmonid spawning, and primary / secondary contact recreation. Applicable state water quality criteria to support these designated uses include water being free of deleterious materials; floating, suspended, or submerged matter; excess nutrients; oxygen-demanding materials; and sediment [IDAPA §16.01.02.200.03, ...05, ...06, ...07]. For sediment and nutrients, the applicable water quality standards are narrative. Instream water quality targets are set for Year 5 (after plan approval) and then held for an additonal five years through Year 10, thus giving the acronym Year 5/10. The USRWMP describes how these narrative criteria are interpreted by Idaho IDEQ in order to provide numeric target values for the TMDL. This interpretation is summarized as follows.

Sediment: Idaho's water quality standards for sediment are narrative criteria with no fixed numeric value. Furthermore, Idaho's water quality standards also state under the antidegradation policy that *"the existing in-stream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected"* [IDAPA 16.01.02.051(01)]. Based on several sources of information described in the USRWMP *(see Section 2.2.3.3(5), pages 101-104),* Idaho IDEQ set an upper limit of 52 mg/L total suspended solids (TSS) as a monthly average target in the TMDL for those streams currently exceeding that value and a daily maximum of 80 mg/L. This allows for a good-to-moderate protection of the fisheries. For streams that are below 52 mg/L, the current TSS concentration is the upper limit in the TMDL based on Idaho's antidegradation policy. Targets for each §303(d) segment are summarized in this review summary under the discussion on loading capacity *(Table 3).* Recognizing the potential need to refine these targets, the TMDL provides that surface water quality within any stream segment that can be demonstrated to be below the instream water quality target will be considered for site-specific criteria development after year 5 of plan implementation or sooner where applicable *(see Section 3.1, page 164).* A substrate sediment target is not suggested at this time since there is little information to qualify a target value or a percent reduction scenario. However, discussion are currently underway by the Mid-Snake Technical Advisory Committee to address this issue over the next 3-5 years.

Total Phosphorus: The provision regarding excess nutrients is the starting point for development of nutrient targets in the TMDL. This provision states that: *"Surface waters of the State shall be free from excess nutrients that can cause visible slime growths or other nuisance aquatic growths impairing designated beneficial uses"* [IDAPA §16.01.02.200.06]. Nutrients are defined as *"The major substances necessary for the growth and reproduction of aqautic plant life, consisting of nitrogen, phosphorus, and carbon compounds"* [IDAPA §16.01.02.003.66]. Based on several sources of information described in the USRWMP *(see Section 2.2.3.3(2c), pages 99-100),* Idaho IIDEQ set an instream target of 0.100 mg/L total phosphorus for tributaries to the Mid Snake River. For the mainstem Snake, the Mid-SnakeTMDL used a water quality target of 0.075 mg/L total phosphorus at Gridley Bridge. This has now

been modified to be 0.075 mg/L total phosphorus for the entire Middle Snake River as a representative average (*see Section 3.1.2, page 169, of the TMDL*). This takes into account the modified flow regime of the Mid Snake with run-of-river impoundments on a large river system. Therefore, "from upstream to downstream the overall target of the Middle Snake River is 0.075 mg/L" (see Section 3.1.2, page 170, of the TMDL). The logic and approach of an instream target of 0.100 mg/L for all waterbodies flowing into the Middle Snake River is summarized in Section 3.53, pp 217-218, in the TMDL.

Fecal Coliform: Idaho's water quality standards identify numeric criteria for fecal coliform bacteria to protect both primary and secondary contact recreation [IDAPA §16.01.02.100.03 and §16.01.02.250.01]. For primary contact recreation, the numeric criteria is not to exceed 500 colonies / 100 mL at any time, 200 colonies / 100 mL in more than ten percent of the total samples taken over a 30-day period, and a geometric mean of 50 colonies / 100 mL based on a minimum of five samples taken over a 30-day period. For secondary contact recreation, the numeric criteria is not to exceed 800 colonies / 100 mL at any time, 400 colonies / 100 mL in more than ten percent of the total samples taken over a 30-day period, and a geometric mean of 200 colonies / 100 mL based on a minimum of five samples taken over a 30-day period. Instream water quality targets for fecal coliform are discussed in the USRWMP *(see Section 3.1.3, pages 170-173)* and are set at 400 colonies / 100 mL. As of April 5, 2000 Idaho has adopted E. coli criteria to replace the fecal coliform criteria, as recommended by EPA in 1986. A revised TMDL will be developed at a later date taking these new criteria into account. In the meantime implementation to address fecal coliform loading is expected to also reduce E. coli loading.

4. LOADING CAPACITY

Loading capacities for TSS and total phosphorus in the Upper Snake / Rock Subbasin TMDL are calculated as an annual average load (tons/year). Determination of the loading capacity is a function of streamflow and target concentrations. While total phosphorus (TP) loading capacity was calculated as an annual load, allocations of TP are expressed as lbs/day to facilitate NPDES permiting and comparison to the Mid-Snake TP TMDL approved in 1997. Its reductions in annual loading of TP that are expected to be effective in meeting water quality criteria. The relationship of these parameters to identification of the loading capacity and subsequent development of the TMDL is discussed below.

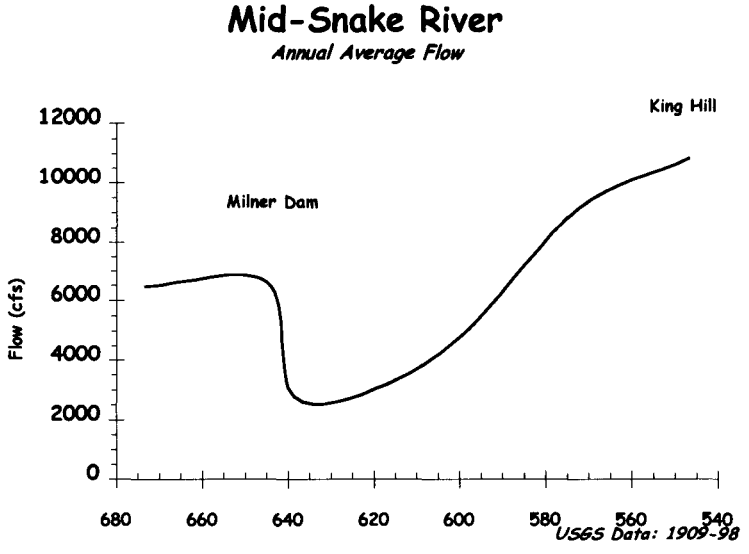
Streamflow: The U.S. Geological Survey (USGS) has five long term stations on the mainstem Mid Snake in the subbasin. Because a significant volume of water is diverted at Milner Dam (e.g. the head of the Upper Snake / Rock Subbasin), a sixth long term gage on the mainstem Snake River gives a useful perspective. These USGS streamflow gages are identified in Table 2 and provide information which was considered in the review of the Upper Snake / Rock TMDL. The effect of water withdrawals from the Snake River below Minidoka is shown in Figure 1 using the USGS data. Figure 1 also illustrates how the Mid-Snake gains water through the US/R subbasin from spring sources and irrigation return flow. In general, the flow design of the TMDL was based on an annual low flow. This accounted for the worst case scenario for pollution concerns.

Table 2. USGS Gages Considered in the Upper Snake / Rock TMDL Review

Unit	Gage	Site	RM	Area (mi^2)	Annual Mean (cfs)	Period of Record
	13081500	Snake River near Minidoka	673.5	15,700	6,463	1927-98
1	13088000	Snake River at Milner	638.7	17,180	2,799	1927-98
1	13090000	Snake River near Kimberly	617.2	17,288	3,185	1924-98
3	13094000	Snake River near Buhl	596.8	24,831	5,263	1947-98
5	13135000	Snake River below Lower Salmon Falls	572.5	30,092	9,127	1938-98
6	13154500	Snake River at King Hill	546.6	35,800	10,860	1909-98

The annual mean flows are descriptive of the entire period of record and do not correspond to the values defined in the TMD §2.1.3.2, Table 10, which are for the period 1983-1998 as segregated into low flow and high flow years. Drainage area f 13060000, 13094000, and 13135000 was estimated (interpolated) based on area/flow basis.

Figure 1. Annual Mean Flow of Mid-Snake through US/R Subbasin



Total Suspended Solids: Development of loading capacities for TSS in the Upper Snake / Rock Subbasin TMDL are described in the USRWMP *(see Section 3.1.1, pages 164-66 and Appendix D).* Loading capacities (L.C.) based on the annual average flow and target TSS concentrations are summarized in Table 3 and are calculated as follows:

$$\text{L.C. (tons/yr)} = \frac{[\text{Annual average flow (cfs)} * \text{Target Conc. (mg/L)} * 5.39] * 365 \text{ (days/yr)}}{2000 \text{ (lbs/ton)}}$$

The L.C. for TSS is defined as 52 mg/L. In addition, the existing TSS concentration is identified in Table 3 to illustrate the amount that current conditions deviate from the TMDL target. These are

found in the TMDL on pages 202-215, and Appendix D, Section 7, pp 357-363. The following tributaries had flows that included fish hatchery flows: Rock Creek, Cedar Draw, Clear Springs, Mud Creek, Deep Creek, Blind Canyon Creek, Thousand Springs Creek, Riley Creek, and Billingsley Creek.

Total Phosphorus: Development of loading capacities for total phosphorus (TP) in the Upper Snake / Rock Subbasin TMDL are described in the USRWMP *(see Section 3.1.2, pages 169-70).* Loading capacities based are the annual average flow and target TP concentrations and follow the same format as described with TSS:

L.C. (lbs/day) = Annual average flow (cfs) * Target Conc. (mg/L)*5.39

The L.C. for TP is defined as 0.100 mg/L for the tributaries and 0.075 mg/L for the Middle Snake River. These are summarized as daily load values in Table 3. While water quality effects of TP are based on annual loading, capacities are presented as daily loads to facilitate NPDES permiting and comparison to the Mid-Snake TP TMDL approved in 1997.

Fecal Coliform: The development of fecal coliform loading capacity presents challenges because it is a most probable number (MPN) measurement. A simple, first cut approach is to estimate a surrogate load using colony forming units (cfu expressed as billions) as follows:

L.C. (cfu^9/day) = Annual average flow (cfs) * Target Conc. (cfu/100mL) * 0.02445

The instream target concentration identified by IDEQ is 400 cfu/100mL (instantaneous) designed to protect below the primary contact recreation standard of 500 cfu/100 mL. These loading capacities do not reflect the imprecise nature of the fecal coliform MPN analytical method, nor the inherent variability of ambient fecal coliform concentrations. As new data and methods are developed to better address these challenges, the loading capacities will be refined and the TMDL revised. See Section 3.1.3, pp 170-173, of the TMDL for a summary of the logic and approach used to meet water quality standards.

Tributary L.C. is summarized in Table 3a and are derived as the Year 5/10 Target loads for WLAs + LA s. The final Year 5/10 Target is the L.C. for the particular stream segment.

Table 3a. Loading Capacities for Upper Snake / Rock Subbasin TMDL

Unit	Stream Name	PNRS	Annual Flow (cfs)	Sediment(WLA+LA)		Phosphorus[3] (WLA + LA) (lbs/day)	Fecal Coliform (cfu^9/day)
				Target[1] (mg/L)	L.C. (tons/yr)		
Tributaries							
1	Dry Creek, West Fork	411.0	3.2	52.0	164.7	1.7	39.1
	Dry Creek	409.0	1.0	52.0	51.2	0.5	12.2
	Dry Creek	408.0	10.0	*(290.0)* 52.0	511.5	5.4	122.3
	Vinyard Creek[4]	407.0	13.4	1.3	17.1	1.4	0.0[5]

2	Alpheus Creek[4,5]	405.0	1.0	1.3	1.3	0.1	0.0[8]
	Rock Creek [2]	400.0	315.1	*(66.4)* 52.0	16,117.7	169.8	3,852.1
	Ellison Creek[4]	399.0	1.3	1.3	1.6	0.1	0.0[8]
	Crystal Springs[4]	398.0	50.0	1.3	63.9	79.0	0.0[8]
3	Cedar Draw [2]	397.0	195.5	*(107.9)* 52.0	10,000.0	105.4	2,390.0
	Clear Springs [2]	395.0	495.2	3.5	1,089.8	170.1	0.0[8]
	Mud Creek [2]	394.0	159.3	*(62.3)* 52.0	8,148.4	85.9	1,947.4
	Deep Creek [2]	392.0	169.3	*(65.7)* 52.0	8,659.9	91.3	2,069.7
	McMullen Creek[6]	404.0	4.0	*(66.4)* 52.0	204.6	2.2	48.9
	Cottonwood Creek[6]	403.0	2.3	*(66.4)* 52.0	117.6	1.2	28.1
	Blind Canyon Creek [2]	389.0	50.5	29.0	778.5	25.9	617.4
4	Thousand Springs Cr. [2,4]	386.0	1,298.1	1.3	1,685.8	143.3	0.0
	Riley Creek [2]	385.0	187.8	14.8	972.1	50.6	2,295.9
5	Billingsley Creek [2]	384.0	289.5	4.7	969.2	143.3	3,539.1
6	Pioneer Reservoir[7]	380.0	40.8	9.7	388.8	22.0	498.8
	Clover Creek[7]	379.0	40.8	9.7	388.8	22.0	498.8

Notes:

[1]For those streams that exceed 52 mg/L TSS, the value in parentheses on left represents the current condition while valu on right is the TMDL target concentration. The 52 mg/L TSS instream target is the Load Capacity of the stream as de: ribe in §3.1.1, pp 164-166, of the TMDL. [2]Flow includes fish hatchery discharge. See Appendix D, Section 7, of the TMDL f r details. [3]Based on total phosphorus target of 0.100 mg/L, which is defined as the L.C. for TP in the tributaries to the river [4]Unless otherwise noted and where no information exists, springfed creeks (Vinyard Creek, Alpheus Creek, Ellison Cree k Crystal Springs, Thousand Springs Creek) were estimated at 1 3 mg/L TSS. This is Assumption 2 as described in Appendix D Seciton 7, p 365, of the TMDL. [5]See §2.3.1.1, p 132, of the TMDL. For the most part the entire spring is ut ized and diverte such that a very small amount (<1.0 cfs) discharges directly to the Middle Snake River. A discharge of 1.0 cfs was assigne as a high estimate. [6] McMullen Creek and Cottonwood Creek discharge to the High Line Canal (Twin Falls Canal Company), whi h discharges to Deep Creek. See §3.0.2.8 for Cottonwood Creek, and §2.1.3.6 (Rock Creek Complex, p 29) for both. Sir :e McMullen Creek and Cottonwood Creek are located in the same drainage as the Rock Creek Complex (but they discharge t the High Line Canal which discharges to th e Deep Creek system), current conditions were estimated the same as Rock Cree (66.4 mg/L TSS). See Table 102, pp 207-210, footnote 3, of the TMDL for flow estimate data.[7]The Clover Creek Complex, as described in Appendix D, Section 7, p 363, has an estimated annual flow of 40.8 cfs and TSS annual mean of 9.7 mg/ These values were also used as the discharge values for Pioneer Reservoir (as described on p 72 of the TMDL), which i manmade reservoir that intercepts Clover Creek prior to discharging into the Middle Snake River. Because reservoir wate is depleted due to irrigation, the wate: level in the reservoir drops thus allowing encroachment by cattle into the flood zon area. When the water is replenished in the winter and early spring, the water level covers the manure piles left by rec cattle grazing, thus increasing the bacteria levels in the rese voir and downstream into Clover Creek. This condition does no exist year'round. [8]Tributaries not requiring a pathogen TMDL since they meet beneficial uses.

Mainstem Snake River L.C. is summarized in Table 3b. Annual average flow and L.C. is based on discharge flow from one segment into the next segment. TSS and TP average concentration are shown from their current value to what will be the target at Year 5 with imposed reductions for point and nonpoint sources.

Table 3b. Loading Capacities for Upper Snake / Rock Subbasin TMDL

Unit	Stream Name	PNRS	Annual Flow [1] (cfs)	Sediment as TSS (<52 mg/L)			Total Phosphorus (0.075 mg/L)		
				Target mg/L[2] Current	Target	L.C. tons/yr	Target mg/L Current	Target	L.C. lbs/day
Mainstem Snake River (RM 638.5 to RM 545.0)									
1	Snake River	378.0	4,737.0	15.3	9.4	43,800.9[3]	0.147	0.075	1,914.9[3]
	Snake River	377.0							
	Shoshone Falls Res.	375.0							
2	Snake River	374.1	5,498.0	19.0	11.1	60,031.5[3]	0.141	0.075	2,222.6[3]
	Snake River	374.0d							
3	Snake River	374.0c	7,212.0	25.9	21.4	151,817.3[3]	0.111	0.075	2,915.5[3]
	Snake River	374.0b							
	Snake River	374.0a							
4	Upper Salmon Falls Res	373.0	9,113.0	20.8	16.3	146,117.0[3]	0.094	0.075	3,683.9[3]
5	Lower Salmon Falls Res	372.0	11,108.0	18.0	16.7	182,475.3[3]	0.083	0.075	4,490.4[3]
	Snake River	371.0							
6	Bliss Reservoir	370.0	11,398.0	26.8	20.0	224,238.6[3]	0.081	0.075	4,607.6[3]
	Snake River	369.0b							
	Snake River	369.0a							

Notes:
[1]Analysis of flow data described in USRWMP *(see Appendix D, pages 366-69)*. Mean annual flow for each analysis unit derived from USGS data from WY1983-98. [2]Target TSS concentrations for mean annual flow conditions in each analysis unit described in USRWMP *(see Appendix D, page 369)*. Each target was further analyzed from its beginning baseline target to its final target at Years 5/10 based on reductions within the respective segments from WLAs and LA s. Based on the annual mean flow, an expected concentration at the "discharge point" of the river segment was calculated based on the L.C. for the river segment at the point of discharge into the next river segment. [3] Loading Capacity (L.C.) is the value at Year 5/10 of the instream targets, not the 1990-1991 baseline years.

5. WASTE LOAD ALLOCATIONS

Allocations, both load and wasteload, are described in the *"Upper Snake Rock Watershed Management Plan"* (USRWMP) organized in terms of six major analysis units for the Middle Snake River *(see Section 3.5, pages 197-228)*. Wasteload allocations (WLAs) for specific sources are identified in the USRWMP *(see Appendix D)*. For aquaculture, the methodology used to develop WLAs for TSS is described in Appendix D, pages 406-11 of the USRWMP. The methodology used to develop WLAs for total phosphorus is described in Appendix D, pages 436-38 of the USRWMP with the understanding that the predictive allocation should not be construed as the method which IDEQ or USEPA may use to allocate the final wasteloads in three years. Similarly, for municipalities in the subbasin, WLAs for

TSS are described in Appendix D, pages 357-65 of the USRWMP while WLAs for total phosphorus are described in Appendix D, page 438. Wasteload allocations for CFOs/CAFOs and land application facilities are zero. The WLAs for TSS are summarized in Table 4. WLAs for total phosphorus are summarized in Table 5. Detailed allocations are presented at the end of this Summary document in Tables 8 and 9.

6. LOAD ALLOCATIONS (LA s)

Load allocations (LAs) for nonpoint sources were developed for each tributary identified by IDEQ-TFRO which contributes flow to the Middle Snake River or is a segment on Idaho's 1998 §303(d) list. Stream types accounted for in the load allocation process include: 1) springs; 2) agricultural drains; 3) natural tributaries; and 4) segments of the Middle Snake River. LAs for TSS are expressed as annual average values (e.g. tons/year) while LAs for total phosphorus are expressed as daily values (e.g. pounds/day).

The process to identify specific load allocations for sediment used a mass balance approach that considered annual average TSS values and stream type. For springs, an average annual flow was used in combination with a regional mean water quality estimate of 1.3 mg/L to calculate the annual average LA for TSS. For agricultural drains, an average annual flow was used with either the annual average concentration for that drain or 52 mg/L (whichever is smaller) to calculate the annual average LA for TSS. This same approach was used to determine the total LA for TSS on natural tributaries.

For mainstem segments of the mid-Snake, a unit load per stream mile was used. The unit load was determined using an annual flow of 20 cfs per mile and average TSS concentration of 35.7 mg/L. The 20 cfs per mile is the average annual incremental flow that was not accounted for between Milner Dam and King Hill. This was derived using water balance information described in the USRWMP *(see Appendix D, page 369)*. The concentration associated with this flow is the regional mean water quality estimate of 35.7 mg/L TSS *(see USRWMP Section 3.0.2, pages 151-152)*. A 33% reduction was then applied to determine load allocations for mainstem mid-Snake segments as described in Section 3.5.2.7, Table 106, page 215 in the TMDL.

The total LA for TSS on natural tributaries and the mid-Snake was further allocated to either agriculture, grazing, or background using a stream corridor approach described in the USRWMP *(see Section 3.0.2, pages 151-53)*. This approach used by IDEQ recognizes that attainment of the overall tributary LA should be managed by land use. IDEQ's intent is also to use the stream corridor approach to identify critical acres for each natural tributary or mid-Snake segment to pursue for implementation of BMPs. LAs for TSS are summarized in Table 4 while detailed allocations are presented in Tables 8 and 9 at the end of this Summary.

The mass balance approach used to develop load allocations for sediment should account for several uncertainties associated with TSS data. Watershed processes that contribute to these uncertainties include both unaccounted losses and gains. Uncertainties associated with sediment losses are due to attenuation, water withdrawals, and the challenge of balancing flow data. Uncertainties associated with gains are due to the difficulties of estimating sediment inputs from major tributaries, particularly Rock Creek, Cedar Draw Creek, Mud Creek, Deep Creek, and the Malad River. Thus, to

account for these uncertainties and acheive a mass balance at mainstem monitoring locations, a separate allocation was made to un-identified sources for each analysis unit. These other allocations go beyond the margin of safety.

Table 4a summarizes the sediment TMDL for the 303(d) tributary streams only. It is estimated that overall, 5.9% of the TMDL makes up wasteload allocations, 76.8% makes up load allocations, and 17.3% makes up the MOS. Where waterbodies are already meeting the instream target, the MOS is zero. The only streams requiring an MOS are Dry Creek (all segments), Rock Creek, Cedar Draw, Mud Creek, Deep Creek, McMullen Creek, and Cottonwood Creek. See Section 7 of the *Summary* document for an explanation of the MOS. % Reduction is defined for WLA and LA values from 1990-1991 to the Year 5 target.

Table 4a. Summary of Sediment TMDL and Allocations for Upper Snake / Rock Subbasin TMDL

Unit	Stream Name	PNRS	TMDL (tons/yr)	WLAs [1] (tons/yr)	LAs [2] (tons/yr)	MOS [3] (tons/yr)	% Reduction from 1990-1991 [4]
			Tributaries				
1	Dry Creek, West Fork	411.0	164.7	(0) 0.0	(1) 131.8[5]	32.9	82.1%
	Dry Creek	409.0	51.2	(0) 0.0	(1) 40.9	10.2	82.1%
	Dry Creek	408.0	511.5	(0) 0.0	(3) 409.2[5]	102.3	82.1%
	Vinyard Creek	407.0	17.1	(0) 0.0	(1) 17.1[6]	0.0	0.0%
2	Alpheus Creek	405.0	1.3	(0) 0.0	(1) 1.3[7]	0.0	0.0%
	Rock Creek	400.0	16,117.7	(8) 187.2[8]	(3) 12,744.4[9]	3,186.1	21.8%
	Ellison Creek	399.0	1.6	(0) 0.0	(1) 1.6[7]	0.0	0.0%
	Crystal Springs	398.0	468.1	(0) 404.2	(1) 63.9[7]	0.0	54.7%
3	Cedar Draw	397.0	10,000.0	(10) 160.0[10]	(1) 7,872.0[10]	1,968.0	52.5%
	Clear Springs	395.0	1,058.0	(5) 877.9[11]	(1) 180.1[11]	0.0	2.9%
	Mud Creek	394.0	8,148.4	(11) 150.8[10]	(1) 6,398.1[10]	1,599.5	16.3%
	Deep Creek	392.0	8,659.9	(6) 144.5[10]	(1) 6,812.3[10]	1,703.1	27.1%
	McMullen Creek	404.0	204.6	(0) 0.0	(1) 163.7[10]	40.9	34.2%
	Cottonwood Creek	403.0	117.6	(0) 0.0	(1) 94.1[10]	23.5	34.2%
	Blind Canyon Creek	389.0	778.5	(1) 13.7[12]	(3) 764.8[12]	0.0	37.9%
4	Thousand Springs Cr.	386.0	1,625.8	(1) 50.6[13]	(1) 1,575.2[13]	0.0	0.0%
	Riley Creek	385.0	972.1	(2) 238.0[13]	(1) 734.1[13]	0.0	0.0%
5	Billingsley Creek	384.0	969.2	(11) 787.7[14]	(1) 181.5[14]	0.0	0.0%

6	Pioneer Reservoir	380.0	388.8	*(0)*	0.0	*(3)*	388.8[15]	0.0	0.0%
	Clover Creek	379.0	388.8	*(0)*	0.0	*(3)*	388.8[15]	0.0	0.0%
Overall Totals			50,704.9	*(55)*	3,014.6	(30)	38,963.7	8,666.5	26.4%

Notes:
[1]Value in parentheses on left represents total number of wasteload allocations in the segment. Includes a group allocation to CFOs and / or CAFOs and a group allotment to land application facilities (both zero discharge).[2]Value in parentheses on left represents total number of load allocations in the segment. Individual allocations identified in the USRWMP *(see Tables 100-105, pages 202-15).* [3]The margin of safety is zero where waters are already meeting the water quality target of 52mg/l TSS. These waters are allocated their average current load. By definition, a TMDL = WLAs + LA s + MOS. [4] % Reduction from 1990-1991 based on reduction from Year 5 to Years 1990-1991 as described in pp 202-214 in the TMDL for both WLAs and LA s. [5] From p 203, Table 100, of the TMDL. [6] From p 357, Appendix D, Section VII, of the TMDL. [7] From p 358, Appendix D, Section VII, of the TMDL. [8] From p 406, Appendix D, Section XII, of the TMDL. [9] From p 206, Table 101, of the TMDL. [10] From p 208, Table 102, of the TMDL. [11] From p 207, Table 102, and p 407, Appendix D, Section XII, of the TMDL. [12] From p 209, Table 102, of the TMDL. [13] From p 210, Table 103, of the TMDL. [14] From p 213, Table 104, of the TMDL. [15] From p 214, Table 105, of the TMDL.

Table 4b summarizes the TSS TMDL (taken from Table 3b L.C. for TSS) and allocations for the mainstem of the Snake River. Tributary reductions will reduce the TSS "current" concentration to a lesser "target" value (as described in Table 3b) by Year 5/10. Thus, the mainstem Snake River TMDL describes the TSS "target" values that are estimated due to tributary and mainstem reductions from point and nonpoint sources by Years 5/10 of TMDL implementation.

Table 4b. Summary of Sediment TMDL and Allocations for Upper Snake / Rock Subbasin TMDL

Unit	Stream Name	PNRS	TMDL [1] *(tons/yr)*	WLAs [2] *(tons/yr)*	LAs [3] *(tons/yr)*	MOS [1] *(tons/yr)*	Percent Reduction
Mainstem Snake River (RM 638.5 to RM 545.0)							
1	Snake River	378.0	43,800.9	*(4)* 1.3[4]	*(16)* 35,039.7[6]	8,759.9	38.6%
	Snake River	377.0					
	Shoshone Falls Res.	375.0					
2	Snake River	374.1	60,031.5	*(20)* 1,246.4[5]	*(20)* 47,028.1[7]	11,757.0	41.6%
	Snake River	374.0d					
3	Snake River	374.0c	151,817.3	*(45)* 2,654.5	*(24)* 119,330.2[8]	29,832.6	17.4%
	Snake River	374.0b					
	Snake River	374.0a					
4	Upper Salmon Falls Res.	373.0	146,117.0	*(8)* 577.2	*(11)* 116,431.8[9]	29,108.0	21.6%
5	Lower Salmon Falls Res.	372.0	182,475.3	*(34)* 1,130.8	*(12)* 145,075.6[10]	36,268.9	7.2%
	Snake River	371.0					

6	Bliss Reservoir	370.0	224,238.6	*(3)* 0.0	*(8)* 179,390.9[11]	44,847.7	25.4%
	Snake River	369.0b					
	Snake River	369.0a					
AVERAGE OF ALL SEGMENTS			134,746.8	935.9	107,049.4	26,762.3	25.3%
AVERAGE % OF TOTAL			100.0%	0.7%	79.4%	19.9%	-

Notes:
[1]For Units 2-6, the TMDL is the sum of that unit's allocations (both WLAs & LAs) plus the sum of all upstream allocations (both WLAs & LAs). Thus, the MOS accounts for WLAs and LAs already allocated to upstream TMDL analysis units. The TMDLs are thus cumulative, not incremental.[2]Value in parentheses on left represents total number of wasteload allocations in the segment. Includes a group allotment to CFOs and/or CAFOs and a group allotment to land application facilities (both zero discharge). [3]Value in parentheses on left represents total number of load allocations in the segment. Individual allocations identified in the USRWMP *(see Tables 100-105, pages 202-15).* [4] From pp 202-203, Table 100, of the TMDL. [5] From pp 205-207 Table 101, of the TMDL. [6] From Table 9a of the *Summary* document. [7] From Table 9c of the *Summary* document. [8] From Table 9e of the *Summary* document. [9] From Table 9f of the *Summary* document. [10] From Table 9h of the *Summary* document. [11] From Table 9i of the *Summary* document.

Load allocations for total phosphorus on tributaries are designed to meet an in-stream target of 0.100 mg/L using an average annual flow. LAs for total phosphorus on segments of the mid-Snake are designed to meet an instream target of 0.075 mg/L, also using an average annual flow. Overall, it is estimated that 50.7% of the L.C. for TP is from WLAs, 44.0% is from LA s, and 5.3% is MOS. The process to identify specific load allocations for total phosphorus used a mass balance approach similar to the one used for TSS. Regional mean water quality estimates for total phosphorus are described in the USRWMP *(see Section 3.0.2, page 151).* LAs for total phosphorus are summarized in Table 5 while detailed allocations are presented in Tables 8 and 9 at the end of this Review Summary.

Table 5a. Summary of Phosphorus TMDL and Allocations for Upper Snake / Rock Subbasin TMDL

Unit	Stream Name	PNRS	TMDL *(lbs/day)*	WLAs[1] *(lbs/day)*	LAs[2] *(lbs/day)*	MOS *(lbs/day)*	Percent Reduction
Tributaries							
1	Dry Creek, West Fork	411.0	1.7	*(0)* 0.0	*(1)* 1.4	0.3	26.3%
	Dry Creek	409.0	0.5	0.0	0.4	0.1	26.3%
	Dry Creek	408.0	5.4	*(0)* 0.0	*(4)* 4.3	1.1	26.3%
	Vinyard Creek	407.0	1.4	*(0)* 0.0	*(1)* 1.4	0.0	2.9%
2	Alpheus Creek	405.0	0.1	*(0)* 0.0	*(1)* 0.1	0.0	0.0%
	Rock Creek	400.0	169.8	*(8)* 34.1	*(3)* 108.6	27.1	38.0%
	Ellison Creek	399.0	0.1	*(0)* 0.0	*(1)* 0.1	0.0	0.0%
	Crystal Springs	398.0	79.0	*(1)* 73.6	*(1)* 5.4	0.00	20.0%

3	Cedar Draw	397.0	105.4	*(10)*	45.5	*(1)* 47.9	12.0	43.1%
	Clear Springs	395.0	170.1	*(5)*	164.5	*(1)* 5.6	0.0	20.0%
	Mud Creek	394.0	85.9	*(11)*	37.3	*(1)* 38.9	9.7	40.9%
	Deep Creek	392.0	91.3	*(6)*	26.5	*(3)* 51.8	13.0	37.1%
	McMullen Creek	404.0	2.2	*(0)*	0.0	*(1)* 1.8	0.4	34.5%
	Cottonwood Creek	403.0	1.2	*(0)*	0.0	*(1)* 1.0	0.2	37.8%
	Blind Canyon Creek	389.0	25.9	*(1)*	2.5	*(3)* 23.4	0.0	38.1%
4	Thousand Springs Cr.	386.0	143.3	*(1)*	9.4	*(1)* 137.1	0.0	20.0%
	Riley Creek	385.0	50.6	*(2)*	43.4	*(1)* 7.2	0.0	50.0%
5	Billingsley Creek	384.0	162.1	*(14)*	140.9	*(1)* 21.2	0.0	25.9%
6	Pioneer Reservoir	380.0	22.0	*(0)*	0.0	*(3)* 22.0	0.0	67.6%
	Clover Creek	379.0	22.0	*(0)*	0.0	*(3)* 22.0	0.0	67.6%
Overall Totals			1,140.0		577.7	501.6	60.7	31.1%

Notes:
[1]Value in parentheses on left represents total number of wasteload allocations in the segment. Includes a group allocation to CFOs and / or CAFOs and a group allotment to land application facilities (both zero discharge).[2]Value in parentheses on left represents total number of load allocations in the segment. Individual allocations identified in the USRWMP *(see Tables 107-113, pages 219-28).* [3]The margin of safety is zero where waters are already meeting the water quality target of 0.100 mg/L TP. These waters are allocated their average current load.

Table 5b summrizes the phophorus TMDL (from Table 3b) and allocations for the mainstem of the Snake River. The MOS was estimated similarly as the TSS (20%). It is estimated that 7.2% of the L.C. for TP comes from WLAs, 74.2% from LA s, and 18.6% is accounted for in the MOS.

Table 5b. Summary of Phosphorus TMDL and Allocations for Upper Snake / Rock Subbasin TMDL

Unit	Stream Name	PNRS	TMDL [1] *(lbs/day)*	WLAs [2] *(lbs/day)*	LAs [3] *(lbs/day)*	MOS [1] *(lbs/day)*	Percent Reduction
Mainstem Snake River (RM 638.5 to RM 545.0)							
1	Snake River	378.0	1,914.93	*(4)* 3.3	*(16)* 1,529.3[4,10]	382.3	49.0%[11]
	Snake River	377.0					
	Shoshone Falls Res.	375.0					
2	Snake River	374.1	2,222.6	*(20)* 873.0	*(20)* 1,079.7[5,10]	269.9	47.9%[11]
	Snake River	374.0d					

3	Snake River	374.0c	2,915.5	*(45)* 440.3	*(23)* 1,980.2[6,10]	495.0	32.4%[11]
	Snake River	374.0b					
	Snake River	374.0a					
4	Upper Salmon Falls Res.	373.0	3,683.9	*(8)* 45.9	*(11)* 2,910.4[7,10]	727.6	30.3%[11]
5	Lower Salmon Falls Res.	372.0	4,490.4	*(34)* 67.9	*(12)* 3,538.0[8,10]	884.5	30.6%[11]
	Snake River	371.0					
6	Bliss Reservoir	370.0	4,607.6	*(3)* 0.0	*(7)* 3,686.1[9,10]	921.5	29.6%[11]
	Snake River	369.0b					
	Snake River	369.0a					
AVERAGE OF ALL SEGMENTS			3,305.8	238.4	2,453.9	613.5	36.6%
AVERAGE % OF TOTAL			100.0%	7.2%	74.2%	18.6%	-

Notes:
[1]For Units 2-6, the TMDL is the sum of that unit's allocations (both WLAs & LAs) plu the sum of all upstream allocations (both WLAs & LAs). Thus, the MOS accounts for WLAs and LAs already allocated to upstream TMDL analysis units. The TMDLs are thus cumulative, not incremental. The TMDL for TP is the equivalent L.C. TP value in Table 3b, column B.[2]Value in parentheses on left represents total number of wasteload allocations in the segment. Includes a group allotment to CFOs and/or CAFOs and a group allotment to land application facilities (both zero discharge).[3]Value in parentheses on left represents total number of load allocations in the segment. Individual allocations identified in the USRWMP *(see Tables 107-113, pages 219-28).* [4] From Table 9a of the *Summary* document. [5] From Table 9c of the *Summary* document. See note 10. [6] From Table 9e of the *Summary* document. See note 10. [7] From Table 9f of the *Summary* document. See note 10. [8] From Table 9h of the *Summary* document. See note 10. [9] From Table 9i of the *Summary* document. See note 10. [10] There is a high level of variability as well as unknown information in the actual value for all the LA s. Because of the attenuation potential in the phosphorus, the absolute value of the variance between the 1990-1991 baseline attenuation and the 1 e Year 5/10 attenuation was used as the estimate MOS. Therefore, the LA = TMDL - (WLA + MOS). Monitoring of the Middle Snake River and its tributaries will help to establish a better understanding of a truer MOS and LA.[11] The % Reduction is based on the average of all the reductions within the segment.

Table 6 describes the development of load allocations for fecal coliform as described in the USRWMP *(see Section 3.5.1, pages 198-199).* The loading capacity for fecal coliform is based on a target concentration of 500 cfu/100mL (instantaneous) designed to protect for primary contact recreation. Allocations have been identified which are intended to achieve an instream target of 400 cfu/100 mL leaving a margin of safety of 100 cfu/100mL (or 20%). IDEQ has also identified the anticipated reduction of fecal coliform for some of these tributaries which is described in the USRWMP *(see page 199).* Where uncertainty exists as to % Reduction due to lack of monitoring data, monitoirng (M) will be done to make certain that targets are being met. Streams not requiring a TMDL for pathogens are identified in grey fill-in color. All streams requiring a pathogen TMDL will be monitored for fecal coliform bacteria and/or *E. coli.*

Table 6. Fecal Coliform TMDL and Allocation Summary for Upper Snake / Rock Subbasin TMDL

Unit	Stream Name	PNRS	TMDL [1] (cfu/day)	WLAs [2] (cfu/day)	LAs [3] (cfu/day)	MOS (cfu/day)	Percent Reduction

Tributaries									
1	Dry Creek, West Fork	411.0	39.1	*(0)*	0.0	*(1)*	31.3	7.8	M
	Dry Creek	409.0	12.2	*(0)*	0.0		9.8	2.4	M
	Dry Creek	408.0	122.3	*(0)*	0.0	*(4)*	97.8	24.5	M
	Vinyard Creek	407.0	0.0		0.0		0.0	0.0	0.0
2	Alpheus Creek	405.0	0.0		0.0		0.0	0.0	0.0
	Rock Creek	400.0	3,630.8	*(8)*	0.0	*(3)*	2,904.6	726.2	31%
	Ellison Creek	399.0	0.0		0.0		0.0	0.0	0.0
	Crystal Springs	398.0	0.0		0.0		0.0	0.0	0.0
3	Cedar Draw	397.0	2,390.0	*(10)*	2.3	*(1)*	1,910.2	477.5	57%
	Clear Springs	395.0	0.0		0.0		0.0	0.0	0.0
	Mud Creek	394.0	1,947.4	*(11)*	6.0	*(1)*	1,553.2	388.3	60%
	Deep Creek	392.0	2,069.7	*(0)*	0.0	*(3)*	1,655.8	413.9	75%
	McMullen Creek	404.0	48.9	*(0)*	0.0	*(1)*	39.1	9.8	(M) 35% Reduction
	Cottonwood Creek	403.0	28.1	*(0)*	0.0	*(1)*	22.5	5.6	80%
	Blind Canyon Creek	389.0	617.4	*(0)*	0.0	*(3)*	493.9	123.5	M
4	Riley Creek	385.0	2,295.9	*(0)*	0.0	*(1)*	1,836.7	459.2	M
5	Billingsley Creek	384.0	3,539.1	*(0)*	0.0	*(1)*	2,831.3	707.8	22%
6	Pioneer Reservoir	380.0	498.8	*(0)*	0.0	*(3)*	399.0	99.8	63%
	Clover Creek	379.0	498.8	*(0)*	0.0	*(3)*	399.0	99.8	63%

Notes:
M = Monitoring required. Grey filled-in streams donot require a pathogen TMDL. [1]The TMDL does not reflect the imprecise nature of the fecal coliform MPN analytical method, nor the inherent variability of ambient fecal coliform concentrations. As new data and methods are developed to better address these challenges, the loading capacities for fecal coliform may be refined and the TMDL revised. [2]Value in parentheses on left represents total number of wasteload allocations in the segment. Includes a group allocation to CFOs and / or CAFOs and a group allotment to land application facilities (both zero discharge) [3]Value in parentheses on left represents total number of load allocations in the segment.

7. MARGIN OF SAFETY (MOS)

A uniform value of 20% was applied as the MOS for TSS, TP, and pathogens, since the average of all the calculated MOS's for TSS and TP when averaged together approximates 20.2%. Also, the pathogen MOS is based on 100 cfu (20%) below the water quality standard (500 cfu) for primary contact recreation. However, as described in the Upper Snake Rock TMDL, the MOS is implicit in that it is incorporated through conservative assumptions in the analysis. Section 3.4, pages 195-197 of the Upper Snake Rock TMDL describes these implicit conservative assumptions. These assumptions are

summarized in Table 7. Figures 4 and 5 illustrate the apparent magnitude of the MOS of TSS and TP on the mainstem Middle Snake River in the subbasin. It is worth noting that the MOS for individual TMDLs in the Upper Snake Rock TMDL appears to vary throughout the subbasin (although a uniform value of 20% was applied to account for average conditions). Insufficient data exists to account for more accurate values for the MOS for individual TMDLs. However, there is sufficient information to ascertain that each TMDL is derived from a unique set of circumstances in terms of land use and point source discharges. Thus, different combinations affect water quality in different ways. Also, "current" conditions vary across the subbasin, which indicates that different reductions and MOS's are needed for different TMDLs. Lastly, the MOS values for TSS on upper mainstem reaches are higher as a percentage to allow for the unaccounted TSS inputs observed in the lower reaches. For TP, the MOS value appears to be the reverse of TSS. That is, the MOS value on the lower reaches is higher as a percentage. This reversal in MOS values for TP is because algal growth problems are more pronounced due to the residence time in the impoundment reaches of the Middle Snake River and also as a result of cumulative effects from upstream sources.

Table 7. Supporting Information for Margin of Safety

Uncertainties in TMDL	Adjustments to Account for Uncertainties
The degree of excess sediment to mainstem mid-Snake is currently difficult to quantify or define. Instream indicators of sediment, such as substrate targets, not used because of lack of site specific information for these parameters. Extrapolation of values from dissimilar areas may have limited relevance for the mid-Snake.	TSS targets are based on achieving annual average concentrations. Actual allocations to meet these targets have been derived from low flow conditions (similar scenario to a 7Q10 flow for dissolved oxygen / BOD). TSS target concentrations apply to all annual flow conditions (e.g. low, average, high). As more data is collected over the next 3-5 years, instream targets can be developed and adjustments made, if needed.
High flow sediment inputs from major tributaries, particularly Rock creek, Cedar Draw Creek, Mud Creek, Deep Creek, and the Malad River, may be underestimated.	Allocations have been identified for unaccounted sediment inputs in mainstem reaches 3 and 6 that are over and above the margin of safety. As more data is collected over the next 3-5 years and better analysis tools are developed, the TMDL may be revised as needed. In addition, a TMDL is targeted for development in the Big Wood subbasin which will reduce sediment input from the Malad River.
Little or no data available to define sediment targets for tributary streams.	An initial target of 52 mg/L identified based on literature cited in the USRWMP. For tributaries below this value, the current condition is the target. As more data is collected over the next 3-5 years, these targets will be assessed.

Figure 4 illustrates that the WLA loadings are very small when compared to the LA loadings and their accompanying MOS load. The LA loadings make up 79.4% of the total, followed by 19.9% for the MOS, and 0.7% for the WLAs.

Figure 5. TP Mainstem

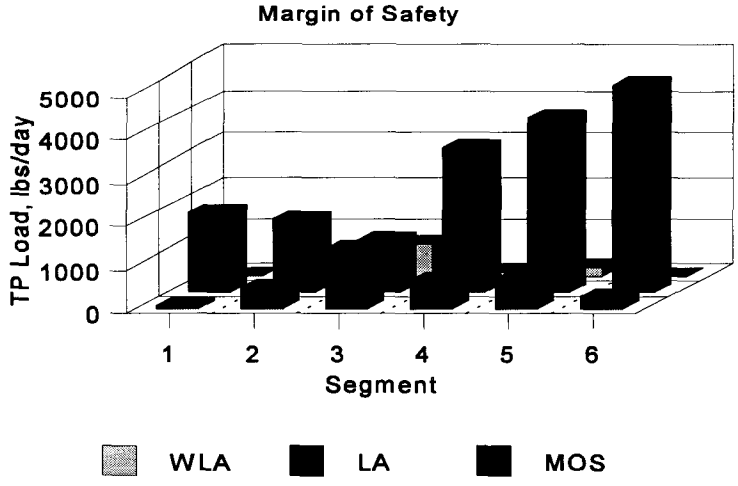
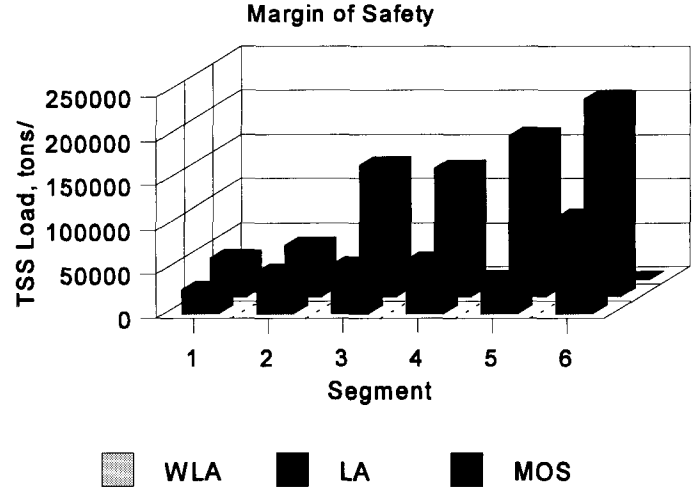


Figure 5 illustrates that the WLA loadings are very small in certain segments (the exception being Segment 3) of the mainstem of the Snake River when compared to the LA loadings and their accompanying MOS load. The LA loadings make up 74.2% of the total, followed by 18.6% for the MOS, and 7.2% for the WLAs.

Figure 4. TSS Mainstem



8. SEASONAL VARIATION

Allocations for TSS in the Upper Snake / Rock subbasin TMDL are expressed as annual average values. Allocations for phosphorus are expressed as daily loads averaged over an annual period. Seasonal variation was considered in development of the TMDL and is described in the USRWMP *(see Appendix D, pages 343-56).*

9. MONITORING PLAN (optional)

The *"Upper Snake Rock Watershed Management Plan"* presents a discussion on monitoring *(see Section 3.6.3, pages 236-37).* The purpose of this monitoring, as described in the Upper Snake Rock Plan is to provide information needed to evaluate water quality management in the subbasin. Trend monitoring, in conjunction with implementation of BMPs will be used to determine which management measures and BMPs are being implemented, whether the management measures and BMPs are being implemented as designed, and the need for increased efforts to promote or induce the use of additional management measures and BMPs. Idaho IDEQ indicates that it may be necessary to modify current or proposed monitoring programs to those that are more consistent with an adaptive management style for the watershed.

The trend monitoring plan *(see Appendix A)* proposed by the Mid-Snake Technical Advisory Committee (TAC) will be utilized by Idaho IDEQ, other agencies, and organizations. Each industry will be responsible for its own level of compliance monitoring. Idaho IDEQ is committed to continue monitoring the Middle Snake River for water quality. Tributary monitoring will be continued by IDEQ as needed in support of the Upper Snake / Rock Subbassin TMDL.

The *"Upper Snake Rock Watershed Management Plan"* also presents a discussion on the feedback loop and adaptive management as a component of the TMDL *(see Section 3.6.6, pages 240-41).* IDEQ-TFRO will review all monitoring results for point and nonpoint sources, and will provide an opportunity for the Mid-Snake WAG and U.S. EPA to review and comment on an annual basis. Each industry will provide an annual summary review / report to IDEQ-TFRO on its monitoring efforts, strategies, and ongoing reduction mechanisms. Based on these reports and other data, the Upper Snake / Rock Subbasin TMDL will be revised accordingly as an iterative plan.

10. IMPLEMENTATION PLANS (optional)

See Section 4, pages 242-53, of the TMDL. Presently, several land management agencies are monitoring and developing more refined implementation plans that specifically define the critical acres for achieving instream water quality targets for TSS, TP, and bacteria. IDEQ-TFRO has presented to the Mid-Snake WAG on various occasions a draft outline covering implementation plans specific to the Upper Snake Rock TMDL. IDEQ-TFRO has requested that all industries present their draft implementation plans on January 17, 2001 at the regularly scheduled Mid-Snake WAG Meeting in Twin Falls, Idaho. Public comment of the plans will be observed for 30-days, so that plans may be modified and finalized and submitted to IDEQ-TFRO by July 1, 2001.

11. REASONABLE ASSURANCES

Control measures to implement the Upper Snake / Rock Subbasin total phosphorus TMDL are not limited simply to NPDES, but are also based on the reasonable assurance that State and local authorities will be used to ensure needed reductions in nonpoint source loads. For the Upper Snake / Rock Subbasin TMDL, the reasonable assurance that it will lead to the attainment of water quality standards is based on three components:

- ✔ point source NPDES permits will require implementation and monitoring to collect new data that will be used to address wasteload allocation concerns *(see Section 3.6.3, pages 229-30)*

- ✔ nonpoint source implementation of BMPs will be based on land management agencies assurance that reductions will occur *(see Section 3.6.2, page 230-35)*

- ✔ a trend monitoring plan that will be used to document relative changes in various aquatic organism populations, and in physical / chemical water quality parameters over a 10-year to assess overall progress towards attainment of water quality standards.

The *"Upper Snake Rock Watershed Management Plan"* presents a discussion on the legal authorities that support management and control actions used to implement the TMDL *(see Section 3.6.4, pages 237-39)*. Point sources (e.g. aquaculture, food processors, municipalities) are regulated under the NPDES program administered by U.S. EPA.

In the *"Overview for the Implementation of Nonpoint Source TMDLs"*, Idaho IDEQ commits to the development of implementation plans for all Idaho TMDLs within 18 months of EPA approval. Among the elements of these plans is a need to seek funding for implementation of nonpoint source control measures, establish implementation timelines, and establish a monitoring program that addresses both implementation of BMPs as well as water quality trend monitoring.

12. PUBLIC PARTICIPATION

The *"Upper Snake Rock Watershed Management Plan"* summarizes the public participation which occurred during development of the TMDL *(see Section 5, pages 254-55)*. Public participation of the Upper Snake / Rock Subbasin TMDL was conducted using both an advisory group process and a formal notice / comment period. Three advisory groups provided different levels of input to development of the Upper Snake / Rock Subbasin TMDL which included:

- *Middle Snake River Watershed Advisory Group (WAG)*, as part of their statutory stewardship under §39-3601 *et seq*, provided input on development of the subbasin assessment. IDEQ-TFRO presented the draft subbasin assessment to the WAG on July 15, 1998 to solicit comments. From March through October 1999, various portions of the TMDL and revisions to the subbasin assessment were presented to the WAG. Feedback and comments from the WAG were incorporated into the TMDL prior to start of the formal public comment period.

- *Middle Snake River Technical Advisory Committee (TAC)* was the scientific arm of the Mid-Snake WAG and provided technical assistance to IDEQ in development of the subbasin assessment and TMDL. The TAC helped to review all technical data bases, information sources, and references. The Mid-Snake TAC began review of the subbasin assessment on June 17, 1998. On March 17, 1999, the Mid-Snake TAC was provided a general overview of the TMDL development process. Following the March meeting, TAC meetings provided an opportunity for continued discussion and comments on development of the TMDL.

- *Upper Snake Basin Advisory Group (BAG)*, as part of their statutory stewardship under §39-3601 *et seq* provided guidance and advice to the Mid-Snake WAG, the Mid-Snake TAC, and IDEQ-TFRO. Part of that stewardship is to review documents after formal presentation and provide feedback. The subbasin assessment was presented to the BAG on September 2, 1998. The proposed TMDL was presented to the BAG on October 6, 1999.

A proposed draft Upper Snake / Rock Subbasin TMDL was completed on October 4, 1999 and distributed to the WAG at their regularly scheduled meeting on October 20, 1999. A public notice on the proposed Upper Snake / Rock Subbasin TMDL was issued by Idaho IDEQ on November 1, 1999. The comment period was open for 30 days. Idaho IDEQ prepared a response to comments which is part of the final *"Upper Snake Rock Watershed Management Plan" (see Section 8, pages 448-88).*

13. OTHER PARAMETRS CONSIDERED

Un-ionized Ammonia: A summary of existing water quality data for un-ionized ammonia is presented in the USRWMP *(see Section 2.2.4, pages 118 and 122-23).* In the discussion of instream water quality targets, the USRWMP addresses concerns surrounding un-ionized ammonia *(see Section 3.1.4, pages 173-175).* Only 5 of 1,498 samples (0.3%) exceeded water quality standards on the Middle Snake River. On the tributaries, there were 27 of 2,212 samples (1.2%) that exceeded water quality standards. The USRWMP states that no un-ionized ammonia TMDLs will be done at this time. The rationale is based on the low frequency of exceedances and on the major reductions in TSS levels which will also reduce inputs of un-ionized ammonia to waters in the Upper Snake / Rock subbasin. The effect of TSS reductions on un-ionized ammonia is discussed in the USRWMP *(see Appendix D, pages 380-405).*

Pesticides: Within the Upper Snake/ Rock subbasin, the only §303(d) segment listed for pesticides was Cottonwood Creek. Idaho IDEQ conducted additional work during development of the Subbasin Assessment including a literature survey of efforts by other agencies and follow-up sampling *(see Section 3.1.6, page 176).* IDEQ found no evidence of pesticides being discharged to Cottonwood. In addition, IDEQ sampled Cottonwood Creek in 1999 (June, July, August) when the potential for pesticide effects on Cottonwood Creek is greatest. This in-stream water quality analysis for pesticides indicates that no pesticides (as herbicides, organophosphates, or organochlorine insecticides) were detected. As a result, IDEQ recommended that pesticides be removed as a §303(d) pollutant for Cottonwood Creek.

Oil & Grease: No TMDL for oil & grease was developed for the Upper Snake / Rock subbasin. Within the US/R subbasin, the only §303(d) segment listed for oil & grease was Rock Creek. The listing was

the result of previous historical practices that allowed the discharge of the Twin Falls POTW and other point sources into Rock Creek. Idaho IDEQ determined that these sources no longer discharge to Rock Creek. In addition, Idaho IDEQ conducted follow-up work which demonstrates that oil & grease is no longer a contaminant of Rock Creek *(see USRWMP Section 3.1.7, page 176)*. As a result, IDEQ recommended that oil & grease be removed as a §303(d) pollutant for Rock Creek.

14. DETAILED ALLOCATIONS

The details of the allocations are derived from the Upper Snake Rock TMDL itself. TSS is found on pp 202-215, Tables 100-106. TP is found on pp 219-228, Tables 107-113. Bacteria is found on pp 170-173 and on Table 3a of this *Summary* document. Additional information is found in Appendix D of the TMDL. Footnotes are provided within each TMDL sub section of Tables 8a-9i. An attempt was made to account for rounding errors by taking the prinicipal value at "face value" and not carry over any decimal places beyond the signifcant decimal placement appropriate to the allocation value. On bacteria, it is assumed that fish hatcheries do not discharge fecal coliform bacteria or E. coli, therefore their bacteria allocation is 0.0.

Table 8a. Allocations for Upper Snake / Rock Subbasin TMDL *(Tributaries)*

Unit	Source	Allocation Type	Sediment *(tons/yr)*	Phosphorus *(lbs/day)*	Fecal Coliform
	Vinyard TMDL[4]				
1	Vinyard Creek	LA	17.1[1]	1.4[2]	0.0[3]
Notes on Vinyard Creek: [1] From Table 100 of the TMDL. [2] From Table 107 of the TMDL. [3] From Table 3a of the *Summary* document. [4]Based on Segment 1 allocations and Table 3a of the *Summary* document.					
	Dry Creek TMDL[7]				
1	Dry Creek (408) *Ag, Grazing, Background*	LA	511.5[1]	5.4[2]	122.3[4]
1	Dry Creek (409) *Ag, Grazing, Background*	LA	51.2[1]	0.5[2]	12.2[4]
1	W.F. Dry Creek (411) *Grazing, Background*	LA	163.7[1]	1.7[2]	39.1[4,5]
	TOTAL DRY CREEK LAS *(4)*	4 LAs	726.4[1]	7.6[3]	173.6[6]
Notes on Dry Creek: [1] From Table 100 of the TMDL. [2] TP allocation, lbs/day = (TSS allocation, tons/year / Total Dry Creek TSS LA s) x 5.39 Total Dry Creek TP LA s, lbs/day. [3] From Table 107 of the TMDL. [4] Bacteria allocation = (TSS allocation, tons/year / Total Dry Creek TSS LA s) x 97.8 Total Dry Creek Bacteria LA s. [5] The allocation of W.F. Dry Creek of 39.1 Bacteria = 39.1 Bacteria allocation of Table 3a of the *Summary* document. [6] From Table 3a of the *Summary* document. [7]Based on Segment 1 and Table 3a of the *Summary* document.					
	Alpheus Creek TMDL[2]				
2	Alpheus Creek	LA	1.3[1]	0.1[1]	0.0[1]

Notes on Alpheus Creek:
[1] From Table 3a of the *Summary* document. [2]Based on Segment 2 and Table 3a of the *Summary* document.

Rock Creek TMDL[8]						
2	C&M Fish Farm	ID-002714-6	WLA	28.1[1]	5.12[2,3]	0.0
2	Canyon Trout Farm	ID-002191-1	WLA	21.1[1]	3.84[2,3]	0.0
2	Canyon Trout Processing	ID-002191-1	WLA	0.0[1]	0.00[2,3]	0.0
2	Coats Farm Ponds	ID-002761-8	WLA	39.3[1]	7.16[2,3]	0.0
2	CSI Fish Hatchery	ID-002630-1	WLA	9.7[1]	1.77[2,3]	0.0
2	Daydream Ranch FH	ID-002680-8	WLA	25.9[1]	4.72[2,3]	0.0
2	Deadman Hatchery	ID-002689-1	WLA	27.5[1]	5.01[2,3]	0.0
2	Frame Hatchery	ID-002703-1	WLA	35.6[1]	6.48[2,3]	0.0
	TOTAL ROCK CREEK WLAs	*(8)*	8 WLA s	187.2	34.10[3]	0.0
2	Rock Creek	*(Agriculture)*	LA	9,328.6[1]	100.13[4]	2,604.0[6]
2	Rock Creek	*(Grazing)*	LA	198.7[1]	2.13[4]	55.5[6]
2	Rock Creek	*(Background)*	LA	1,512.5[1]	16.23[4]	422.2[6]
	TOTAL ROCK CREEK LAs	*(3)*	3 LA s	11,039.8[1]	118.5[5]	3,081.7[7]
WLA + LA Totals				11,227.0	152.6	3,081.7
Instream Target Loads at Annual Q				16,117.7	169.8	3,852.1

Notes on Rock Creek:
[1] From Table 101 of the TMDL. [2] TP allocation, lbs/day = (TSS WLA, tons/year / Total Rock Creek TSS WLA s) x 34.10 Total Rock Creek TP WLA s, lbs/day. [3] From Appendix D, Section XIV, p 436, of the TMDL. [4] TP allocation, lbs/day = (TSS LA, tons/year / Total Rock Creek TSS LA s) x 118.50 Total Rock Creek TP LA s, lbs/day. [5] From Table 108 of the TMDL. [6] Bacteria allocation = (TSS LA, tons/year / Total Rock Creek TSS LA s) x 3,081.7 Total Rock Creek Bacteria allocation. [7] From Table 3a of the *Summary* document. [8]Based on Segment 2 and Tables 3a and 6 of the *Summary* document.

Table 8b. Allocations for Upper Snake / Rock Subbasin TMDL *(Tributaries)*

Unit	Source	Allocation Type	Sediment *(tons/yr)*	Phosphorus *(lbs/day)*	Fecal Coliform
Ellison Creek TMDL[4]					
2	Ellison Creek	LA	1.6[1]	0.13[2]	0.0[3]

Notes on Ellison Creek:
[1] From Table 101 of the TMDL. [2] From Table 108 of the TMDL. [3] From Table 3a of the *Summary* document. [4]Based on Segment 2 and Table 3a of the *Summary* document.

Crystal Springs TMDL[4]					
2	Crystal Springs	LA	63.9[1]	79.0[2]	0.0[3]

Notes on Crystal Springs:
[1] From Table 101 of the TMDL. [2] From Table 108 of the TMDL. [3] From Table 3a of the *Summary* document. [4]Based on Segment 2 and Table 3a of the *Summary* document.

Cedar Draw TMDL[7]						
3	Filer POTW	ID-002006-1	WLA	2.1[1]	16.40[2]	2.3[5]
3	Cedar Draw Hatchery	ID-002503-8	WLA	39.6[1]	7.22[3]	0.0
3	Leo Martin Fish Hatchery	ID-002775-8	WLA	29.5[1]	5.38[3]	0.0
3	Olson Ponds	ID-002592-5	WLA	7.6[1]	1.39[3]	0.0
3	Rainbow Trout Processing		WLA	0.04[1]	0.4[2]	0.0
3	Rainbow Trout Farm (Filer)	ID-000102-3	WLA	25.3[1]	4.60[3]	0.0
3	SEAPAC Processing		WLA	0.0[1]	0.00[2]	0.0
3	Stutzman Fish Farm	ID-002730-8	WLA	2.4[1]	0.44[3]	0.0
3	Tunnel Creek Hatchery	ID-002292-6	WLA	35.8[1]	6.53[3]	0.0
3	Yoder's Farm Pond	ID-002423-6	WLA	17.5	3.19[3]	0.0
	TOTAL CEDAR DRAW WLAS	***(10)***	**10 WLAs**	**160.0**	**45.5**	**2.3[6]**
3	Cedar Draw		LA	5,721.0[1]	62.1[4]	1,910.2[6]
	TOTAL CEDAR DRAW LAS	***(1)***	**1 LA s**	**5,721.0[1]**	**62.1[4]**	**1,910.2[6]**
WLA + LA Totals				**5,881.0**	**107.6**	**1,912.5**
Instream Target Loads at Annual Q				**10,000.0**	**105.4**	**2,390.0**

Notes on Cedar Draw:
[1] From Table 102 of the TMDL. [2] From Appendix D, Section XIV, p 438, of the TMDL. [3] From Appendix D, Section XIV, p 436, of the TMDL. [4] From Table 109 of the TMDL. [5] Calculated from Pathogen TMDL = 400 cfu x 0.24 annual cfs x 0.02445 = 2.3 average cfu. [6] From Table 3a of the *Summary* document. [7]Based on Segment 3 and Table 6 of the *Summary* document.

Table 8c. Allocations for Upper Snake / Rock Subbasin TMDL *(Tributaries)*

Unit	Source		Allocation Type	Sediment *(tons/yr)*	Phosphorus *(lbs/day)*	Fecal Coliform
Clear Springs TMDL[6]						
3	Clear Lakes Trout Co.	ID-000101-5	WLA	317.2[1]	57.8[2]	0.0
3	Clear Lakes Trout Processing	ID-000101-5	WLA	1.0	0.4[3]	0.0
3	Clear Springs Processing	ID-002688-3	WLA	5.8[1]	5.4[3]	0.0
3	Middle Hatchery FH	ID-000093-1	WLA	358.2[1]	65.2[2]	0.0
3	Snake River FH	ID-000075-2	WLA	195.8[1]	35.7[2]	0.0
	TOTAL CLEAR SPRINGS WLAS	***(5)***	**5 WLAs**	**877.9**	**164.5**	**0.0**

3	Clear Springs & Lake	LA	180.1[1]	5.6[4]	0.0[5]
	TOTAL CLEAR SPRINGS LAs *(1)*	1 LA	180.1[1]	5.6[4]	0.0[5]
WLA + LA			1,058.0	170.1	0.0
Instream Target Loads at Annual Q			1,058.0	170.1	0.0

Notes on Clear Springs:
[1]From Table 102 of the TMDL. [2] From Appendix D, Section XIV, p 436 of the TMDL. [3] From Appendix D, Section XIV, p 438. [4] From Table 109 of the TMDL. [5] From Table 3a of the *Summary* document. [6]Based on Segment 3 and Tables 3a and 6 of the *Summary* document.

Mud Creek TMDL[8]						
3	Buhl POTW	ID-002066-4	WLA	28.8[1]	17.40[2]	6.0[6]
3	Buhl Trout Farm Pond (Blau)	ID-002673-5	WLA	9.9[1]	1.80[3]	0.0
3	Buhl Trout Rearing Facility	ID-002674-3	WLA	6.7[1]	1.22[3]	0.0
3	First Ascent Fish Farm	ID-002777-4	WLA	35.3[1]	4.30[3]	0.0
3	Jukers Ponds (Silo Creek)	ID-002618-2	WLA	10.6[1]	1.94[3]	0.0
3	Mi Vida Loca (Compton)	ID-002788-0	WLA	7.9[1]	1.44[4]	0.0
3	Rainbow Trout Farm (Buhl)	ID-000103-1	WLA	16.3[1]	2.96[3]	0.0
3	RCP (Silo Creek)	ID-002752-9	WLA	3.5[1]	0.64[3]	0.0
3	Rocky Ridge Ranch	ID-002780-4	WLA	4.0[1]	0.72[3]	0.0
3	W&W Trout Farm	ID-002606-9	WLA	20.0[1]	3.64[3]	0.0
3	White's Trout Farm	ID-002604-2	WLA	7.8[1]	1.43[3]	0.0
	TOTAL MUD CREEK WLAs *(11)*		11 WLAs	150.8	37.3	6.0
3	Mud Creek		LA	4,965.4[1]	52.4[5]	1,941.4[7]
	TOTAL MUD CREEK LAs *(1)*		1 LA	4,965.4[1]	52.4[5]	1,941.4[7]
WLA + LA				5,116.2	89.7	1,947.4
Instream Target Loads at Annual Q				8,148.4	85.9	1,947.4

Notes on Mud Creek:
[1] From Table 102 of the TMDL. [2] From Appendix D, Section XIV, p 438, of the TMDL. [3] From Appendix D, Section XIV, p 436, of the TMDL. [4] From Appendix D, Section XIV, p 437, of the TMDL. [5] From Table 109 of the TMDL. [6] From the following calculation: 0.61 annual flow (cfs) x 400 cfu x 0.02445 = 6.0 cfu. [7] From Table 3a of the *Summary* document. 1947.4 - 6.0 = 1941.4 cfu. [8]Based on Segment 3 and Tables 3a and 6 of the *Summary* document.

Table 8d. Allocations for Upper Snake / Rock Subbasin TMDL *(Tributaries)*

Unit	Source	Allocation Type	Sediment *(tons/yr)*	Phosphorus *(lbs/day)*	Fecal Coliform

Deep Creek TMDL[7]						
3	Boswell Trout Farm	ID-002670-1	WLA	33.2[1]	6.05[2]	0.0
3	Cox Farm Ponds	ID-002533-0	WLA	30.7[1]	5.58[2]	0.0
3	Deep Creek Trout Farm	ID-002515-1	WLA	31.1[1]	5.67[2]	0.0
3	Dolana Farm Ponds	ID-002615-8	WLA	10.2[1]	1.85[2]	0.0
3	Howell Farm Ponds	ID-002763-4	WLA	19.0[1]	3.46[2]	0.0
3	Peter's Farm Pond	ID-002424-4	WLA	20.3[1]	3.70[2]	0.0
	TOTAL DEEP CREEK WLAs	***(6)***	**6 WLAs**	**144.5**	**26.5**	**0.0**
3	McMullen Creek — Tributary TMDL		LA	204.6[1]	2.2[3]	48.9[5]
3	Cottonwood Creek — Tributary TMDL		LA	117.6[1]	1.15[3]	28.1[5]
3	Deep Creek		LA	4,480.0[1]	51.7[3,4]	2,069.7[5]
	TOTAL DEEP CREEK LAs	***(3)***	**3 LAs**	**4,750.9**	**55.1**	**2,146.7[6]**
WLA + LA				**4,895.4**	**81.6**	**2,069.7**
Instream Target Loads at Annual Q				**8,659.9**	**91.3**	**2,069.7**

Notes on Deep Creek:
[1] From Table 102 of the TMDL. [2] From Appendix D, Section XIV, p 437, of the TMDL. [3] TP allocation, lbs/day = (TSS LA, tons/year / Total Deep Creek LA, tons/year) x 55.10. [4] 51.96 lbs/day TP for Deep Creek's LA is considered equivalent to the value of 51.7 lbs/day found in Table 109 of the TMDL. [5] From Table 3a of the *Summary* document. [6] The WLA+LA pathogen value of 2,069.7 cfu is < Total Deep Creek LAs of 2,146.7 cfu because McMullen Creek and Cottonwood Creek have been incrementally added. In fact, they should not be added, since they have their own TMDL and will have their own reductions. [7] Based on Segment 3 and Tables 3a and 6 of the *Summary* document.

McMullen Creek TMDL[4]					
3	McMullen Creek	LA	204.6[1]	2.2[2]	48.9[3]

Notes on McMullen Creek:
[1] From Table 102 of the TMDL. [2] From Table 8d on Deep Creek of the *Summary* document. [3] From Table 3a of the *Summary* document. [4] Based on Segment 3 and Tables 3a and 6 of the *Summary* document.

Cottonwood Creek TMDL[4]					
3	Cottonwood Creek	LA	117.6[1]	1.15[2]	28.1[3]

Notes on Cottonwood Creek:
[1] From Table 102 of the TMDL. [2] From Table 8d on Deep Creek of the *Summary* document. [3] From Table 3a of the *Summary* document. [4] Based on Segment 3 and Tables 3a and 6 of the *Summary* document.

Blind Canyon Creek TMDL[7]						
3	Blind Canyon Hatchery	ID-002599-2	WLA	13.7[1]	2.50[2]	0.0
	TOTAL BLIND CANYON CREEK WLAs	***(1)***	**1 WLA**	**13.7[1]**	**2.50[2]**	**0.0**
3	Blind Canyon Creek	*(Agriculture)*	LA	611.7[1]	18.72[3]	493.8[5]

3	Blind Canyon Creek *(Grazing)*	LA	79.5[1]	2.43[3]	64.1[5]
3	Blind Canyon Creek *(Background)*	LA	73.6[1]	2.25[3]	59.5[5]
	TOTAL BLIND CANYON CREEK LAs *(3)*	3 LA s	764.8	23.40[4]	617.4[6]
	WLA + LA		778.5	25.9	617.4
	Instream Target Loads at Annual Q		778.5	25.9	617.4

Notes on Blind Canyon Creek:
[1] From Table 102 of the TMDL. [2] From Appendix D, Section XIV, p 436, of the TMDL. [3] TP allocation, lbs/day = (TSS LA, tons/year / Total Blind Canyon Creek LA s, tons/year) x 23.40. [4] From Table 109 of the TMDL. [5] Bacteria allocation = (TSS LA, tons/year / Total Blind Canyon Creek LA s, tons/year) x 493.9. [6] From Table 3a of the *Summary* document. [7] Based on Segment 3 and Tables 3a and 6 of the *Summary* document.

Table 8e. Allocations for Upper Snake / Rock Subbasin TMDL *(Tributaries)*

Unit	Source	Allocation Type	Sediment *(tons/yr)*	Phosphorus *(lbs/day)*	Fecal Coliform
	Thousand Springs Creek TMDL[5]				
4	Ten Springs FH	WLA	50.6[1]	9.40[2]	0.0
	TOTAL THOUSAND SPRINGS CREEK WLAs *(1)*	1 WLA	50.6[1]	9.40[2]	0.0
4	Thousand Springs Creek	LA	1,575.2[1]	137.1[3]	0.0[4]
	TOTAL THOUSAND SPRINGS CREEK LAs *(1)*	1 LA	1,575.2[1]	137.1[3]	0.0[4]
	WLA + LA		1,625.8	146.5	0.0
	Instream Target Loads at Annual Q		1,685.8	143.3	0.0
	Riley Creek TMDL[5]				
4	IDFG Hagerman State ID-000080-9	WLA	142.2[1]	25.90[2]	0.0
4	USFWS Hagerman National ID-000082-5	WLA	95.8[1]	17.46[2]	0.0
	TOTAL RILEY CREEK WLAs *(2)*	2 WLAs	238.0	43.4	0.0
4	Riley Creek	LA	734.1[1]	7.2[3]	2,295.9[4]
	TOTAL RILEY CREEK LAs *(1)*	1 LA	734.1[1]	7.2[3]	2,295.9[4]
	WLA + LA		972.1	50.6	2,295.9
	Instream Target Loads at Annual Q		972.1	50.6	2,295.9

Notes on Riley Creek:
[1] From Table 103 of the TMDL. [2] From Appendix D, Section XIV, p 437, of the TMDL. [3] From Table 110 of the TMDL. [4] From Table 3a of the *Summary* document. [5] Based on Segment 4 and Table 3a of the *Summary* document.

Table 8f. Allocations for Upper Snake / Rock Subbasin TMDL *(Tributaries)*

Unit	Source		Allocation Type	Sediment *(tons/yr)*	Phosphorus *(lbs/day)*	Fecal Coliform
Billingsley Creek TMDL[5]						
5	Boyer Farm Ponds	ID-002704-9	WLA	22.8[1]	4.20[2]	0.0
5	Dunn / Rainbow Falls	ID-002675-1	WLA	45.2[1]	8.20[2]	0.0
5	Eckles Fish Farm	ID-002676-0	WLA	36.5[1]	6.70[2]	0.0
5	Fisheries Development FH	ID-002499-6	WLA	208.5[1]	38.00[2]	0.0
5	Hidden Springs FH	ID-002440-6	WLA	32.5[1]	5.90[2]	0.0
5	Idaho Springs Ponds	ID-000073-6	WLA	265.6[1]	48.40[2]	0.0
5	Jones Fish Hatchery	ID-000086-8	WLA	88.5[1]	16.10[2]	0.0
5	Donny McFadden Farm Ponds	ID-002612-3	WLA	12.8[1]	2.30[2]	0.0
5	Rangen's FH	ID-002303-5	WLA	38.3[1]	4.40[2]	0.0
5	Schrank Springs FH	ID-002497-0	WLA	4.9[1]	0.90[2]	0.0
5	Talbot Trout Ponds	ID-002677-8	WLA	22.2[1]	4.00[2]	0.0
5	2 Non-permitted FH (T&J)		2 WLAs	9.8[1]	1.79	0.0
	TOTAL BILLINGSLEY CREEK WLAs *(13)*		13 WLAs	787.7	140.90	0.0
5	Billingsley Creek		LA	181.5[1]	21.20[3]	3,539.1[4]
	TOTAL BILLINGSLEY CREEK LAs *(1)*		1 LA	181.5[1]	21.20[3]	3,539.1[4]
WLA + LA				**969.2**	**162.1**	**3,539.1**
Instream Target Loads at Annual Q				**969.2**	**143.3**	**3,539.1**

Notes on Billingsley Creek:
[1] From Table 104 of the TMDL. [2] From Appendix D, Section XIV, p 437, and Table 111 of the TMDL. [3] From Table 111 of the TMDL. [4] From Table 3a of the *Summary* document. [5]Based on Segment 5 and Table 3a of the *Summary* document.

Pioneer Reservoir TMDL[5]						
6	Pioneer Reservoir *(Agriculture)*		LA	69.2[1]	3.92[2]	88.8[3]
6	Pioneer Reservoir *(Grazing)*		LA	319.6[1]	18.08[2]	410.0[3]
	TOTAL PIONEER RESERVOIR LAs *(2)*		2 LA s	388.8	22.00	498.8[4]

Notes on Pioneer Reservoir:
[1] From Table 105 of the TMDL. [2] TP allocation, lbs/day = (TSS LA, tons/year / Total Pioneer Reservoir TSS LA, tons/year) x 22.00. [3] Bacteria allocation = (TSS LA, tons/year / Total Pioneer Reservoir TSS LA, tons/year) x 399.0 [4] From Table 3a of the *Summary* document. [5]Based on Segment 6 and Table 3a of the *Summary* document.

Clover Creek TMDL[5]						
6	Clover Creek	*(Agriculture)*	LA	69.2[1]	3.92[2]	88.8[3]
6	Clover Creek	*(Grazing)*	LA	319.6[1]	18.08[2]	410.0[3]
	TOTAL CLOVER CREEK LAs	*(2)*	2 LA s	**388.8**	**22.00**	**498.8[4]**

Notes on Clover Creek:
[1] From Table 105 of the TMDL. [2] TP allocation, lbs/day = (TSS LA, tons/year / Total Clover Creek TSS LA, tons. year) x 22.00
[3] Bacteria allocation = (TSS LA, tons/year / Total Clover Creek TSS LA, · ons/year) x 399.0. [4] From Table 3a of the *Summary* document. [5]Based on Segment 6 and Table 3a of the *Summary* document.

Tables 9a through 9i will have LA s for specific Middle Snake River segments (1 through 6) subdivided into agriculture, grazing, and background for both sediment and phosphorus. Allocation calculations are based on unaccounted loads (for both springs and surface waterbodies) and are prorated according to percent land use for the specific segment as described in §3.5.2 of the Upper Snake Rock TMDL.

Table 9a. Allocations for Upper Snake / Rock Subbasin TMDL *(Mainstem)*

Unit	Source		Allocation Type	Sediment *(tons/yr)*	Phosphorus *(lbs/day)*
MAINSTEM SNAKE RIVER: SEGMENT 1, WLA + LA					
1	Hansen POTW	ID-002244-6	WLA	1.3[1]	3.3[5,6]
1	CFOs and/or CAFOs		WLA	0.0[1]	0.0[6]
1	Land Application Facilities		WLA	0.0[1]	0.0[6]
1	Hydroelectric Power Facilities		WLA	0.0[1]	0.0[6]
	TOTAL UNIT 1 WLAs	*(4)*	4 WLAs	**1.3**	**3.3**
1	Upstream Input: Milner Dam		LA	62,650.3	1,560.4
1	Vinyard Creek — Tributary TMDL	*(1)*	LA	17.1[1]	1.4[6]
1	Devil's Corral Spring		LA	54.0[1]	4.6[6]
1	Dry Creek — Tributary TMDL	*(4)*	4 LA	726.4[1,2]	7.6[6]
1	Northside A Drain		LA	451.2[1]	4.7[6]
1	Southside A-10 Drain		LA	209.7[1]	2.6[6]
1	Northside C 55 Drain		LA	342.9[1]	4.0[6]
1	Southside Twin Falls Coulee		LA	444.3[1]	4.7[6]
1	Mid-Snake - Milner Dam to Pillar Falls	*(Agriculture)*[4]	LA	6,533.3	265.2[7]
1	Mid-Snake - Milner Dam to Pillar Falls	*(Grazing)*[4]	LA	1,160.1	47.1[7]
1	Mid-Snake - Milner Dam to Pillar Falls	*(Background)*[4]	LA	2,483.1	100.8[7]

1	Unaccounted Flow: Springs + Surface	LA	10,176.5	201.2
1	Loss and Attenuation	LA	-41,476.3	-292.7
	TOTAL UNIT 1 LAs *(16)*	16 LAs	43,773.9[3]	1,914.9[8]

Notes on Mid-Snake Mainsteam - Segment 1 WLAs and LAs:
[1] From Table 100 of the TMDL. [2] From Table 8a of the *Summary* document. [3] From Table 4b of the *Summary* document. [4] From Table 100, Segment 1 mainstem allocations, of the TMDL for agriculture (64.2%), grazing (11.4%), and background (24.4%). [5] From Appendix D, Section XIV, p 438, of the TMDL. [6] From Table 107 of the TMDL. [7] TP allocation, lbs/day = (TSS LA, tons/year / Total Mainstem Segment TSS LA, tons/year [=11,843.0]) * Total Mainstem Segment TP LA, tons/year [=272.6]. [8] From Table 5b of the *Summary* document.

Table 9b. Allocations for Upper Snake / Rock Subbasin TMDL *(Mainstem)*

Unit	Source		Allocation Type	Sediment *(tons/yr)*	Phosphorus *(lbs/day)*
	MAINSTEM SNAKE RIVER: SEGMENT 2, WLA				
2	City of Twin Falls POTW	ID-002127-0	WLA	146.4[1]	707.0[5]
2	Blue Lakes Trout Farm	ID-000095-7	WLA	296.87[2]	54.1[5]
2	Blue Lakes Processing FH	ID-000095-7	WLA	0.61[2]	0.0[6]
2	Canyon Springs FH	ID-002731-6	WLA	31.3[1,2]	5.7[7]
2	Crystal Springs Trout Farm	ID-000089-2	WLA	404.23[2]	73.6[7]
2	Green's Trout Farm	ID-000096-5	WLA	12.00[2]	2.19[7]
2	Pristine Springs / Sunnybrook Hatchery	ID-002501-1	WLA	94.0[1,2]	22.8[7]
2	Pristine Springs / Warm Water	ID-002501-1	WLA	31.3[1,3]	7.6[9]
2	Rand Trout Farm (LQ/LS Drains)	ID-002583-6	WLA	0.0[1,3]	0.0
2	CFOs and/or CAFOs		WLA	0.00[1]	0.0[8]
2	Land Application Facilities		WLA	0.00[1]	0.0[8]
2	Hydroelectric Power Facilities		WLA	0.00[1,4]	0.0[8]
2	Fish Hatcheries — *see* Rock Creek	*(8)*	8 WLA	187.2[1]	34.1[7]
	TOTAL UNIT 2 WLAs	*(20)*	20 WLAs	1,203.9	907.1

Notes on Mid-Snake Mainsteam - Segment 2 WLAs:
[1] From Table 101 of the TMDL. Rand Trout FH has not been operational since 1990. Therefore, it received a zero allocation. [2] From Appendix D, Section XII, p 407. [3] From Appendix D, Section XII, p 408. [4] From Appendix D, Section XII, p 406. [5] From Appendix D, Section XIV, p 438. [6] From Appendix D, Section XIV, p 437. Blue Lakes Processing FH was shut down in 1999. [7] From Appendix D, Section XIV, p 436. [8] From Table 108 of the TMDL.
[9] Pristine Springs has one NPDES permit number for the Sunnybrook Hatchery (94.0 tons/year TSS) and for the Warm Water portion (31.3 tons/year TSS). A ratio of the Warm Water-to-Sunnybrook Hatchery yields 31.3/94.0 = 0.333. This ratio value multiplied into 22.8 (the lbs/day value for Sunnybrook) yields an estimate of 7.6 lbs/day TP for the Warm Water portion.

Table 9c. Allocations for Upper Snake / Rock Subbasin TMDL *(Mainstem)*

Unit	Source	Allocation Type	Sediment *(tons/yr)*	Phosphorus *(lbs/day)*
	MAINSTEM SNAKE RIVER: SEGMENT 2, LA			
2	Upstream Input: Pillar Falls	LA	43,773.9	1,914.9
2	Ellison Springs — Tributary TMDL *(1)*	LA	1.6[1]	0.1[3]
2	Crystal Springs & Lake — Tributary TMDL *(1)*	LA	63.9[1]	5.4[3]
2	East Perrine Coulee	LA	1,482.3[1]	15.8[3]
2	Main Perrine Coulee	LA	559.0[1]	5.9[3]
2	Southside West Perrine Coulee	LA	129.2[1]	1.4[3]
2	Southside 43 Drain	LA	16.3[1]	0.2[3]
2	Warm Creek	LA	341.1[1]	2.3[3]
2	Jerome Golf Course Drain	LA	397.2[1]	4.2[3]
2	Rock Creek — Tributary TMDL *(3)*	3 LA s	11,039.8[1]	118.5[3]
2	Southside 30 Drain	LA	311.4[1]	3.3[3]
2	LQ/LS Drain	LA	1,500.4[1]	16.3[3]
2	Southside LS2/39 A Drain	LA	269.6	2.8[3]
2	Northside N42-N Drain	LA	147.8[1]	4.8[3]
2	Northside N42-NT Drain (Rim)	LA	321.2[1]	5.5[3]
2	Southside 39 Drain	LA	243.5[1]	2.6[3]
2	Mid-Snake - Pillar Falls to Crystal Springs *(Agriculture)*[5]	LA	1,994.7	268.4[6]
2	Mid-Snake - Pillar Falls to Crystal Springs *(Grazing)*[5]	LA	391.8	52.7[6]
2	Mid-Snake - Pillar Falls to Crystal Springs *(Background)*[5]	LA	604.1	81.3[6]
2	Unaccounted Flow: Springs + Surface	LA	2,990.5	59.2
2	Loss and Attenuation	LA	-10,343.5	-1,250.1
	TOTAL UNIT 2 LAs *(22)*	22 LA s	57,441.0[2]	2,222.6[4]

Notes on Mid-Snake Mainsteam - Segment 2 LA :
[1] From Table 101 of the TMDL. [2] From Table 4b of *Summary* document. [3] From Table 108 of the TMDL. [4] From Table 5b of the *Summary* document. [5] The TSS allocation is based on Table 101, Segment 2 allocation, for agriculture (66.7%), grazi g (13.1%), and background (20.2%). [6] TP allocation, lbs/day = (TSS LA, tons/year / Total Mainstem Segment TSS LA, tons/year [=5,930.7]) * Total Mainstem Segment TP LA, tons/year [=136.6].

Table 9d. Allocations for Upper Snake / Rock Subbasin TMDL *(Mainstem)*

Unit	Source		Allocation Type	Sediment (tons/yr)	Phosphorus (lbs/day)
MAINSTEM SNAKE RIVER: SEGMENT 3, WLA					
3	Jerome POTW	ID-002016-8	WLA	15.9[1]	205.0[7]
3	Box Canyon Trout Farm	ID-002290-0	WLA	584.5[1,2]	106.5[6,8]
3	Briggs Creek Hatchery (Briggs Creek)	ID-002684-1	WLA	44.9[1,3]	8.2[6,8]
3	Catfish Farm (WW) / FBI	ID-002295-1	WLA	35.3[1,2]	6.4[6,8]
3	Gary Wright Farm Ponds	ID-002725-1	WLA	10.8[1,3]	2.0[6,8]
3	IPC / Niagara Springs Hatchery	ID-002238-1	WLA	108.6[1,3]	19.8[6,8]
3	Kaster Trout Farm	ID-002517-8	WLA	96.6[1,2]	17.6[6,8]
3	Magic Valley Steelhead Hatchery	ID-002304-3	WLA	144.1[1,2]	26.2[6,8]
3	Rim View Trout Co. / Wendell Hatchery	ID-000099-0	WLA	266.9[1,3]	48.6[6,8]
3	CFOs and/or CAFOs		WLA	0.0[1]	0.0[6]
3	Land Application Facilities		WLA	0.0[1]	0.0[6]
3	Hydroelectric Power Facilities		WLA	0.0[1]	0.0[6]
3	Fish Hatcheries — *see* Clear Springs	*(5)*	5 WLAs	877.9[1,2]	164.5[6]
3	POTW & Fish Hatcheries — *see* Cedar Draw	*(10)*	10 WLAs	160.0[1,4]	45.5[8,11]
3	POTW & Fish Hatcheries — *see* Mud Creek	*(11)*	11 WLAs	150.8[1,5]	37.3[9,12]
3	Fish Hatcheries — *see* Deep Creek	*(6)*	6 WLAs	144.5[1,5]	26.5[10]
3	Fish Hatchery — *see* Blind Canyon Creek	*(1)*	WLA	13.7[1,2]	2.5[8]
	TOTAL UNIT 3 WLAs	*(45)*	45 WLAs	2,654.5	716.6

Notes on Mid-Snake Mainsteam - Segment 3 WLA:
[1] From Table 102 of the TMDL. [2] From Appendix D, Section XII, p 407, of the TMDL. [3] From Appendix D, Section XII, p 408, of the TMDL. [4] From Appendix D, Section XII, p 411, of the TMDL. [5] From Appendix D, Section XII, p 410, of the TMDL. [6] From Table 109 of the TMDL. [7] From Appendix D, Section XIV, p 438, of the TMDL. [8] From Appendix D, Section XIV, p 436, of the TMDL. [9] From Appendix D, Section XIV, pp 436-437, of the TMDL. [10] From Appendix D, Section XIV, p 437, of the TMDL. [11] From Table 91 (POTW) of the TMDL. [12] From Table 92 (POTW) of the TMDL.

Table 9e. Allocations for Upper Snake / Rock Subbasin TMDL *(Mainstem)*

Unit	Source	Allocation Type	Sediment (tons/yr)	Phosphorus (lbs/day)
MAINSTEM SNAKE RIVER: SEGMENT 3, LA				
3	Upstream Input: Crystal Springs	LA	57,441.0	2,222.6
3	Niagara Springs	LA	38.9[1]	3.3[2]

3	Clear Springs & Lake — Tributary TMDL *(1)*	LA	180.1[1]	5.6[2]
3	Banbury Springs	LA	154.3[1]	13.0[2]
3	Briggs Creek Springs	LA	106.6[1]	9.0[2]
3	Box Canyon Springs	LA	83.1[1]	7.0[2]
3	Cedar Draw — Tributary TMDL *(1)*	LA	5,721.0[1]	62.1[2]
3	Mud Creek — Tributary TMDL *(1)*	LA	4,965.7[1]	52.4[2]
3	Deep Creek — Tributary TMDL *(3)*	3 LAs	4,480.0[1]	51.7[2]
3	McMullen Creek - Tributary TMDL *(1)*	LA	172.0	2.2
3	Cottonwood Creek - Tributary TMDL *(1)*	LA	98.9	1.2
3	Blind Canyon Creek — Tributary TMDL *(3)*	3 LAs	764.8[1]	23.4[2]
3	Southside I Drain	LA	584.1[1]	6.2[2]
3	Northside J8 Drain	LA	365.1[1]	4.9[2]
3	Southside N Drain	LA	157.8[1]	2.4[2]
3	Northside S29 Drain	LA	30.9[1]	1.4[2]
3	Northside S19/S Drain	LA	2,262.2[1]	28.6[2]
3	Mid-Snake - Crystal Springs to Box Canyon *(Agriculture)*[3]	LA	2,475.1	630.0[4]
3	Mid-Snake - Crystal Springs to Box Canyon *(Grazing)*[3]	LA	427.9	108.9[4]
3	Mid-Snake - Crystal Springs to Box Canyon *(Background)*[3]	LA	785.7	200.0[4]
3	Unaccounted Flow: Springs + Surface	LA	3,688.7	73.0
3	Loss and Attenuation	LA	47,044.3	-1,310.0
	TOTAL UNIT 3 LAs *(24)*	24 LAs	134,682.5[5]	2,915.5[6]

Notes on Mid-Snake Mainsteam - Segment 3 LAs:
[1] From Table 102 of the TMDL. [2] From Table 109 of the TMDL. [3] The TSS allocation of the LAs is found in Table 102 for agriculture (67.1%), grazing (11.6%), and background (21.3%). [4] TP allocation, lbs/day = (TSS LA, tons/year / Total Mainstem Segment TSS LA, tons/year [=6,262.6]) * Total Mainstem Segment TP LA, tons/year [=144.1]. [5] From Table 4b of the *Summary* document. [6] From Table 5b of the *Summary* document.

Table 9f. Allocations for Upper Snake / Rock Subbasin TMDL *(Mainstem)*

Unit	Source		Allocation Type	Sediment *(tons/yr)*	Phosphorus *(lbs/day)*
MAINSTEM SNAKE RIVER: SEGMENT 4, WLA + LA					
4	Blind Canyon Aqua Ranch FH	ID-002600-0	WLA	50.6[1]	2.5[3]
4	Pisces Magic Springs FH	ID-000097-3	WLA	238.0[1]	43.4[3]

4	CFOs and/or CAFOs		WLA	0.0[1]	0.0[3]
4	Land Application Facilities		WLA	0.0[1]	0.0[3]
4	Hydroelectric Power Facilities		WLA	0.0[1]	0.0[3]
4	Fish Hatchery — *see* Thousand Springs	*(1)*	WLA	50.6[1]	9.4
4	Fish Hatcheries — *see* Riley Creek	*(2)*	WLA	238.0[1]	43.4
	TOTAL UNIT 4 WLAs	*(8)*	8 WLAs	577.2	98.7
4	Upstream Input: Box Canyon		LA	134,682.5	2,915.5
4	Thousand Springs Creek — Tributary TMDL	*(1)*	LA	1,575.2[1]	137.1[3]
4	Riley Creek — Tributary TMDL	*(1)*	LA	734.1[1]	7.2[3]
4	Sand Springs Creek		LA	117.2[1]	9.9[3]
4	Salmon Falls Creek		LA	5,966.6[1]	80.5[3]
4	Northside W26 Drain		LA	927.1[1]	9.8[3]
4	Mid-Snake - Box Canyon to Gridley Bridge	*(Agriculture)*[5]	LA	714.0	14.1[6]
4	Mid-Snake - Box Canyon to Gridley Bridge	*(Grazing)*[5]	LA	422.9	8.4[6]
4	Mid-Snake - Box Canyon to Gridley Bridge	*(Background)*[5]	LA	311.4	6.2[6]
4	Unaccounted Flow: Springs + Surface		LA	1,448.3	28.6
4	Loss and Attenuation		LA	-15,838.8	368.1
	TOTAL UNIT 4 LAs	*(11)*	11 LA s	131,637.9[2]	3,683.9[4]

Notes on Mid-Snake Mainsteam - Segment 4 WLAs and LA s:
[1] From Table 103 of the TMDL. [2] From Table 4b of the *Summary* document. [3] From Table 110 of the TMDL. [4] From Table 5b of the *Summary* document. [5] The TSS allocation of the LA s is found in Table 103 for agriculture (49.3%), grazing (29.2%) and background (21.5%). [6] TP allocation, lbs/day = (TSS LA, tons/year / Total Mainstem Segment TSS LA, tons/ye r [=2,336.7]) * Total Mainstem Segment TP LA, tons/year [=53.8].

Table 9g. Allocations for Upper Snake / Rock Subbasin TMDL *(Mainstem)*

Unit	Source		Allocation Type	Sediment *(tons/yr)*	Phosphorus *(lbs/day)*
MAINSTEM SNAKE RIVER: SEGMENT 5, WLA					
5	City of Hagerman POTW	ID-002594-1	WLA	1.4[1]	5.7[3]
5	Barret Farm Pond / FBI	ID-002718-9	WLA	19.8[1]	3.6[4]
5	Big Bend Trout Inc. (Big Bend Ditch)	ID-002532-1	WLA	8.5[1]	1.6[4]
5	Buckeye Farm Ponds	ID-002611-5	WLA	40.2[1]	7.3[4]
5	John Flemming Farm Ponds	ID-002780-4	WLA	17.6[1]	3.2[4]

5	Mike Flemming Farm Ponds	ID-002732-4	WLA	11.2[1]	2.0[4]
5	Henslee Hatchery	ID-002762-6	WLA	16.7[1]	3.0[4]
5	Lemmon FH (Curren Ditch)	ID-002668-9	WLA	7.9[1]	1.4[4]
5	Slane Ponds	ID-002779-1	WLA	8.2[1]	1.5
5	Smith Farm Ponds	ID-002687-5	WLA	17.9[1]	3.3[4]
5	Stevenson Ponds	ID-002781-2	WLA	15.8[1]	2.9
5	White Springs Trout Farm	ID-002580-1	WLA	61.7[1]	11.2[4]
5	Woods Farm Ponds / Rangen Inc.	ID-002733-2	WLA	24.4[1]	4.4[4]
5	Birch Creek FH (Birch Creek)	ID-002601-8	WLA	17.9[1]	3.3[4]
5	C.J. Simms Ponds (Birch Creek)	ID-002683-2	WLA	10.4[1]	1.9[4]
5	Bell Fish Ponds (Stoddard Creek)	ID-002491-1	WLA	7.4[1]	1.4[4]
5	Standal Ponds (Stoddard Creek)	ID-002778-2	WLA	9.7[1]	1.8[4]
5	White Water Ranch (Stoddard Creek)	ID-000091-4	WLA	22.0[1]	4.0[4]
5	Decker Springs Farm (Decker Springs Cr.)	ID-002734-1	WLA	24.4[1]	4.4[4]
5	CFOs and/or CAFOs		WLA	0.0[1]	0.0[5]
5	Land Application Facilities		WLA	0.0[1]	0.0[5]
5	Hydroelectric Power Facilities		WLA	0.0[1]	0.0[5]
5	Fish Hatcheries — *see* Billingsley Creek	*(14)*	14 WLAs	787.7[1,2]	140.9[2]
	TOTAL UNIT 5 WLAs	*(35)*	35 WLAs	1,130.8	208.8

Notes on Mid-Snake Mainsteam - Segment 5 WLA:
[1] From Table 104 of the TMDL. [2] From Table 8f of the *Summary* document. [3] From Appendix D, Section XIV, p 438, of the TMDL. [4] From Appendix D, Section XIV, p 437, of the TMDL. [5] From Table 110 of the TMDL.

Table 9h. Allocations for Upper Snake / Rock Subbasin TMDL *(Mainstem)*

Unit	Source	Allocation Type	Sediment *(tons/yr)*	Phosphorus *(lbs/day)*
MAINSTEM SNAKE RIVER: SEGMENT 5, LA				
5	Upstream Input: Gridley Bridge	LA	131,637.9	3,683.9
5	Birch Creek	LA	1.3[1]	0.1[3]
5	Stoddard Creek	LA	0.0[1]	0.0[3]
5	Decker Springs Creek	LA	0.0[1]	0.0[3]
5	Malad River	LA	3,753.7[1]	75.7[3]

5	Malad River Power Flume	LA	23,606.6[1]	475.9
5	Billingsley Creek — Tributary TMDL *(1)*	LA	181.5[1]	21.2[3]
5	Mid-Snake - Gridley Bridge to Shoestring Br.*(Agriculture)*[5]	LA	985.8	19.5[6]
5	Mid-Snake - Gridley Bridge to Shoestring Br. *(Grazing)*[5]	LA	1,802.4	35.6[6]
5	Mid-Snake - Gridley Bridge to Shoestring Br.*(Background)*[5]	LA	465.2	9.2[6]
5	Unaccounted Flow: Springs + Surface	LA	3,253.4	64.3
5	Loss and Attenuation	LA	-1,410.9	-103.9
	TOTAL UNIT 5 LAs *(12)*	12 LA s	165,407.8[2]	4,490.4[4]

Notes on Mid-Snake Mainsteam - Segment 5 LA s:
[1] From Table 104 of the TMDL. [2] From Table 4b of the *Summary* document. [3] From Table 111 of the TMDL. [4] From Table 5b of the *Summary* document. [5] The TSS allocation of the LA s is found in Table 104 for agriculture (30.3%), grazing (55.4%) and background (14.3%). [6] TP allocation, lbs/day = (TSS LA, tons/year / Total Mainstem Segment TSS LA, tons/ye r [=7,594.6]) * Total Mainstem Segment TP LA, tons/year [=174.5].

Table 9i. Allocations for Upper Snake / Rock Subbasin TMDL *(Mainstem)*

Unit	Source	Allocation Type	Sediment *(tons/yr)*	Phosphorus *(lbs/day)*
	MAINSTEM SNAKE RIVER: SEGMENT 6, WLA + LA			
6	CFOs and/or CAFOs	WLA	0.0[1]	0.0[3]
6	Land Application Facilities	WLA	0.0[1]	0.0[3]
6	Hydroelectric Power Facilities	WLA	0.0[1]	0.0[3]
	TOTAL UNIT 6 WLAs *(3)*	3 WLAs	0.0	0.0
6	Upstream Input: Shoestring Bridge (without diversions)	LA	165,407.8	4,490.4
6	Black Mesa Diversion	LA	-1,451.2	-28.1
6	Wiley Pumps Diversion	LA	-440.2	-8.5
	Sub Total Upstrem Input: Shoestring Bridge	LA	163,516.4	4,456.9
6	Clover Creek — Tributary TMDL *(2)*	2 LA s	388.8[1]	22.0[3]
6	Mid-Snake - Shoestring Bridge to King Hill. *(Agriculture)*[5]	LA	1,083.9	44.0[6]
6	Mid-Snake - Shoestring Bridge to King Hill *(Grazing)*[5]	LA	3,232.0	131.2[6]
6	Mid-Snake - Shoestring Bridge to King Hill *(Background)*[5]	LA	633.5	25.7[6]
6	Unaccounted Flow: Springs + Surface	LA	4,949.5	97.9
6	Loss and Attenuation	LA	28,118.2	-170.0
	TOTAL UNIT 6 LAs *(8)*	8 LA s	201,922.3[2]	4,607.6[4]

Notes on Mid-Snake Mainsteam - Segment 6 WLAs and LA : :
[1] From Table 105 of the TMDL. [2] From Table 4b of the *Summary* document. [3] From Table 112 of the TMDL. [4] From Table 5b of the *Summary* document. [5] The TSS allocation is based on Table 105, Segment 6 allocation, for agriculture (21.9%), grazing (65.3%), and background (12.8%). [6] TP allocation, lbs/day = (TSS LA, tons/year / Total Mainstem Segment TSS LA, tons/year [=9,697.7]) * Total Mainstem Segment TP LA, tons/year [=223.3].

An overall summary of the mainstem Middle Snake River Tables 9a - 9i is illustrated in Table 10. The WLA categorization of the river segments indicates that more TSS and TP from point sources enters the Middle Snake River at Segments 2 - 5. The LA categorization of the river segments indicates that nonpoint source TSS and TP enters at all river segments and increases from upstream to downstream. Loss and attenuation of TSS indicates that Segments 3 (Crystal Springs to Box Canyon) and 6 (Shoestring Bridge to King Hill) are more selective for sediment transport while the other segments are more conducive to sediment deposition. This is not to say that sediment deposition doesn't occur in Segments 3 and 6. But as the TSS load increases from upstream to downstream, the two greatest loads occur in Segments 3 and 6 followed by Segments 4 and 5. TP functions totally different than TSS.

Table 10. Summary loadings for TSS and TP on the mainstem Middle Snake River

Unit	WLA	LA	Loss & Attenuation	Net Load Change
Mainstem Middle Snake River for TSS Loading, tons/year				
1	1.3	43,773.9	-41,476.3	2,298.9
2	1,203.9	57,441.0	-10,343.5	48,301.4
3	2,654.5	134,682.5	47,044.3	184,381.3
4	577.2	131,637.9	-15,838.8	116,356.3
5	1,130.8	165,407.8	-1,410.9	165,127.7
6	0.0	201,922.3	28,118.2	230,040.5
Mainstem Middle Snake River for TP Loading, lbs/day				
1	3.3	1,914.9	-292.7	1,625.5
2	907.1	2,222.6	-1,250.1	1,879.6
3	716.1	2,915.5	-1,310.0	2,321.6
4	98.7	3,683.9	368.1	4,150.7
5	208.8	4,490.4	-103.9	4,595.3
6	0.0	4,607.6	-170.0	4,437.6

Notes
Information compiled from each segment of the Upper Snake Rock TMDL and from Tables 9a - 9i. or the Loss & Attenuation column, a negative value indicates depositional sediment building up in the segment, and a positive value indicates sediment transport into the next segment or river reach. Net Load Change = (WLA + LA) - Loss & Attenuation.

TSS TP Allocations Summary

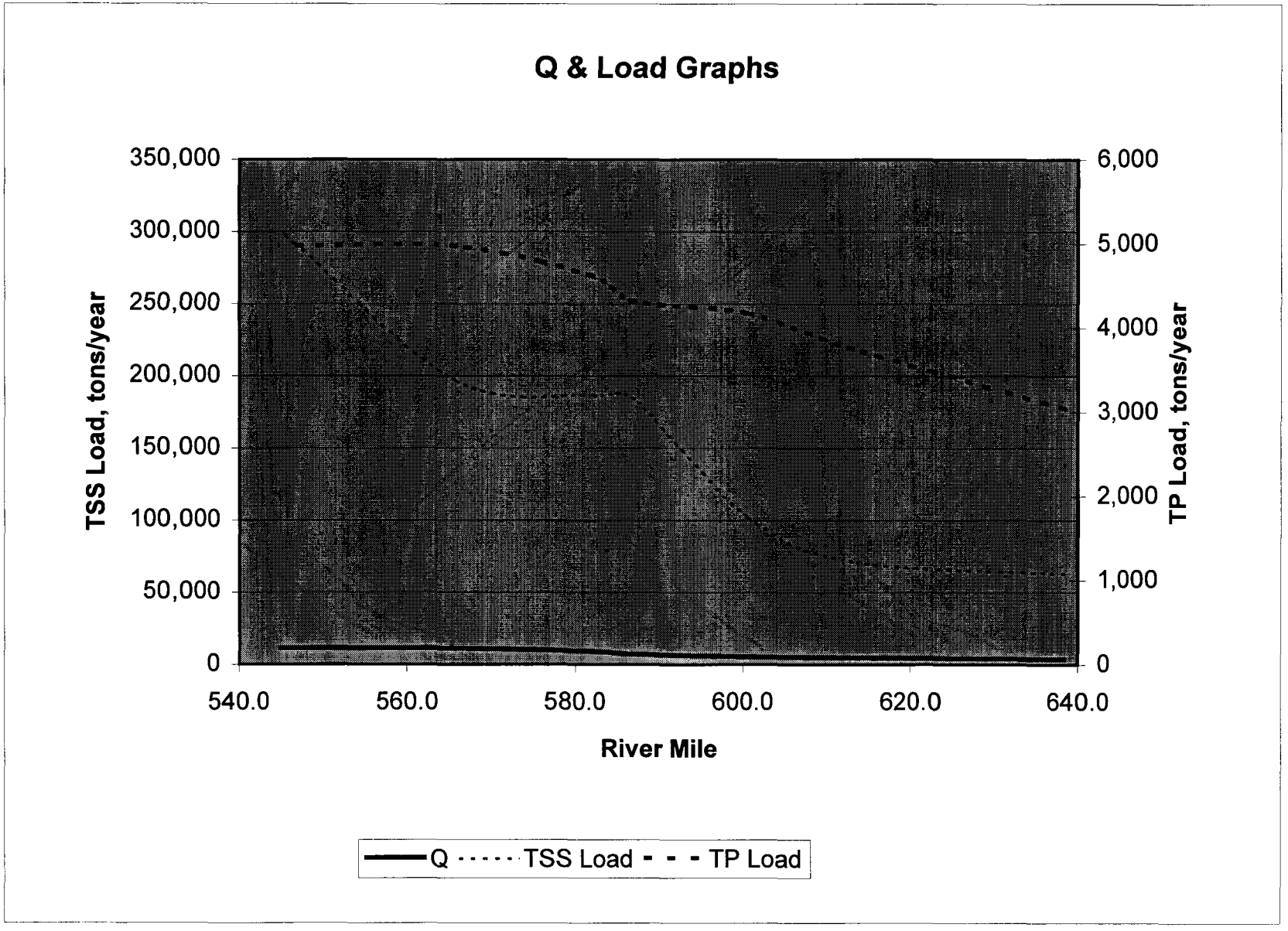
Mean Flow Conditions: Appendix D, Section IX, p 369 Factor = 5.39
Mean TSS Concentrations: Appendix D, Section IX, p 369
Mean TP Concentrations: Appendix D, Section XIV, p 434-435

	RM	Name	Q cfs	TSS mg/L	TSS Load tons/year	TP mg/L	TP Load lbs/day	RM/Seg	Q/Seg	cfs/RM
1 Up	638.43	Milner	3860	16.5	62,650.3	0.146	3,037.6	25.34	877	35
2 Up	613.09	Pillar	4737	15.3	71,292.9	0.147	3,753.3	12.69	761	60
3 Up	600.40	Crystal	5498	19.0	102,756.7	0.141	4,178.4	13.40	1714	128
4 Up	587.00	Box Canyon	7212	25.9	183,741.4	0.111	4,314.9	5.00	1901	380
5 Up	582.00	Gridley	9113	20.8	186,456.0	0.094	4,617.2	16.25	1995	123
6 Up	565.75	Shoestring	11108	18.0	196,679.9	0.083	4,969.4	20.75	290	14
6 Down	545.00	King Hill	11398	26.8	300,479.7	0.081	4,976.3			
6 - 1 =	93.43		7538				Mean =	15.57	1256	123
cfs/RM	80.68									

Graphing of Q, TSS Load, and TP Load in the Middle Snake River:

RM	Q cfs	TSS Load tons/year	TP Load lbs/day	TP/TSS %
638.43	3860	62,650.3	3,037.6	4.85%
613.09	4737	71,292.9	3,753.3	5.26%
600.40	5498	102,756.7	4,178.4	4.07%
587.00	7212	183,741.4	4,314.9	2.35%
582.00	9113	186,456.0	4,617.2	2.48%
565.75	11108	196,679.9	4,969.4	2.53%
545.00	11398	300,479.7	4,976.3	1.66%

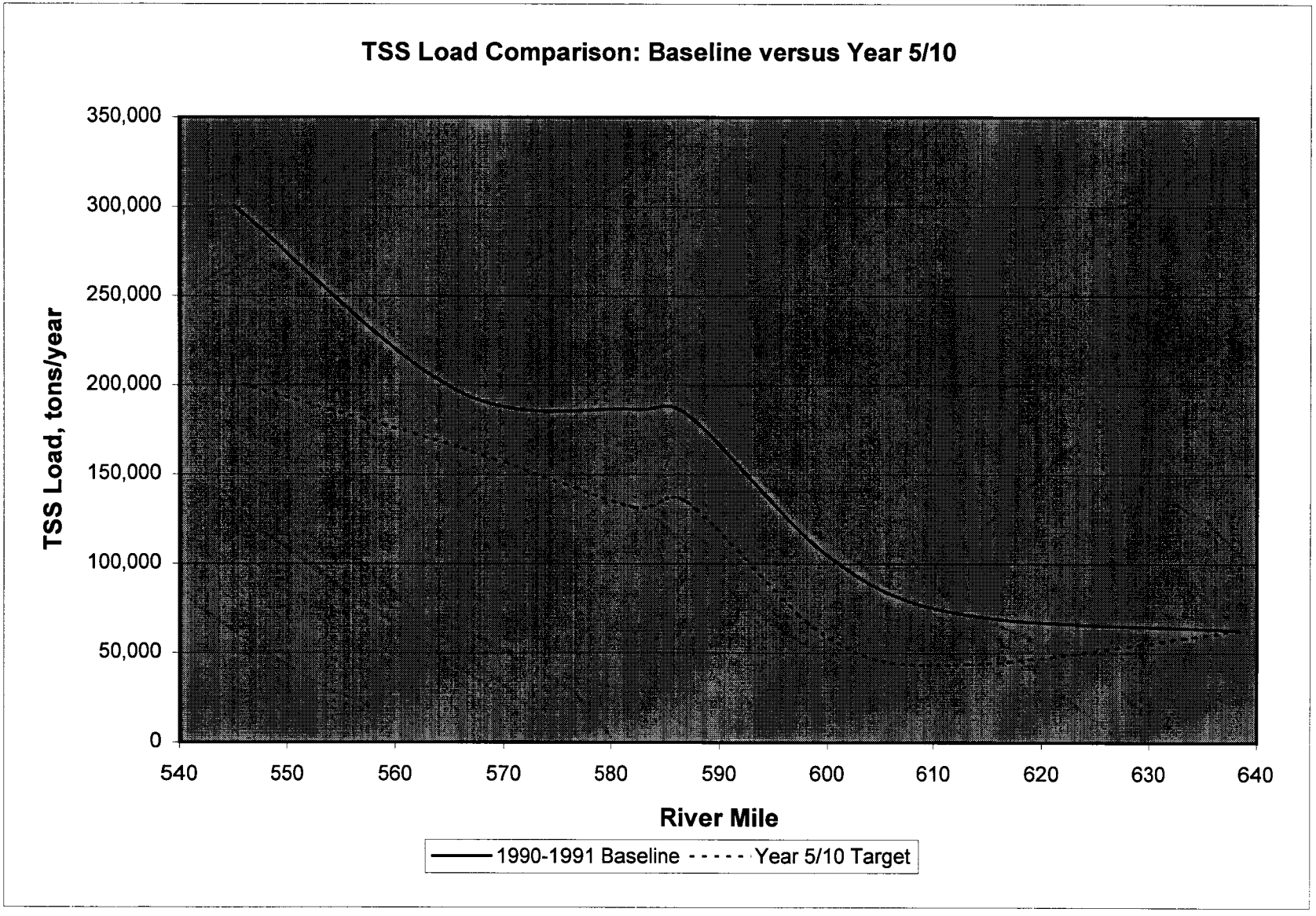
Name	Elevation feet	Segment Change	RM/Seg	Slope feet/mile
Milner	4,134			
Pillar	3,137	997	25.34	39.3
Crystal	2,980	157	12.69	12.4
Box Canyon	2,890	90	13.40	6.7
Gridley	2,890	0	5.00	0.0
Shoestring	2,675	215	16.25	13.2
King Hill	2,475	200	20.75	9.6


Q & Load Graphs
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
TSS Load, tons/year
6,000
5,000
4,000
3,000
2,000
1,000
0
TP Load, tons/year
540.0
560.0
580.0
600.0
620.0
640.0
River Mile
Q
TSS Load
TP Load

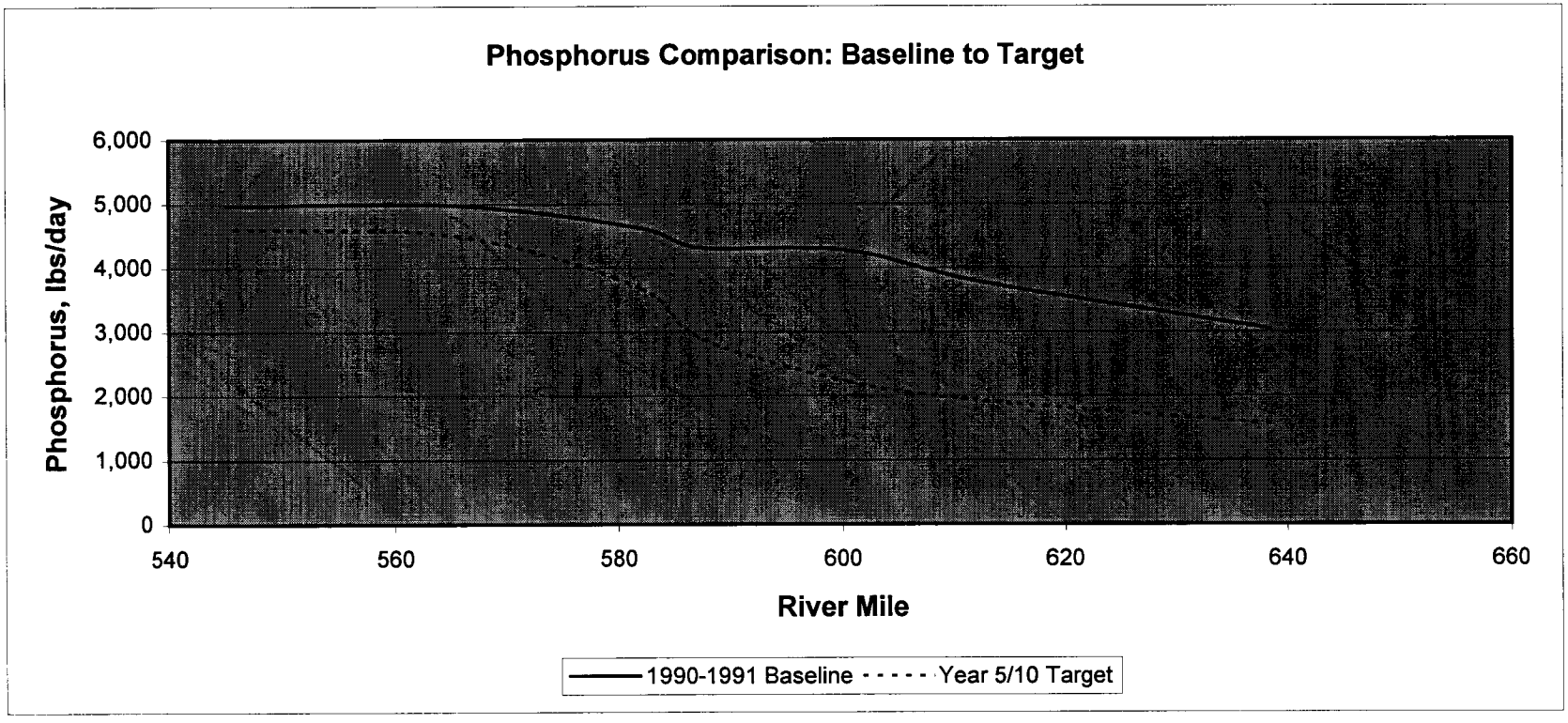
From Appendix D, Section VII, pp 357-363:

		Allocation of Water			Unaccounted Q, cfs				
					Springs	Surface	Total		Mean Q
Segment	Q/Seg	% Spring	% Surface		cfs	cfs	cfs		cfs
1	877	0.653	0.347		510.4	271.2	781.6		30.8
2	761	0.653	0.347		149.9	79.7	229.6		18.1
3	1714	0.653	0.347		185.1	98.3	283.4		21.1
4	1901	0.653	0.347		72.6	38.6	111.2		22.2
5	1995	0.653	0.347		163.2	86.7	249.9		15.4
6	290	0.653	0.347		248.3	131.9	380.2		18.3
				Total	1329.5	706.4	2035.9		21.0
				% of Total	65.3%	34.7%		SD =	5.4
							21.7906	CV =	0.26

		Net	Year 5&10	
		TSS Load	TSS Load	%
Name	RM	tons/year	tons/year	Reduction
Milner	638.43	62,650.3	62,650.3	0.0
Pillar	613.09	71,292.9	43,773.9	38.6
Crystal	600.40	102,756.7	57,441.0	44.1
Box Canyon	587.00	183,741.4	134,682.5	26.7
Gridley	582.00	186,456.0	131,637.9	29.4
Shoestring	565.75	196,679.9	165,407.8	15.9
King Hill	545.00	300,479.7	201,922.3	32.8

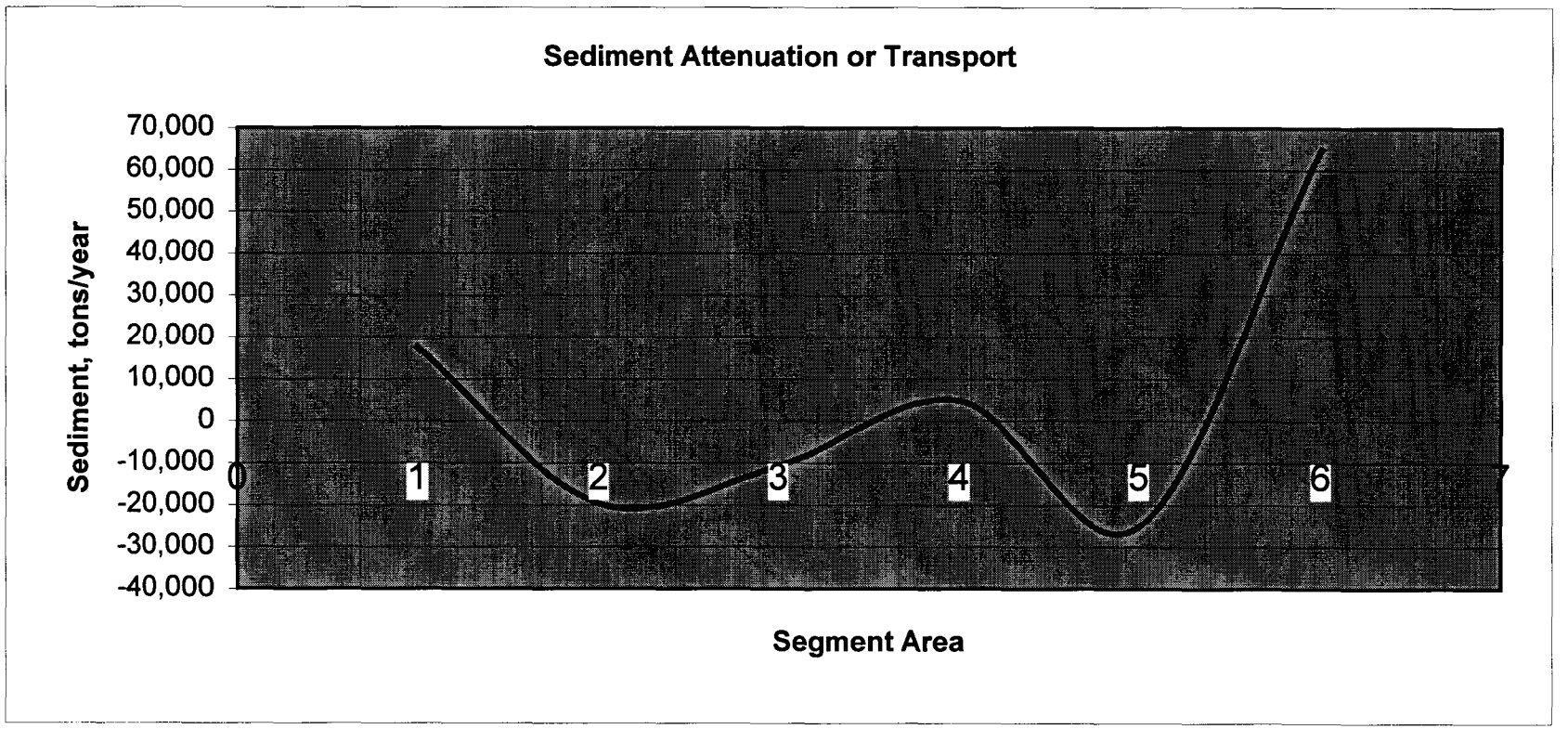

TSS Load Comparison: Baseline versus Year 5/10
TSS Load, tons/year
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
540
550
560
570
580
590
600
610
620
630
640
River Mile
1990-1991 Baseline
Year 5/10 Target

RM	Net TP Load lbs/day	Year 5&10 TP Load lbs/day	% Reduction
638.43	3,037.6	1,560.4	48.6
613.09	3,753.3	1,914.9	49.0
600.40	4,267.3	2,222.6	47.9
587.00	4,314.9	2,915.5	32.4
582.00	4,617.2	3,683.9	30.3
565.75	4,969.4	4,490.4	30.6
545.00	4,976.3	4,607.6	29.6



SEDIMENT ATTENUATION

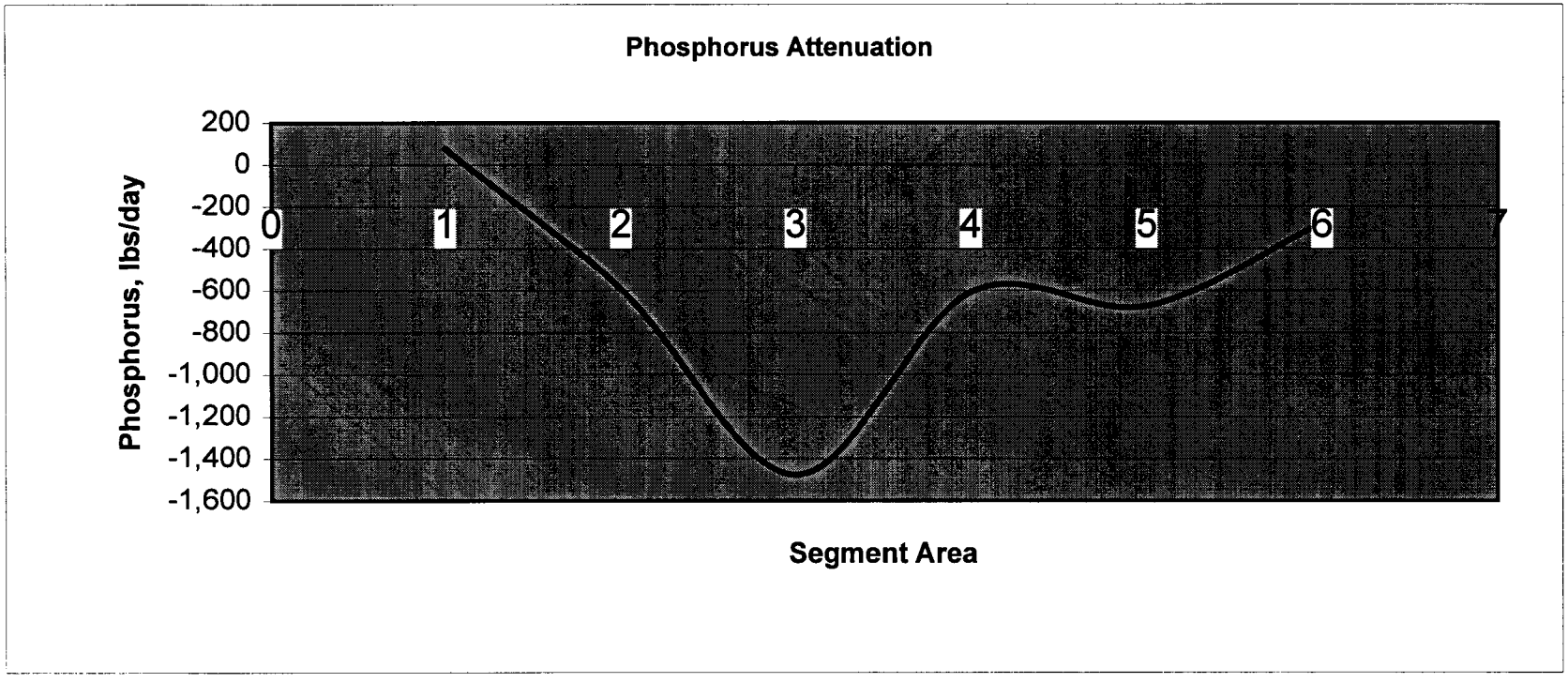
Segment	Net TSS Load tons/year	ear 5 & 10 TSS Load tons/year	Attenuation		Slope feet/mile	Segment	Attenuatio	Q/Seg
1: MD-PF	-23,928.0	-41,476.3	17,548.3	Transport of Sedime	39.3	1	17,548.3	877
2: PF-CS	-30,053.7	-10,343.5	-19,710.3	Buildup of Sediment	12.4	2	-19,710.3	761
3: CS-BC	36,287.9	47,044.3	-10,756.4	Buildup of Sediment	6.7	3	-10,756.4	1714
4: BC-GB	-10,968.9	-15,838.8	4,869.9	Transport of Sedime	0.0	4	4,869.9	1901
5: GB-SB	-26,642.7	-1,410.9	-25,231.9	Buildup of Sediment	13.2	5	-25,231.9	1995
6: SB-KH	92,932.4	28,118.2	64,814.2	Transport of Sedime	9.6	6	64,814.2	290



PHOSPHORUS ATTENUATION

Segment	Net TP Load lbs/day	ear 5 & 10 TP Load lbs/day	Attenuation
1	-218.0	-292.7	74.7
2	-1844.7	-1250.1	-594.6
3	-2787.3	-1310.0	-1477.4
4	-239.8	368.1	-607.9
5	-778.5	-103.9	-674.7
6	-451.9	-170.0	-281.9

Slope feet/mile	Segment	Attenuatio	Q/Seg
39.3	1	74.7	877
12.4	2	-594.6	761
6.7	3	-1477.4	1714
0.0	4	-607.9	1901
13.2	5	-674.7	1995
9.6	6	-281.9	290



Segment 1 TSS Allocations

Milner Dam (MD) to Pillar Falls (PF)

tons/year = Q,cfs x TSS,mg/L x 5.39 x 0.1825

0.1825 = 365 days/1 year / 2000 lbs/1 ton

Snake Segment	Discharge to Trib	River Mile	Source Name	Allocation Type	Source Category	Q cfs	TSS mg/L	Conversion Factor	1990-1991 TSS Load tons/year	Sub Allocation	Year 5 & 10 TSS Load tons/year	% Reduction
1		638.43	Milner Dam: Upstream Input	LA	Upstream	3,860.00	16.5	5.39	62,650.3		62,650.3	0.0
1		617.90	Hansen POTW	WLA	POTW	0.09	14.3	5.39	1.3		1.3	0.0
1		617.97	Vinyard Creek	LA	Spring	13.38	1.3	5.39	17.1		17.1	0.0
1		617.12	Devils Corral Spring	LA	Spring	42.23	1.3	5.39	54.0		54.0	0.0
1		630.56	Dry Creek (408)	LA	Ag, Graze, Background					611.5		
1		630.56	Dry Creek (409)	LA	Ag, Graze, Background					51.2		
1		630.56	West Fork Dry Creek (411)	LA	Graze, Background					163.7		
1		630.56	Total Dry Creek Tributary	LA		14.20	290.0	5.39	4,050.6		726.4	82.1
1		627.60	Northside A Drain	LA	Agriculture	8.80	164.2	5.39	1,421.4		451.2	68.3
1		619.53	Southside A10 Drain	LA	Agriculture	4.80	44.5	5.39	210.1		209.7	0.2
1		619.00	Northside C55 Drain	LA	Agriculture	7.40	47.3	5.39	344.3		342.9	0.4
1		618.00	Southside Twin Falls Coulee	LA	Agriculture	8.70	121.3	5.39	1,038.1		444.3	57.2
1			Seg 1: Milner to Pillar Falls	LA	Agriculture			64.2%		6,533.3		
1			Seg 1: Milner to Pillar Falls	LA	Grazing			11.4%		1,160.1		
1			Seg 1: Milner to Pillar Falls	LA	Background			24.4%		2,483.1		
1		613.09	Seg 1: Milner to Pillar Falls	LA					15,257.1		10,176.5	33.3%
1			UNACCOUNTED Q: Springs	LA	Background	510.4	1.3	5.39	652.7		652.7	0.0
1			UNACCOUNTED Q: Surface	LA	Background	271.2	35.7	5.39	9,523.8		9,523.8	0.0
1			SEDIMENT ATTENUATION	LA	Background				-23,928.0		-41,476.3	-73.3
		25.34	Pillar Falls Area			4,737.00	15.3	5.39	71,292.9		43,773.9	38.6

UNACCOUNTED Q: Springs from Appendix D, Section XII, Segment 1, p 652.7

UNACCOUNTED Q: Surface from Appendix D, Section XII, Segment 1, p 9,523.8

Total of UNACCOUNTED Q Springs & Surface = 10,176.5

Allocate the total load according to land use: 64.2% Ag, 11.4% Graze, and 24.4% Background

Table 100 of the TMDL has a 33.3% TSS reduction in the river segment alone.

Thus, 10,176.5 tons/year TSS / .667 = 15,257.1

15.3 mg/L TSS is the concentration average value of the river at Pillar Falls. This value can be used as a link to Sediment Attenuation once you have the total Q in the segment.

Table 100 of the TMDL states that the overall % R of Segment 1 is 38.6%.

Therefore, 100.0% - 38.6% = 61.4% = 0.614

1990-1991 Allocation x 0.614 = Year 5/10 Allocation

Segment 1 TP Allocations

Milner Dam (MD) to Pillar Falls (PF)

tons/year = Q,cfs x TSS,mg/L x 5.39 x 0.1825

0.1825 = 365 days/1 year / 2000 lbs/1 ton

Snake Segment	Discharge to Trib	River Mile	Source Name	Allocation Type	Source Category	Q cfs	TP mg/L	Conversion Factor	1990-1991 TP Load lbs/day	Sub Allocation	Year 5 & 10 TP Load lbs/day	% Reduction
1		638.43	Milner Dam: Upstream Input	LA	Upstream	3,860.00	0.146	5.39	3,037.6		1,560.4	48.6
1		617.90	Hansen POTW	WLA	POTW	0.09	10.500	5.39	5.1		3.3	35.2
1		617.97	Vinyard Creek	LA	Spring	13.38	0.020	5.39	1.4		1.4	2.9
1		617.12	Devils Corral Spring	LA	Spring	42.23	0.020	5.39	4.6		4.6	0.1
1		630.56	Dry Creek (408)	LA	Ag, Graze, Background					5.4		
1		630.56	Dry Creek (409)	LA	Ag, Graze, Background					0.5		
1		630.56	West Fork Dry Creek (411)	LA	Graze, Background					1.7		
1		630.56	Total Dry Creek Tributary	LA		14.20	0.136	5.39	10.4		7.6	27.0
1		627.60	Northside A Drain	LA	Agriculture	8.80	0.234	5.39	11.1		4.7	57.7
1		619.53	Southside A10 Drain	LA	Agriculture	4.80	0.153	5.39	4.0		2.6	34.3
1		619.00	Northside C55 Drain	LA	Agriculture	7.40	0.139	5.39	5.5		4.0	27.9
1		618.00	Southside Twin Falls Coulee	LA	Agriculture	8.70	0.246	5.39	11.5		4.7	59.3
1			Seg 1: Milner to Pillar Falls	LA	Agriculture			64.2%		265.2		
1			Seg 1: Milner to Pillar Falls	LA	Grazing			11.4%		47.1		
1			Seg 1: Milner to Pillar Falls	LA	Background			24.4%		100.8		
1		613.09	Seg 1: Milner to Pillar Falls	LA					466.8		413.2	11.5
1			UNACCOUNTED Q: Springs	LA	Background	510.4	0.020	5.39	55.0		55.0	0.0
1			UNACCOUNTED Q: Surface	LA	Background	271.2	0.245	5.39	358.1		146.2	59.2
1			SEDIMENT ATTENUATION	LA	Background				-218.0		-292.7	-34.3
		25.34				4,737.00	0.147	5.39	3,753.3		1,914.9	49.0

From Appendix D, Section XIV, TP Assumptions, p 438:

Middle Snake River = 0.113 mg/L TP ..... Instream target = 0.075 mg/L TP

Tributaries = 0.136 mg/L TP (the mean of 0.117 & 0.156) ..... Instream target = 0.100 mg/L TP

Springs = 0.020 mg/L TP

Aquaculture = predictive Value of pp 436-437

Unaccounted Surface = 0.245 mg/L TP ..... Instream target = 0.100 mg/L TP

Table 107 of the TMDL has a 11.5% TP reduction in the river segment alone.

Thus, 463.6 lbs/day TP / 0.885 = 523.8 lbs/day TP to start with

TP overall concentration: Appendix D, Section XIV, p 434-435:

Avg of MD & PF = 0.146 & 0.147 mg/L TP = **0.147** mg/L 3,753.3 lbs/day

Year 5/10 Load, mg/L = 0.075 mg/L TP x 5.39 x 4832.4 cf 1,914.9 lbs/day

UNACCOUNTED Q SPRINGS: 572.7 cfs x 0.020 mg/L TP x 5.3 55.0 lbs/day

UNACCOUNTED Q SURFACE: 304.3 cfs x 0.245 mg/L TP x 5.3 358.1 lbs/day

Total of UNACCOUNTED Q Springs & Surface = 413.2 lbs/day

Allocate the total load according to land use: 64.2% Ag, 11.4% Graze, and 24.4% Background

Segment 2 TSS Allocations — tons/year = Q,cfs x TSS,mg/L x 5.39 x 0.1825

Pillar Falls (PF) to Crystal Springs (CS) — 0.1825 = 365 days/1 year / 2000 lbs/1 ton

Snake Segment	Discharge to Trib	River Mile	Source Name	Allocation Type	Source Category	Q cfs	TSS mg/L	Conversion Factor	1990-1991 TSS Load tons/year	Sub Allocation	Year 5 & 10 TSS Load tons/year	% Allocation
ROCK CREEK TRIBUTARY:												
2	Rock Ck	606.41	Frame FH	WLA	FH	18.10	2.0	5.39	35.6		35.6	0.0
2	Rock Ck	606.41	Canyon Trout FH	WLA	FH	10.74	2.0	5.39	21.1		21.1	0.0
2	Rock Ck	606.41	Canyon Trout FH/Processing	WLA	FH				0.0		0.0	0.0
2	Rock Ck	606.41	Coats FH	WLA	FH	19.96	2.0	5.39	39.3		39.3	0.0
2	Rock Ck	606.41	CSI FH	WLA	FH	4.95	2.0	5.39	9.7		9.7	0.0
2	Rock Ck	606.41	C&M FH	WLA	FH	14.26	2.0	5.39	28.1		28.1	0.0
2	Rock Ck	606.41	Daydream FH	WLA	FH	13.18	2.0	5.39	25.9		25.9	0.0
2	Rock Ck	606.41	Deadman FH	WLA	FH	13.98	2.0	5.39	27.5		27.5	0.0
						95.17		Sub Total	187.2		187.2	0.0
2		613.09	Pillar Falls: With upstream Trib	LA + WLA	Upstream	4,737.00	15.3	5.39	71,292.9		43,773.9	38.6
2		608.50	Twin Falls POTW	WLA	POTW	6.28	23.7	5.39	146.4		146.4	0.0
2	Snake R	609.90	Blue Lakes FH	WLA	FH	150.90	6.7	5.39	994.5		296.9	70.1
2	Snake R	610.00	Blue Lakes FH/Processing	WLA	FH	0.31	58.9	5.39	18.0		0.6	96.6
2	Snake R	610.10	Canyon Springs+WW FH	WLA	FH	15.93	2.0	5.39	31.3		31.3	0.0
2	Crystal S	600.50	Crystal Springs FH	WLA	FH	205.47	4.8	5.39	970.2		404.2	58.3
2	E. Perrine	612.60	Green's Trout FH	WLA	FH	6.10	2.0	5.39	12.0		12.0	0.0
2	Snake R	608.90	Pristine Springs/Sunnybrook F	WLA	FH	47.80	2.0	5.39	94.0		94.0	0.0
2	Snake R	608.90	Pristine Springs/WW FH	WLA	FH	15.90	2.0	5.39	31.3		31.3	0.0
2	LQ/LS Dr	603.60	Rand FH	WLA	FH	24.13	2.0	5.39	47.5		0.0	0.0
2		605.00	Ellison Springs	LA	Springs	1.25	1.3	5.39	1.6		1.6	0.0
2		600.40	Crystal Springs & Lake	LA	Springs	50.00	1.3	5.39	63.9		63.9	0.0
2		610.00	Alpheus Creek	LA	Springs	1.00	1.3	5.39	1.3		1.3	0.0
2		612.65	East Perrine Coulee	LA	Agriculture	29.27	116.9	5.39	3,365.8		1,482.3	56.0
2		610.86	Main Perrine Coulee	LA	Agriculture	10.95	117.2	5.39	1,262.4		559.0	55.7
2		609.10	Southside West Perrine Coulee	LA	Agriculture	2.53	223.2	5.39	555.5		129.2	76.7
2		608.30	Southside 43 Drain	LA	Agriculture	0.32	179.7	5.39	56.6		16.3	71.2
2		608.00	Warm Creek	LA	Agriculture	21.67	16.0	5.39	341.1		341.1	0.0
2		607.54	Jerome Golf Course Drain	LA	Agriculture	7.78	102.0	5.39	780.6		397.2	49.1
2	Rock Ck	606.41	Rock Creek WLAs	8 WLAs	FH	95.17			187.2		187.2	38.6
2		606.41	Rock Creek	LA	Agriculture			84.5%	11,979.1	9,328.6		22.1
2		606.41	Rock Creek	LA	Grazing			1.8%	255.2	198.7		22.1

Snake Segment	Discharge to Trib	River Mile	Source Name	Allocation Type	Source Category	Q cfs	TSS mg/L	Conversion Factor	TSS Load tons/year	Sub Allocation	TSS Load tons/year	% Allocation
2		606.41	Rock Creek	LA	Background			13.7%	1,942.0	1,512.5		22.1
2		606.41	Rock Creek						14,176.3		11,039.8	22.1
2		605.30	Southside 30 Drain	LA	Agriculture	6.10	371.3	5.39	2,228.0		311.4	86.0
2		603.60	LQ/LS Drains	LA	Agriculture	30.32	215.5	5.39	6,427.3		1,500.4	76.7
2		602.20	Southside LS2/39A Drain	LA	Agriculture	5.28	213.9	5.39	1,111.0		269.6	75.7
2		601.40	Northside N42 Drain (IR23N)	LA	Agriculture	8.84	17.0	5.39	147.8		147.8	0.0
2		601.40	Northside N42 Drain (IR23NT	LA	Agriculture	10.14	32.2	5.39	321.2		321.2	0.0
2		600.90	Southside 39 Drain	LA	Agriculture	4.77	425.7	5.39	1,997.4		243.5	87.8
2			Seg 2: Pillar Falls to Crystal Sp	LA	Agriculture			66.7%		1,994.7		
2			Seg 2: Pillar Falls to Crystal Sp	LA	Grazing			13.1%		391.8		
2			Seg 2: Pillar Falls to Crystal Sp	LA	Background			20.2%		604.1		
2		600.40	Seg 2: Pillar Falls to Crystal Spgs						8,980.6		2,990.5	66.7
2			UNACCOUNTED Q: Springs	LA	Background	149.90	1.3	5.39	191.7		191.7	0.0
2			UNACCOUNTED Q: Surface	LA	Background	79.70	35.7	5.39	2,798.8		2,798.8	0.0
2			SEDIMENT ATTENUATION						-30,053.7		-10,343.5	65.6
			Crystal Springs Area			5,498.00	19.0	5.39	102,756.7		57,441.0	44.1

Some of the aquaculture facilities have Net Load values that are > Year 5/10 Load targets. These facilities had actual values above the MDL that allowed for better estimation of the the annual load. All FH were allocated a 2 mg/L TSS target as an preliminary target (not as the final wasteload allocation) to ascertain the actual value < 4 mg/L The aquaculture general permit calls for an MDL < 2 mg/L to refine the wasteload estimate more exactly and will be assessed after Year 3 of the TSS MDL. TMDL implementation phase.

UNACCOUNTED Q: Springs = 191.7 tons/year

UNACCOUNTED Q: Surface = 2,798.8 tons/year

Total of UNACCOUNTED Q Springs & Surface = 2,990.5 tons/year

Table 101 of the TMDL has a 66.7% TSS reduction in the river segment alone.

Therefore, 9,909.9 tons/year TSS / 0.333 = 8,980.6 tons/year

19.0 mg/L TSS is the concentration average value of the river at Crystal Springs. This value can be used as a link to Sediment Attenuation once you have the total Q in the segment.

Table 101 of the TMDL states that the overall % reduction in Segment 2 is 44.1%.

Therefore, 100.0% - 44.1% = 55.9% = 0.559

1990-1991 Allocation x 0.559 = Year 5/10 Allocation

Segment 2 TP Allocations

Pillar Falls (PF) to Crystal Springs (CS)

tons/year = Q,cfs x TSS,mg/L x 5.39 x 0.1825

0.1825 = 365 days/1 year / 2000 lbs/1 ton

Snake Segment	Discharge to Trib	River Mile	Source Name	Allocation Type	Source Category	Q cfs	TP mg/L	Conversion Factor	1990-1991 TP Load lbs/day	Sub Allocation	Year 5 & 10 TP Load lbs/day	% Reduction
2	Rock Ck	606.41	Frame FH	WLA	FH	18.10			10.8		6.5	40.0
2	Rock Ck	606.41	Canyon Trout FH	WLA	FH	10.74			6.4		3.8	40.0
2	Rock Ck	606.41	Canyon Trout FH/Processing	WLA	FH				0.0		0.0	0.0
2	Rock Ck	606.41	Coats FH	WLA	FH	19.96			11.9		7.2	40.0
2	Rock Ck	606.41	CSI FH	WLA	FH	4.95			3.0		1.8	40.0
2	Rock Ck	606.41	C&M FH	WLA	FH	14.26			8.5		5.1	40.0
2	Rock Ck	606.41	Daydream FH	WLA	FH	13.18			7.9		4.7	40.0
2	Rock Ck	606.41	Deadman FH	WLA	FH	13.98			8.3		5.0	40.0
						95.17			56.8		34.1	40.0
2		613.09	Pillar Falls: With upstream Tri	LA + WLA	Upstream	4,737.00	0.147	5.39	3,753.3		1,914.9	49.0
2		608.50	Twin Falls POTW	WLA	POTW	6.28		5.39	1,071.2		707.0	34.0
2	Snake R	609.90	Blue Lakes FH	WLA	FH	150.90			90.1		54.1	40.0
2	Snake R	610.00	Blue Lakes FH/Processing	WLA	FH	0.31	8.083	5.39	13.5		0.0	100.0
2	Snake R	610.10	Canyon Springs+WW FH	WLA	FH	15.93			9.5		5.7	40.0
2	Crystal S	600.50	Crystal Springs FH	WLA	FH	205.47			122.7		73.6	40.0
2	E. Perrine	612.60	Green's Trout FH	WLA	FH	6.10			3.6		2.2	40.0
2	Snake R	608.90	Pristine Springs/Sunnybrook F	WLA	FH	47.80			38.0		22.8	40.0
2	Snake R	608.90	Pristine Springs/WW FH	WLA	FH	15.90			12.7		7.6	40.2
2	LQ/LS Dr	603.60	Rand FH	WLA	FH	24.13			0.0		0.0	0.0
2		605.00	Ellison Springs	LA	Springs	1.25	0.02	5.39	0.1		0.1	0.0
2		600.40	Crystal Springs & Lake	LA	Springs	50.00	0.02	5.39	5.4		5.4	0.0
2		610.00	Alpheus Creek	LA	Springs	1.00	0.020	5.39	0.1		0.1	0.0
2		612.65	East Perrine Coulee	LA	Agriculture	29.27	0.199	5.39	31.4		15.8	49.7
2		610.86	Main Perrine Coulee	LA	Agriculture	10.95	0.198	5.39	11.7		5.9	49.5
2		609.10	Southside West Perrine Coulee	LA	Agriculture	2.53	0.309	5.39	4.2		1.4	67.6
2		608.30	Southside 43 Drain	LA	Agriculture	0.32	0.257	5.39	0.4		0.2	61.1
2		608.00	Warm Creek	LA	Agriculture	21.67	0.060	5.39	7.0		2.3	66.7
2		607.54	Jerome Golf Course Drain	LA	Agriculture	7.78	0.245	5.39	10.3		4.2	59.1
2	Rock Ck	606.41	Rock Creek WLAs	8 WLAs	FH	95.17			56.8		34.1	40.0
2		606.41	Rock Creek	LA	Agriculture			84.5%		100.1		
2		606.41	Rock Creek	LA	Grazing			1.8%		2.1		

Snake Segment	Discharge to Trib	River Mile	Source Name	Allocation Type	Source Category	Q cfs	TP mg/L	Conversion Factor	TP Load lbs/day	Sub Allocation	TP Load lbs/day	% Reduction
2		606.41	Rock Creek	LA	Background			13.7%		16.2		
2		606.41	Rock Creek						184.9		118.5	35.9
2		605.30	Southside 30 Drain	LA	Agriculture	6.10	0.491	5.39	16.1		3.3	79.6
2		603.60	LQ/LS Drains	LA	Agriculture	30.32	0.306	5.39	50.0		16.3	67.3
2		602.20	Southside LS2/39A Drain	LA	Agriculture	5.28	0.342	5.39	9.7		2.8	70.8
2		601.40	Northside N42 Drain (IR23N)	LA	Agriculture	8.84	0.113	5.39	5.4		4.8	11.5
2		601.40	Northside N42 Drain (IR23NT	LA	Agriculture	10.14	0.151	5.39	8.3		5.5	33.8
2		600.90	Southside 39 Drain	LA	Agriculture	4.77	0.757	5.39	19.5		2.6	86.8
2			Seg 2: Pillar Falls to Crystal Sp	LA	Agriculture			66.7%		268.4		
2			Seg 2: Pillar Falls to Crystal Sp	LA	Grazing			13.1%		52.7		
2			Seg 2: Pillar Falls to Crystal Sp	LA	Background			20.2%		81.3		
2		600.40	Seg 2: Pillar Falls to Crystal Spgs						454.7		402.4	11.5
2			UNACCOUNTED Q: Springs	LA	Background	149.90	**0.020**	5.39	16.2		16.2	0.0
2			UNACCOUNTED Q: Surface	LA	Background	79.70	**0.245**	5.39	105.2		43.0	59.2
2			SEDIMENT ATTENUATION						-1,844.7		-1,250.1	32.2
						5,498.00	**0.144**	5.39	4,267.3		2,222.6	47.9

TP overall concentration: Appendix D, Section XIV, p 439:

Avg of PF & CS = 0.147 & 0.141 mg/L TP = **0.144** mg/L TP = 4,267.3

Year 5/10 Load, mg/L = 0..075 mg/L TP x 5.39 x 6351.61 cfs = 2,222.6

Segment 2 LA s for Agriculture, Grazing, and Background were obtained from p 200, Section 3.5.2, of the TMDL.

TP Actual Data on Irrigation Returns from Appendix D, Section XIV, p 434.

Otherwise, unknown TP estimated from Appendix D, Section XIV, TP Assumptions, p 438:

Middle Snake River = **0.113** mg/L TP ..... Instream target = 0.075 mg/L TP

Tributaries = **0.136** mg/L TP (the mean of 0.117 & 0.156) ..... Instream target = 0.100 mg/L TP

Springs = **0.020** mg/L TP .....Instream target < 0.020 mg/L TP

Aquaculture = predictive Value of pp 436-437

Unaccounted Surface = **0.245** mg/L TP ..... Instream target = 0.100 mg/L TP

Twin Falls POTW TP allocations based on Mid-Snake TMDL, pp 62-63, and Appendix A-6, pp 221-224.

Blue Lakes FH/Processing Facility was closed in 1999.

Rand FH was not in operation since 1990-2000 and was not allocated a load.

UNACCOUNTED Q SPRINGS: 16.2 lbs/day TP

UNACCOUNTED Q SURFACE: 105.2 lbs/day TP

Total: 402.4 lbs/day TP

Table 107 of TMDL, pp 220-221, shows an 11.5% reduction in the Seg 2 portion of the river = 0.885 multiplier.

TP Allocation for Rock Creek was done similarly as TSS.

See Table 108 for gross TP allocations:

184.9 lbs/day TP = 1990-1991

118.5 lbs/day TP = Year 5/10

Segment 3 TSS Allocations — tons/year = Q,cfs x TSS,mg/L x 5.39 x 0.1825

Crystal Springs (CS) to Box Canyon (BC) — 0.1825 = 365 days/1 year / 2000 lbs/1 ton

Snake Segment	Discharge to Trib	River Mile	Source Name	Allocation Type	Source Category	Q cfs	TSS mg/L	Conversion Factor	1990-1991 TSS Load tons/year	Sub Allocation	Year 5 & 10 TSS Load tons/year	% Reduction
CEDAR DRAW TRIBUTARY:												
3	Cedar Draw	599.14	Filer POTW	WLA	POTW	0.24	8.9	5.39	2.1		2.1	0.0
3	Cedar Draw	599.14	Cedar Draw FH	WLA	FH	20.15	2.0	5.39	39.6		39.6	0.0
3	Cedar Draw	599.14	Leo Martin FH	WLA	FH	15.01	2.0	5.39	29.5		29.5	0.0
3	Cedar Draw	599.14	Olson Ponds FH	WLA	FH	3.87	2.0	5.39	7.6		7.6	0.0
3	Cedar Draw	599.14	Rainbow Trout Processing	WLA	FH	0.02	2.0	5.39	0.0		0.0	0.0
3	Cedar Draw	599.14	Rainbow Trout (Filer) FH	WLA	FH	12.85	2.0	5.39	25.3		25.3	0.0
3	Cedar Draw	599.14	SEAPAC Processing	WLA	FH	0.00	2.0	5.39	0.0		0.0	0.0
3	Cedar Draw	599.14	Stutzman FH	WLA	FH	1.24	2.0	5.39	2.4		2.4	0.0
3	Cedar Draw	599.14	Tunnel Creek FH	WLA	FH	18.22	2.0	5.39	35.8		35.8	0.0
3	Cedar Draw	599.14	Yoder's FH	WLA	FH	8.90	2.0	5.39	17.5		17.5	0.0
					Sub Total	80.50			160.00		160.00	0.0
CLEAR LAKES & SPRINGS TRIBUTARY:												
3	Clear Spring	593.00	Clear Lakes Trout FH	WLA	FH	161.25	2.2	5.39	349.0		317.2	9.1
3	Clear Spring	593.00	Clear Lakes Trout/Processing	WLA	FH	0.02	49.3	5.39	1.0		1.0	0.0
3	Clear Spring	593.00	Clear Springs/Processing	WLA	FH	0.05	118.3	5.39	5.8		5.8	0.0
3	Clear Spring	593.00	Clear Springs/Middle FH	WLA	FH	182.06	2.0	5.39	358.2		358.2	0.0
3	Clear Spring	593.00	Clear Springs/Snake River FH	WLA	FH	99.50	2.0	5.39	195.8		195.8	0.0
					Sub Total	442.88			909.7		877.9	3.5
MUD CREEK TRIBUTARY:												
3	Mud Creek	591.47	Buhl POTW	WLA	POTW	0.61	48.0	5.39	28.8		28.8	0.0
3	Mud Creek	591.47	Buhl Trout (Blau) FH	WLA	FH	5.01	2.0	5.39	9.9		9.9	0.0
3	Mud Creek	591.47	Buhl Trout FH	WLA	FH	3.4	2.0	5.39	6.7		6.7	0.0
3	Mud Creek	591.47	First Ascent FH	WLA	FH	17.95	2.0	5.39	35.3		35.3	0.0
3	Mud Creek	591.47	Jukers Ponds FH)	WLA	FH	5.41	2.0	5.39	10.6		10.6	0.0
3	Mud Creek	591.47	Mi Vida Loca FH	WLA	FH	4.02	2.0	5.39	7.9		7.9	0.0
3	Mud Creek	591.47	Rainbow Trout (Buhl) FH	WLA	FH	8.26	2.0	5.39	16.3		16.3	0.0
3	Mud Creek	591.47	RCP FH	WLA	FH	1.78	2.0	5.39	3.5		3.5	0.0
3	Mud Creek	591.47	Rocky Ridge FH	WLA	FH	2.01	2.0	5.39	4.0		4.0	0.0
3	Mud Creek	591.47	White's Trout FH	WLA	FH	3.99	2.0	5.39	7.8		7.8	0.0
3	Mud Creek	591.47	W&W Trout FH	WLA	FH	10.17	2.0	5.39	20.0		20.0	0.0
					Sub Total	62.61			150.8		150.8	0.0

DEEP CREEK TRIBUTARY:											
3	Deep Creek	591.38	Boswell Trout FH	WLA	FH	16.89	2.0	5.39	33.2	33.2	0.0
3	Deep Creek	591.38	Cox/Harder FH	WLA	FH	15.58	2.0	5.39	30.7	30.7	0.0
3	Deep Creek	591.38	Deep Creek FH	WLA	FH	15.83	2.0	5.39	31.1	31.1	0.0
3	Deep Creek	591.38	Dolana Farm FH	WLA	FH	5.17	2.0	5.39	10.2	10.2	0.0
3	Deep Creek	591.38	Howell Farm FH	WLA	FH	9.65	2.0	5.39	19.0	19.0	0.0
3	Deep Creek	591.38	Peter's Farm FH	WLA	FH	10.33	2.0	5.39	20.3	20.3	0.0
					Sub Total	73.45			144.5	144.5	0.0
BLIND CANYON CREEK TRIBUTARY:											
3	Blind Canyon	588.06	Blind Canyon FH	WLA	FH	6.97	2.0	5.39	13.7	13.7	0.0
					Sub Total	6.97			13.7	13.7	0.0
3		600.40	Crystal Springs: Upstream inpu	LA + WLA	Upstream	5,498.00			102,756.7	57,441.0	44.1
3	Cedar Draw	599.14	Cedar Draw WLAs	10 WLAs	POTW/FH	80.50			160.0	160.0	0.0
3	Clear Spring	593.00	Clear Springs WLAs	5 WLAs	FH	442.88			909.7	877.9	3.5
3	Mud Creek	591.47	Mud Creek WLAs	11 WLAs	POTW/FH	62.61			150.8	150.8	0.0
3	Deep Creek	591.38	Deep Creek WLAs	6 WLAs	FH	73.45			144.5	144.5	0.0
3	Blind Canyon	588.06	Blind Canyong Creek WLAs	1 WLAs	FH	6.97			13.7	13.7	0.0
3	J8 Drain	600.40	Jerome POTW	WLA	POTW	0.91	17.8	5.39	15.9	15.9	0.0
3	Snake River	588.40	Box Canyon Trout FH	WLA	FH	297.09	5.9	5.39	1,724.2	584.5	66.1
3	Snake River	590.28	Briggs Creek FH	WLA	FH	22.84	2.0	5.39	44.9	44.9	0.0
3	Snake River	519.50	Catfish Farm FH	WLA	FH	17.95	15.8	5.39	279.0	35.3	87.3
3	Snake River	592.50	Gary Wright FH	WLA	FH	5.50	2.0	5.39	10.8	10.8	0.0
3	Snake River	599.00	Niagara Springs FH	WLA	FH	55.19	2.0	5.39	108.6	108.6	0.0
3	Snake River	589.80	Kaster Trout FH	WLA	FH	49.12	2.0	5.39	96.6	96.6	0.0
3	Snake River	600.00	Magic Valley Steelhead FH	WLA	FH	73.25	7.4	5.39	533.2	144.1	73.0
3	Snake River	598.70	Rim View Trout FH	WLA	FH	135.67	4.6	5.39	613.9	266.9	56.5
3		599.00	Niagara Springs	LA	Spring	30.4	1.3	5.39	38.9	38.9	0.0
3		593.00	Clear Springs & Lake	LA	Spring	52.31	3.5	5.39	180.1	180.1	0.0
3		588.85	Banbury Springs	LA	Spring	120.67	1.3	5.39	154.3	154.3	0.0
3		590.28	Briggs Creek Springs	LA	Spring	83.35	1.3	5.39	106.6	106.6	0.0
3		587.76	Box Canyon Springs	LA	Spring	64.97	1.3	5.39	83.1	83.1	0.0
3		599.14	Cedar Draw	LA	Background	115.19	107.9	5.39	12,226.1	5,721.0	53.2

3	591.47	Mud Creek	LA	Background	97.26	62.3	5.39	5,960.4		4,965.4	16.7
3	591.38	Deep Creek	LA	Background	95.89	65.7	5.39	6,197.1		4,480.0	27.7
3	591.38	McMullen Creek	LA	Background	4.00	66.4	5.39	261.3		172.0	34.2
3	591.38	Cottonwood Creek	LA	Background	2.30	66.4	5.39	150.2		98.9	34.2
3	588.06	Blind Canyon Creek	LA	Agriculture	31.93	29.0	5.39	910.9		611.7	32.8
3	588.06	Blind Canyon Creek	LA	Grazing	4.13	29.0	5.39	117.8		79.5	32.5
3	588.06	Blind Canyon Creek	LA	Background	7.44	29.0	5.39	212.2		73.6	65.3
3	598.00	Southside I Drain	LA	Agriculture	11.42	111.9	5.39	1,257.0		584.1	53.5
3	595.10	Northside J8 Drain	LA	Agriculture	9.03	41.1	5.39	365.1		365.1	0.0
3	591.50	Southside N Drain	LA	Agriculture	4.36	36.8	5.39	157.8		157.8	0.0
3	589.50	Northside S29 Drain	LA	Agriculture	2.64	11.9	5.39	30.9		30.9	0.0
3	588.40	Northside S19/S Drain	LA	Agriculture	52.99	43.4	5.39	2,262.2		2,262.2	0.0
3	588.4	Segment 3: CS to BC	LA	Agriculture			67.1%		2,475.1		
3	588.4	Segment 3: CS to BC	LA	Grazing			11.6%		427.9		
3	588.4	Segment 3: CS to BC	LA	Background			21.3%		785.7		
3	588.4	Segment 3: CS to BC	LA					5,530.3		3,688.7	33.3
3		UNACCOUNTED Q: SPRINGS	LA		185.10	1.3	5.39	236.7		236.7	0.0
3		UNACCOUNTED Q: SURFACE	LA		98.30	35.7	5.39	3,452.0		3,452.0	0.0
3		SEDIMENT ATTENUATION						36,287.9		47,044.3	-29.6
		Box Canyon Area			7,212.00	25.9	5.39	183,741.4		134,682.5	26.7

Table 102 of the TMDL states that the overall reduction is 26.7%.
Therefore, 100.0% - 26.7% = 73.3% = 0.733 multiplier
1990-1991 Allocation x 0.733 = Year 5/10 Allocation

Segment 3 TP Allocations — tons/year = Q,cfs x TSS,mg/L x 5.39 x 0.1825

Crystal Springs (CS) to Box Canyon (BC) — 0.1825 = 365 days/1 year / 2000 lbs/1 ton

Snake Segment	Discharge to Trib	River Mile	Source Name	Allocation Type	Source Category	Q cfs	TP mg/L	Conversion Factor	1990-1991 TP Load lbs/day	Sub Allocation	Year 5 & 10 TP Load lbs/day	% Reduction
CEDAR DRAW TRIBUTARY:												
3	Cedar Draw	599.14	Filer POTW	WLA	POTW	0.24		5.39	24.9		16.4	34.1
3	Cedar Draw	599.14	Cedar Draw FH	WLA	FH	20.15		5.39	12.0		7.2	40.0
3	Cedar Draw	599.14	Leo Martin FH	WLA	FH	15.01		5.39	9.0		5.4	40.0
3	Cedar Draw	599.14	Olson Ponds FH	WLA	FH	3.87		5.39	2.3		1.4	40.0
3	Cedar Draw	599.14	Rainbow Trout Processing	WLA	FH	0.01	8.083	5.39	0.6		0.4	40.0
3	Cedar Draw	599.14	Rainbow Trout (Filer) FH	WLA	FH	12.85		5.39	7.7		4.6	40.0
3	Cedar Draw	599.14	SEAPAC Processing	WLA	FH	0.00		5.39	0.0		0.0	0.0
3	Cedar Draw	599.14	Stutzman FH	WLA	FH	1.24		5.39	0.7		0.4	40.0
3	Cedar Draw	599.14	Tunnel Creek FH	WLA	FH	18.22		5.39	10.8		6.5	40.0
3	Cedar Draw	599.14	Yoder's FH	WLA	FH	8.90		5.39	5.3		3.2	40.0
					Sub Total	80.49		Sub Total	73.4		45.5	38.0
CLEAR LAKES & SPRINGS TRIBUTARY:												
3	Clear Springs	593.00	Clear Lakes Trout FH	WLA	FH	161.25			96.3		57.8	40.0
3	Clear Springs	593.00	Clear Lakes Trout/Processing	WLA	FH	0.02	6.703	5.39	0.7		0.4	40.0
3	Clear Springs	593.00	Clear Springs/Processing	WLA	FH	0.34	4.966	5.39	9.0		5.4	40.0
3	Clear Springs	593.00	Clear Springs/Middle FH	WLA	FH	182.06			108.7		65.2	40.0
3	Clear Springs	593.00	Clear Springs/Snake River FH	WLA	FH	99.50			59.5		35.7	40.0
					Sub Total	443.16		Sub Total	274.2		164.5	40.0
MUD CREEK TRIBUTARY:												
3	Mud Creek	591.47	Buhl POTW	WLA	POTW	0.61			26.3		17.4	33.8
3	Mud Creek	591.47	Buhl Trout (Blau) FH	WLA	FH	5.01			3.0		1.8	40.0
3	Mud Creek	591.47	Buhl Trout FH	WLA	FH	3.4			2.0		1.2	40.0
3	Mud Creek	591.47	First Ascent FH	WLA	FH	17.95			7.2		4.3	40.0
3	Mud Creek	591.47	Jukers Ponds FH)	WLA	FH	5.41			3.2		1.9	40.0
3	Mud Creek	591.47	Mi Vida Loca FH	WLA	FH	4.02			2.3		1.4	40.0
3	Mud Creek	591.47	Rainbow Trout (Buhl) FH	WLA	FH	8.26			5.0		3.0	40.0
3	Mud Creek	591.47	RCP FH	WLA	FH	1.78			1.0		0.6	40.0
3	Mud Creek	591.47	Rocky Ridge FH	WLA	FH	2.01			1.2		0.7	40.0
3	Mud Creek	591.47	White's Trout FH	WLA	FH	3.99			2.3		1.4	40.0
3	Mud Creek	591.47	W&W Trout FH	WLA	FH	10.17			6.0		3.6	40.0
					Sub Total	62.61		Sub Total	59.5		37.3	37.3

DEEP CREEK TRIBUTARY:											
3	Deep Creek	591.38	Boswell Trout FH	WLA	FH	16.89			10.2	6.1	40.0
3	Deep Creek	591.38	Cox/Harder FH	WLA	FH	15.58			9.3	5.6	40.0
3	Deep Creek	591.38	Deep Creek FH	WLA	FH	15.83			9.5	5.7	40.0
3	Deep Creek	591.38	Dolana Farm FH	WLA	FH	5.17			3.2	1.9	40.0
3	Deep Creek	591.38	Howell Farm FH	WLA	FH	9.65			5.8	3.5	40.0
3	Deep Creek	591.38	Peter's Farm FH	WLA	FH	10.33			6.2	3.7	40.0
					Sub Total	73.45		Sub Total	44.2	26.5	40.0
BLIND CANYON CREEK TRIBUTARY:											
3	Blind Canyon	588.06	Blind Canyon FH	WLA	FH	6.97			4.2	2.5	40.0
					Sub Total	6.97		Sub Total	4.2	2.5	40.0
3		600.40	Crystal Springs: Upstream inpu	LA + WLA	Upstream	5,498.00	0.141	5.39	4,267.3	2,222.6	47.9
3	Cedar Draw	599.14	Cedar Draw WLAs	10 WLAs	POTW/FH	80.49		5.39	73.4	45.5	38.0
3	Clear Springs	593.00	Clear Springs WLAs	5 WLAs	FH	443.16		5.39	274.2	164.5	40.0
3	Mud Creek	591.47	Mud Creek WLAs	11 WLAs	POTW/FH	62.61		5.39	59.5	37.3	37.3
3	Deep Creek	591.38	Deep Creek WLAs	6 WLAs	FH	73.45		5.39	44.2	26.5	40.0
3	Blind Canyon	588.06	Blind Canyong Creek WLAs	1 WLAs	FH	6.97		5.39	4.2	2.5	40.0
3	J8 Drain	600.40	Jerome POTW	WLA	POTW	0.91		5.39	310.1	205.0	33.9
3	Snake River	588.40	Box Canyon Trout FH	WLA	FH	297.09		5.39	177.5	106.5	40.0
3	Snake River	590.28	Briggs Creek FH	WLA	FH	22.84		5.39	13.7	8.2	40.0
3	Snake River	519.50	Catfish Farm FH	WLA	FH	17.95		5.39	10.7	6.4	40.0
3	Snake River	592.50	Gary Wright FH	WLA	FH	5.50		5.39	3.3	2.0	40.0
3	Snake River	599.00	Niagara Springs FH	WLA	FH	55.19		5.39	33.0	19.8	40.0
3	Snake River	589.80	Kaster Trout FH	WLA	FH	49.12		5.39	29.3	17.6	40.0
3	Snake River	600.00	Magic Valley Steelhead FH	WLA	FH	73.25		5.39	43.7	26.2	40.0
3	Snake River	598.70	Rim View Trout FH	WLA	FH	135.67		5.39	81.0	48.6	40.0
3		599.00	Niagara Springs	LA	Spring	30.4	0.020	5.39	3.3	3.3	0.0
3		593.00	Clear Springs & Lake	LA	Spring	52.31	0.020	5.39	5.6	5.6	0.0
3		588.85	Banbury Springs	LA	Spring	120.67	0.020	5.39	13.0	13.0	0.0
3		590.28	Briggs Creek Springs	LA	Spring	83.35	0.020	5.39	9.0	9.0	0.0
3		587.76	Box Canyon Springs	LA	Spring	64.97	0.020	5.39	7.0	7.0	0.0
3		599.14	Cedar Draw	LA	Background	115.19		5.39	119.8	62.1	48.2

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3	591.47	Mud Creek	LA	Background	97.26		5.39	94.4		52.4	44.5
3	591.38	Deep Creek	LA	Background	95.89		5.39	78.6		51.7	34.2
3	591.38	McMullen Creek	LA	Background	4.00		5.39	3.4		2.2	34.5
3	591.38	Cottonwood Creek	LA	Background	2.30		5.39	1.9		1.2	37.8
3	588.06	Blind Canyon Creek	LA	Agriculture	31.93		5.39	29.3		18.7	36.1
3	588.06	Blind Canyon Creek	LA	Grazing	4.13		5.39	3.8		2.4	36.0
3	588.06	Blind Canyon Creek	LA	Background	7.44		5.39	3.6		2.3	36.1
3	598.00	Southside I Drain	LA	Agriculture	11.42		5.39	12.8		6.2	51.5
3	595.10	Northside J8 Drain	LA	Agriculture	9.03		5.39	6.4		4.9	23.0
3	591.50	Southside N Drain	LA	Agriculture	4.36		5.39	2.7		2.4	11.1
3	589.50	Northside S29 Drain	LA	Agriculture	2.64		5.39	2.3		1.4	40.2
3	588.40	Northside S19/S Drain	LA	Agriculture	52.99		5.39	69.7		28.6	59.0
3	588.4	Segment 3: CS to BC	LA	Agriculture			67.1%		630.0		
3	588.4	Segment 3: CS to BC	LA	Grazing			11.6%		108.9		
3	588.4	Segment 3: CS to BC	LA	Background			21.3%		200.0		
3	588.4	Segment 3: CS to BC	LA					1061.0		938.9	11.5
3		UNACCOUNTED Q: SPRINGS	LA		185.1	0.020	5.39	20.0		20.0	0.0
3		UNACCOUNTED Q: SURFACE	LA		98.3	0.245	5.39	129.8		53.0	59.2
3		SEDIMENT ATTENUATION						-2,787.3		-1,310.0	53.0
		Box Canyon Area			7,212.00	0.111	5.39	4,314.9		2,915.5	32.4

TP overall concentration: Appendix D, Section XIV, p 439:

1990-1991 Load = 7895.9cfs x 0.111mg/LTP x 5.39 = 4,314.9

Year 5/10 Load, mg/L = 0.075 mg/L TP x 5.39 x 7,895.9 cfs 3,191.9

Segment 4 TSS Allocations

Box Canyon (BC) to Gridley Bridge (GB)

tons/year = Q,cfs x TSS,mg/L x 5.39 x 0.1825

0.1825 = 365 days/1 year / 2000 lbs/1 ton

Snake Segment	Discharge to Trib	River Mile	Source Name	Allocation Type	Source Category	Q cfs	TSS mg/L	Conversion Factor	1990-1991 TSS Load tons/year	Sub Allocation	Year 5 & 10 TSS Load tons/year	% Reduction
4	Thousand Spring	584.38	Ten Springs FH	WLA	FH	25.74	2.0	5.39	50.6		50.6	0.0
4					Sub Total	25.74			50.6		50.6	0.1
4	Riley Creek	582.88	IDFG/Hagerman State FH	WLA	FH	72.28	2.0	5.39	142.2		142.2	0.0
4	Riley Creek	582.88	USFWS/Hagerman National F	WLA	FH	48.72	2.0	5.39	95.8		95.8	0.0
4					Sub Total	121.00			238.0		238.0	0.0
4		587.00	Segment 4: Box Canyon Input	WLA+LA	Upstream	7,212.00			183,741.4		134,682.5	26.7
4	Snake River	584.38	Thousand Springs WLAs	WLA	1 FH	25.74			50.6		50.6	0.1
4	Snake River	582.88	Riley Creek WLAs	WLA	2 FHs	121.00			238.0		238.0	0.0
4	Snake River	588.06	Blind Canyon Aqua Ranch FH	WLA	FH	25.74	2.0	5.39	50.6		50.6	0.0
4	Snake River	583.80	Pisces/Magic Springs FH	WLA	FH	120.99	2.0	5.39	238.0		238.0	0.0
4		584.38	Thousand Springs Creek	LA	Spring	1,272.00			1,575.2		1,575.2	0.0
4		582.88	Riley Creek	LA	Spring	66.78			734.1		734.1	0.0
4		584.44	Sand Springs Creek	LA	Spring	91.65	1.3	5.39	117.2		117.2	0.0
4		586.50	Salmon Falls Creek	LA	Background	149.40	40.6	5.39	5,966.6		5,966.6	0.0
4		584.30	Northside W26 Drain	LA	Agriculture	18.16	61.2	5.39	1,093.2		927.1	15.2
4			Segment 4: BC to GB	LA	Agriculture			49.3%		714.0		
4			Segment 4: BC to GB	LA	Grazing			29.2%		422.9		
4			Segment 4: BC to GB	LA	Background			21.5%		311.4		
4			Segment 4: BC to GB						2,171.4		1,448.3	33.3
4			UNACCOUNTED Q: SPRINGS	LA		72.6	1.3	5.39	92.8		92.8	0.0
4			UNACCOUNTED Q: SURFACE	LA		38.6	35.7	5.39	1,355.5		1,355.5	0.0
4			SEDIMENT ATTENUATION						-10,968.9		-15,838.8	-44.4
			Gridley Bridge Area			9,113.00	20.8	5.39	186,456.0		131,637.9	29.4

UNACCOUNTED Q: SPRINGS: 72.6 cfs x 1.3 mg/L TSS x 5.39 x 0.18 = 92.8 tons/year

UNACCOUNTED Q: SURFACE: 38.6 cfs x 35.7 mg/L TSS x 5.39 x 0.1 = 1,355.5 tons/year

Total Unaccounted Load = 1,448.3 tons/year

Table 103 states that the overall reduction of Segment 4 is 29.4

Therefore, 100.0% - 29.4% = 70.6% = 0.706

Table 103 of the TMDL indicates that Segment 4 has a 33.3% reduction.

Therefore, 100% - 33.3% = 66.7% = 0.667 = 1,448.3/0.667 = 2,171.4 tons/year

1990-1991 Allocation x 0.706 = Year 5/10 Allocation

Segment 4 TP Allocations

Box Canyon (BC) to Gridley Bridge (GB)

tons/year = Q,cfs x TSS,mg/L x 5.39 x 0.1825

0.1825 = 365 days/1 year / 2000 lbs/1 ton

Snake Segment	Discharge to Trib	River Mile	Source Name	Allocation Type	Source Category	Q cfs	TP mg/L	Conversion Factor	1990-1991 TP Load lbs/day	Sub Allocation	Year 5 & 10 TP Load lbs/day	% Reduction
4	Thousand Spring	584.38	Ten Springs FH	WLA	FH	25.74			15.6		9.4	40.0
4					Sub Total	25.74			15.6		9.4	40.0
4	Riley Creek	582.88	IDFG/Hagerman State FH	WLA	FH	72.28			43.2		25.9	40.0
4	Riley Creek	582.88	USFWS/Hagerman National FH	WLA	FH	48.72			29.1		17.5	40.0
4					Sub Total	121.00			72.3		43.4	40.0
4		587.00	Segment 4: Box Canyon Input	WLA+LA		7,212.00	0.111	5.39	4,314.9		2,915.5	32.4
4	Snake River	584.38	Thousand Springs WLAs	WLA	1 FH	25.74		5.39	15.6		9.4	40.0
4	Snake River	582.88	Riley Creek WLAs	WLA	2 FHs	121.00		5.39	72.3		43.4	40.0
4	Snake River	588.06	Blind Canyon Aqua Ranch FH	WLA	FH	25.74		5.39	4.2		2.5	40.0
4	Snake River	583.80	Pisces/Magic Springs FH	WLA	FH	120.99		5.39	72.3		43.4	40.0
4		584.38	Thousand Springs Creek	LA	Spring	1,272.00		5.39	137.1		137.1	0.0
4		582.88	Riley Creek	LA	Spring	66.78		5.39	18.0		7.2	60.0
4		584.44	Sand Springs Creek	LA	Spring	91.65		5.39	9.9		9.9	0.0
4		586.50	Salmon Falls Creek	LA	Background	149.40		5.39	81.3		80.5	1.0
4		584.30	Northside W26 Drain	LA	Agriculture	18.16		5.39	13.9		9.8	29.5
4			Segment 4: BC to GB	LA	Agriculture			49.3%		14.1		
4			Segment 4: BC to GB	LA	Grazing			29.2%		8.4		
4			Segment 4: BC to GB	LA	Background			21.5%		6.2		
			Segment 4: BC to GB						58.8		28.6	51.3
4			UNACCOUNTED Q: SPRINGS	LA		72.6	0.020	5.39	7.8		7.8	0.0
4			UNACCOUNTED Q: SURFACE	LA		38.6	0.245	5.39	51.0		20.8	59.2
4			SEDIMENT ATTENUATION						-239.8		368.1	253.5
			Gridley Bridge Area			9,113.00	0.094	5.39	4,617.2		3,683.9	30.3

UNACCOUNTED Q: SPRINGS: 72.6 cfs x 0.020 mg/L TSS x 5.39 = 7.8 lbs/day — 7.8 lbs/day

UNACCOUNTED Q: SURFACE: 38.6 cfs x 0.245 mg/L TSS x 5.39 = 51.0 lbs/day

UNACCOUNTED Q: SURFACE: 38.6 cfs x 0.100 mg/L TSS x 5.39 = — 20.8 lbs/day

58.8 lbs/day

28.6 lbs/day

Segment 5 TSS Allocations

Gridley Bridge (GB) to Shoestring Bridge (SB)

tons/year = Q,cfs x TSS,mg/L x 5.39 x 0.1825

0.1825 = 365 days/1 year / 2000 lbs/1 ton

Snake Segment	Discharge to Trib	River Mile	Source Name	Allocation Type	Source Category	Q cfs	TSS mg/L	Conversion Factor	1990-1991 TSS Load tons/year	Sub Allocation	Year 5 & 10 TSS Load tons/year	% Reduction
5	Billingsley	573.76	Boyer Farm FH	WLA	FH	11.60	2.0	5.39	22.8		22.8	0.0
5	Billingsley	573.76	Rainbow Falls (Dunn) FH	WLA	FH	23.00	2.0	5.39	45.2		45.2	0.0
5	Billingsley	573.76	Eckles FH	WLA	FH	18.56	2.0	5.39	36.5		36.5	0.0
5	Billingsley	573.76	Fisheries Development FH (001A)	WLA	FH	12.10	2.0	5.39	23.8		23.8	0.0
5	Billingsley	573.76	Fisheries Development FH (003A)	WLA	FH	93.90	2.0	5.39	184.7		184.7	0.0
5	Billingsley	573.76	Hidden Springs	WLA	FH	16.50	2.0	5.39	32.5		32.5	0.0
5	Billingsley	573.76	Idaho Springs/Gold Springs FH	WLA	FH	135.00	2.0	5.39	265.6		265.6	0.0
5	Billingsley	573.76	Jones FH	WLA	FH	45.00	2.0	5.39	88.5		88.5	0.0
5	Billingsley	573.76	McFadden Farm FH	WLA	FH	6.50	2.0	5.39	12.8		12.8	0.0
5	Billingsley	573.76	Rangen's FH	WLA	FH	19.45	2.0	5.39	38.3		38.3	0.0
5	Billingsley	573.76	Springs Creek (Schrank) FH	WLA	FH	2.50	2.0	5.39	4.9		4.9	0.0
5	Billingsley	573.76	Talbot Trout FH	WLA	FH	11.30	2.0	5.39	22.2		22.2	0.0
5	Billingsley	573.76	2 Non-permitted FH	WLA	FH	5.00	2.0	5.39	9.8		9.8	0.0
					Sub Total	400.41			787.7		787.7	0.0
5		582.00	Segment 5: Gridley Bridge Input	WLA+LA	Upstream	9,113.00			186,456.0		131,637.9	29.4
5	Snake River	576.00	Hagerman POTW	WLA	POTW	0.27	5.1	5.39	1.4		1.4	0.0
5	Snake River	573.00	Barret Farm/Fish Breeders FH	WLA	FH	10.06	2.0	5.39	19.8		19.8	0.0
5	Snake River	577.20	Big Bend Trout FH	WLA	FH	4.34	2.0	5.39	8.5		8.5	0.0
5	Snake River	578.60	Buckeye Farm FH	WLA	FH	20.42	2.0	5.39	40.2		40.2	0.0
5	Snake River	567.70	John Flemming Ponds FH	WLA	FH	8.97	2.0	5.39	17.6		17.6	0.0
5	Snake River	572.20	Mike Flemming Ponds FH	WLA	FH	5.71	2.0	5.39	11.2		11.2	0.0
5	Snake River	580.20	Henslee FH	WLA	FH	8.51	2.0	5.39	16.7		16.7	0.0
5	Snake River	575.90	Lemmon Ponds FH	WLA	FH	4.03	2.0	5.39	7.9		7.9	0.0
5	Snake River	568.00	Slane Ponds FH	WLA	FH	4.18	2.0	5.39	8.2		8.2	0.0
5	Snake River	569.60	Smith Farm FH	WLA	FH	9.11	2.0	5.39	17.9		17.9	0.0
5	Snake River	566.80	Stevenson Ponds FH	WLA	FH	8.04	2.0	5.39	15.8		15.8	0.0
5	Snake River	572.40	White Springs Trout FH	WLA	FH	31.34	4.0	5.39	123.3		61.7	50.0
5	Snake River	568.40	Rangen/Woods FH	WLA	FH	12.38	2.0	5.39	24.4		24.4	0.0
5	Birch Creek	572.20	Birch Creek Trout FH	WLA	FH	9.08	2.0	5.39	17.9		17.9	0.0
5	Birch Creek	572.28	CJ Simms Ponds FH	WLA	FH	5.28	2.0	5.39	10.4		10.4	0.0
5	Stoddard Ck	570.10	Bell Fish Ponds FH	WLA	FH	3.77	2.0	5.39	7.4		7.4	0.0
5	Stoddard Ck	570.10	Standal Ponds FH	WLA	FH	4.95	2.0	5.39	9.7		9.7	0.0
5	Stoddard Ck	570.10	White Water Ranch FH	WLA	FH	11.18	2.0	5.39	22.0		22.0	0.0
5	Decker Spgs	569.80	Decker Springs Farm FH	WLA	FH	12.38	2.0	5.39	24.4		24.4	0.0
5	Billingsley	573.76	14 FHs	14 WLA	FH	400.41			787.7		787.7	0.0
5		572.28	Birch Creek	LA	Spring	1.05	1.3	5.39	1.3		1.3	0.0

5	570.10	Stoddard Creek	LA	Spring	0.00	1.3	5.39	0.0		0.0	0.0
5	569.80	Decker Springs Creek	LA	Spring	0.00	1.3	5.39	0.0		0.0	0.0
5	571.42	Malad River	LA	Background	180.00	21.2	5.39	3,753.7		3,753.7	0.0
5	571.19	Malad River Power Flume	LA	Background	1,132.00	21.2	5.39	23,606.6		23,606.6	0.0
5	573.76	Billingsley Creek	LA	Background	39.25	4.7	5.39	181.5		181.5	0.0
5	565.75	Segment 5: GB to SB	LA	Agriculture			30.3%		985.8		
5	565.75	Segment 5: GB to SB	LA	Grazing			55.4%		1,802.4		
5	565.75	Segment 5: GB to SB	LA	Background			14.3%		465.2		
5	565.75	Segment 5: GB to SB	LA					4,877.6		3,253.4	33.3
5		UNACCOUNTED Q: SPRINGS	LA		163.2	**1.3**	5.39	208.7		208.7	0.0
5		UNACCOUNTED Q: SURFACE	LA		86.7	**35.7**	5.39	3,044.7		3,044.7	0.0
5		SEDIMENT ATTENUATION						-26,642.7		-1,410.9	94.7
		Shoestring Bridge Area			11,108.00	18.0	5.39	196,679.9		165,407.8	15.9

UNACCOUNTED Q: SPRINGS: 163.2cfs x 1.3mg/LTSS x 5.39 x 0. 208.7 tons/year
UNACCOUNTED Q: SURFACE: 86.7cfs x 35.7mg/LTSS x 5.39 x 0 3,044.7 tons/year
Total Unaccounted Load = 3,253.4 tons/year

Table 104 of the TMDL states that Segment 5 has a 33.3% reduction.
Therefore, 100% - 33.3% = 66.7% = 0.667
Then, Total Unaccounted Load (= 3,253.4 tons/year) / 0.66 4,877.6 tons/year

Table 104 of the TMDL states that the Overall % Reduction of Segment 5 = 15.9%
Therefore, 100% - 15.9% = 84.1%
1990-1991 Allocation x 0.841 = Year 5/10 Allocation

Segment 5 TP Allocations

Gridley Bridge (GB) to Shoestring Bridge (SB)

tons/year = Q,cfs x TSS,mg/L x 5.39 x 0.1825

0.1825 = 365 days/1 year / 2000 lbs/1 ton

Snake Segment	Discharge to Trib	River Mile	Source Name	Allocation Type	Source Category	Q cfs	TP mg/L	Conversion Factor	1990-1991 TP Load lbs/day	Sub Allocation	Year 5 & 10 TP Load lbs/day	% Reduction
5	Billingsley	573.76	Boyer Farm FH	WLA	FH	11.60		5.39	7.0		4.2	40.0
5	Billingsley	573.76	Rainbow Falls (Dunn) FH	WLA	FH	23.00		5.39	13.7		8.2	40.0
5	Billingsley	573.76	Eckles FH	WLA	FH	18.56		5.39	11.1		6.7	40.0
5	Billingsley	573.76	Fisheries Development FH (001A)	WLA	FH	12.10						
5	Billingsley	573.76	Fisheries Development FH (003A)	WLA	FH	93.90		5.39	63.3		38.0	40.0
5	Billingsley	573.76	Hidden Springs	WLA	FH	16.50		5.39	9.9		5.9	40.0
5	Billingsley	573.76	Idaho Springs/Gold Springs FH	WLA	FH	135.00		5.39	80.6		48.4	40.0
5	Billingsley	573.76	Jones FH	WLA	FH	45.00		5.39	26.9		16.1	40.0
5	Billingsley	573.76	McFadden Farm FH	WLA	FH	6.50		5.39	3.8		2.3	40.0
5	Billingsley	573.76	Rangen's FH	WLA	FH	19.45		5.39	7.3		4.4	40.0
5	Billingsley	573.76	Springs Creek (Schrank) FH	WLA	FH	2.50		5.39	1.5		0.9	40.0
5	Billingsley	573.76	Talbot Trout FH	WLA	FH	11.30		5.39	6.7		4.0	40.0
5	Billingsley	573.76	2 Non-permitted FH	WLA	FH	5.00		5.39	1.8		1.8	0.0
					Sub Total	400.41			233.56		140.92	39.7
5		582.00	Segment 5: Gridley Bridge Input	WLA+LA	Upstream	9,113.00	0.094	5.39	4,617.2		3,683.9	20.2
5	Snake River	576.00	Hagerman POTW	WLA	POTW	0.27	8.880	5.39	12.9		5.7	55.9
5	Snake River	573.00	Barret Farm/Fish Breeders FH	WLA	FH	10.06		5.39	6.0		3.6	40.0
5	Snake River	577.20	Big Bend Trout FH	WLA	FH	4.34		5.39	2.7		1.6	40.0
5	Snake River	578.60	Buckeye Farm FH	WLA	FH	20.42		5.39	12.2		7.3	40.0
5	Snake River	567.70	John Flemming Ponds FH	WLA	FH	8.97		5.39	5.3		3.2	40.0
5	Snake River	572.20	Mike Flemming Ponds FH	WLA	FH	5.71		5.39	3.3		2	40.0
5	Snake River	580.20	Henslee FH	WLA	FH	8.51		5.39	5.0		3	40.0
5	Snake River	575.90	Lemmon Ponds FH	WLA	FH	4.03		5.39	2.3		1.4	40.0
5	Snake River	568.00	Slane Ponds FH	WLA	FH	4.18		5.39	2.5		1.5	40.0
5	Snake River	569.60	Smith Farm FH	WLA	FH	9.11		5.39	5.5		3.3	40.0
5	Snake River	566.80	Stevenson Ponds FH	WLA	FH	8.04		5.39	4.8		2.9	40.0
5	Snake River	572.40	White Springs Trout FH	WLA	FH	31.34		5.39	18.7		11.2	40.0
5	Snake River	568.40	Rangen/Woods FH	WLA	FH	12.38		5.39	7.3		4.4	40.0
5	Birch Creek	572.20	Birch Creek Trout FH	WLA	FH	9.08		5.39	5.5		3.3	40.0
5	Birch Creek	572.28	CJ Simms Ponds FH	WLA	FH	5.28		5.39	3.2		1.9	40.0
5	Stoddard Ck	570.10	Bell Fish Ponds FH	WLA	FH	3.77		5.39	2.3		1.4	40.0
5	Stoddard Ck	570.10	Standal Ponds FH	WLA	FH	4.95		5.39	3.0		1.8	40.0
5	Stoddard Ck	570.10	White Water Ranch FH	WLA	FH	11.18		5.39	6.7		4	40.0
5	Decker Spg	569.80	Decker Springs Farm FH	WLA	FH	12.38		5.39	7.3		4.4	40.0
5	Billingsley	573.76	14 FHs	14 WLA	FH	400.41		5.39	233.6		140.92	39.7
5		572.28	Birch Creek	LA	Spring	1.05	0.02	5.39	0.1		0.1	0.0

5	570.10	Stoddard Creek	LA	Spring	0.00	0.02	5.39	0.0		0.0	0.0
5	569.80	Decker Springs Creek	LA	Spring	0.00	0.02	5.39	0.0		0.0	0.0
5	571.42	Malad River	LA	Background	180.00	0.078	5.39	75.7		75.7	0.0
5	571.19	Malad River Power Flume	LA	Background	1,132.00	0.078	5.39	475.9		475.9	0.0
5	573.76	Billingsley Creek	LA	Background	39.25	0.114	5.39	24.1		21.2	12.1
5	565.75	Segment 5: GB to SB	LA	Agriculture			30.3%		19.5		
5	565.75	Segment 5: GB to SB	LA	Grazing			55.4%		35.6		
5	565.75	Segment 5: GB to SB	LA	Background			14.3%		9.2		
5	565.75	Segment 5: GB to SB	LA					72.7		64.3	11.5
5		UNACCOUNTED Q: SPRINGS	LA		163.2	**0.020**	5.39	17.6		17.6	0.0
5		UNACCOUNTED Q: SURFACE	LA		86.7	**0.245**	5.39	114.5		46.7	59.2
5		SEDIMENT ATTENUATION						-778.5		-103.9	
		Shoestring Bridge Area			11,108.00	0.083	5.39	4,969.4		4,490.4	30.6

	1990-1991 Baseline	Year 5/10 Target
UNACCOUNTED Q: SPRINGS = 163.2cfs x 0.020mg/LTP x 5.39 =	17.6 lbs/day	17.6 lbs/day
UNACCOUNTED Q: SURFACE = 86.7cfs x 0.245mg/LTP x 5.39 =	114.5 lbs/day	46.7 lbs/day
Total Unaccounted Load =	132.1 lbs/day	64.3 lbs/day

Table 111 of the TMDL says that there is an 11.5% reduction in Segment 5 (GB to SB), and an overall 15.5% reduction in the entire segment.

Therefore, 100.0% - 11.5% = 88.5% = 0.885 multiplier

Therefore, Total Unaccounted Load / 0.885 = Baseline Load (1990-1991)

Therefore, 100.0% - 15.5% = 84.5% = 0.845 multiplier

Therefore, Shoestring Bridge Area 1990-1991 Load x 0.845 = Year 5/10 Load

Segment 6 TSS Allocations

Shoestring Bridge (SB) to King Hill (KH)

tons/year = Q,cfs x TSS,mg/L x 5.39 x 0.1825

0.1825 = 365 days/1 year / 2000 lbs/1 ton

Snake Segment	Discharge to Trib	River Mile	Source Name	Allocation Type	Source Category	Q cfs	TSS mg/L	Conversion Factor	1990-1991 TSS Load tons/year	Sub Allocation	Year 5 & 10 TSS Load tons/year	% Reduction
6		565.75	Segment 6: Shoestring Input Gros	WLA+LA	Upstream	11,108.00	18.0	5.39	196,679.9		165,407.8	15.9
6		552.50	Black Mesa DIVERSION	LA	Diversion	-63.59	23.2	5.39	-1,451.2		-1,451.2	
6		565.00	Wiley Pumps DIVERSION	LA	Diversion	-19.29	23.2	5.39	-440.2		-440.2	
6		565.75	Segment 6: Shoestring Input Net	WLA+LA	Upstream	11,025.12			194,788.5		163,516.38	16.1
6	Snake River	547.70	Clover Creek	LA	Agriculture			17.8%		69.2		
6	Snake River	547.70	Clover Creek	LA	Grazing			82.2%		319.6		
6	Snake River	547.70	Clover Creek	LA	Background			0.0%		0.0		
6	Snake River	547.70	Clover Creek	LA		40.75	9.7	5.39	388.8		388.8	0.0
6			Segment 6: SB to KH	LA	Agriculture			21.9%		1,083.9		
6			Segment 6: SB to KH	LA	Grazing			65.3%		3,232.0		
6			Segment 6: SB to KH	LA	Background			12.8%		633.5		
6			Segment 6: SB to KH	LA					7,420.5		4,949.5	33.3
6			UNACCOUNTED Q: SPRINGS	LA		248.3	**1.3**	5.39	317.5		317.5	0.0
6			UNACCOUNTED Q: SURFACE	LA		131.9	**35.7**	5.39	4,632.0		4,632.0	0.0
6			SEDIMENT ATTENUATION						92,932.4		28,118.2	69.7
			King Hill Area			11,398.00	26.8	5.39	300,479.7		201,922.3	32.8

UNACCOUNTED Q: SPRINGS = 248.3cfs x 1.3mg/LTSS x 5.39 x 0.1825 = 317.5 tons/year

UNACCOUNTED Q: SURFACE = 131.9cfs x 35.7mg/LTSS x 5.39 x 0.1825 = 4,632.0 tons/year

Total Unaccounted Load = 4,949.5 tons/year

Table 105 of the TMDL says that 33.3% reduction occurs in Segment 6.

Therefore, 100% - 33.3% = 66.7% = 0.667 multiplier

Therefore, Total Unaccounted Load / 0.667 = Baseline Unaccounted Load

Table 105 of the TMDL says that Segment 6 has an overall reduction of 32.8%

Therefore, 100.0% - 32.8% = 67.2% = 0.672 multiplier

Therefore, King Hill Area load x 0.672 = Year 5/10 load.

Segment 6 TP Allocations

Shoestring Bridge (SB) to King Hill (KH)

tons/year = Q,cfs x TSS,mg/L x 5.39 x 0.1825

0.1825 = 365 days/1 year / 2000 lbs/1 ton

Snake Segment	Discharge to Trib	River Mile	Source Name	Allocation Type	Source Category	Q cfs	TP mg/L	Conversion Factor	1990-1991 TP Load lbs/day	Sub Allocation	Year 5 & 10 TP Load lbs/day	% Reduction
6		565.75	Segment 6: Shoestring Input Gross	WLA+LA	Upstream	11,108.00	0.083	5.39	4,969.4		4,490.4	9.6
6		552.50	Black Mesa DIVERSION	LA	Diversion	-63.59	0.082	5.39	-28.1		-28.1	
6		565.00	Wiley Pumps DIVERSION	LA	Diversion	-19.29	0.082	5.39	-8.5		-8.5	
6		565.75	Segment 6: Shoestring Input Net	WLA+LA	Upstream	11,025.12	0.083	5.39	4,932.3		4,456.9	9.6
6	Snake River	547.70	Clover Creek	LA	Agriculture			17.8%		3.9		
6	Snake River	547.70	Clover Creek	LA	Grazing			82.2%		18.1		
6	Snake River	547.70	Clover Creek	LA	Background			0.0%		0.0		
6	Snake River	547.70	Clover Creek	LA		40.75	0.309	5.39	67.9		22.0	67.6
6			Segment 6: SB to KH	LA	Agriculture			21.9%		44.0		
6			Segment 6: SB to KH	LA	Grazing			65.3%		131.2		
6			Segment 6: SB to KH	LA	Background			12.8%		25.7		
6			Segment 6: SB to KH	LA					227.1		200.9	11.5
6			UNACCOUNTED Q: SPRINGS	LA		248.3	**0.020**	5.39	26.8		26.8	0.0
6			UNACCOUNTED Q: SURFACE	LA		131.9	**0.245**	5.39	174.2		71.1	59.2
6			SEDIMENT ATTENUATION						-451.9		-170.0	
			King Hill Area			11,398.00	0.081	5.39	4,976.3		4,607.6	29.6

UNACCOUNTED Q: SPRINGS: 248.3cfs x 0.020mg/LTP x 5.39 = 26.8 lbs/day

UNACCOUNTED Q: SURFACE: 131.9cfs x 0.245mg/LTP x 5.39 = 174.2 lbs/day

Total Unaccounted Load = 200.9 lbs/day

Table 112 of the TMDL says that there is a % reduction of 11.5% in Segment 6.

Therefore, 100.0% - 11.5% = 88.5% = 0.885 multiplier

Therefore, Total Unaccounted Load / 0.885 = Baseline Load