Resources Agency
Department of Water Resources
Division of Planning and Local Assistance
Northern District

Deer Creek Water Quality Investigation 1997-2000

October 2008

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Governor
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Report Summary

This report presents the findings of a comprehensive three-year aquatic monitoring program conducted by the Department of Water Resources (DWR) on Deer Creek, an important tributary to the Sacramento River mostly located within Tehama County, California. Funding was provided primarily through a grant from the US Fish and Wildlife Service's Anadromous Fish Restoration Program. Monthly sampling began in April 1997 at four sites along the mainstem of Deer Creek and continued until April 2000. The sites sampled include Deer Creek below Childs Meadow, at Ponderosa Way (at A-Line Road in winter), at Upper Diversion Dam, and at the mouth of Deer Creek (or at Highway 99 when the Sacramento River is high). Sampling locations are shown on Figure 1.

The goal of this project was to evaluate the stream's water quality and establish some baseline aquatic conditions for this stream. The goal of this report is to present and interpret the data in order to assist others in planning the management of Deer Creek and its watershed. The data can be used by local interests and other agencies and interested parties to evaluate the benefits of improved water management practices (such as Integrated Regional Water Management planning), assess the success of restoration activities, and provide data to help focus future local management and restoration activities.

Contents

Report Summary ..... **v**
Contents ..... **vii**
Introduction **1**
Need for Study 2
Methodology **2**
Minerals, Nutrients, and Trace Metals 3
Aquatic Macroinvertebrates 3
Bacteria and Coliform 3
Toxicity Analysis 4
Gravel Size 4
Fish Specimens 4
Pesticide 4
Study Results **6**
Temperature 6
Physical 7
Dissolved Oxygen 7
pH 7
Specific Conductance 7
Alkalinity 7
Coliform Bacteria 8
Turbidity and Total Dissolved Solids 8
Metals 9
Nutrients 9
Minerals 9
Pesticides 10
Aquatic Macroinvertebrates 10
Water Column and Sediment Toxicity 13
Fish Tissue 14
Stream gravels 18
Discussion **18**
Recommendations **18**
References Cited **19**

Appendix A. Water Temperatures from Deer Creek **21**
Appendix B. Physical Water Quality Results **45**
Appendix C. Coliform Bacteria Results **55**
Appendix D. Summary of Total Metals from Deer Creek **65**
Appendix E. Deer Creek Nutrient Results **69**
Appendix F. Deer Creek Mineral Results **73**
Appendix G. Deer Creek Organics **79**
Appendix H. Deer Creek Benthic Macroinvertebrates **81**
Appendix I. Fish Tissue Results **95**
Appendix J. Stream Gravel Results **99**

Figures

Figure 1. Deer Creek water quality monitoring stations 2
Figure 2. Deer Creek at Hwy 99: water and air temperature, summer 1995 6
Figure 3. Deer Creek at Hwy 99: water and air temperature, summer 1996 7
Figure 4. Number of fecal coliform colonies in Deer Creek Recreation Area 8
Figure 5. Deer Creek benthic macroinvertebrates. EPT taxa indices, 1998 and 1999. 11
Figure 6. Benthic macroinvertebrate total taxa richness vs. EPT taxa richness, 1998 and 1999. 12
Figure 7. Benthic macroinvertebrates density, 1998 vs. 1999 13
Figure A-1. Water temperature on Deer Creek below Childs Meadow 22

Figure A-1. Water temperature on Deer Creek below Childs Meadow 22
Figure A-2. Water temperature on Deer Creek below Upper Falls (flow) 24
Figure A-3. Water temperature on Deer Creek below Upper Falls (pool) 26
Figure A-4. Water temperature on Deer Creek at about A-line (flow) 28
Figure A-5. Water temperature on Deer Creek at about A-line (pool) 30
Figure A-6. Water temperature on Deer Creek at Ponderosa Way 32
Figure A-7. Water temperature on Deer Creek at Apperson Cow Camp (flow) 34
Figure A-8. Water temperature on Deer Creek at Apperson Cow Camp (pool) 35
Figure A-9. Water temperature on Deer Creek at Upper Diversion Dam 36
Figure A-10. Water temperature on Deer Creek at Highway 99 (east) 39
Figure A-11. Water temperature on Deer Creek at the mouth 43

Tables

Table 1. Deer Creek monitoring schedule 5
Table 2. Deer Creek benthic macroinvertebrates. Summary of population statistics for 1998 and 1999. 11
Table 3. Water column toxicity results 14
Table 4. Sediment toxicity results 14
Table 5. PCB cogeners found in 1998 fish tissue samples 15
Table 6. Metals results for fish collected from the Deer Creek watershed in 1998 and 1999. Criteria and results in mg/kg (ppm) 17

Introduction

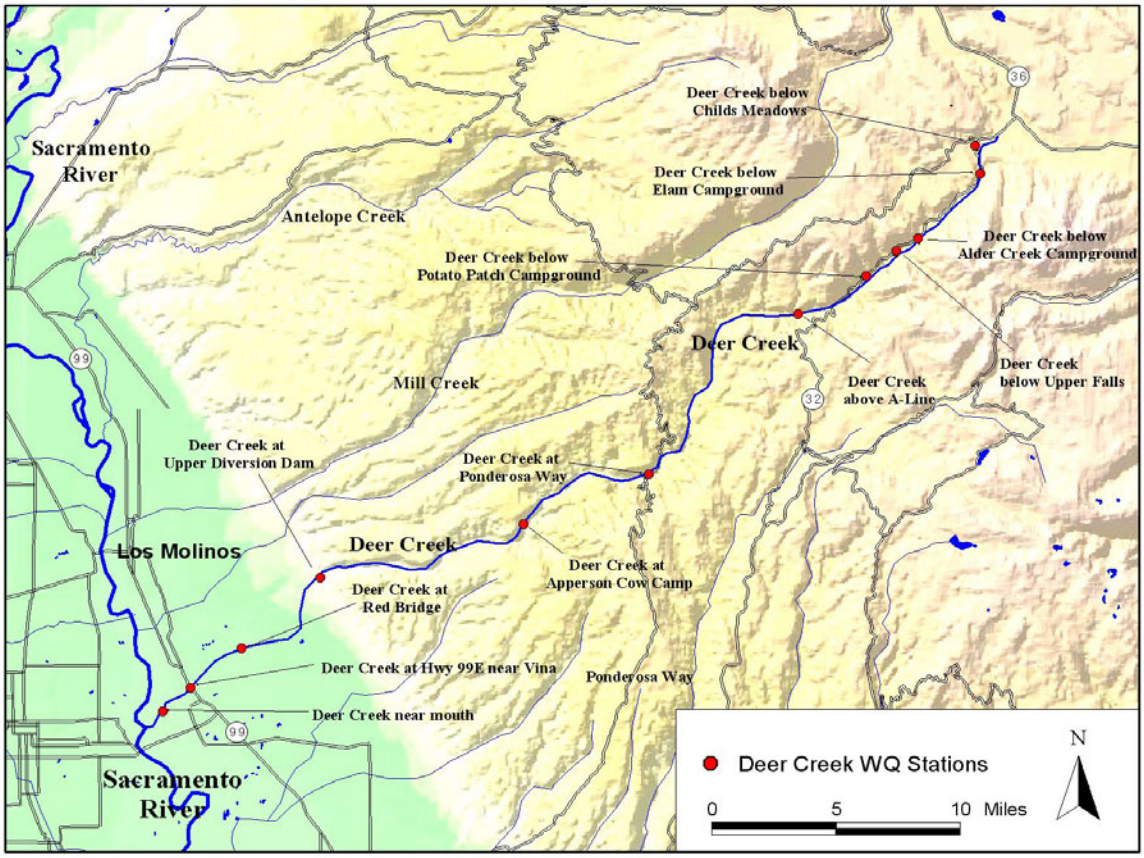
Deer Creek is an eastside tributary of the Sacramento River that originates near the summit of Butt Mountain at an elevation of 7,320 feet. The tributary's approximately 60 miles of channel initially flow through meadows and timber forests before dropping rapidly into a steep rock canyon and then onto the Sacramento Valley floor. It traverses approximately 11 miles on the valley floor before it meets the Sacramento River near the town of Vina. Three dams and four diversion ditches along the lower reaches of the stream divert most of the natural flow during the irrigation season.

Land ownership within the watershed consists of various federal, State, and private owners. The majority of public land is in the upper two-thirds of the watershed, while the lower one-third of the watershed is primarily under private ownership. Major land uses in the watershed include grazing, crop production, timber production, recreation, and residential. The land use in the upper section of the watershed is predominantly timber production, with some livestock grazing and recreation. The dominant land use in the lower reach is irrigated agriculture, including pastures, orchards (primarily walnuts, plums, and almonds), and other croplands (Jones and Stokes 1994).

This project will provide information about system stressors in the Deer Creek watershed that affect priority aquatic species and their habitats. The main stressors for which this project will provide valuable information are (1) the alteration of flows and the other effects of water management, including hydrograph alterations, migration barriers, and straying; (2) water quality; (3) water temperature; and (4) land use, including grazing, forestry, and agricultural practices. Natural flows in Deer Creek are altered by diverting water for irrigation at three dams and four diversion ditches. These alterations to the natural flow adversely affect water quality, sediment transport, and gravel recruitment. Adverse water quality conditions created by this hydrograph modification, especially as related to water temperature modification, result in delaying or blocking migration by anadromous fish. Water temperatures, especially during lower flows, may adversely affect the ability of the creek to provide suitable migration, spawning, and nursery habitat for anadromous fish, as well as other aquatic species.

The aquatic species most affected include spring-run, fall-run, and late-fall-run Chinook salmon and steelhead trout. This project will identify water quality impairments that are limiting the quality of the habitat and reducing the survival of these species. As a secondary benefit this project will provide baseline conditions needed to evaluate the effects of other activities that occur in the watershed. The project also supports watershed coordination efforts by the Deer Creek Conservancy by providing basic data for watershed planning and management.

Figure 1. Deer Creek water quality monitoring stations



Need for Study

This study was undertaken by DWR to provide information about system stressors in the Deer Creek watershed that affect priority aquatic species and their habitats. Monitoring water resources in the watershed is essential to detect and document pollution. Water quality affects the beneficial uses of streams, including its use as fish habitat. Prior to this study, minimal water quality data were available for the Deer Creek watershed. Without this data, environmental effects on migrating, spawning, and rearing salmon and steelhead cannot be realistically determined, nor can mitigation plans be developed until the scope of the problem is defined. Data developed by this study can be used to identify current conditions of various resources related to water quality and provide a baseline to determine the effectiveness of mitigation activities in the watershed. Agencies and groups can use the data to implement best management practices to improve habitat conditions. The data are important to water resource managers and will provide a strong basis for better decision-making by federal, State, and local agencies, as well as environmental groups.

Methodology

Four monitoring sites were established to assess water quality conditions monthly throughout the Deer Creek watershed. Two more sites were added for continuous water temperature monitoring: one named “below Upper Falls” and one named “Apperson Cow Camp”. During summer months, four additional recreation sites near campgrounds were sampled for bacteria (Figure 1 and Table 1). Continuously recording temperature loggers were placed at each

of these selected monitoring stations. These temperature loggers were serviced and downloaded at intervals not exceeding a month.

Field sampling procedures followed DWR's *Sampling Manual for Environmental Measurement Projects* (DWR 1994). Water samples were collected monthly 1 foot below the water surface in flowing, well-mixed riffle or run areas. Water temperature, dissolved oxygen, conductivity, and pH were measured in the field at each monitoring station. Conductivity and water temperature were measured with an Orion Model 128 conductivity/temperature meter. Dissolved oxygen in streams was measured by titration (azide modification of the iodometric method). A Hellige comparator was used to determine pH. The samples were analyzed for:

- Minerals (calcium, sodium, potassium, magnesium, sulfate, chloride, boron, and alkalinity),
- Nutrients (nitrate plus nitrite, ammonia, dissolved orthophosphate, and total phosphorus), and
- Metals (aluminum, arsenic, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, selenium, silver, and zinc).

Minerals, Nutrients, and Trace Metals

Samples for nutrient and mineral analyses were collected in sample-rinsed polyethylene bottles. Samples for dissolved parameters were filtered through a nitrocellulose membrane filter with a 0.45 micron pore diameter. The samples were then preserved per standard procedures and submitted to DWR's Bryte Chemical Laboratory in West Sacramento. Samples were analyzed according to protocols approved by the U.S. Environmental Protection Agency (EPA) or the American Public Health Association (APHA 1998).

The samples used for trace metals analyses were collected using the methods outlined in EPA Method 1669 (EPA 1996). Samples were collected to test for total recoverable fractions of aluminum, arsenic, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, selenium, silver, and zinc. The bottles for the total recoverable metals tests were provided by Frontier Geosciences in Seattle, Washington, which performed the analyses.

Aquatic Macroinvertebrates

Aquatic macroinvertebrates were sampled using the rapid bioassessment protocols developed by the EPA. Organisms were collected from riffle areas using a kick screen and a metal frame delineating a 3-square-foot sampling area. Three samples were collected along a transect across a riffle and combined into one sample. Three riffles were sampled at each monitoring station, resulting in three samples per station. Organisms from the samples were identified at DWR's Aquatic Macroinvertebrate Laboratory in Red Bluff using the subsampling protocols of the DFG rapid bioassessment method (DFG 1998).

Bacteria and Coliform

Bacteria levels were assessed monthly at the monitoring stations using membrane filter procedures for both fecal (Standard Method 9222 D) and total (Standard Method 9222 B) coliform. Samples for total and fecal coliform bacteria analyses were collected monthly from eight monitoring stations. During summer months, samples were collected from four additional stations near the recreation sites along the creek. Bacteria samples were collected into sterile 120 mL water sample containers by dipping them to a depth of approximately 1 foot beneath the water surface. The sample containers were immediately capped, sealed, placed on ice, and delivered to the DWR laboratory in Red Bluff for analysis. Samples were analyzed for bacteria densities within 24 hours of collection using the membrane filter technique for members of the coliform group (APHA 1998).

Toxicity Analysis

The first step in collecting grab samples for toxicity analysis was rinsing pre-cleaned 1-gallon glass bottles three times in ambient water at the sampling site. Then the sample bottles were held approximately 6 inches below the water surface and filled with sample water. The sample bottles were then labeled with the station name code, sampler's name, and sampling date and time; then they were placed into an ice chest to be preserved with ice at a temperature of approximately 39 ºF.

Water column toxicity testing involved the use of water flea (*Ceriodaphnia*) and the fathead minnow (*Pimephales*). Water samples were collected monthly for toxicity analyses from two monitoring sites on Deer Creek (Figure 1 and Table 1). Toxicity tests were performed by the U.C. Davis Toxicity Laboratory according to protocols outlined in the EPA's "Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms" (EPA/600/4-90/027F).

Composite sediment toxicity samples were collected using the U.S. Geological Survey (USGS) National Ambient Water Quality Assurance (NAWQA) sediment collection methods (USGS 1994). Samples were collected from shallower depositional areas using clean nylon spoons and bowls. Sediment samples were analyzed by the DFG's Pesticide Laboratory in Elk Grove using the amphipod *Hyallela azteca* and the cladoceran *Ceriodaphnia dubia*.

Gravel Size

Stream gravels from riffle areas at the monitoring sites along Deer Creek were collected and analyzed in a laboratory for particle size distribution. Five samples were collected from each monitoring site using a McNeil sampler. Streambed materials from the sampler were split into two portions using standard protocols. All coarse material is separated out for particle size analysis and placed in plastic bags, and the remaining liquids are transferred to bottles to be analyzed for total suspended sediments.

These samples were collected in the fall and analyzed using standard gradation analysis at DWR's Soils Laboratory in West Sacramento. Analyses of the particle size distribution data is presented in graphs and tables in Appendix J.

Fish Specimens

Fish specimens were collected for tissue analysis from two sites in fall 1998 and again in fall 1999. Two backpack shockers and two netters were used to collect the fish specimens. The tissue analysis for toxicity was performed by DFG's Water Pollution Control Laboratory in Rancho Cordova.

Pesticide

Water samples were collected in the fall to analyze pesticide contamination, after rains produced the first significant runoff, and again during February after dormant-spraying of orchards in the watershed. Samples were analyzed at the Bryte Chemical Laboratory for chlorinated organic pesticides (EPA 608), organic phosphorus pesticides (EPA 614), chlorinated phenoxy acid herbicides (EPA 615), volatile organic pesticides (EPA 502.2), carbamate pesticides (EPA 531.1), and glyphosate (EPA 547).

Table 1. Deer Creek monitoring schedule

Station	Temperature Recorder	Physical	Chemical	Aquatic Macroinvertebrates	Coliform Bacteria	Toxicity Tests		Sediment Particle size	Fish Tissue	Pesticides
						Water Column	Bed Sediment			
		DO,pH, EC, Turbidity, Alkalinity	Minerals, Nutrients, Minor Elements			Fathead minnow & Ceriodaphnia	Hyalella		Sculpin or Corbicula	
Deer Cr @ mouth	c	m	**m and (2)**	September	m	m	**March, October**	September	September	fall & winter
Deer Cr @ Hwy 99	c	m		September	m			September		
Deer Cr @ Upper Diversion Dam	c	m	m	September	m			September		fall & winter
Deer Cr @ Ponderosa Way	c	m	m	September	m	m	**March, October**	September	September	
Deer Cr @ A Line Rd	c	m		September	m			September		
Deer Cr below Meadows	c	m	m	September	m			September		fall & winter
Deer Cr @ Elam Cr Cmpgrd		m			m (1)					
Deer Cr @ Potato Patch Cmpgrd		m			m (1)					
Deer Cr @ Alder Cr Cmpgrd		m			m (1)					
Deer Cr @ Red Bridge on Leininger Rd		m			m (1)					
Deer Cr at Upper Falls	c	m		September	m			September		
Deer Cr @ Apperson Camp	c	m		September	m			September		

groundwater monitoring - summer 1999

c - continuously temperature recorder; serviced monthly

m - monthly sampling and analyses, **except minerals every other month**

m (1) - monthly during recreation season

minerals = calcium, sodium, potassium, magnesium, sulfate, chloride, boron

nutrients = nitrate plus nitrite, ammonia, dissolved orthophosphate, total phosphorus

minor elements = aluminum, arsenic, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, selenium, silver, zinc, **and total suspended solids**

dissolved minor elements - Ar, Cd, Cr, Cu, Ni, Zn, Hg ONLY where Totals are showing up higher than CTR criteria (ex: from data on MacServer, total Cd in Deer creek is not showing up higher than CTR criteria, so no need to sample for dissolved)

pesticides - includes carbofuran, chlordane, chlorpyrifos, DDT, diazinon, PCBs, toxaphene

fish tissues - includes pesticides and arochlors or NIST congeners, PAHs, petroleum hydrocarbons, and trace elements

sediment toxicity - 10 day growth and survival test using Hyalella azteca & Ceriodaphnia

water column - chronic survival test using Ceriodaphnia and fathead minnow

sediment particle size - sieve analysis of five replicate samples collected with McNeil sampler

(2) = TOC and TDS at mouth only

Study Results

The beneficial uses examined in this study include agriculture, aquatic habitat, and associated aquatic species. Water quality results were compared to known criteria and guidelines to determine the impacts of water quality on these beneficial uses.

Temperature

Elevated summer temperatures are an area of concern for the lower Deer Creek watershed. Appendix A contains the results of monitoring tests at various sites. Mean water temperatures approach 80 °F at the most downstream stations during July and August. Maximum daily water temperatures peak at 85 °F to 90 °F during the hottest days at the Deer Creek at Highway 99 station. These water temperature peaks are normally associated with low flow conditions and high ambient air temperatures (Figures 2 and 3). Bartholow (1989) found that air temperature above the stream surface was the greatest factor in increasing water temperature followed in importance by relative humidity and shade.

Water temperature has been found to have a direct effect on survival of Chinook salmon adults, eggs, fry, and fingerlings (DWR 1988). Salmon adults have exhibited poor survival and have also produced less viable eggs when exposed to water temperatures greater than 60 °F. The available data suggest that the maximum temperature for successful upstream migration should be less than 65 °F for adult Chinook salmon in the Sacramento River.

Figure 2. Deer Creek at Hwy 99: water and air temperature, summer 1995

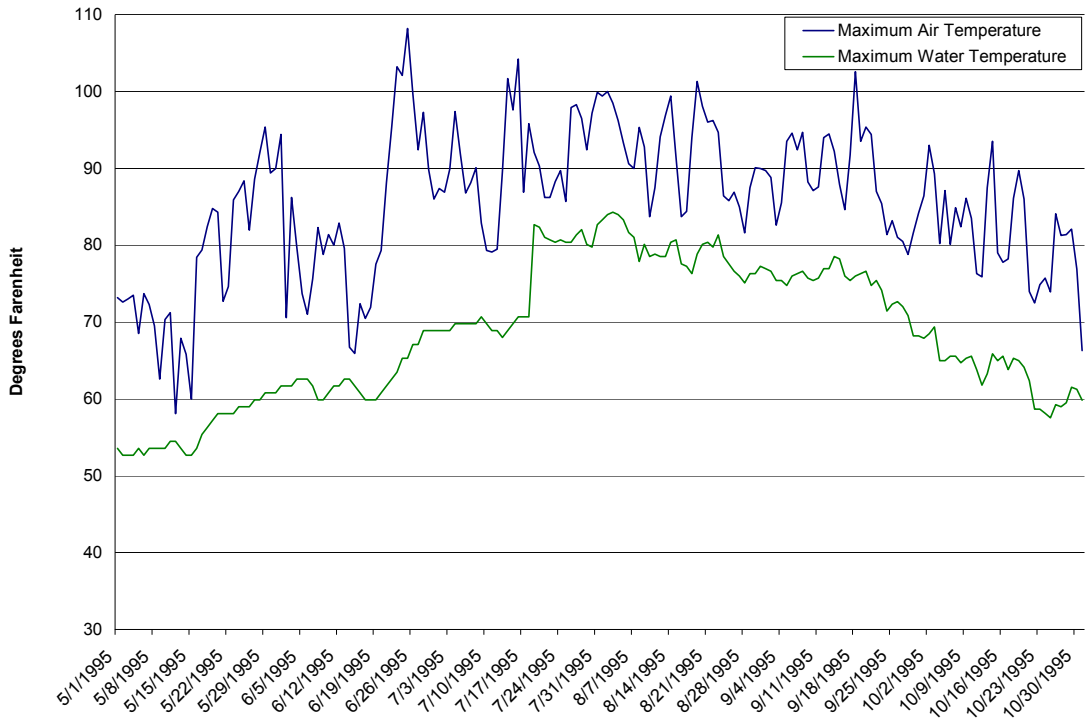
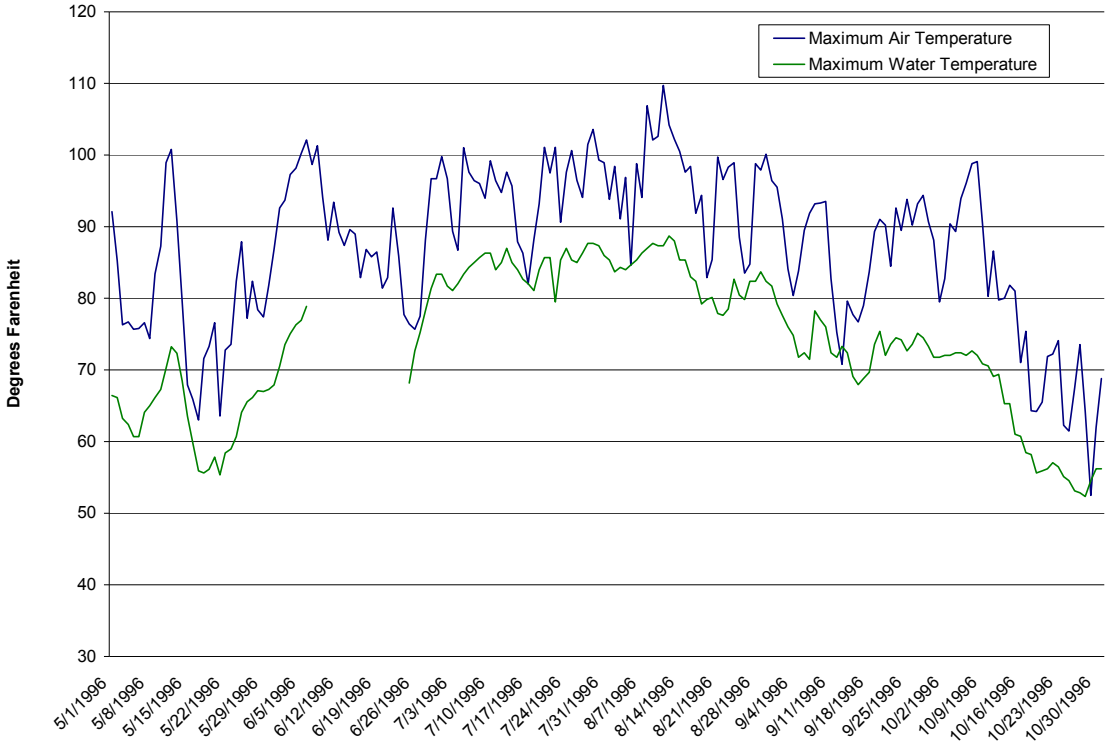


Figure 3. Deer Creek at Hwy 99: water and air temperature, summer 1996



Physical

Dissolved Oxygen

The Water Quality Control Plan (Basin Plan) for the Central Valley Region (1998) recommends that the dissolved oxygen concentrations should not fall below 7.0 mg/L in streams where cold water fish species are present either for migration or spawning. All dissolved oxygen results were above the established lower limit for the Deer Creek watershed with only three exceptions. The dissolved oxygen concentrations at the Deer Creek at mouth station dropped just below this lower limit during each July with a recorded value of 6.8 mg/L on July 10, 1997, and 6.9 mg/L on July 21, 1998. The Deer Creek at Highway 99 was the only other station to drop below this criterion with a reading of 6.9 mg/L obtained on September 8, 2000.

pH

All pH results fell within the Basin Plan criteria of 6.5-8.5, with results ranging from a low of 6.9 to a high of 8.4.

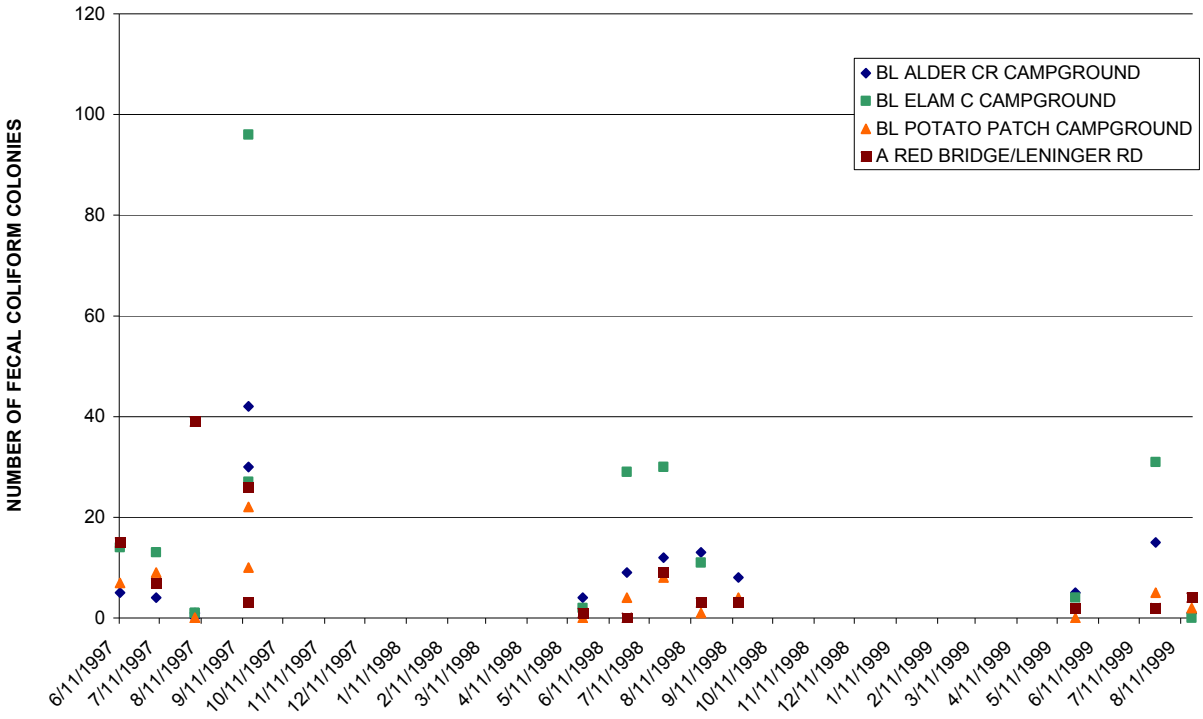
Specific Conductance

The Central Valley Regional Water Quality Control Board (CVRWQCB) sets the upper limit for specific conductance at 700-900 micromhms/centimeter for streams within the Sacramento River watershed. All samples analyzed fell well below this upper limit (Appendix B).

Alkalinity

Alkalinity results generally were above the established criteria. The USEPA National Ambient Water Quality Criteria for alkalinity is set at a minimum of 20 mg/L, which represents a four-day average. On a few occasions, Deer Creek alkalinity values fell below this criterion. These concentrations occurred during storm events in which alkalinities will often subside due to rainfall, runoff, and snowmelt.

Figure 4. Number of fecal coliform colonies in Deer Creek Recreation Area



Coliform Bacteria

Basin Plan criteria are not applicable in this study since multiple samples were generally not collected in any 30-day period. This makes bacteria results difficult to quantify. However, the Basin Plan criteria are used in this evaluation to indicate where elevated bacteria densities were found. The higher CVRWQCB criterion (400 organisms/colonies per 100 mL) is the same as the criterion set by the Department of Health Services (DHS). The lower CVRWQCB criterion is 200 bacteria per 100 mL sample. Only samples from two stations exceeded the lower criterion: Deer Creek below Childs Meadow on November 8, 1999, and Deer Creek at mouth on February 16, 1999. With only two exceedances, the data suggest that coliform bacteria are at low levels and are not going to restrict the beneficial use of the stream.

The total coliform bacteria results from four recreation areas along Deer Creek exhibit a similar trend (Figure 4). Most of the results were low, with a high value of greater than 300 colonies for the Deer Creek at Red Bridge station in June 1997. For all fecal coliform results see Appendix C.

Turbidity and Total Dissolved Solids

DHS (2000) sets the California primary and secondary maximum contaminant level (MCL) for turbidity at 5 Nephelometric Turbidity Units (NTU). Turbidity results on Deer Creek were obtained at levels above criteria only during storm events. In February 1999 and again in February 2000, turbidity was recorded at levels exceeding the standard. In February 1999 the levels exceeded the standard once at the Deer Creek at mouth station, while in February 2000, all four stations sampled exceeded the 5 NTU criteria. Both sampling runs occurred during storm events, with runoff contributing to the higher than normal turbidity results.

Results for Total Dissolved Solids (TDS) have all been well within the established criteria of 450 mg/L for the Agricultural Goal, which is published by the Food and Agriculture

Organization of the United Nations (Ayers 1985). In addition, all TDS results collected are below the 500 mg/L criteria for the California primary and secondary MCL. These criteria were evaluated using established criteria from the Basin Plan (CVRWQCB1998).

Metals

Metals results were evaluated using criteria from the *Recommended Numerical Limits to Translate Water Quality Objectives* (CVRWQCB 2004), which summarizes the criteria recommended to evaluate water quality objectives. The CVRWQCB listed the California Toxic Rule (CTR) criteria for both total and dissolved metals, though the CTR only applies to the dissolved fractions. The CVRWQCB reasoned that since criteria for dissolved fractions were calculated from previous criteria for total recoverable fractions, the total recoverable fraction concentrations could be used to evaluate those concentrations in water samples.

Several metals exceeded various criteria consistently during the study period (Appendix D). The metals that exceeded these criteria most often are aluminum and arsenic. Iron, manganese, and lead had some samples with concentrations greater than the allowable amounts.

Total recoverable arsenic exceeded the California Environmental Protection Agency (CalEPA) cancer potency factor for drinking water as well as the EPA's National Ambient Water Quality Criteria (NAWQC) in all samples collected (that had appropriate detection limits). The CalEPA criterion was developed to monitor sources of domestic drinking water, while the EPA's NAWQC criteria was developed to monitor toxicity to human health. With all of the arsenic results being above established criteria, it suggests that these baseline concentrations of arsenic in Deer Creek are such that these exceedances should not be cause for alarm.

All of the exceedances for aluminum, iron, manganese, and lead suggest that background levels of these metals are high enough so that the concentrations of these metals within the stream channel are elevated to levels above the established criteria during high flows and runoff events. Cadmium, chromium, copper, nickel, selenium, silver, and zinc levels did not exceed any criteria in any samples collected in the Deer Creek watershed. In addition, all total mercury samples collected were at levels well below the applicable criteria.

Nutrients

Total phosphorus concentrations in Deer Creek exceed the EPA's "Recommended Ecoregional Nutrient Criteria for Rivers and Streams in Ecoregion II" (2000). Their recommendation is that total phosphorus concentrations not exceed 0.010 mg/L. Throughout the watershed, the concentrations of total phosphorus are relatively uniform. Due to the consistency with which this criterion is exceeded, it appears that these are the baseline values for this watershed and that there does not appear to be a need for concern over exceeding the EPA's recommendations. In samples collected by the USGS and reported in *Water Quality in the Sacramento River Basin*, phosphorus was found to be "elevated in most samples collected in agricultural and urban streams." (Domagalski 2000)

All other nutrients sampled do not appear to pose any problems at this time. Nutrients sampled include dissolved nitrate + nitrite (NO3 & NO2), dissolved ammonia (NH3), dissolved orthophosphate (Ortho -PO4), and total phosphorus (P). Appendix E lists all testing results.

Minerals

All minerals sampled during this three-year study fall well below any established criteria. No issues are known at the time of this report. Appendix F shows all the testing results.

Pesticides

No concentration of any pesticide was ever detected in any of the samples collected as part of this study. Samples were collected in February and November 1999, and again in April 2000; the analysis showed no detections above the laboratory reporting limits. The station at Deer Creek at the mouth was sampled all three times (February and November 1999, and April 2000), while the Deer Creek at Upper Diversion Dam station was sampled in 1999, and the Deer Creek at A-line road was sampled in 2000 (Appendix G).

Aquatic Macroinvertebrates

Immature life stages (larvae or nymphs) of true flies, mayflies, and caddisflies were the most prevalent organisms sampled from all sites. Collectors, filterers, and grazers were the most dominant functional feeding groups from all sites.

The DFG protocols classify macroinvertebrates into two large groups: tolerant organisms and intolerant organisms. The tolerant organisms tend to be rapid colonizers with short lifespans, capable of tolerating fairly high levels of natural and anthropogenic environmental stressors. This group includes the true flies—such as the midges (Diptera: Chironomidae) and blackflies (Diptera: Simuliidae)—and the aquatic worms (Oligochaeta). Midge larvae usually live in the substrate, where they build cases of sand or mud. They often are one of the first species to recolonize disturbed areas. Blackfly larvae are typically found attached to rock surfaces in high flows. Aquatic worms are usually found in the highest numbers in slow-moving to standing waters with silt or mud substrates. All three taxonomic groups contain genera that tolerate sedimentation and nutrient enrichment; they often develop large populations due to the absence of predatory macroinvertebrates.

The intolerant organisms tend to have longer lifespans (multi-year or multi-seasonal development times) and are fairly sensitive to, and usually respond adversely to, natural and anthropogenic environmental stresses. They include the mayflies (Ephemeroptera), the stoneflies (Plecoptera), and the caddisflies (Trichoptera); this group is often referred to as the EPT community.

This group of intolerant organisms, the so-called EPTs, is considered by DFG (1998) and the EPA (EPA 1989) as one of a few reliable measures of water quality. The ratio of the number of EPT organisms to the total number of organisms found at a station is called the EPT Index. The higher the index, the better the water quality is assumed to be. The number of taxa (identified groups) of EPT organisms divided by the total number of taxa, called the EPT Taxa Index, is also used to gauge the water quality of a site, although is less precise.

The EPT Index was low to moderate in 1998, with indices at two stations (Childs Meadow and Highway 99) falling at or below 0.50 (Table 2, Figure 5). The Upper Falls station had the best results with just over 0.58, which is still relatively low. In 1999, the Highway 99 station still had a low index at 0.37, possibly indicating that whatever stressors were affecting the macroinvertebrate community in 1998 were still affecting it in 1999. Potential stressors at the Deer Creek at Highway 99 station include high summer water temperatures and low base flows. The Deer Creek at Upper Diversion Dam station, which was added in 1999, also exhibited a low EPT Index at 0.43. However, the Upper Falls and A-Line stations had indices of 0.75 and 0.64, respectively. The Childs Meadow station had a moderate index at 0.58.

Table 2. Deer Creek benthic macroinvertebrates. Summary of population statistics for 1998 and 1999.

	Year	Total N Organisms	Density (ft^2)	Taxa Richness	Number of EPT Organisms	EPT Taxa	EPT Index[a]	EPT Taxa Index[a]
at Upper Division Dam[b]	1998	Not taken						
	1999	20080	743.7037	36	8689	18	0.4327	0.5000
below Childs Meadow	1998	14013	519	118	6319	73	0.4509	0.6186
	1999	13296	492.4444	49	7656	32	0.5758	0.6531
at Highway 99	1998	18296	677.6296	99	9099	47	0.4973	0.4748
	1999	20789	769.9556	39	7841	16	0.3772	0.4103
below Upper Falls	1998	4342	160.8148	129	2524	80	0.5813	0.6202
	1999	12046	446.1333	57	9079	38	0.7537	0.6667
at A-Line	1998	10308	381.7778	122	5927	86	0.575	0.7049
	1999	16208	600.2963	59	10416	37	0.6427	0.6271

a. The ratio of the number of EPT organisms to the total number of organisms found at a station is called the EPT Index. The higher the index, the better the water quality is assumed to be. The number of taxa (identified groups) of EPT organisms divided by the total number of taxa (called the EPT Taxa Index) is also used to gauge the water quality of a site, though less precisely.

b. The Deer Creek at Upper Diversion Dam station was added in 1999.

Figure 5. Deer Creek benthic macroinvertebrates. EPT taxa indices, 1998 and 1999.

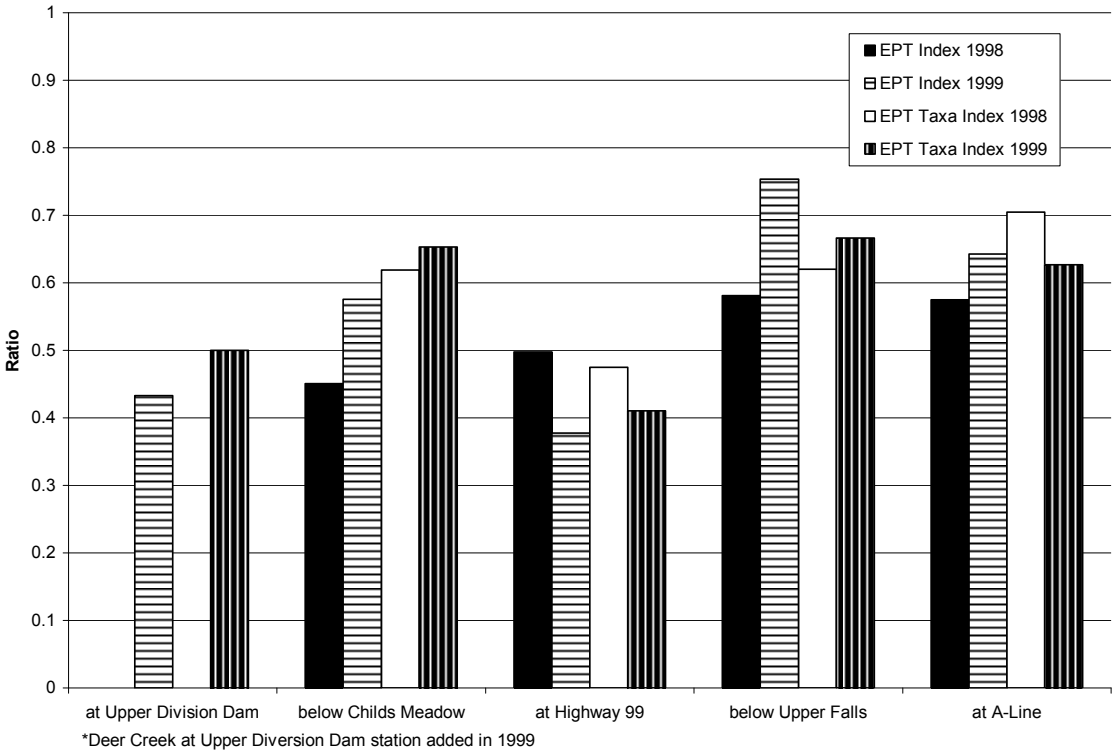
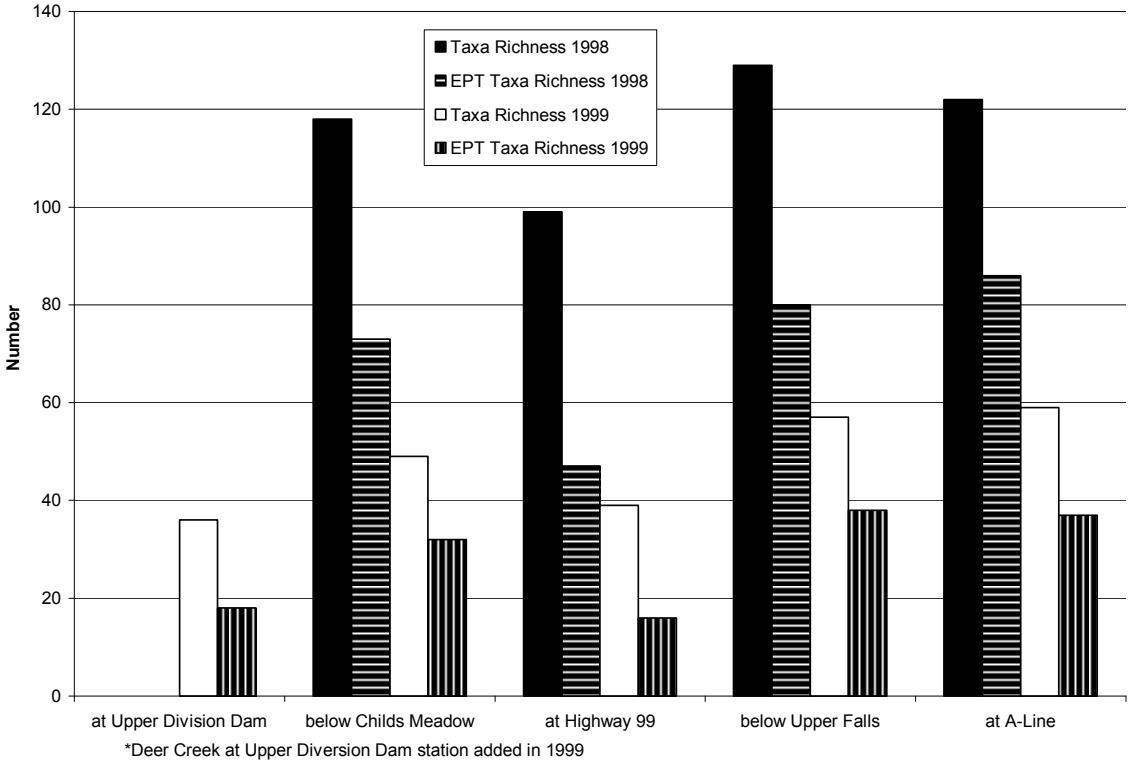


Figure 6. Benthic macroinvertebrate total taxa richness vs. EPT taxa richness, 1998 and 1999.



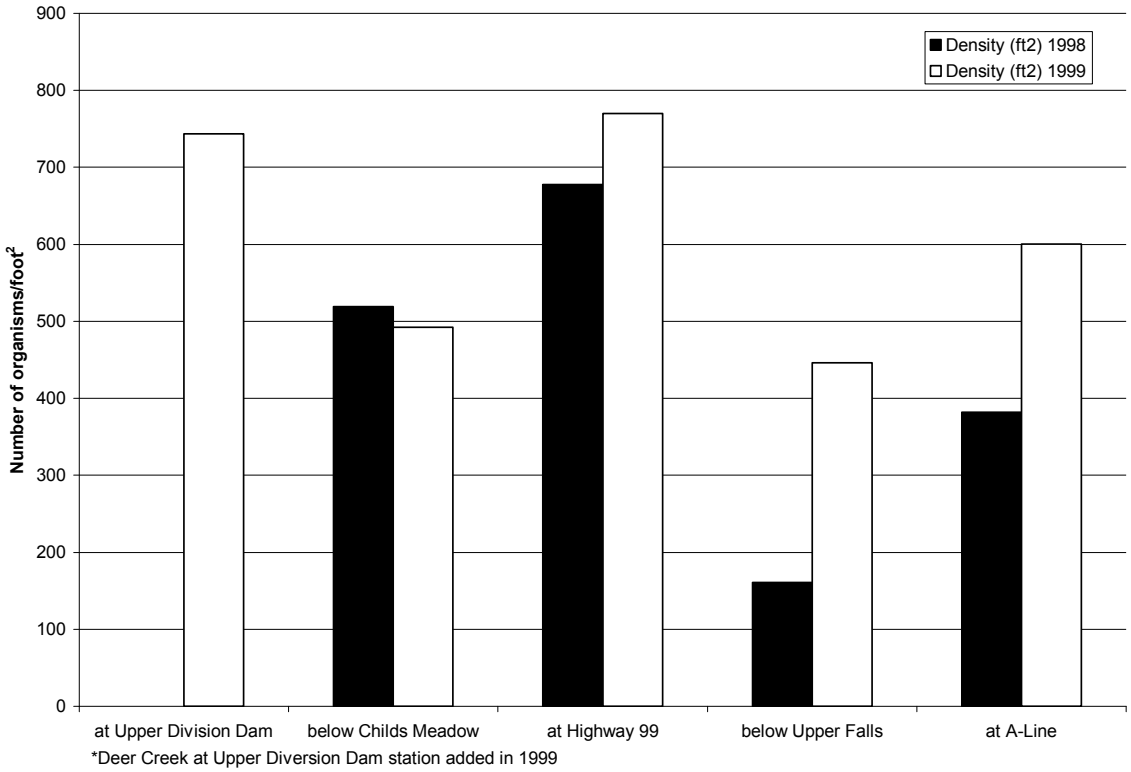
The number of EPT taxa varied across all sites (16 to 40 taxa); the highest number of EPT taxa occurred at the A-line station in 1998. The taxa indices demonstrate that, at most of the stations, there was very little change in EPT taxa richness (Table 2, Figure 6). Most of the indices were within four to eight points of one another between the two years. For example, the Childs Meadow station had 36 EPT taxa in 1998 compared to only 32 taxa in 1999. However, the taxa indices were 0.6102 in 1998 and 0.6531 in 1999.

The density of organisms varied among stations, from 161/ft^2 at Upper Falls in 1998 to 770/ft^2 at Highway 99 in 1999 (Table 2, Figure 7). The density at Highway 99 had the highest abundance with 20,789 organisms found (Table 2), the second lowest taxa richness, and the lowest EPT Index (0.37). This reflects the high numbers of blackfly larvae, aquatic worms, and midge larvae found at the site that year (Appendix H).

Species of midges (Diptera: Chironomidae) and blackflies (Diptera: Simuliidae) were present in moderate to high densities at most sites between the years. Aquatic worms (Oligochaeta) also were found at most sites. Although the above taxa are often used as indicators for organic pollution and sedimentation, the presence of these organisms alone does not necessarily indicate significantly impaired water quality because these taxa typically are widespread in rivers and streams throughout the Sacramento Basin.

The presence of taxa that are more tolerant to pollution and of sites that contain low species diversity, however, may indicate areas where water quality is limiting for macroinvertebrates. Monitoring for benthic macroinvertebrates at these sites on a regular schedule would be one method of determining if this is so.

Figure 7. Benthic macroinvertebrates density, 1998 vs. 1999



Water Column and Sediment Toxicity

Monthly toxicity testing began in January 1998 with water samples collected from the mouth of Deer Creek, at Ponderosa Way, or at A-line Road (depending on winter access). Data from the water flea (*Ceriodaphnia*) and fathead minnow (*Pimephales*) analyses show few statistical differences between organisms exposed to Deer Creek water and the laboratory control group water (Table 3).

Fine streambed sediments from Deer Creek were collected in November 1998 at the Ponderosa Way station and at the mouth to test for toxicity to water flea (*Ceriodaphnia*) and scuds (*Hyalella*). The data show that the rates of reproduction of water fleas and the mortality rate for the scuds did not differ significantly from laboratory controls. However, the mortality rate for the Ceriodaphnia at Ponderosa Way and at the mouth (20 and 10 percent, respectively) exceeded the control water mortality rate (0 percent), but these exceedances are not considered significant (Table 4).

Table 3. Water column toxicity results

Summary of 7-day Ceriodaphnia toxicity tests (% mortality)			
	Deer C at Hwy 99	**Deer C at A-Line**	**Deer C at Ponderosa Way**
Jan-98	0	-	
Feb-98	0	10	
Mar-98	0	10	
Apr-98			
May-98			
Jun-98	0		0
July-98	0		10
Aug-98	10		0
Sep-98	0		0
Oct-98	0		0
Summary of 7-day Pimephales toxicity test (% mortality)			
	Deer C at Hwy 99	**Deer C at A-Line**	**Deer C at Ponderosa Way**
Jan-98	42.5	-	
Feb-98	30	5	
Mar-98	27.5	2.5	
Apr-98			
May-98			
Jun-98	7.5		5
Jul-98	0		9.5
Aug-98	2.5		0
Sep-98	2.5		0
Oct-98	15		17.5

Table 4. Sediment toxicity results

Station	Test Start Date	Test Organism	Result type	Units	Result
Deer C @ Ponderosa Way	11/6/1998	Hyalella	mortality	%	2.5
Deer C @ Mouth	11/6/1998	Hyalella	mortality	%	7.5
DFG-QA-001 - Lab control	11/6/1998	Hyalella	mortality	%	5
Deer C @ Ponderosa Way	11/6/1998	Ceriodaphnia	reproduction, mean	neonates/adult	16.7
Deer C @ Mouth	11/6/1998	Ceriodaphnia	reproduction, mean	neonates/adult	13.3
DFG-QA-003 - Lab control	11/6/1998	Ceriodaphnia	reproduction, mean	neonates/adult	17.3
Deer C @ Ponderosa Way	11/6/1998	Ceriodaphnia	mortality	%	20
Deer C @ Mouth	11/6/1998	Ceriodaphnia	mortality	%	10
DFG-QA-004 - Lab control	11/6/1998	Ceriodaphnia	mortality	%	0

Fish Tissue

Fish specimens were collected in 1998 to test the tissue for Polychlorinated Biphenyls (PCB) cogeners, organochlorine pesticides, polynuclear aromatic hydrocarbons (PAHs), and low-level metals (arsenic, cadmium, chromium, copper, zinc, silver, nickel, lead, selenium, mercury). In 1999, fish specimens were collected to test for organochlorine pesticides, PAHs, and low-level metals. The fish species collected were rainbow trout (*Oncorhynchus mykiss*), riffle sculpin (*Cottus gulosus*), and smallmouth bass (*Micropterus dolomieu*). Appendix I contains all fish tissue data.

Table 5. PCB cogeners found in 1998 fish tissue samples

PCB Congener	Reporting Limit (RL) fresh weight ppb (ng/g)	Deer C Hwy 99 fresh weight ppb (ng/g)	Deer C Ponderosa Way fresh weight ppb (ng/g)	Deer C Ponderosa Way(Dup) fresh weight ppb (ng/g)
52	0.2	0.279	<RL	<RL
66	0.2	0.206	<RL	<RL
70	0.2	0.301	0.224	<RL
95	0.2	0.265	<RL	<RL
101	0.2	0.317	<RL	<RL
118	0.2	0.478	<RL	0.224
138	0.2	0.35	<RL	<RL
153	0.2	0.327	<RL	<RL

Results from the 1998 samples show that only eight PCB cogeners were found at concentrations above the laboratory reporting limits. Existing criteria for total PCB concentrations in fish tissue are set at 110 nanograms/gram (ng/g) by the New York DEC Fish Flesh Criteria for fish-eating wildlife, and less than 100 ng/g in the U.S. Fish and Wildlife Service (USFWS) Contaminant Hazard Reviews recommendation. The total concentrations for these eight PCB cogeners adds up to only 2.503 ng/g, which is well below both of these criteria (Table 5). Due to the low concentrations found in 1998, no analysis for PCB cogeners was done on the fish tissue samples collected in 1999.

No organochlorine pesticides were detected in any of the 1998 specimens; all results fell below the laboratory reporting limits. In 1999, the rainbow trout tissue sample collected from the Deer Creek below Childs Meadow station found a 4.89 ng/g concentration of DDE, p, p (DDE,p,p is a breakdown product of DDT). This is the only organochlorine compound that was found at any of the sites sampled as part of this study. This result is also well below any of the established criteria. It correlates closely with the water samples collected from Deer Creek for PAHs in which no concentrations were found above laboratory reporting limits (Appendix G).

The results of fish tissue analyses for metals indicate that only four trace metals were found at concentrations that exceed established criteria. Arsenic, chromium, copper, and zinc were found at concentrations that exceed one or more of the established criteria (Table 6). Tissue samples collected in 1998 contained levels of chromium and zinc exceeding criteria, while samples collected in 1999 contain exceedances of arsenic, chromium, and copper.

Arsenic is a relatively common element that occurs in air, water, soil, and all living tissues (USFWS 1988). The 1999 liver sample from riffle sculpin from the Deer Creek at Highway 99 station contained arsenic concentrations of 0.257 parts per million (ppm), which just exceeds the Elevated Data Levels (EDL) 85 criteria of 0.21 ppm (Table 6). From the water column samples collected for low-level metals, arsenic was found in concentrations exceeding established criteria, suggesting that baseline levels within this watershed naturally run at levels exceeding criteria. While arsenic is carcinogenic in humans, evidence of arsenic-induced carcinogenicity in other mammals is scarce. Evidence also indicates that arsenic is nutritionally essential or beneficial for fish.

Chromium concentrations exceeded established criteria in nearly all samples collected. The EDL for fish fillets is less than the 0.02 detection level for chromium. All fish fillets and livers from all sampling sites exceeded EDLs, except liver from rainbow trout from the Deer Creek at Ponderosa Way station. Chromium is an essential trace element in humans and some species of laboratory animals, but data are incomplete to determine the chromium needs of other species (USFWS 1986). At high environmental concentrations, chromium is a mutagen, teratogen, and carcinogen. Biomagnification has not been observed in the food web, and highest concentrations

are usually observed at the lowest trophic levels. One of the difficulties in establishing criteria for the protection of wildlife is that sensitivity to chromium varies widely, even among closely related species. Adverse effects to sensitive species of wildlife have been documented at chromium levels of 5 to 10 mg/kg in their diet (USFWS 1986).

Copper is abundant in the environment and essential for the normal growth and metabolism of all living organisms (USFWS 1998). The 1999 liver samples from rainbow trout contained a copper concentration of 15.1 ppm, which just exceeds the EDL 85 of 12.0 ppm. Copper is among the most toxic of the heavy metals in freshwater biota and often accumulates to levels that cause harm; these levels are just above those required for growth and reproduction. Birds and mammals are relatively resistant to copper, in comparison to lower life forms. The bioavailability and toxicity of copper to aquatic organisms is dependent upon the total copper concentration and species. Its toxicity to aquatic life is related primarily to the dissolved cupric ion and possibly hydroxy complexes. Cupric ion accounts for less than a percent of the dissolved copper in fresh water. Numerous and disparate copper criteria have been proposed for protecting the health of agricultural crops, aquatic life, terrestrial invertebrates, poultry, laboratory white rats, and humans, but no copper criteria are available for protection of avian and mammalian wildlife.

Zinc is naturally present in the environment, but often is found at elevated levels due to anthropogenic sources (USFWS 1993). Zinc levels found in fish collected from Deer Creek were well below the guideline suggested for protection of wildlife from ingestion of prey containing zinc, but the 1998 riffle sculpin samples exceeded the EDL 85 for fish livers. Zinc deficiency occurs in many species of plants and animals, and it has severe adverse effects on all stages of growth, development, reproduction, and survival. Avian diets should contain at least 25 mg of zinc/kg of ration to prevent zinc deficiency, but less than 178 mg/kg of ration to prevent marginal sublethal effects, such as severe anemia or organ damage. Mammals are comparatively resistant to zinc, as evidenced by their tolerance to spending extended periods of time on diets containing over 100 times the minimum daily zinc requirement. The most sensitive species of mammals are adversely affected at dietary concentrations of 90 to 300 mg of zinc/kg ration.

Table 6. Metals results for fish collected from the Deer Creek watershed in 1998 and 1999. Criteria and results in mg/kg (ppm).

			Arsenic	Cadmium	Chromium	Copper		Lead	Mercury	Nickel	Selenium	Silver	Zinc
Maximum Tissue Residue Levels (MTRLs) (for Fillets or Edible Tissues) (a)	for Carcinogens in Inland Surface Waters		0.2										
	for Non-carcinogens in Inland Surface Waters			0.64					1	28			
NAS Recommended Guideline for Freshwater Fish (b)	(Whole Fish)								0.5				
FDA Action Level for Freshwater and Marine Fish (c)	(Edible Portion)								1.0 (d)				
OEHHA Screening values and action levels in fish tissues (e)	USEPA Value		3 (f)	10					0.6 (g)		50		
	OEHHA Value		1 (f)	3					0.3 (g,n)		20		
Elevated Data Levels (a)	Fish Type (h)		All	All	All	Non	Salmo	All	All	All	All	All	All
	Fish Livers	EDL 85	0.21	0.36	0.03	12	170	0.1	ID (j)	<0.10 (i)	3.32	0.26	28
		EDL 95	0.68	0.99	0.07	33	230	0.2	ID	0.2	4.74	0.76	38
	Whole Fish	EDL 85	0.41	0.12	0.23	3.3		0.2	0.11	0.21	1.4	0.02	42
		EDL 95	0.88	0.19	0.54	4.3		0.46	0.22	0.56	1.9	0.04	49
	Fish Fillets	EDL 85	0.14	<0.01 (i)	<0.02 (i)	0.69		<0.10 (i)	0.8	<0.10 (i)	1	<0.02 (i)	21.4
		EDL 95	0.43	0.01	<0.02 (i)	0.99		<0.10	1.7	<0.10 (i)	1.8	<0.02 (i)	30.2
Median International Standards (a)	(excludes liver)		1.5	0.3	1	20		2	0.5		2		45
Canadian Tissue Residue guidelines									0.033 (l)				
USFWS Contaminant Hazard Reviews			NA (m) (USFWS 1988b)	0.1 (USFWS 1985a)	NA (m) (USFWS 1986b)	NA (m) (USFWS 1998a)		NA (m) (USFWS 1988c)	wildlife: 1.1, avian: 0.1 (USFWS 1987)	wildlife:500; avian: 200 (USFWS1998b)	NA (m) (USFWS 1985b)	6 (USFWS 1996)	300 (m) (USFWS 1993)
USFWS protection of threatened and endangered wildlife									0.3 (n)				

Station Name	Collection Date	Species (k)	Type	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Selenium	Silver	Zinc
Deer Creek A Highway 99	8/6/1998	RS	fillet	0.071	0.00234	0.190	0.28	0.0022	0.107	0.018	0.270	0.0005	14.1
Deer Creek A Highway 99	8/6/1998	RS	liver	0.199	0.11938	0.370	2.82	0.0075	0.053	0.042	0.670	0.00325	29.3
Deer Creek A Highway 99	8/24/1999	RS	fillet	0.075	<0.002	0.135	0.393	0.002	0.082	0.031	0.075	<0.002	8.53
Deer Creek A Highway 99	8/24/1999	RS	liver	0.257	0.051	0.183	3.91	0.010	0.043	0.039	0.310	<0.002	23.4
Deer Creek A Highway 99	8/24/1999	SMB	fillet	0.097	<0.002	0.089	0.359	<0.002	0.075	<0.002	0.071	<0.002	5.61
Deer Creek A Highway 99	8/24/1999	SMB	liver	0.203	0.04	0.135	2.23	<0.002	0.044	<0.002	0.330	<0.002	16.9
Deer Creek A Pondersosa Way	8/25/1998	RS	fillet	0.045	0.00065	0.17	0.27	0.0016	0.059	0.015	0.140	0.00033	9.5
Deer Creek A Pondersosa Way - Duplicate	8/25/1998	RS	fillet	0.036	0.00044	0.17	0.26	0.0016	0.063	0.014	0.150	0.00044	9.8
Deer Creek A Pondersosa Way	8/25/1998	RS	liver	0.144	0.04264	0.029	4.08	0.0055	0.042	0.034	0.810	0.00932	28.4
Deer Creek below Childs Meadow	8/13/1999	RS	fillet	0.041	<0.002	0.170	0.35	<0.002	0.034	<0.002	0.112	<0.002	4.92
Deer Creek below Childs Meadow	8/13/1999	RS	liver	0.068	0.032	0.125	7.21	0.009	<0.020	0.005	0.464	0.031	26.8
Deer Creek below Childs Meadow	8/13/1999	RBT	fillet	0.020	<0.002	0.11	0.601	0.012	<0.020	0.002	0.107	<0.002	5.66
Deer Creek below Childs Meadow	8/13/1999	RBT	liver	0.065	0.015	0.206	15.1	0.022	<0.020	0.026	0.638	0.231	25.1

a. From SWRCB 1995. Toxic Substances Monitoring Program, 1994-95 Data Report. State Water Resources Control Board, Sacramento, California.
b. National Academy of Sciences-National Academy of Engineering. 1973. Water Quality Criteria, 1972 (Blue Book). U.S. Environmental Protection Agency, Ecological Research Series.
c. FDA 2000. Action Levels for Poisonous or Deleterious Substances in Human Food and Animal Feed. U.S. Food and Drug Administration. Industry Activities Staff Booklet. Washington, D.C.
d. as methyl mercury.
e. OEHHA 1999. Prevalence of selected target chemical contaminants in sport fish from two California Lakes: Public Health Designed Screening Study. Office of Environmental Health Hazard Assessment, Sacramento, California
f. measured as total arsenic
g. measured as total mercury
h. Non = Includes all non-salmonid species. Salmo = Family Salmonidae (trouts). All = All fish species.
i. < = EDL lies below the indicated detection limit.
j. ID = Insufficient data to calculate the EDL.
k. RS = Riffle sculpin, SMB = Smallmouth bass, RBT = Rainbow trout
l. As methyl mercury
m. No criteria proposed
n. USFWS 2003. Evaluation of the Clean Water Act Section 304(a) Human Health Criterion for Methylmercury: Protectiveness for Threatened and Endangered Wildlife in California. U.S. Fish and Wildlife Service. Sacramento, California.

Stream gravels

Sediment samples were collected from seven sites in the Deer Creek watershed in September 1997 and again in 1998. Hydrometer and mechanical particle-size analysis of the samples was performed; the samples consisted of gravel (from poorly graded to well-graded) with sand and cobble. The "bag" samples contained between 3 and 6 kilograms of oven-dried material, while the "water" samples were classified as fine-grained with dry weights of between 2 and 22 grams in 1997 and between 1 and 13 grams in 1998. Appendix J contains the full lab report.

Discussion

Water quality in Deer Creek was excellent for most of the parameters that were monitored. Almost all physical, mineral, and nutrient results obtained fell within established criteria. Pesticides were not found in significant concentrations in water samples. However, a few metals occasionally exceeded goals or criteria. Metals that exceeded established criteria include aluminum, arsenic, iron, manganese, and lead. At this time there no indications that the occasional high levels of metals are adversely affecting aquatic life in Deer Creek. Coliform bacteria were found occasionally in elevated numbers in several areas of the watershed. Possible bacteria sources include campgrounds and cabins in the upper watershed, and domestic and wild animals in other portions. During the summer months in the lower reaches of Deer Creek, water temperatures are too warm to support salmonids, but become suitable in the middle reach upstream above Ponderosa Way.

Recommendations

1. DWR's Northern District Water Quality and Biology Section should continue long-term monitoring at the Deer Creek at Highway 99 monitoring station.
2. The water temperature monitoring could be expanded to include examination of refugia for migrating salmonids by adding more temperature stations in the lower watershed to monitor summer water temperatures.
3. Sampling sites could also be revisited to collect specimens for fish tissue analysis to see if concentrations of pesticides and metals have increased or decreased from the time of this study.
4. Benthic macroinvertebrates and sediment could be collected to examine current water quality conditions as compared to the findings in this report.

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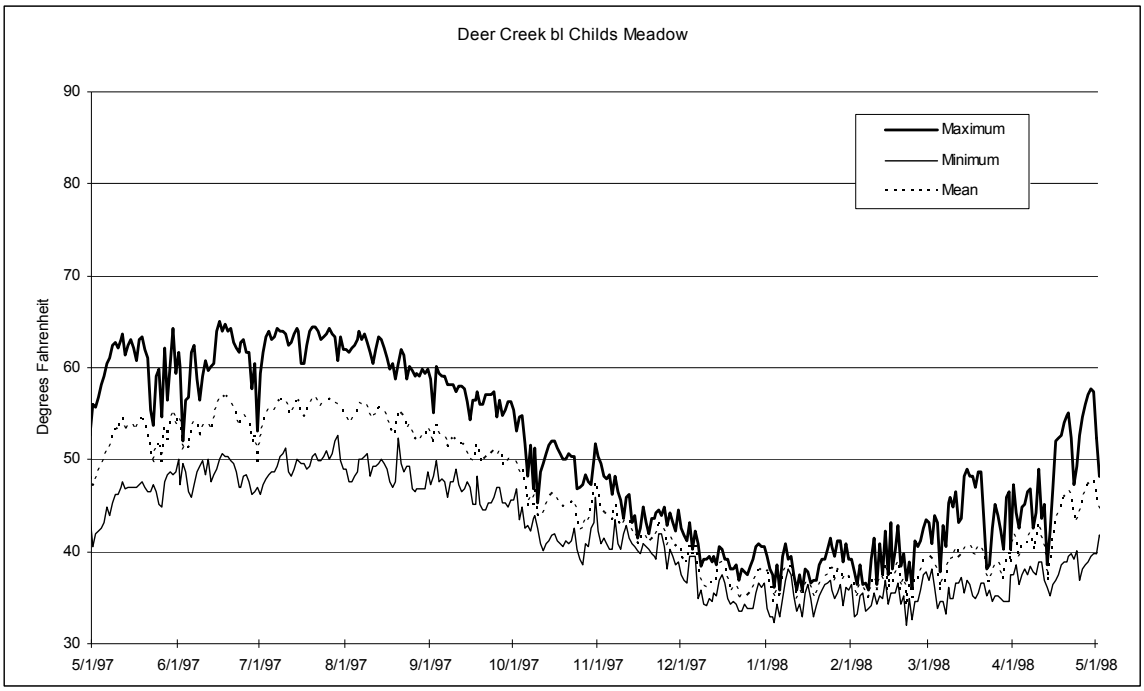
Appendix A. Water Temperatures from Deer Creek

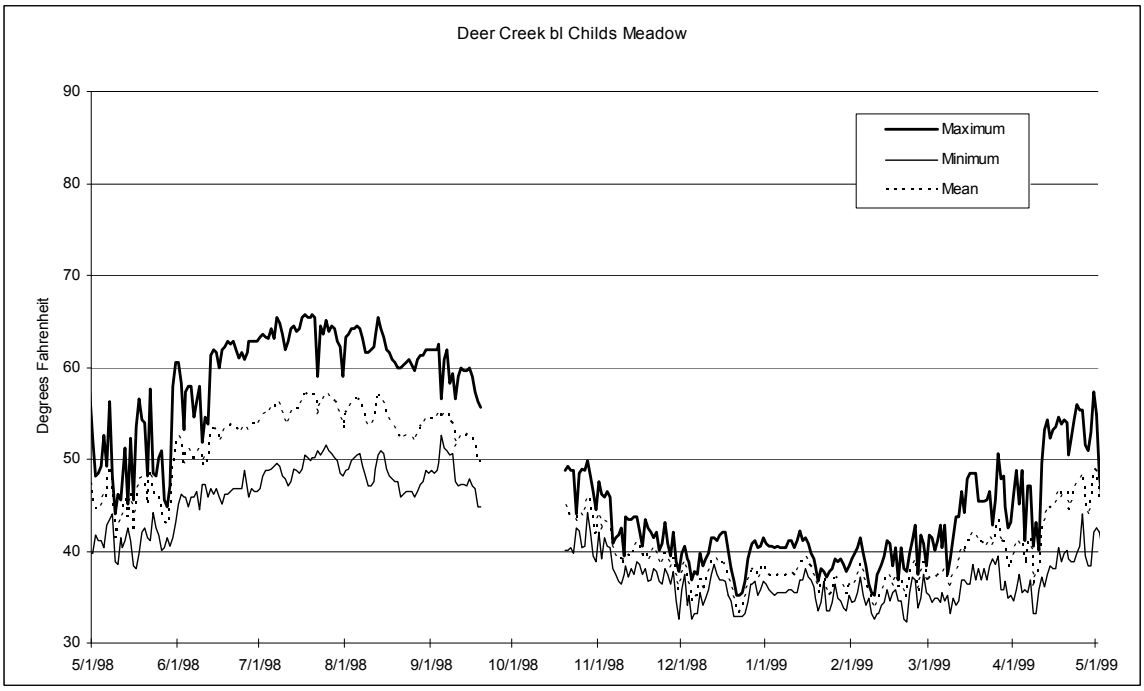
Figure A-1. Water temperature on Deer Creek below Childs Meadow.....22
Figure A-2. Water temperature on Deer Creek below Upper Falls (flow) 24
Figure A-3. Water temperature on Deer Creek below Upper Falls (pool).....26
Figure A-4. Water temperature on Deer Creek at about A-line (flow).....28
Figure A-5. Water temperature on Deer Creek at about A-line (pool) 30
Figure A-6. Water temperature on Deer Creek at Ponderosa Way.....32
Figure A-7. Water temperature on Deer Creek at Apperson Crow Camp (flow) 34
Figure A-8. Water temperature on Deer Creek at Apperson Cow Camp (pool).....35
Figure A-9. Water temperature on Deer Creek at Upper Diversion Dam 36
Figure A-10. Water temperature on Deer Creek at Highway 99 (east) 39
Figure A-11. Water temperature on Deer Creek at the mouth.....43

Figure A-1. Water temperature on Deer Creek below Childs Meadow

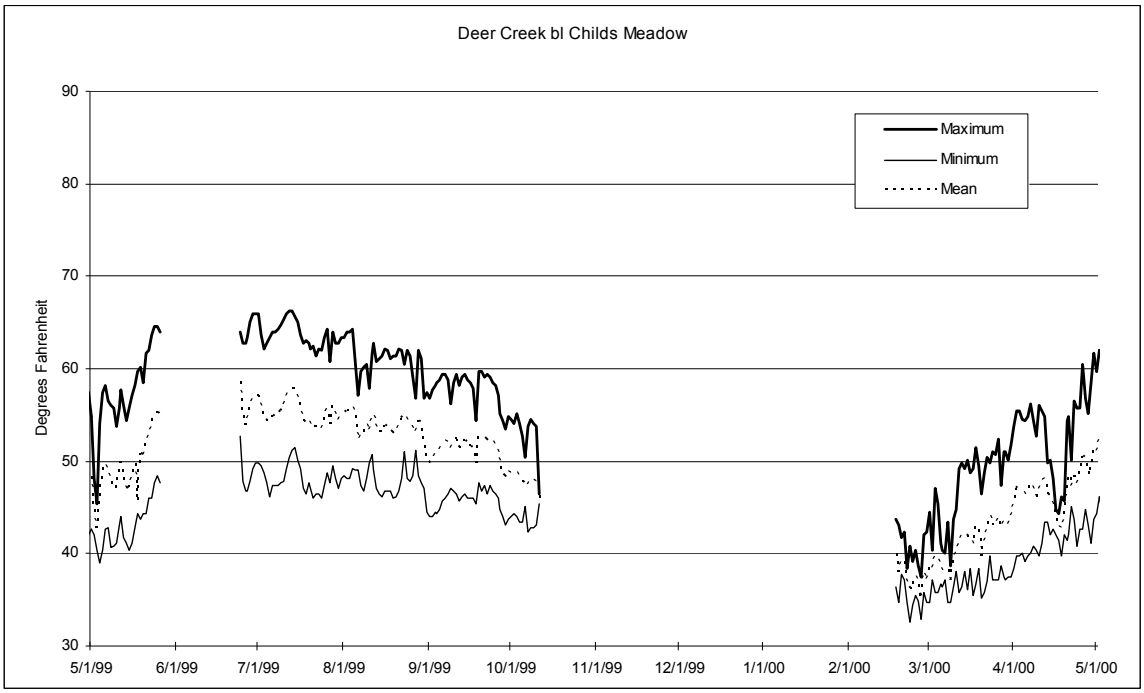
a) May 1, 1997-May 1, 1998



b) May 1, 1998-May 1, 1999



c) May 1, 1999-May 1, 2000



d) May 1, 2000-May 1, 2001

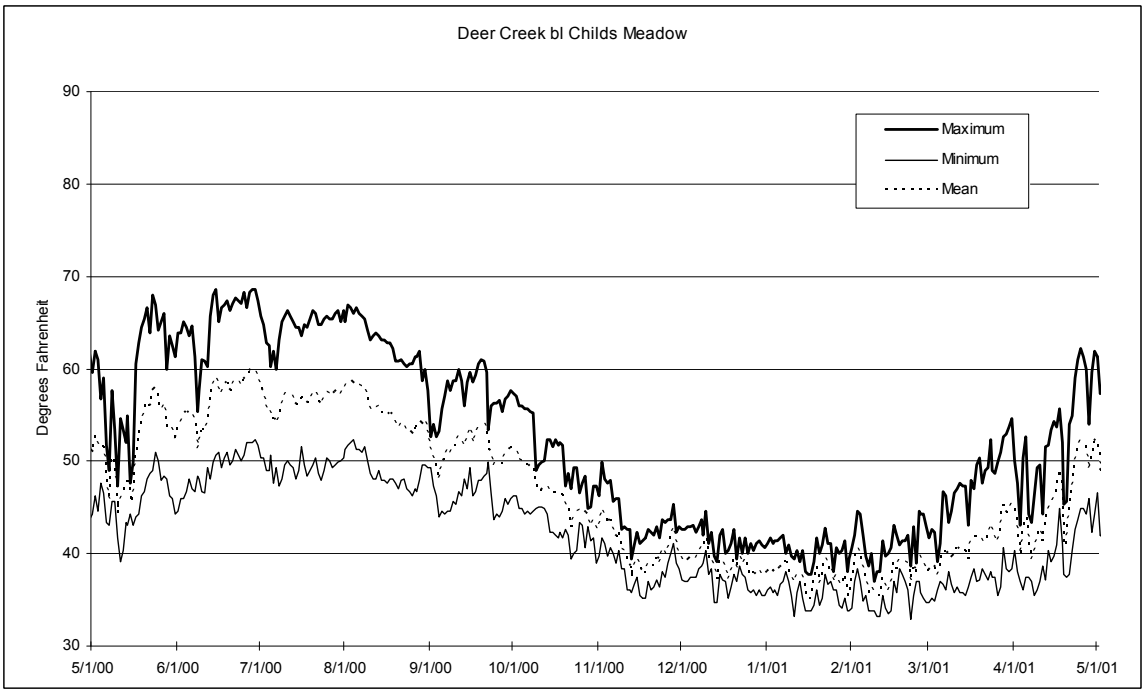
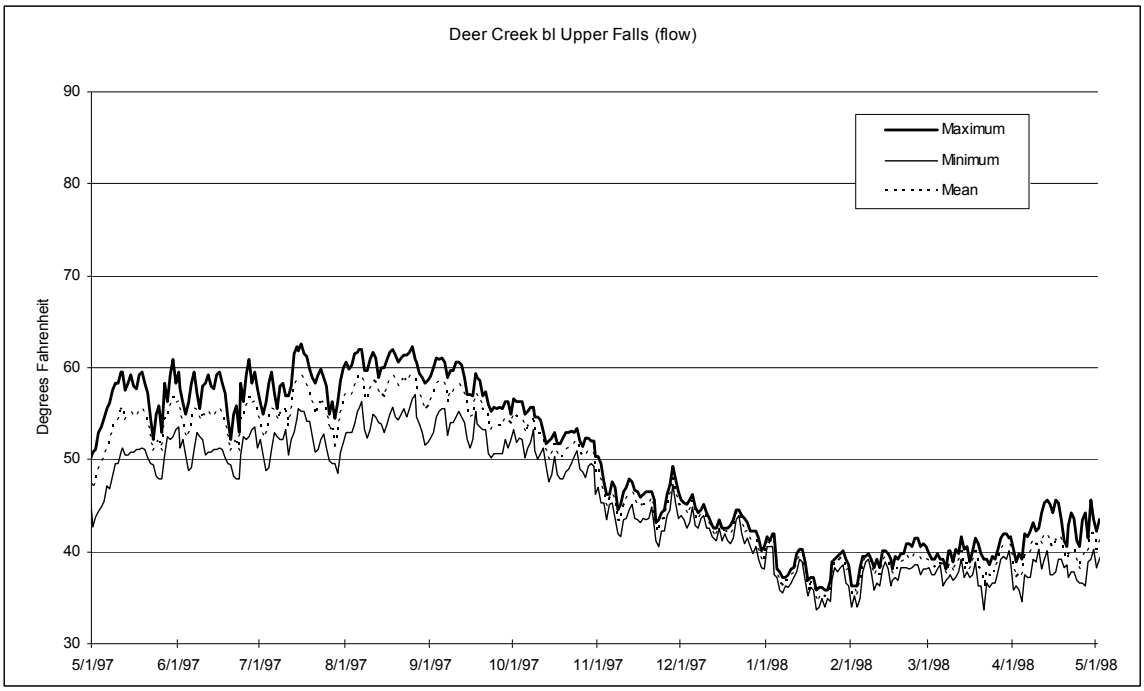
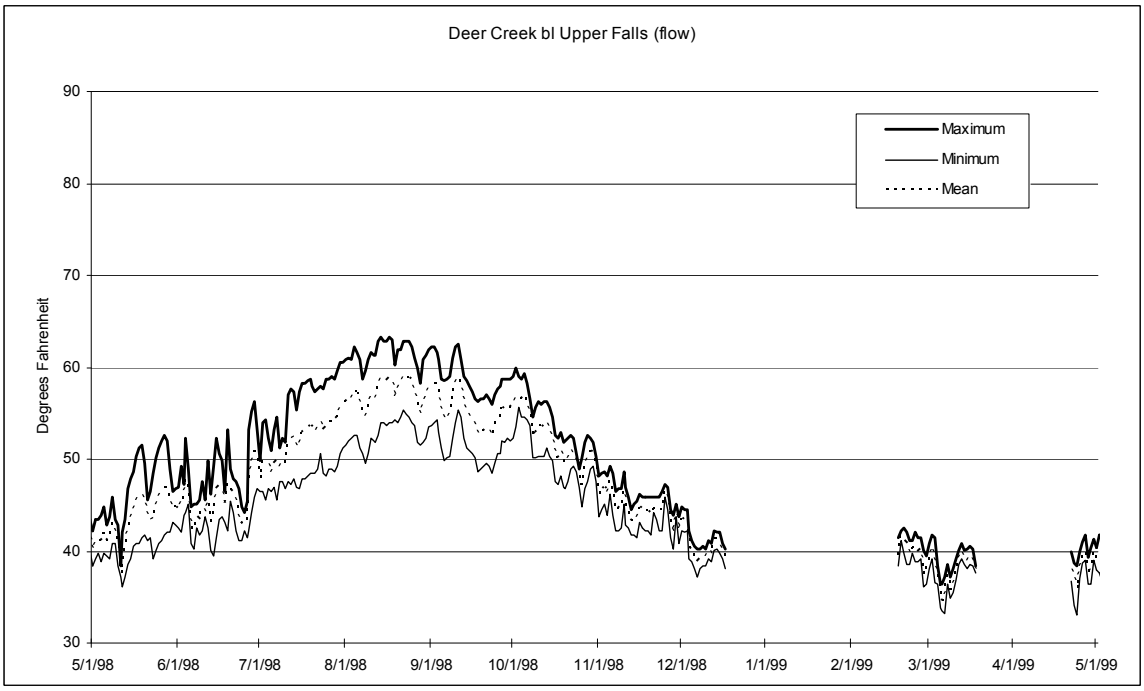


Figure A-2. Water temperature on Deer Creek below Upper Falls (flow)

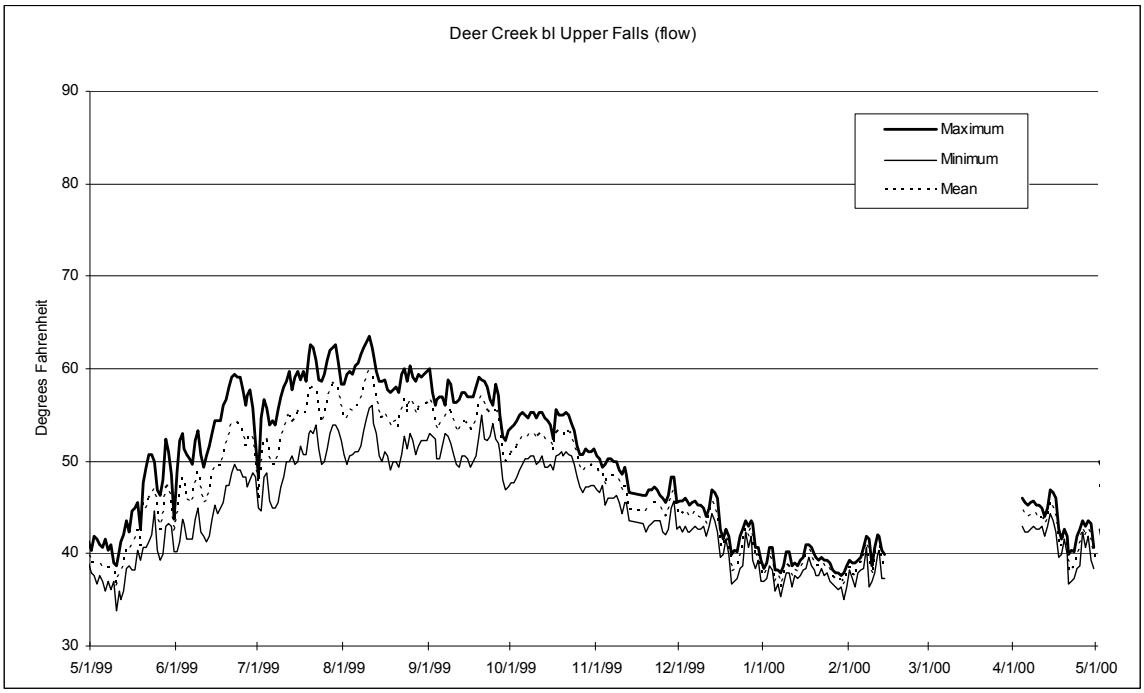
a) May 1, 1997-May 1, 1998



b) May 1, 1998-May 1, 1999



c) May 1, 1999-May 1, 2000



d) May 1, 2000-May 1, 2001

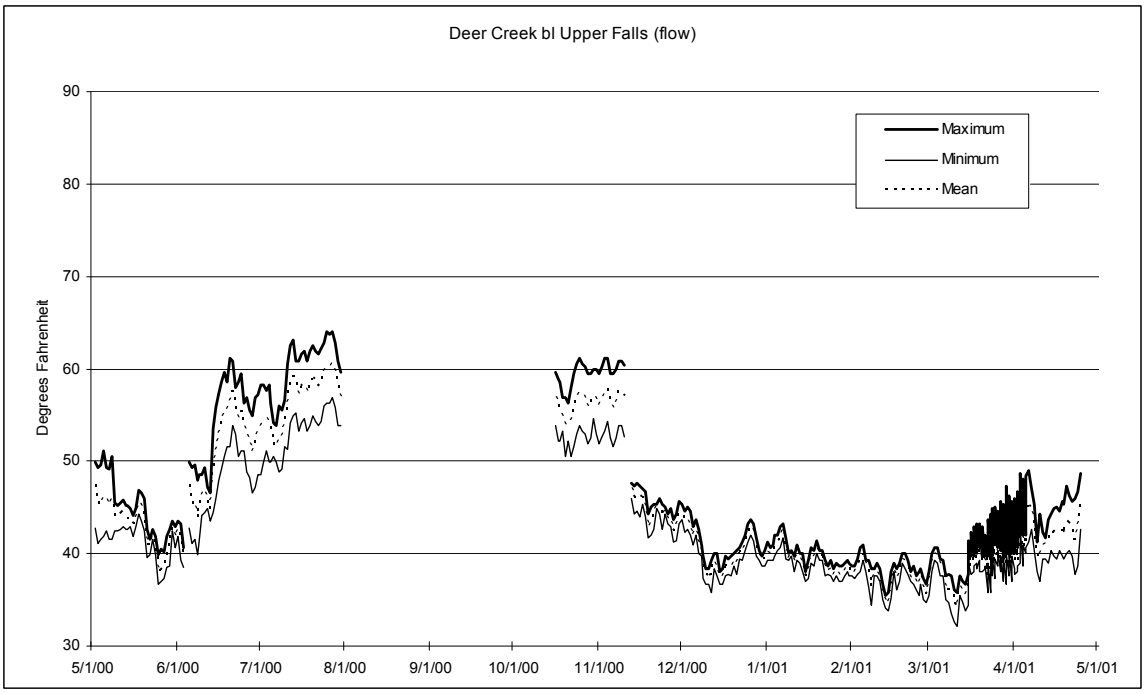
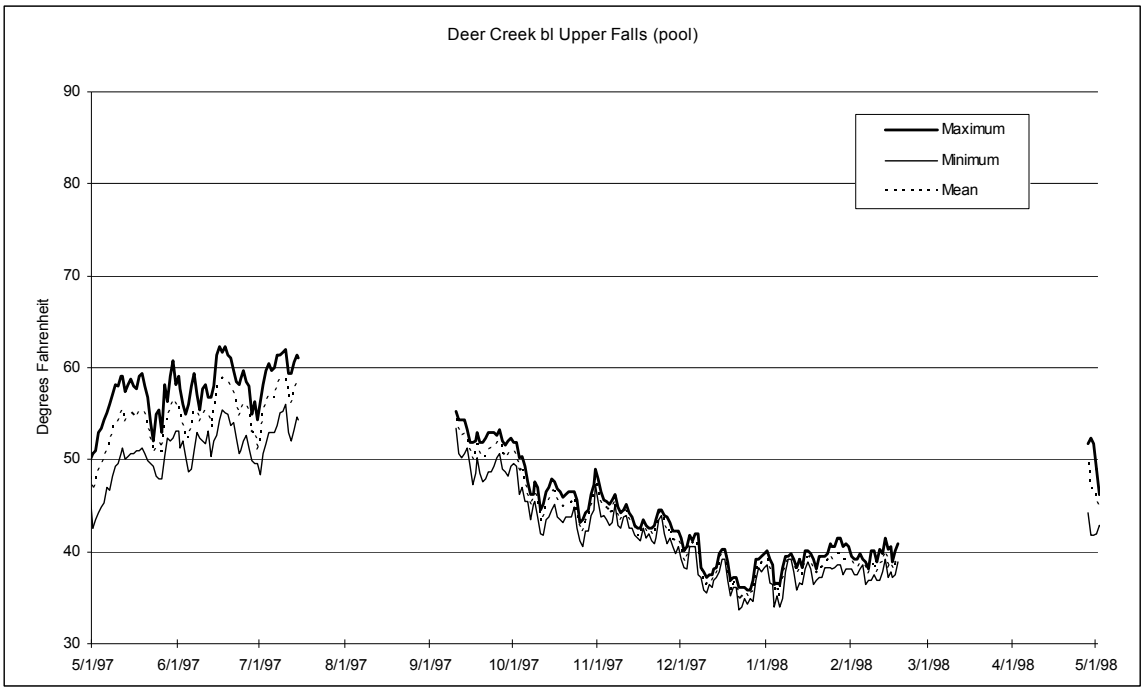
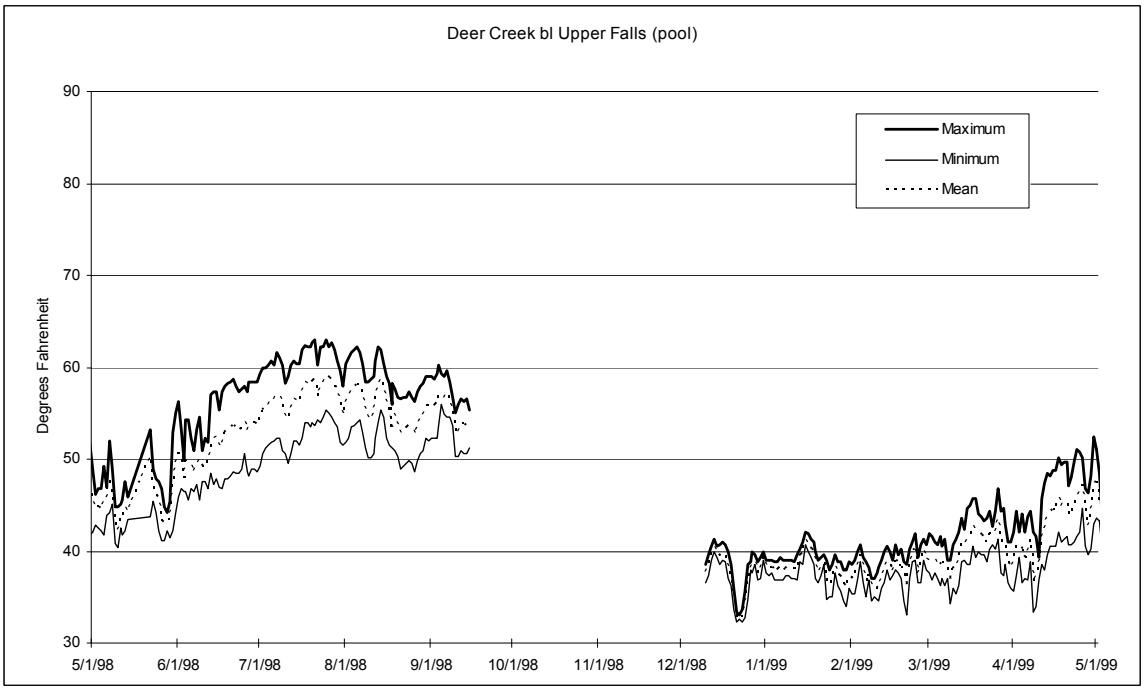


Figure A-3. Water temperature on Deer Creek below Upper Falls (pool)

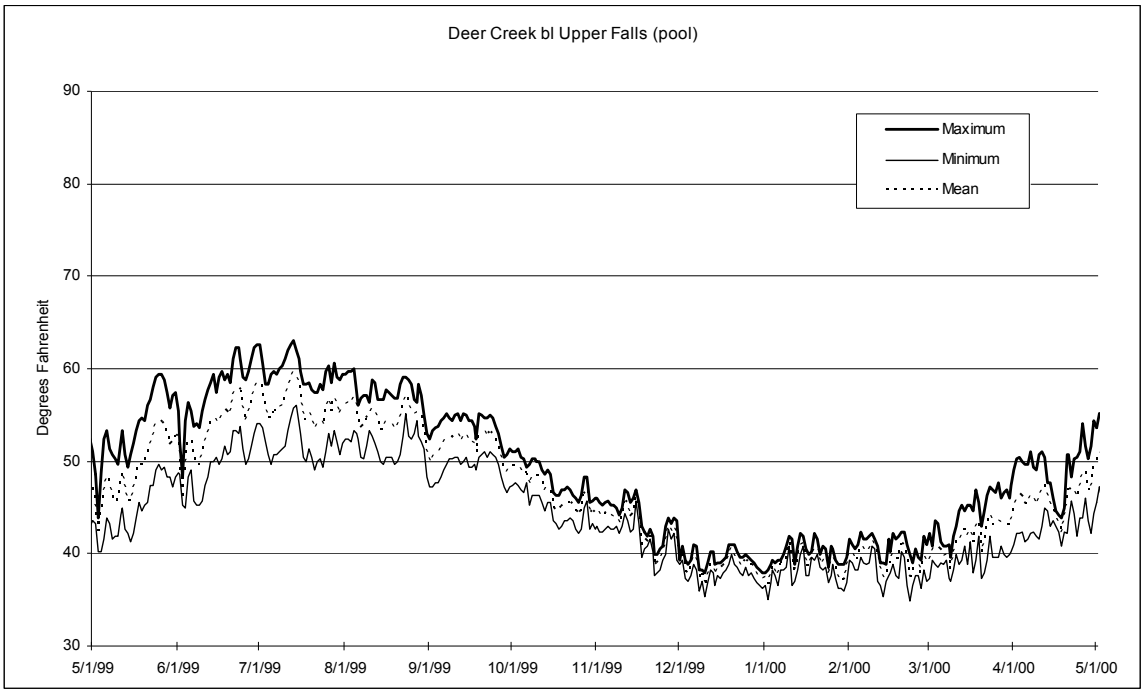
a) May 1, 1997-May 1, 1998



b) May 1, 1998-May 1, 1999



c) May 1, 1999-May 1, 2000



d) May 1, 2000-May 1, 2001

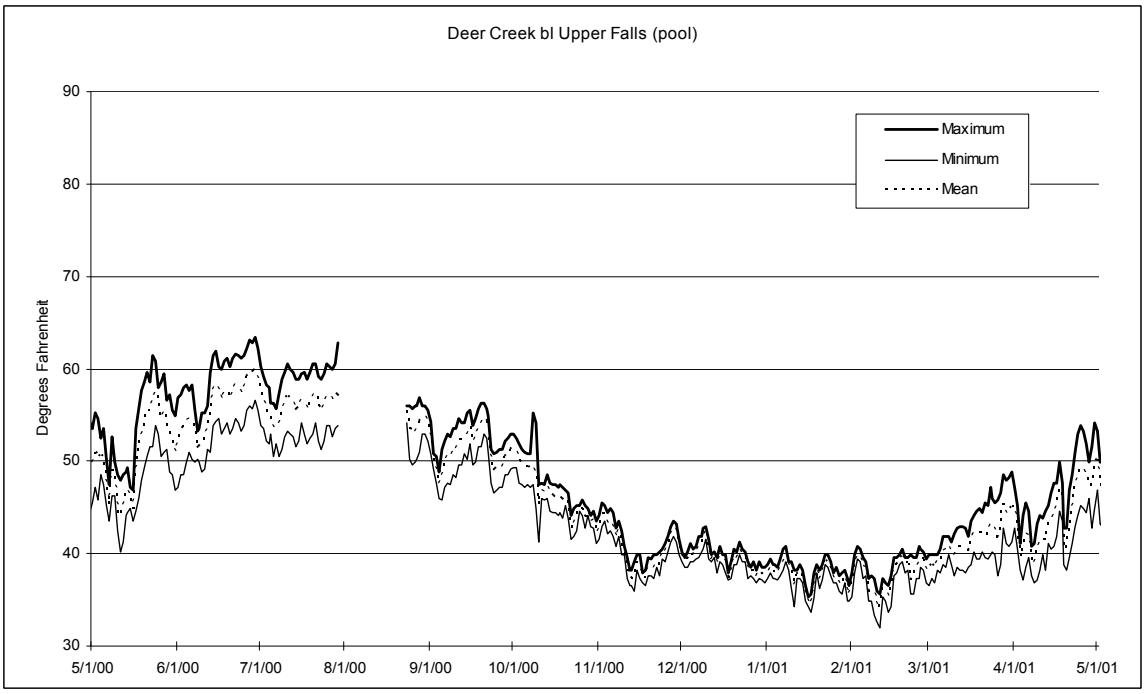
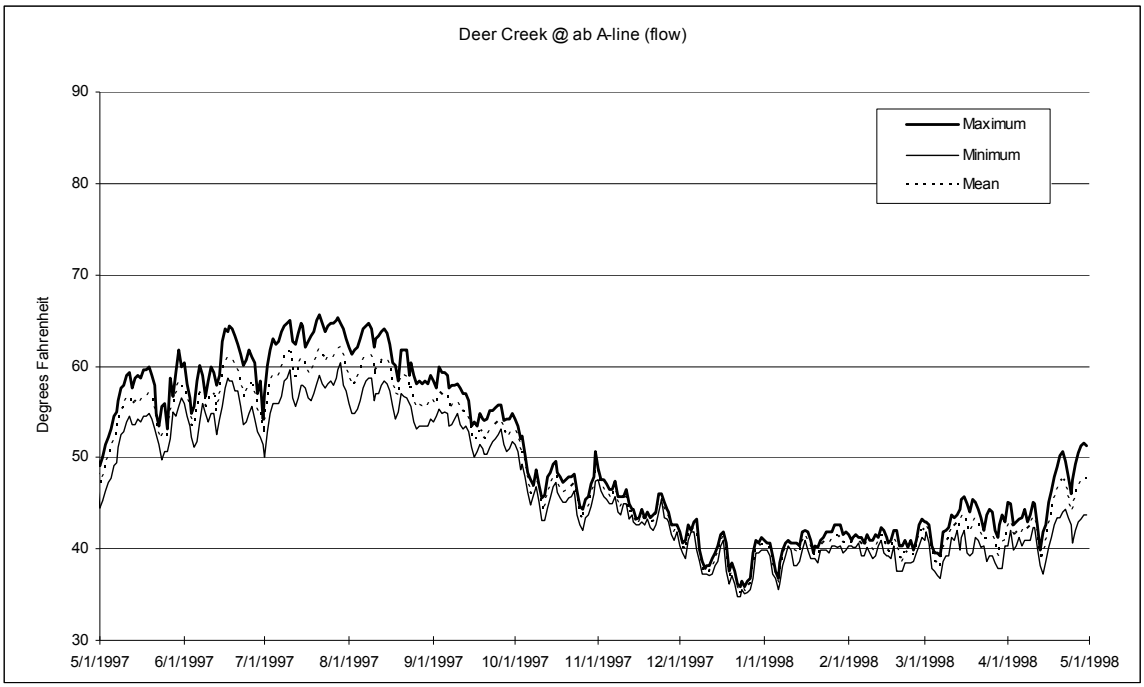
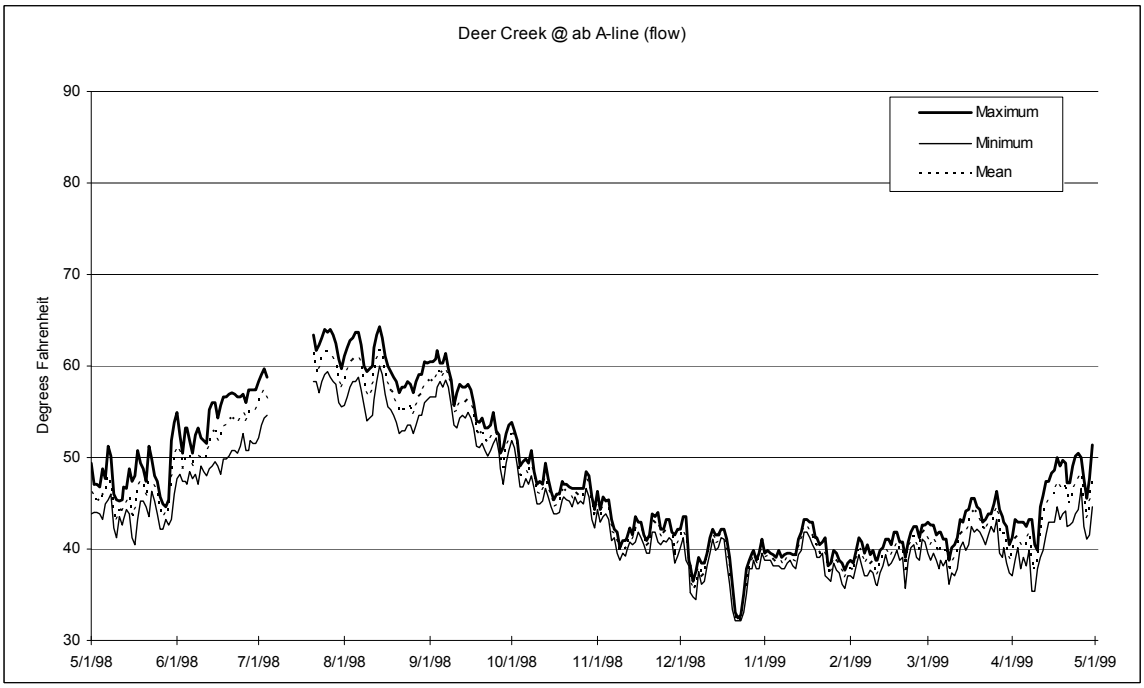


Figure A-4. Water temperature on Deer Creek at about A-line (flow)

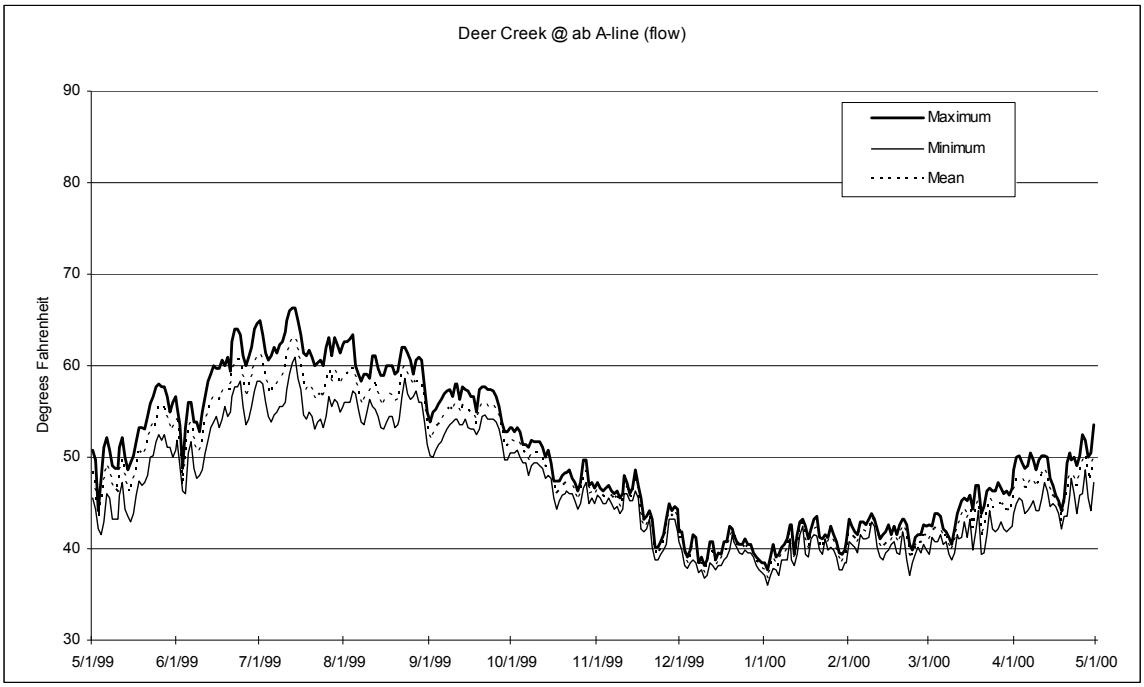
a) May 1, 1997-May 1, 1998



b) May 1, 1998-May 1, 1999



c) May 1, 1999-May 1, 2000



d) May 1, 2000-May 1, 2001

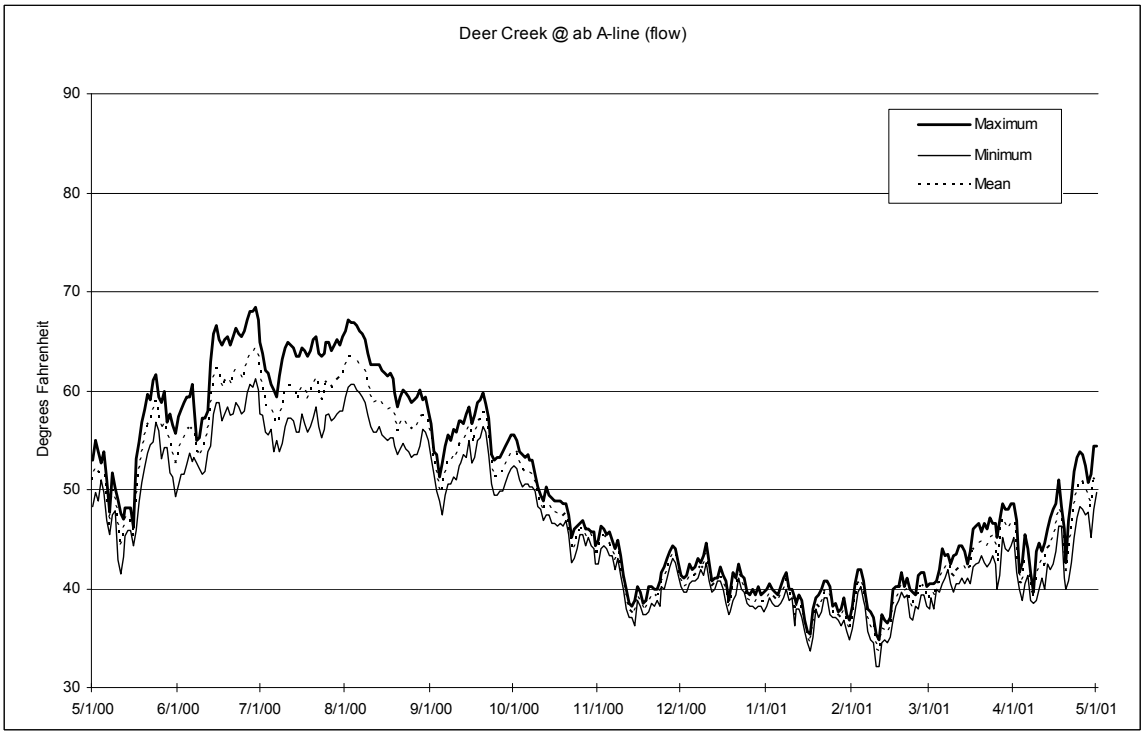
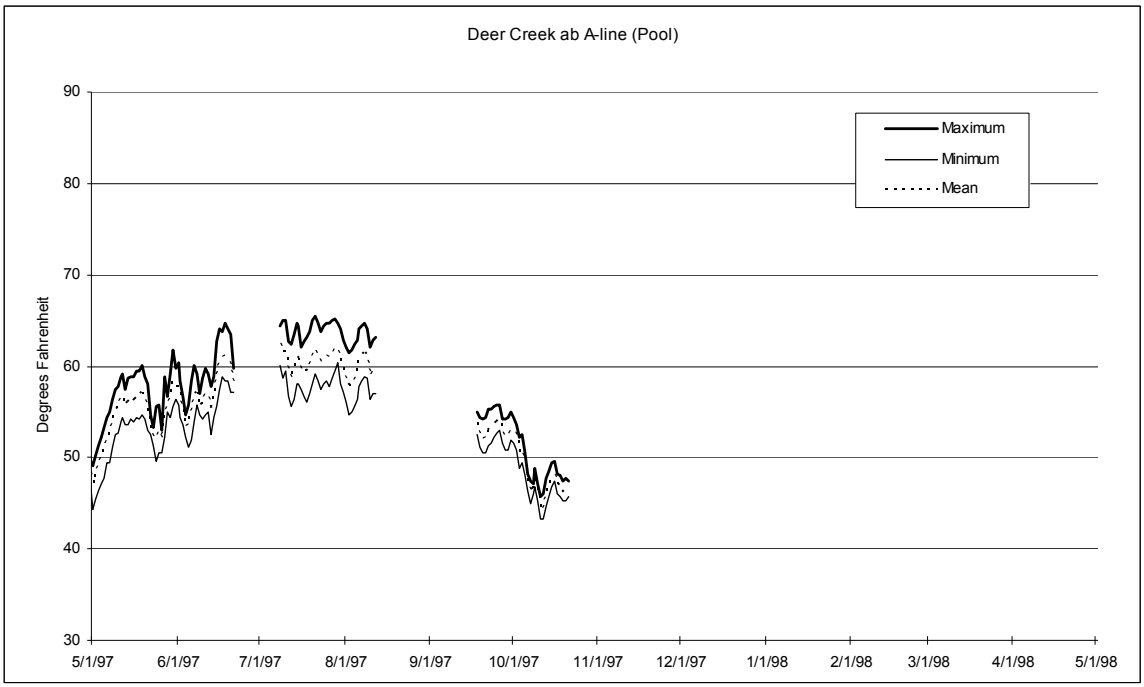
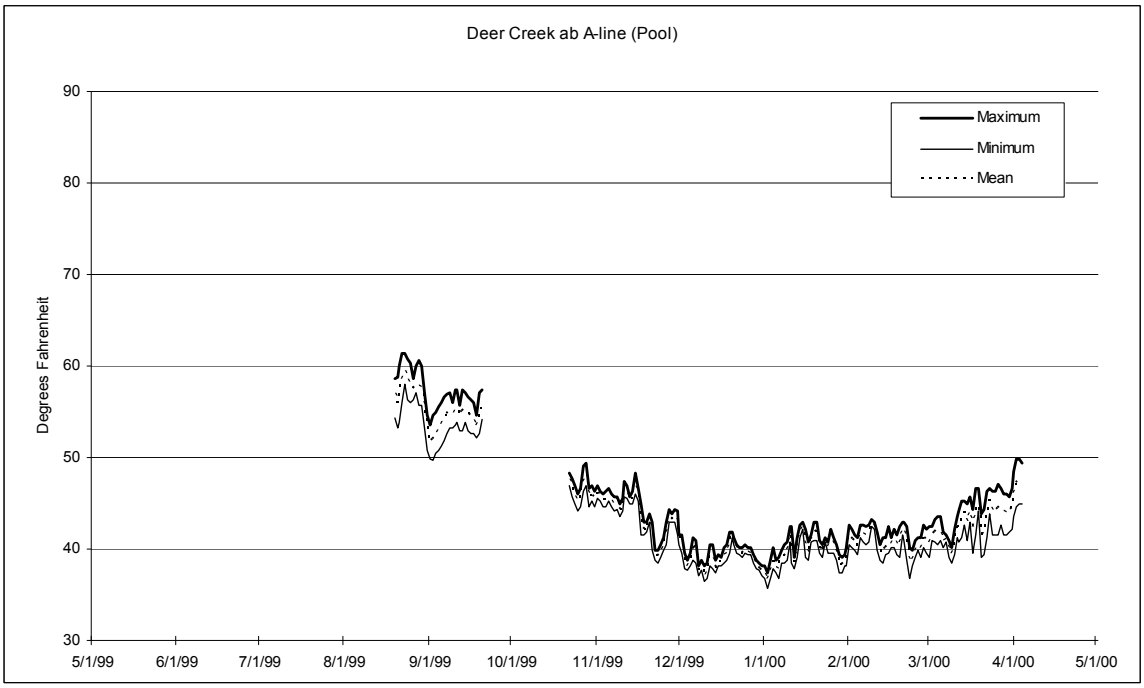


Figure A-5. Water temperature on Deer Creek at about A-line (pool)

a) May 1, 1997-May 1, 1998



b) May 1, 1999-May 1, 2000



c) May 1, 2000-May 1, 2001

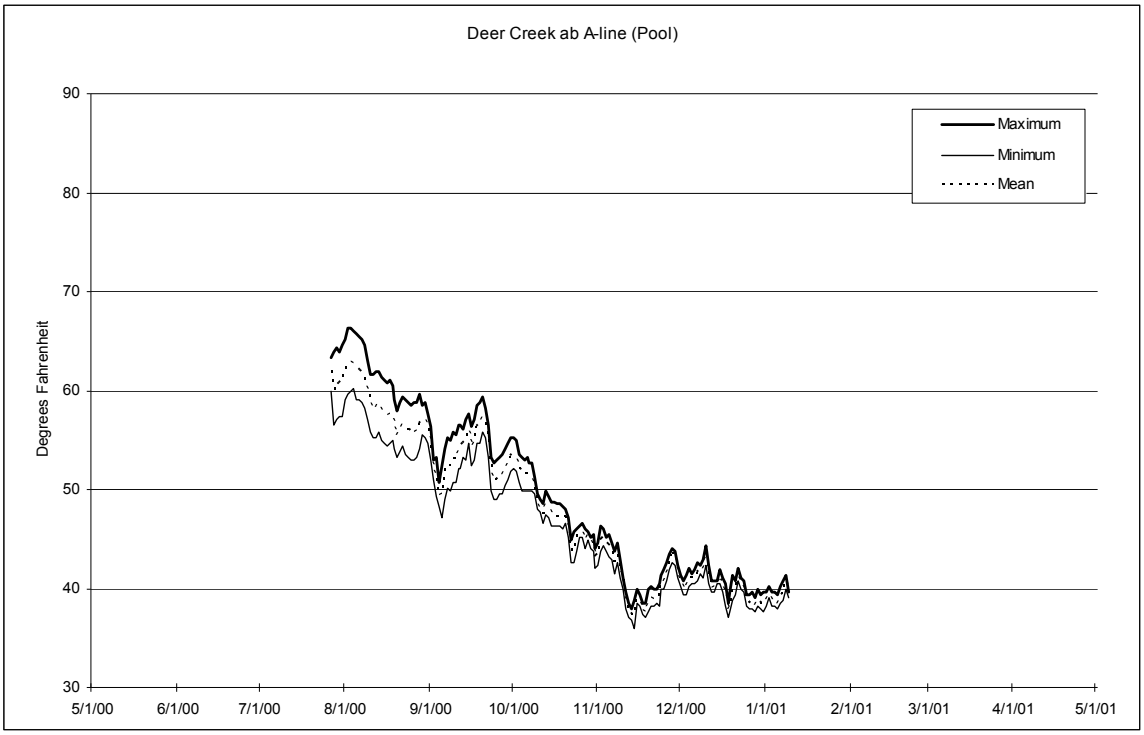
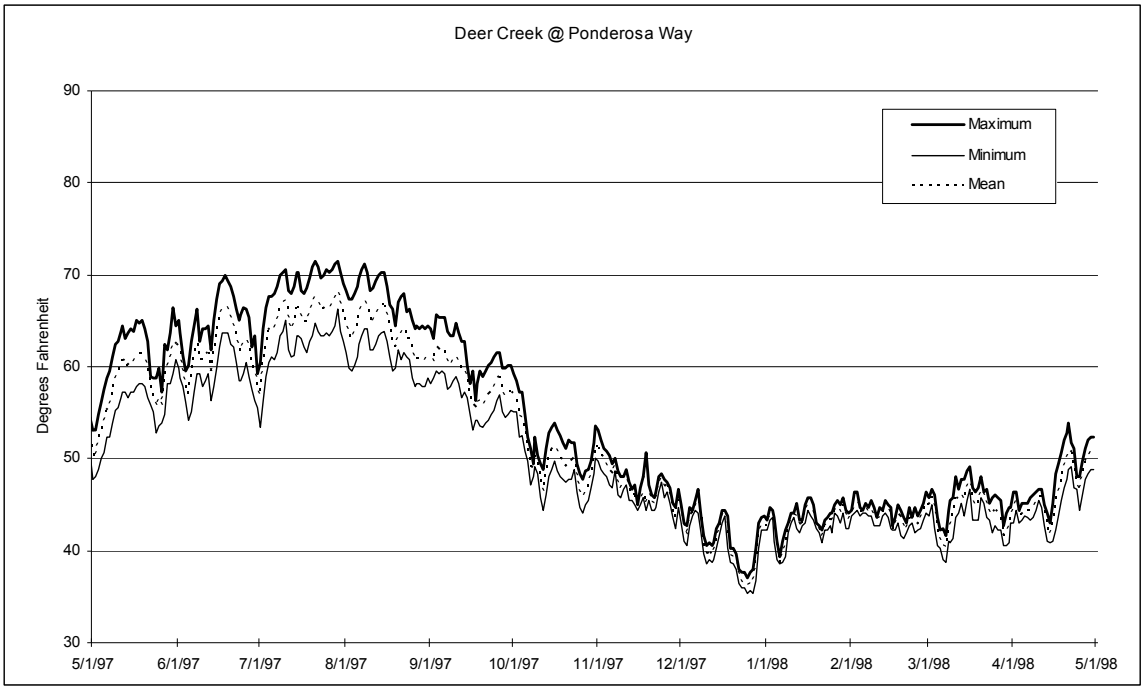
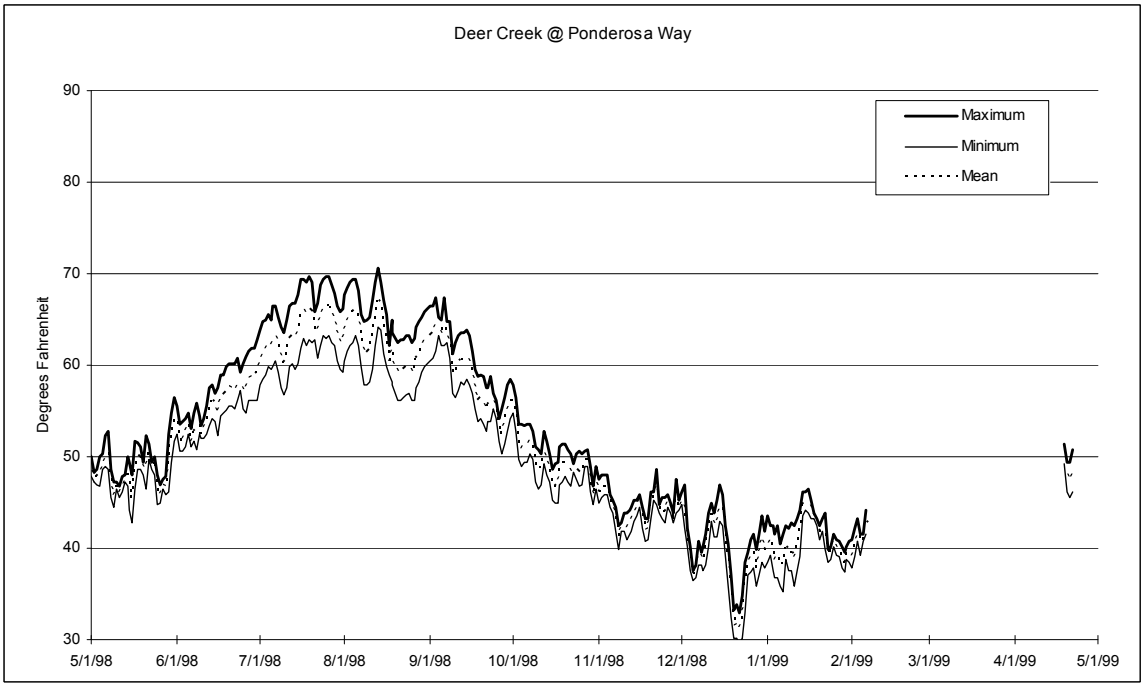


Figure A-6. Water temperature on Deer Creek at Ponderosa Way

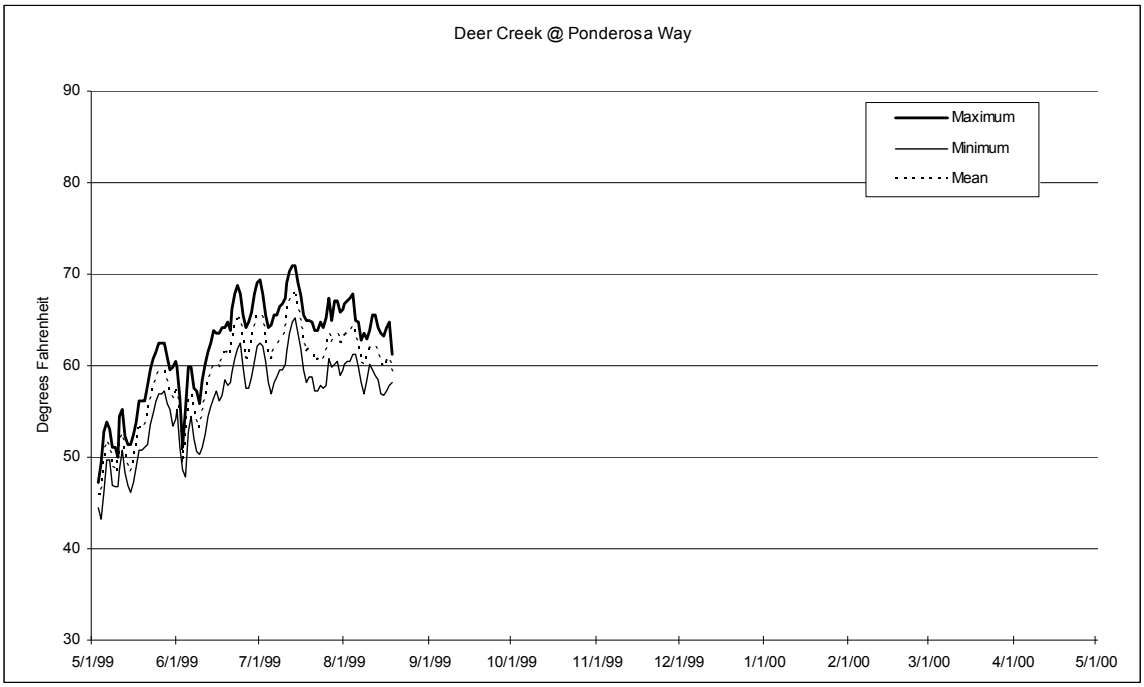
a) May 1, 1997-May 1, 1998



b) May 1, 1998-May 1, 1999



c) May 1, 1999-May 1, 2000



d) May 1, 2000-May 1, 2001

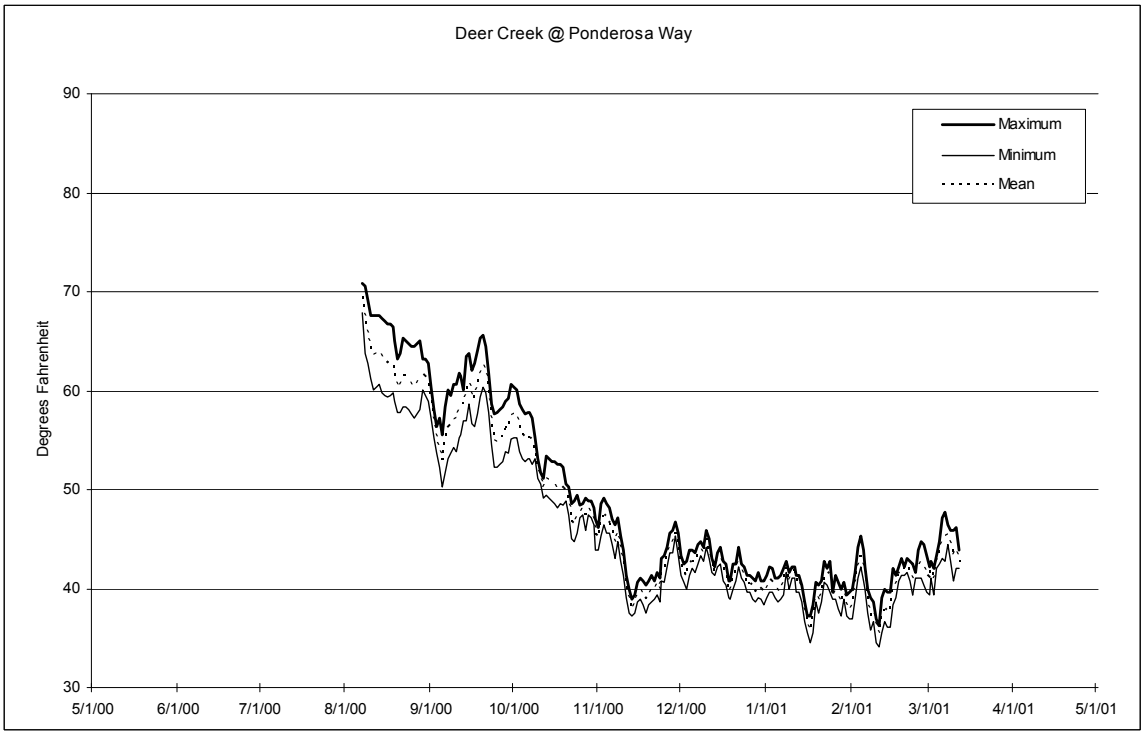
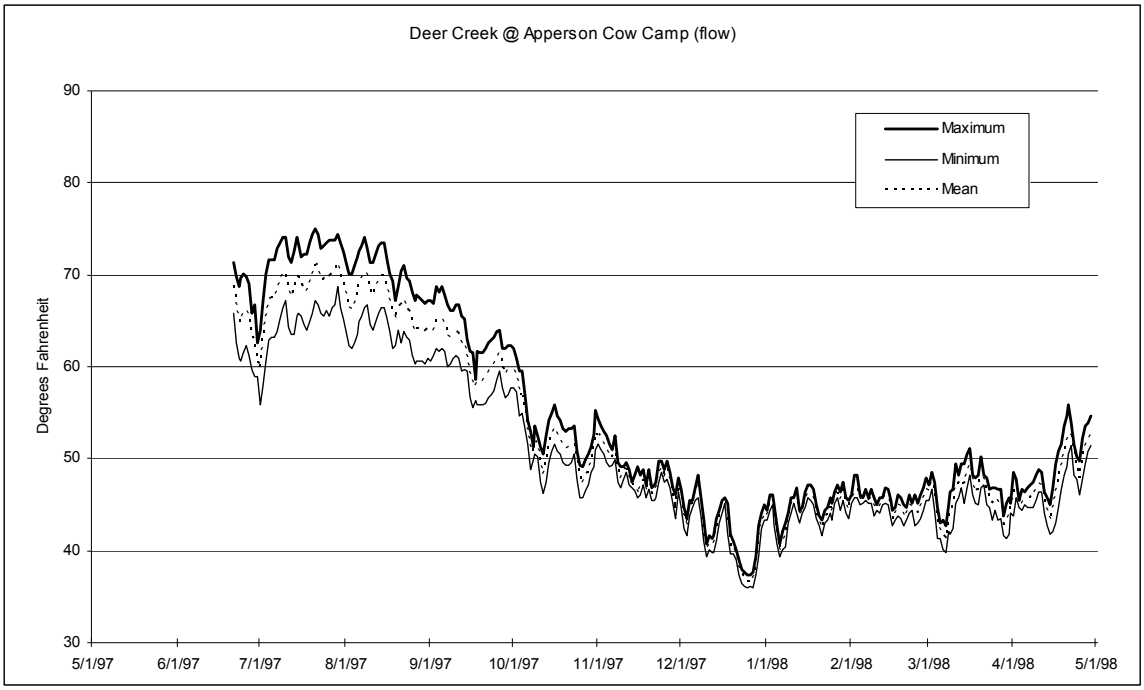


Figure A-7. Water temperature on Deer Creek at Apperson Cow Camp (flow)

a) May 1, 1997-May 1, 1998



b) May 1, 1998-May 1, 1999

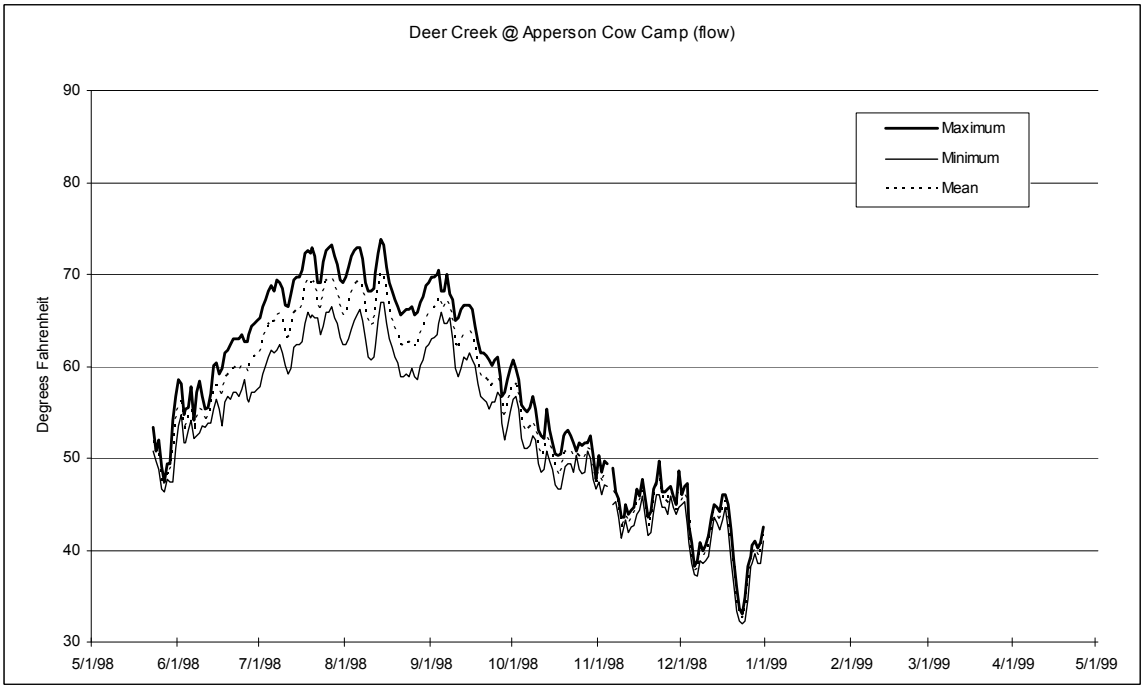


Figure A-8. Water temperature on Deer Creek at Apperson Cow Camp (pool)

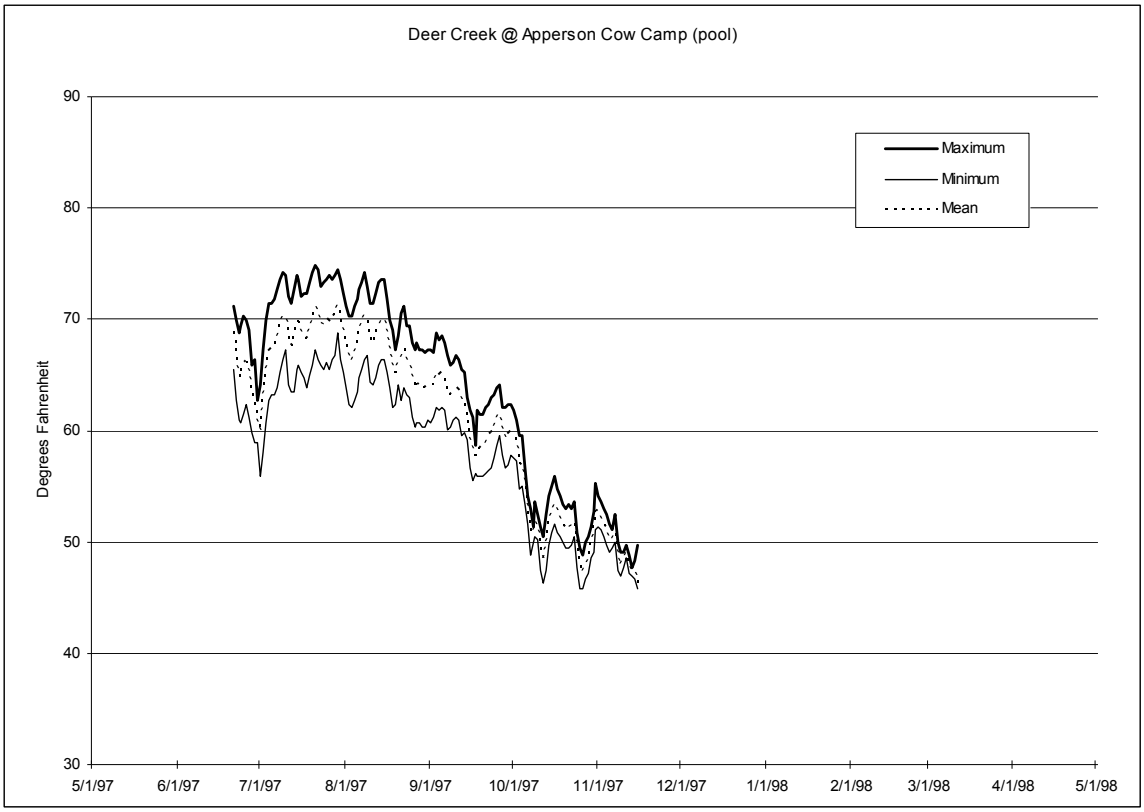
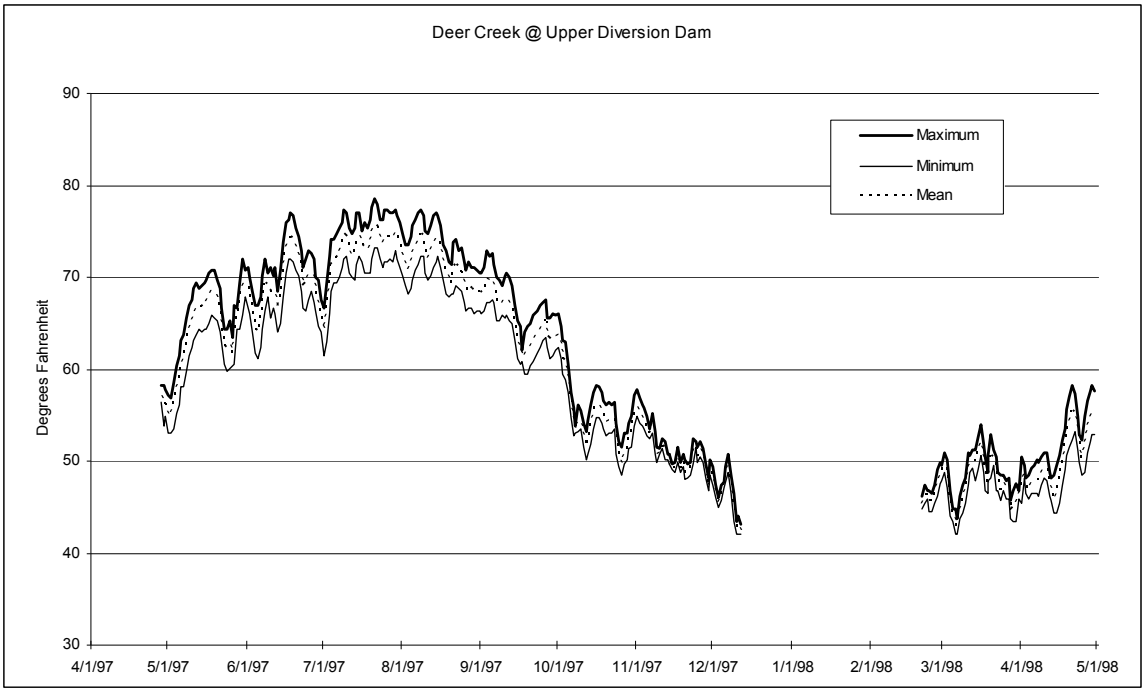
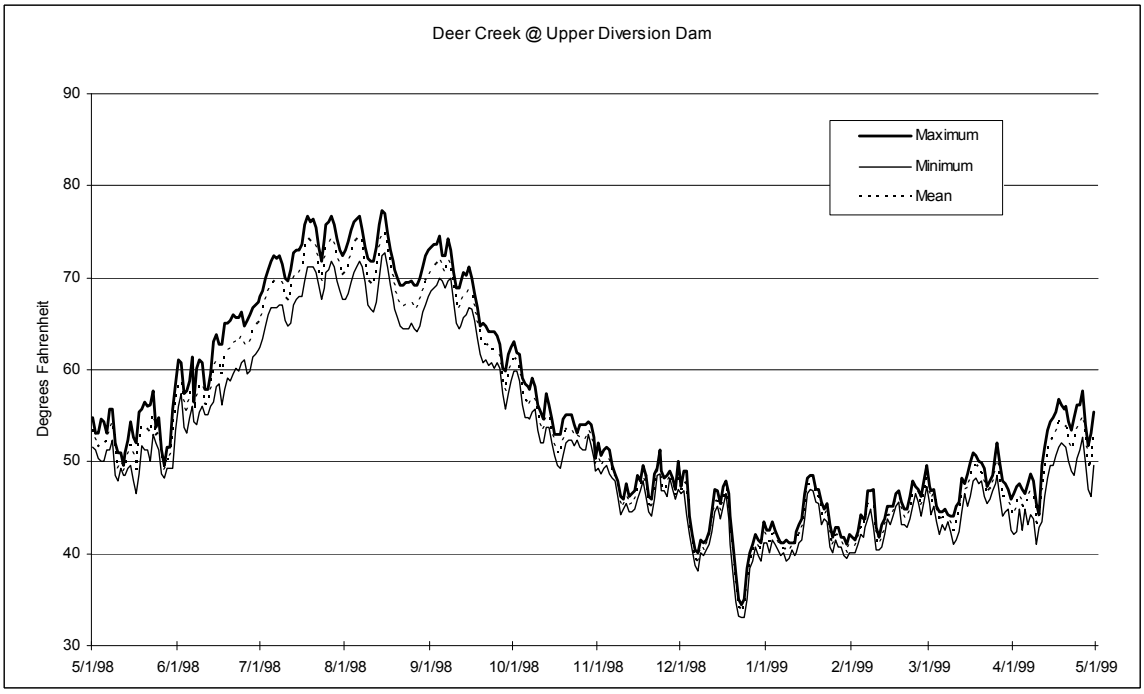


Figure A-9. Water temperature on Deer Creek at Upper Diversion Dam

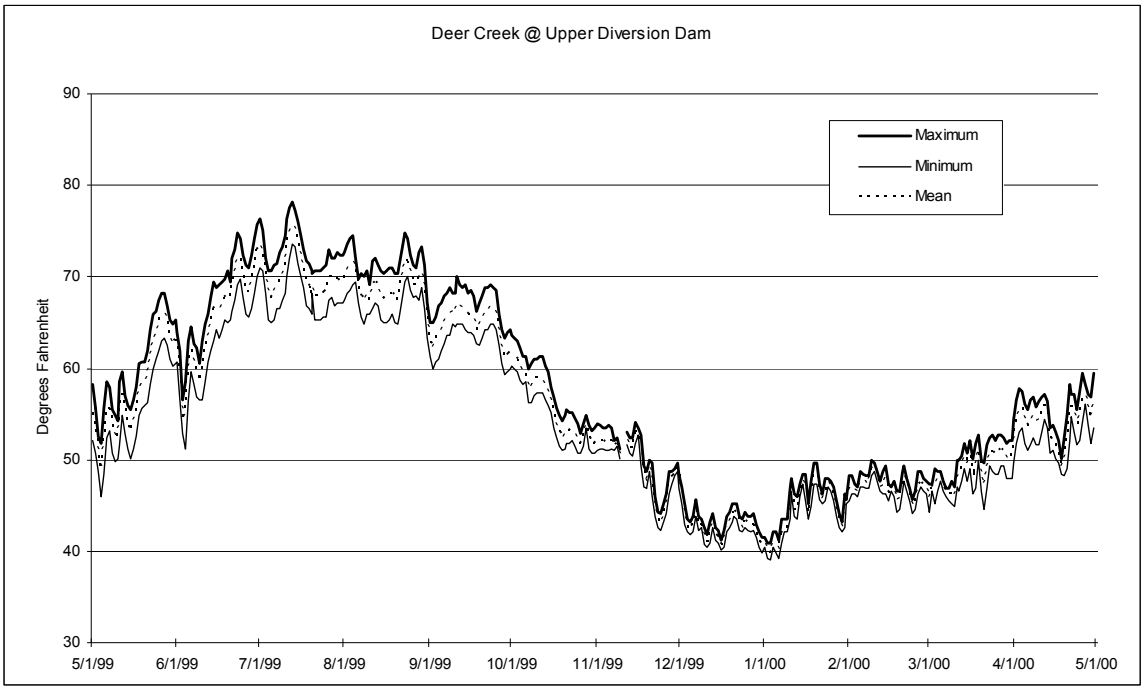
a) April 1, 1997-May 1, 1998



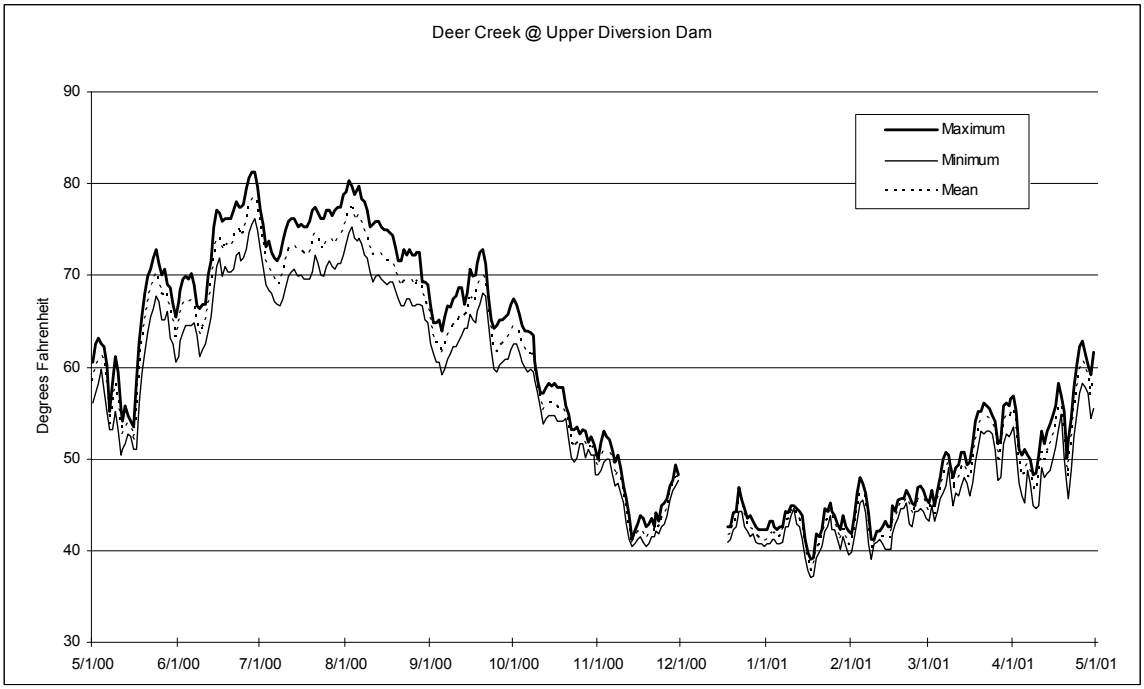
b) May 1, 1998-May 1, 1999



c) May 1, 1999-May 1, 2000



d) May 1, 2000-May 1, 2001



e) May 1, 2001-May 1, 2002

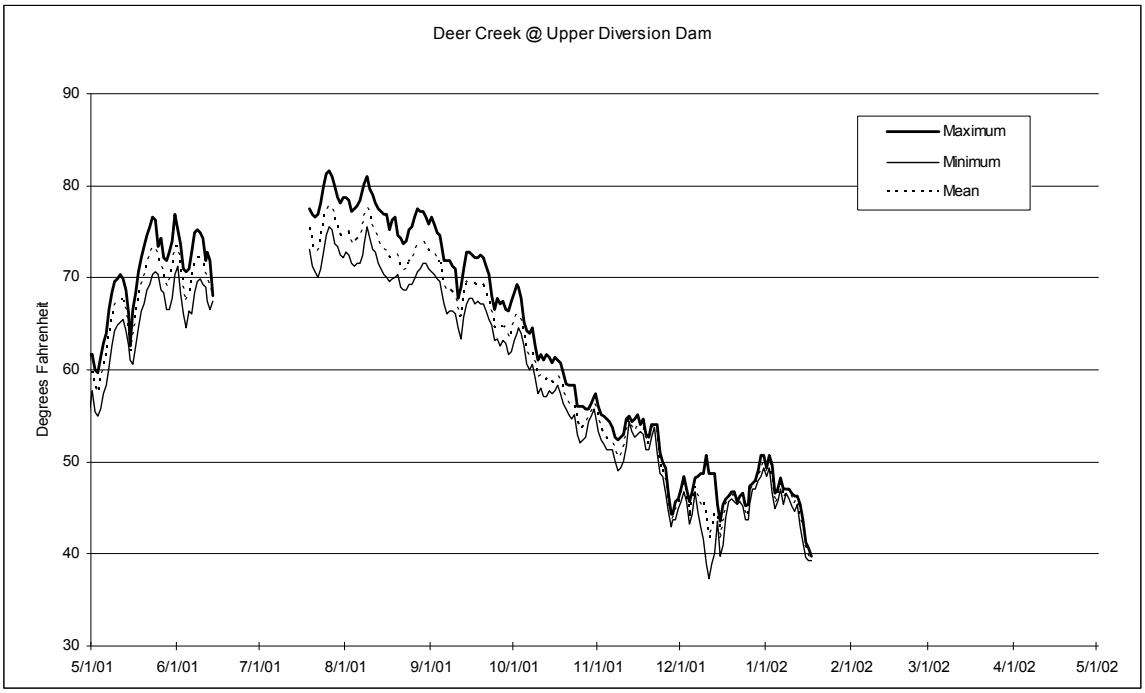
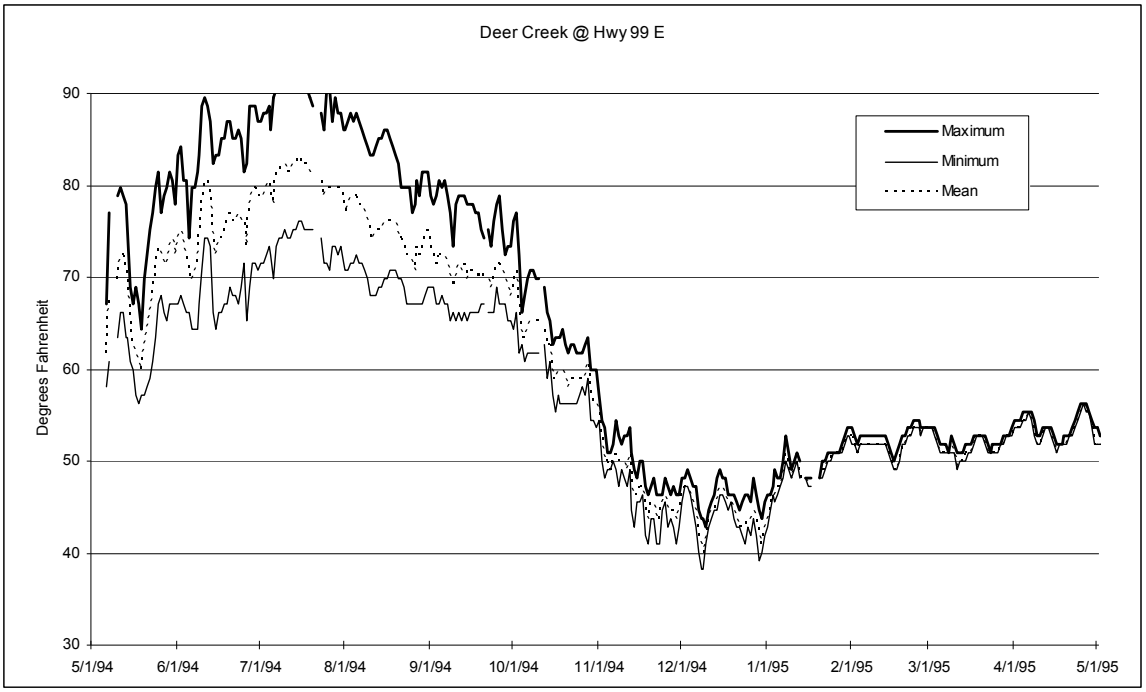
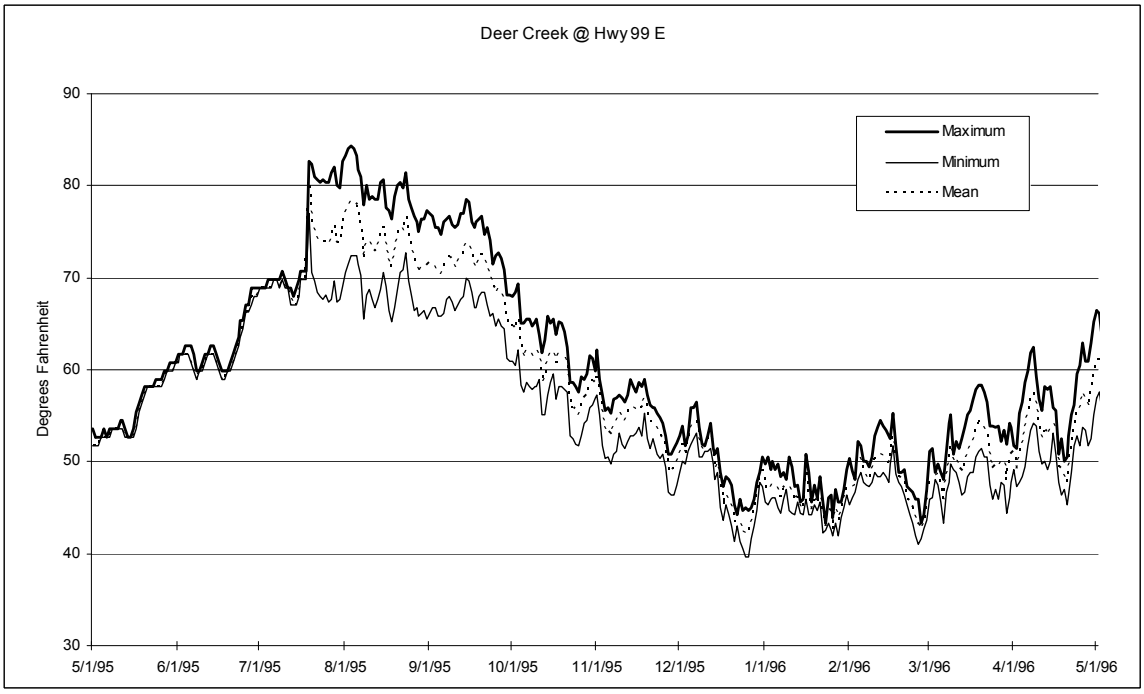


Figure A-10. Water temperature on Deer Creek at Highway 99 (east)

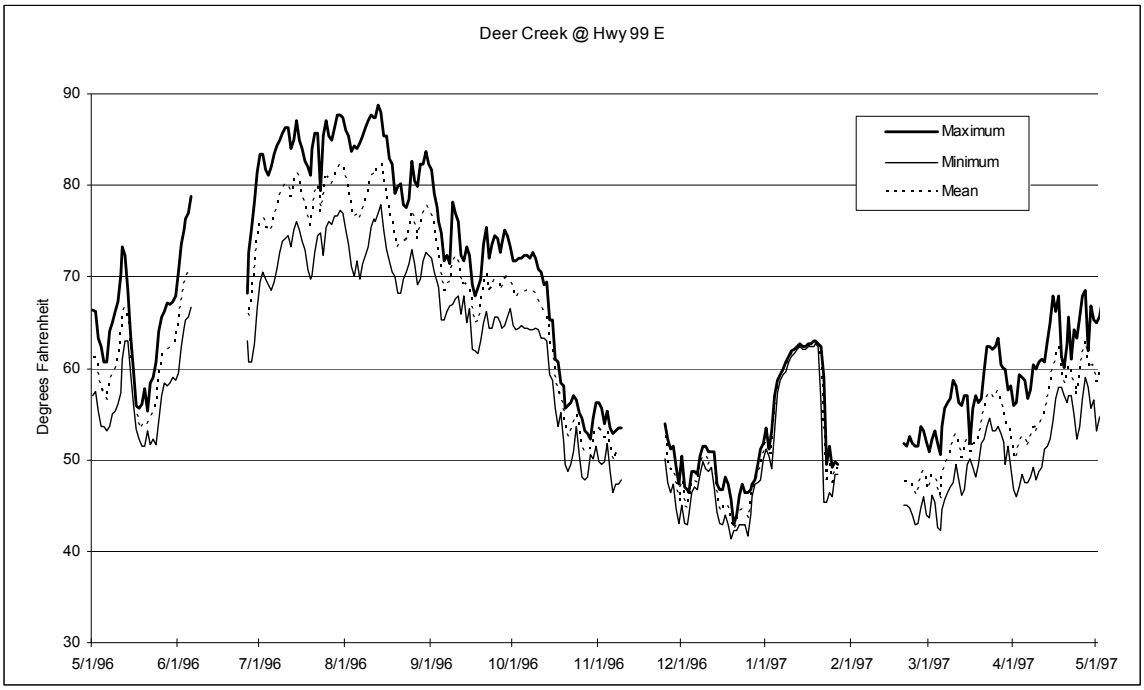
a) May 1, 1994-May 1, 1995



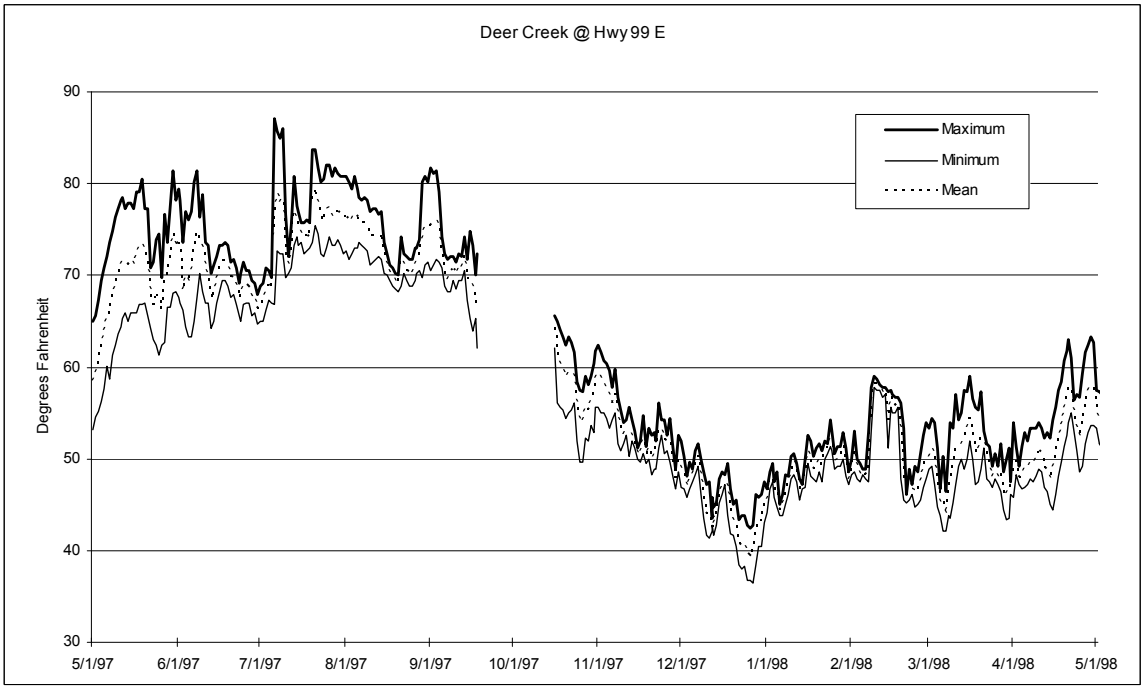
b) May 1, 1995-May 1, 1996



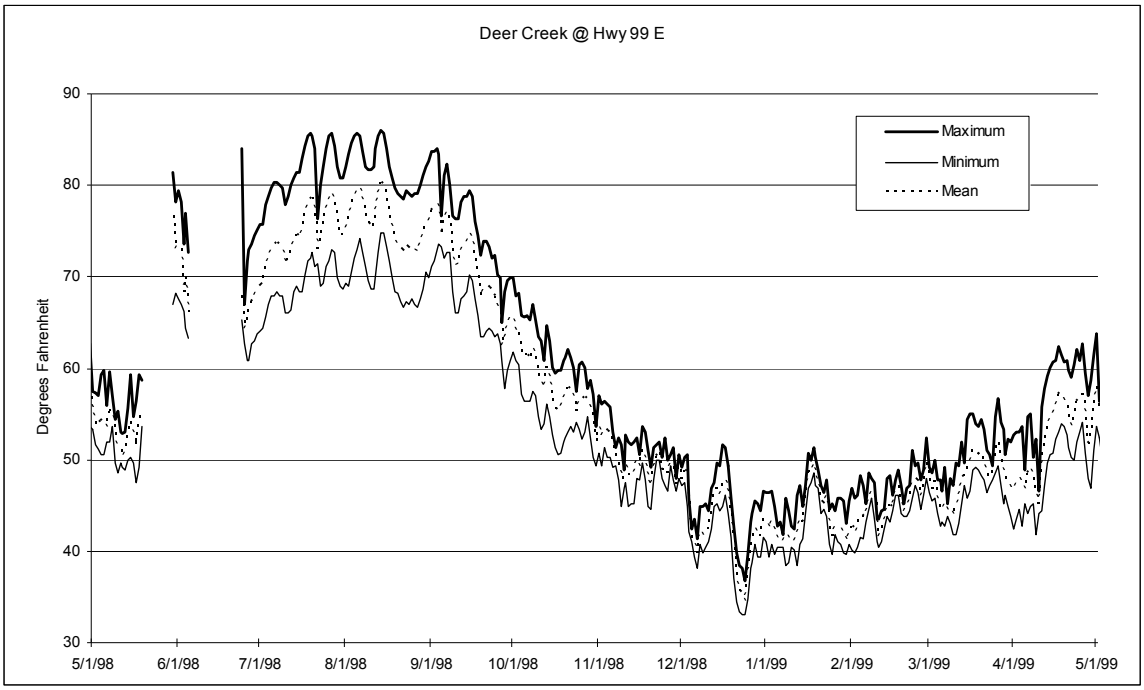
c) May 1, 1996-May 1, 1997



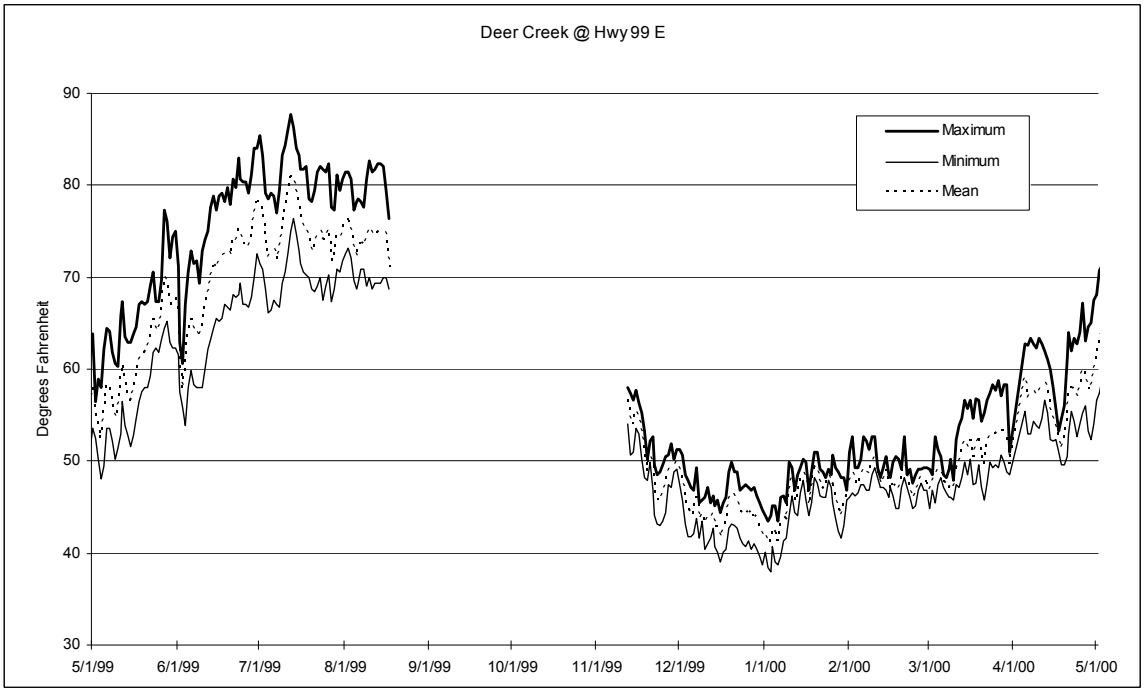
d) May 1, 1997-May 1, 1998



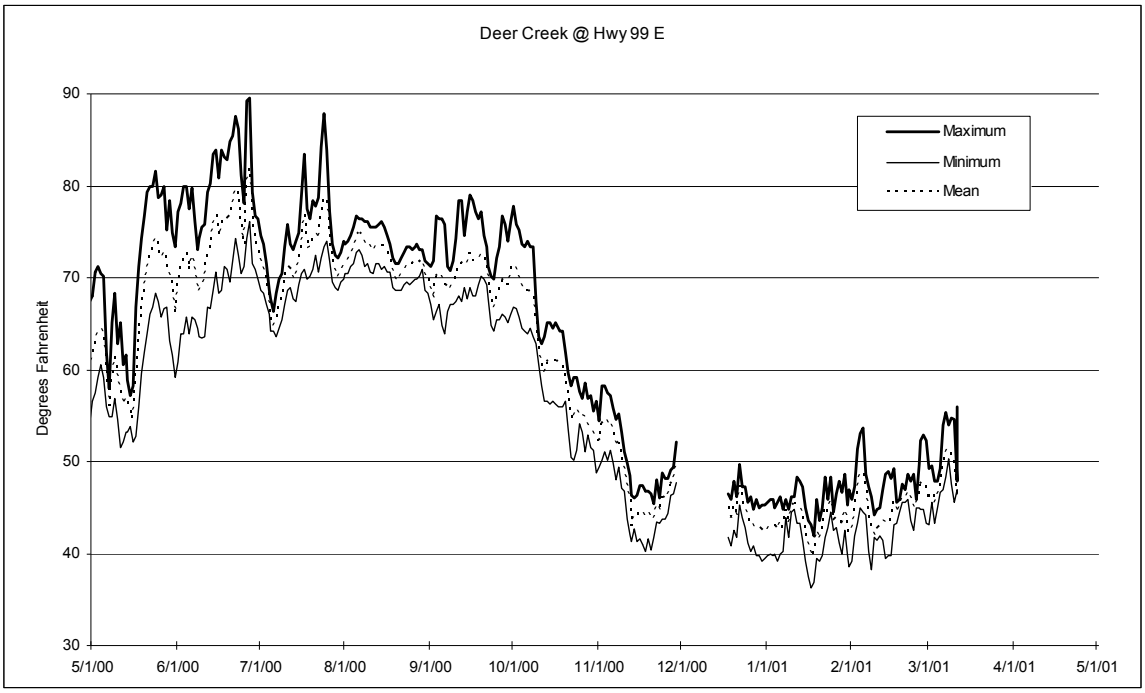
e) May 1, 1998-May 1, 1999



f) May 1, 1999-May 1, 2000



g) May 1, 2000-May 1, 2001



h) May 1, 2001-May 1, 2002

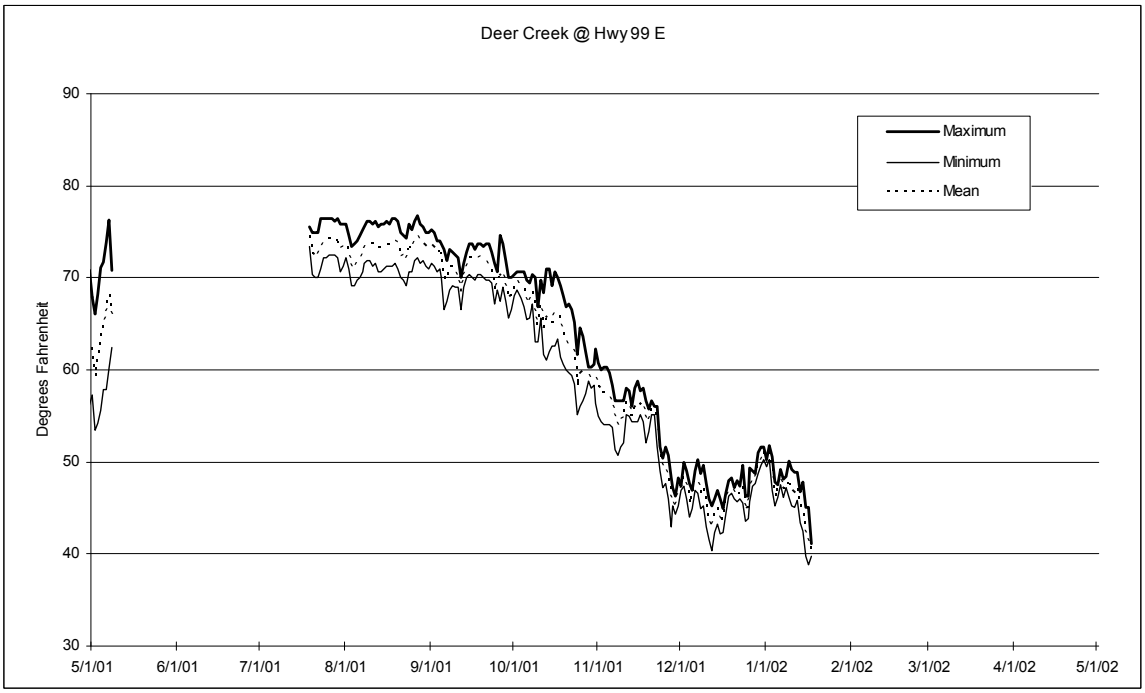
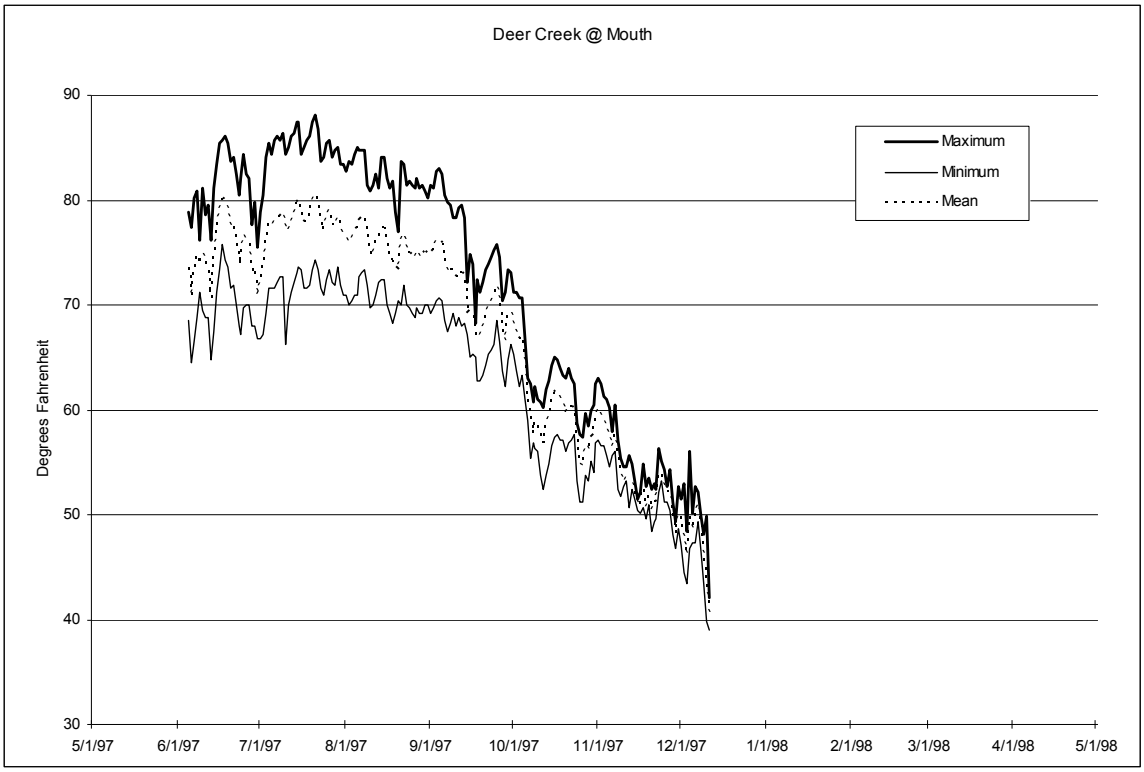
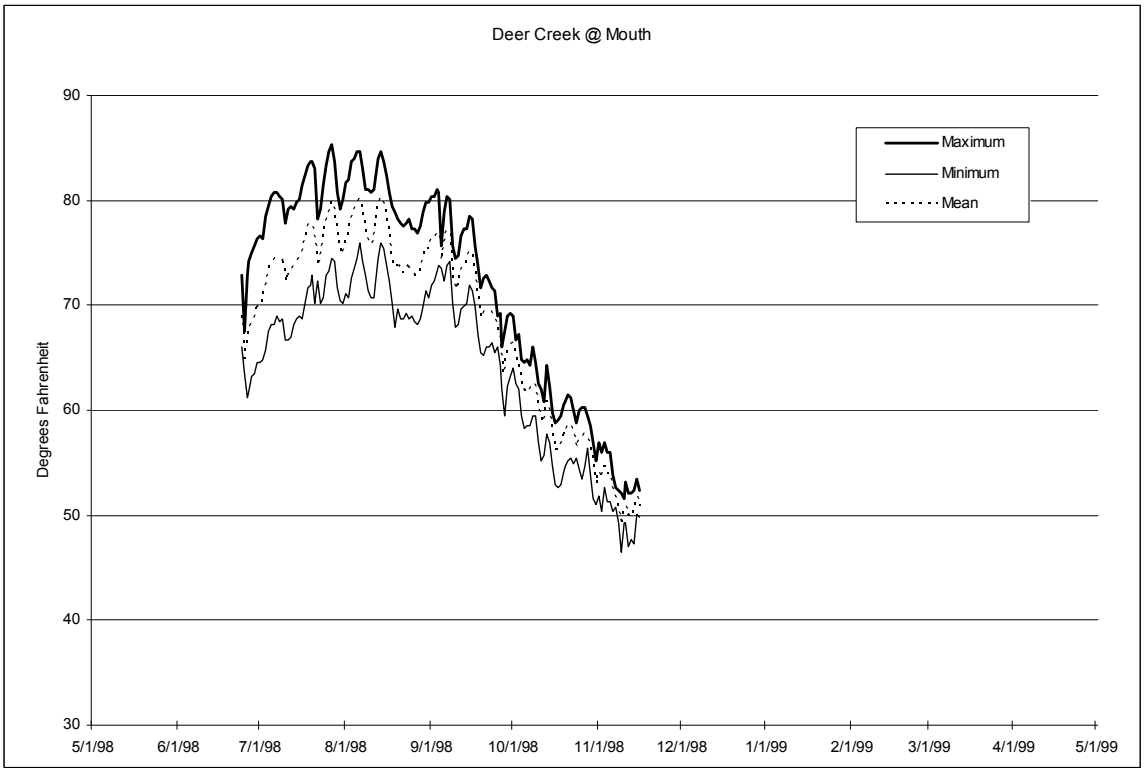


Figure A-11. Water temperature on Deer Creek at the mouth

a) May 1, 1997-May 1, 1998



b) May 1, 1998-May 1, 1999



Appendix B. Physical Water Quality Results

Station Number	Station Name	Date	Time (pst)	Temp (degrees C)	Temp. (degrees F)	D.O. (ppm)	pH (field)	EC(field) (umhos/cm)	EC (lab) (umhos/cm)	Alkalinity RBLab(mg/L)	Turbidity (RBLab,NTU)	TSS mg/L	TDS mg/L
A4-3160	DEER C BL CHILDS MEADOWS	04/29/97	1610	13.7	56.7	8.8	7.3	58	57	27	0.9		
A4-3160	DEER C BL CHILDS MEADOWS	06/11/97	1100	14.2	57.6	9.7	7.3	67	68	32	0.6		
A4-3160	DEER C BL CHILDS MEADOWS	07/08/97	1140	16.7	62.1	9.8	7.4	69	69	36	0.5		
A4-3160	DEER C BL CHILDS MEADOWS	08/06/97	1325	17.6	63.7	9.5	7.6	68	67	36	1.1		
A4-3160	DEER C BL CHILDS MEADOWS	09/15/97	1345	13.1	55.6	9.8	7.9	72	75	83	0.8		
A4-3160	DEER C BL CHILDS MEADOWS	10/21/97	1540	10.6	51.1	9.9	7.5	71	72	40	1.1		
A4-3160	DEER C BL CHILDS MEADOWS	11/17/97	1335	7.1	44.8	10.3	7.4	68	71	36	1.6		
A4-3160	DEER C BL CHILDS MEADOWS	12/09/97	1225	2.5	36.5	11.0	7.3	68	70	35	1.9		
A4-3160	DEER C BL CHILDS MEADOWS	01/22/98	1335	3.6	38.5	12.1	7.3	47	50	24	2.5		
A4-3160	DEER C BL CHILDS MEADOWS	02/18/98	1630	5.8	42.4	11.3	7.2	57	53	28	1.4		
A4-3160	DEER C BL CHILDS MEADOWS	03/23/98	1200	2.8	37.0	12.3	7.0	36	37	18	5.7		
A4-3160	DEER C BL CHILDS MEADOWS	04/24/98	1150	6.1	43.0	11.9	7.2	40	41	25	3.0		
A4-3160	DEER C BL CHILDS MEADOWS	05/21/98	1000	7.1	44.8	11.0	7.3	50	49	34	1.8		
A4-3160	DEER C BL CHILDS MEADOWS	06/24/98	0845	9.2	48.6	9.9	7.3	54	54	25	0.9		
A4-3160	DEER C BL CHILDS MEADOWS	07/21/98	0800	11.2	52.2	9.4	7.5	61	63	31	0		
A4-3160	DEER C BL CHILDS MEADOWS	08/18/98	0715	9.4	48.9	9.9	7.2	63	65	30	0.8		
A4-3160	DEER C BL CHILDS MEADOWS	09/15/98	0745	9.3	48.7	9.7	7.3	66	69	34	0.6	7.8	
A4-3160	DEER C BL CHILDS MEADOWS	10/20/98	0745	4.2	39.6	11.0	7.3	67	69	32	0.6	1.8	
A4-3160	DEER C BL CHILDS MEADOWS	11/16/98	0845	3.5	38.3	11.1	7.3	69	71	37	0.8	0.2	
A4-3160	DEER C BL CHILDS MEADOWS	12/15/98	1015	3.2	37.8	11.2	7.3	57	61	30	1.4	3.6	
A4-3160	DEER C BL CHILDS MEADOWS	01/19/99	0830	2.0	35.6	10.3	7.3	46	50	24	2.9	1.2	
A4-3160	DEER C BL CHILDS MEADOWS	02/16/99	0930	1.9	35.4	11.3	7.1	51	55	26	2	2.4	
A4-3160	DEER C BL CHILDS MEADOWS	03/16/99	0845	2.5	36.5	11.4	7.2	52	55	24	0.9	0	
A4-3160	DEER C BL CHILDS MEADOWS	04/20/99	0715	4.4	39.9	11.0	7.2	43	47	20	2	1.4	
A4-3160	DEER C BL CHILDS MEADOWS	05/18/99	0900	7.9	46.2	9.9	7.2	53	56	27	1	0.8	
A4-3160	DEER C BL CHILDS MEADOWS	06/23/99	0800	11.0	51.8	9.4	7.3	62	64	32	1.2	1	
A4-3160	DEER C BL CHILDS MEADOWS	07/20/99	0800	9.5	49.1	9.8	7.2	64	67	35	0.9	0.2	
A4-3160	DEER C BL CHILDS MEADOWS	08/18/99	0730	8.7	47.7	9.9	7.2	66	70	30	0.6	0.2	
A4-3160	DEER C BL CHILDS MEADOWS	11/08/99	0815	5.3	41.5	10.5	7.0	63	67	32	3.4	5	76
A4-3160	DEER C BL CHILDS MEADOWS	01/20/00	0900	2.4	36.3	11.0	6.9	48	51	25	4		
A4-3160	DEER C BL CHILDS MEADOWS	02/14/00	1030	6.0	42.8	11.5	7.0	29	30	12	26	93	52
A4-3160	DEER C BL CHILDS MEADOWS	04/04/00	1000	5.1	41.2	11.5	7.8	48	51	26	1.3		
A4-3160	DEER C BL CHILDS MEADOWS	04/17/00	0915	5.7	42.3	10.2	7.3	46	50	23	2.2		
A4-3160	DEER C BL CHILDS MEADOWS	05/08/00	1315	11.8	53.2	9.8	7.9	55	67	40	0.6		
		Maximum		**17.6**	**63.7**	**12.3**	**7.9**	**72.0**	**75.0**	**83.0**	**26.0**	**93.0**	**76.0**
		Minimum		**1.9**	**35.4**	**8.8**	**6.9**	**29.0**	**30.0**	**12.0**	**0.0**	**0.0**	**52.0**

Station Number	Station Name	Date	Time (pst)	Temp (degrees C)	Temp. (degrees F)	D.O. (ppm)	pH (field)	EC(field) (umhos/cm)	EC (lab) (umhos/cm)	Alkalinity RBLab(mg/L)	Turbidity (RBLab,NTU)	TSS mg/L	TDS mg/L
A4-3158	DEER C BL ELAM C CAMPGROUND	06/11/97	1120	13.7	56.7	9.7	7.4	72	72	35	0.5		
A4-3158	DEER C BL ELAM C CAMPGROUND	07/08/97	1215	16.6	61.9	9.6	7.7	67	76	41	0.5		
A4-3158	DEER C BL ELAM C CAMPGROUND	08/06/97	1400	18.0	64.4	9.1	7.9	79	77	42	3.3		
A4-3158	DEER C BL ELAM C CAMPGROUND	09/15/97	0930	9.1	48.4	10.5	8.0	82	82	43	0.75		
A4-3158	DEER C BL ELAM C CAMPGROUND	05/22/98	1025	7.6	45.7	11.5	7.4	52	51	27	0.83		
A4-3158	DEER C BL ELAM C CAMPGROUND	06/24/98	0915	9.2	48.6	10.3	7.4	56	56	27	1.4		
A4-3158	DEER C BL ELAM C CAMPGROUND	07/21/98	0830	10.9	51.6	9.7	7.5	65	66	29	0.7		
A4-3158	DEER C BL ELAM C CAMPGROUND	08/18/98	0750	9.1	48.4	10.0	7.6	69	71	33	0.6		
A4-3158	DEER C BL ELAM C CAMPGROUND	09/15/98	0815	9.2	48.6	9.8	7.6	73	75	36	0.6		
A4-3158	DEER C BL ELAM C CAMPGROUND	05/24/99	1100	10.2	50.4	9.9	7.4	57	59	29	1.1		
A4-3158	DEER C BL ELAM C CAMPGROUND	07/23/99	0815	8.7	47.7	9.9	7.7	70	75	43	0.7		
A4-3158	DEER C BL ELAM C CAMPGROUND	08/19/99	0830	8.2	46.8	9.8	7.3	73	78	35	0.5		
		Maximum		**18.0**	**64.4**	**11.5**	**8.0**	**82.0**	**82.4**	**43.0**	**3.3**		
		Minimum		**7.6**	**45.7**	**9.1**	**7.3**	**52.0**	**51.0**	**27.0**	**0.5**		
A4-3156	DEER C BL ALDER C CAMPGROUND	6/11/1997	1135	12.6	54.7	10.2	7.5	84	85	41	0.4		
A4-3156	DEER C BL ALDER C CAMPGROUND	07/08/97	1235	15.3	59.5	10.0	7.9	92	91	49	0.2		
A4-3156	DEER C BL ALDER C CAMPGROUND	08/06/97	1420	16.1	61.0	9.4	8.1	96	94	49	0.56		
A4-3156	DEER C BL ALDER C CAMPGROUND	09/15/97	0910	9.6	49.3	9.4	7.8	97	98	49	0.52		
A4-3156	DEER C BL ALDER C CAMPGROUND	05/22/98	1040	6.7	44.1	11.4	7.4	57	58	28	0.68		
A4-3156	DEER C BL ALDER C CAMPGROUND	06/24/98	0930	9.6	49.3	10.3	7.4	64	58	28	0.68		
A4-3156	DEER C BL ALDER C CAMPGROUND	07/21/98	0845	11.7	53.1	9.9	7.6	77	79	34	0.6		
A4-3156	DEER C BL ALDER C CAMPGROUND	08/18/98	0800	10.1	50.2	10.2	7.6	84	86	41	0.5		
A4-3156	DEER C BL ALDER C CAMPGROUND	09/15/98	0930	10.4	50.7	10.0	7.5	89	91	44	0.5		
A4-3156	DEER C BL ALDER C CAMPGROUND	05/24/99	1115	9.7	49.5	10.1	7.5	65	67	33	0.7		
A4-3156	DEER C BL ALDER C CAMPGROUND	07/23/99	0845	9.7	49.5	10.2	7.6	86	90	53	0.6		
A4-3156	DEER C BL ALDER C CAMPGROUND	08/19/99	0845	9.2	48.6	10.0	7.4	90	95	43	0.4		
		Maximum		**16.1**	**61.0**	**11.4**	**8.1**	**97.0**	**98.0**	**53.0**	**0.7**		
		Minimum		**6.7**	**44.1**	**9.4**	**7.4**	**57.0**	**58.0**	**28.0**	**0.2**		

Station Number	Station Name	Date	Time (pst)	Temp (degrees C)	Temp. (degrees F)	D.O. (ppm)	pH (field)	EC(field) (umhos/cm)	EC (lab) (umhos/cm)	Alkalinity RBLab(mg/L)	Turbidity (RBLab,NTU)	TSS mg/L	TDS mg/L
A4-3154	DEER C A UPPER FALLS	06/11/97	1000	11.7	53.1	10.7	7.5	90	90	46	0.5		
A4-3154	DEER C A UPPER FALLS	07/08/97	1310	15.7	60.3	10.1	8.0	97					
A4-3154	DEER C A UPPER FALLS	08/06/97	1525	16.0	60.8	9.4	8.0	101	99	55	0.3		
A4-3154	DEER C A UPPER FALLS	09/10/97	1645	13.2	55.8	10.4	7.8	102	102	52	0.21		
A4-3154	DEER C A UPPER FALLS	10/24/97	1320			10.0	7.8		102	55	0.2		
A4-3154	DEER C A UPPER FALLS	11/17/97	1430	6.7	44.1	10.8	7.9	95	96	48	0.78		
A4-3154	DEER C A UPPER FALLS	12/09/97	1320	2.2	36.0	12.7	7.6	91	91	47	0.65		
A4-3154	DEER C A UPPER FALLS	01/22/98	1300	4.0	39.2	12.6	7.4	60	63	32	2		
A4-3154	DEER C A UPPER FALLS	02/17/98	1600	5.1	41.2	12.3	7.4	74					
A4-3154	DEER C A UPPER FALLS	03/23/98	1230	4.3	39.7	13.0	7.3	43	45	23	4.3		
A4-3154	DEER C A UPPER FALLS	04/28/98	1115	6.7	44.1	12.6	7.4	52	54	26	1.6		
A4-3154	DEER C A UPPER FALLS	05/22/98	0955	6.4	43.5	12.4	7.5	62	62	31	0.68		
A4-3154	DEER C A UPPER FALLS	06/24/98	0945	10.0	50.0	11.0	7.4	68					
A4-3154	DEER C A UPPER FALLS	07/21/98	0900	12.3	54.1	10.2	7.6	83	84	39	0.6		
A4-3154	DEER C A UPPER FALLS	08/18/98	0815	10.6	51.1	11.0	7.6	89	91	44	0.4		
A4-3154	DEER C A UPPER FALLS	09/15/98	0845	10.7	51.3	10.3	7.6	98	97	47	0.4		
A4-3154	DEER C A UPPER FALLS	10/20/98	0830	6.0	42.8	11.5	7.3	96	99	48	0.5		
A4-3154	DEER C A UPPER FALLS	11/17/98	0900	4.7	40.5	13.0	7.4	87	90	45	1.5		
A4-3154	DEER C A UPPER FALLS	12/17/98	1000	3.4	38.1	12.0	7.4	83	85	41	0.8		
A4-3154	DEER C A UPPER FALLS	01/21/99	1000	3.3	37.9	12.6	7.4	53	57	27	3		
A4-3154	DEER C A UPPER FALLS	02/18/99	0845	3.8	38.8	12.0	7.3	61	61	27	1.7		
A4-3154	DEER C A UPPER FALLS	03/18/99	0830	4.2	39.6	12.2	7.7	62	65	30	0.8		
A4-3154	DEER C A UPPER FALLS	04/22/99	1100	5.2	41.4	11.9	7.3	56	58	28	1.1		
A4-3154	DEER C A UPPER FALLS	05/24/99	1120	10.1	50.2	10.7	7.6	69	71	35	0.6		
A4-3154	DEER C A UPPER FALLS	06/24/99	1435	17.1	62.8	9.3	7.9	84	89	45	0.5		
A4-3154	DEER C A UPPER FALLS	07/23/99	0900	10.1	50.2	10.6	7.8	90	96	58	0.5		
A4-3154	DEER C A UPPER FALLS	08/19/99	0915	9.9	49.8	10.5	7.8	96	100	47	0.4		
		Maximum		**17.1**	**62.8**	**13.0**	**8.0**	**102.0**	**102.0**	**58.0**	**4.3**		
		Minimum		**2.2**	**36.0**	**9.3**	**7.3**	**43.0**	**45.0**	**23.0**	**0.2**		
A4-3152	DEER C BL POTATO PATCH CAMPGROUND	06/11/97	1200	13.4	56.1	10.1	7.5	92	93	46	0.4		
A4-3152	DEER C BL POTATO PATCH CAMPGROUND	07/08/97	1355	16.5	61.7	10.0	8.0	100					
A4-3152	DEER C BL POTATO PATCH CAMPGROUND	08/06/97	1545	16.6	61.9	9.4	8.0	104	102	55	0.21		
A4-3152	DEER C BL POTATO PATCH CAMPGROUND	09/15/97	1410	11.5	52.7	10.2	8.0	105	104	50	0.45		
A4-3152	DEER C BL POTATO PATCH CAMPGROUND	05/22/98	1050	7.2	45.0	11.4	7.4	63	62	33	0.62		
A4-3152	DEER C BL POTATO PATCH CAMPGROUND	06/24/98	1000	10.6	51.1	10.4	7.6	63					
A4-3152	DEER C BL POTATO PATCH CAMPGROUND	07/21/98	0915	13.2	55.8	9.8	7.6	86	87	37	0.6		
A4-3152	DEER C BL POTATO PATCH CAMPGROUND	08/18/98	0830	11.4	52.5	9.9	7.6	93	95	46	0.4		
A4-3152	DEER C BL POTATO PATCH CAMPGROUND	09/15/98	0900	11.4	52.5	9.8	7.6	97	100	49	0.4		
A4-3152	DEER C BL POTATO PATCH CAMPGROUND	05/24/99	1130	10.8	51.4	9.8	7.4	72	73	36	0.5		
A4-3152	DEER C BL POTATO PATCH CAMPGROUND	07/23/99	0930	11.0	51.8	9.9	7.8	95	100	58	0.5		
A4-3152	DEER C BL POTATO PATCH CAMPGROUND	08/19/99	0930	10.6	51.1	9.8	7.9	99		56			
		Maximum		**16.6**	**61.9**	**11.4**	**8.0**	**105.0**	**104.0**	**58.0**	**0.6**		
		Minimum		**7.2**	**45.0**	**9.4**	**7.4**	**63.0**	**62.0**	**33.0**	**0.2**		

Station Number	Station Name	Date	Time (pst)	Temp (degrees C)	Temp. (degrees F)	D.O. (ppm)	pH (field)	EC(field) (umhos/cm)	EC (lab) (umhos/cm)	Alkalinity RBLab(mg/L)	Turbidity (RBLab,NTU)	TSS mg/L	TDS mg/L
A4-3150	DEER C A A-LINE	04/29/97	1200	9.6	49.3	10.6	7.6	75	74	41	0.5	0.6	
A4-3150	DEER C A A-LINE	06/11/97	0905	12.9	55.2	10.4	7.6	94	95	33	0.4		
A4-3150	DEER C A A-LINE	07/08/97	1015	15.9	60.6	10.5	8.1	103	101	52	0.2	0.2	
A4-3150	DEER C A A-LINE	08/07/97	1545	18.0	64.4	9.4	8.2	107	102	52	0.21		
A4-3150	DEER C A A-LINE	09/18/97	1730	12.8	55.0	10.0	7.8	104	105	55	0.35		
A4-3150	DEER C A A-LINE	10/21/97	1340	8.7	47.7	11.2	7.6	108	100	60	0.7		
A4-3150	DEER C A A-LINE	11/17/97	1630	4.8	40.6	11.2	7.6		102	51	0.64		
A4-3150	DEER C A A-LINE	12/09/97	1415	3.0	37.4	12.5	7.6	96	96	47	0.59		
A4-3150	DEER C A A-LINE	01/22/98	1210	4.7	40.5	12.6	7.4	67	69	34	2		
A4-3150	DEER C A A-LINE	02/18/98	1630	5.5	41.9	12.5	7.5	77	77	38	0.62		
A4-3150	DEER C A A-LINE	03/18/98	1030	4.2	39.6	13.2	7.4	61	63	29	0.64		
A4-3150	DEER C A A-LINE	04/28/98	1015	6.6	43.9	13.4	7.4	54	56	28	1.8		
A4-3150	DEER C A A-LINE	05/22/98	0910	6.7	44.1	12.0	7.6	65	65	32	0.58		
A4-3150	DEER C A A-LINE	06/24/98	1040	11.3	52.3	10.2	7.6	63	70	32	0.59		
A4-3150	DEER C A A-LINE	07/21/98	0745	14.6	58.3	9.2	7.6	89	89	38	0.5		
A4-3150	DEER C A A-LINE	08/18/98	0755	13.0	55.4	9.2	7.9	96	96	49	0.3		
A4-3150	DEER C A A-LINE	09/15/98	0745	12.9	55.2	9.4	7.8	101	102	57	0.2		
A4-3150	DEER C A A-LINE	10/20/98	0725	7.9	46.2	10.5	7.6	96	104	50	0.4		
A4-3150	DEER C A A-LINE	11/17/98	1010	6.0	42.8	13.4	7.4	95	98	48	0.8		
A4-3150	DEER C A A-LINE	12/17/98	1030	4.7	40.5	11.6	7.6	88	91	45	0.7		
A4-3150	DEER C A A-LINE	01/19/99	1050	6.1	43.0	12.0	7.3	62	66	34	1.8	0.4	
A4-3150	DEER C A A-LINE	03/16/99	1100	5.1	41.2	12.0	7.4	69	73	33	0.7	1.2	
A4-3150	DEER C A A-LINE	04/22/99	1130	6.1	43.0	11.6	7.5	59	62	31	0.8		
A4-3150	DEER C A A-LINE	05/24/99	1200	11.8	53.2	10.0	8.0	69	71	34	0.6		
A4-3150	DEER C A A-LINE	07/23/99	1000	12.5	54.5	9.9	7.8	97	102	58	0.5		
A4-3150	DEER C A A-LINE	08/19/99	1030	12.3	54.1	9.7	7.9	101	106	50	0.4		
A4-3150	DEER C A A-LINE	01/20/00	1015	5.4	41.7	12.2	7.3	70	72	33	2.5		
A4-3150	DEER C A A-LINE	02/14/00	1145	4.1	39.4	12.2	7.8	43	46	20	29	106	52
A4-3150	DEER C A A-LINE	04/04/00	1145	7.6	45.7	11.2	8.0	64	67	36	0.8		
A4-3150	DEER C A A-LINE	04/17/00	1015	6.6	43.9	11.4	7.7	58	63	31	1.1		
A4-3150	DEER C A A-LINE	05/08/00	1430	10.6	51.1	10.7	8.1	74	76	39			
A4-3150	DEER C A A-LINE	06/06/00	0830	12.1	53.8	10.0	8.2	95	99	56	0.3		
A4-3150	DEER C A A-LINE	07/27/00	1400	17.3	63.1	9.0	8.3	108	106	54	0.3		
A4-3150	DEER C A A-LINE	08/23/00	1435	14.7	58.5	9.3	8.2	113	114	57	0.2		
		Maximum		**18.0**	**64.4**	**13.4**	**8.3**	**113.0**	**114.0**	**60.0**	**29.0**	**106.0**	**52.0**
		Minimum		**3.0**	**37.4**	**9.0**	**7.3**	**43.0**	**46.0**	**20.0**	**0.2**	**0.2**	**52.0**

Station Number	Station Name	Date	Time (pst)	Temp (degrees C)	Temp. (degrees F)	D.O. (ppm)	pH (field)	EC(field) (umhos/cm)	EC (lab) (umhos/cm)	Alkalinity RBLab(mg/L)	Turbidity (RBLab,NTU)	TSS mg/L	TDS mg/L
A4-3145	DEER C A PONDEROSA WAY	04/29/97	0930	10.8	51.4	10.9	7.6	86	83	41	0.6		
A4-3145	DEER C A PONDEROSA WAY	6/4/1997	1545	15.1	59.2	10.8	8.0	98	99	47	0.6		
A4-3145	DEER C A PONDEROSA WAY	07/09/97	1720	21.3	70.3	9.0	8.0	116	111	60	0.2		
A4-3145	DEER C A PONDEROSA WAY	08/14/97	1700	21.3	70.3	9.3	8.1	121	119	61	0.2		
A4-3145	DEER C A PONDEROSA WAY	09/16/97	1810	14.8	58.6	10.1	8.0	121	135	154	0.22		
A4-3145	DEER C A PONDEROSA WAY	10/22/97	0955	8.9	48.0	11.4	8.1	105	123	64.0	0.15		
A4-3145	DEER C A PONDEROSA WAY	11/18/97	0830			11.0	7.8		118	61	0.51		
A4-3145	DEER C A PONDEROSA WAY	12/12/97	1500	4.9	40.8	12.6	7.8	108	114	56	0.3		
A4-3145	DEER C A PONDEROSA WAY	01/26/98	1315	7.1	44.8	11.9	7.5	69	69	35	2.5		
A4-3145	DEER C A PONDEROSA WAY	04/21/98	1740	12.0	53.6	11.8	7.5	71	72	35	1.5		
A4-3145	DEER C A PONDEROSA WAY	05/19/98	0845	9.3	48.7	11.4	7.6	74	74	37	1.1		
A4-3145	DEER C A PONDEROSA WAY	06/24/98	1345	15.5	59.9	9.9	7.8	71	78	37	0.71		
A4-3145	DEER C A PONDEROSA WAY	07/21/98	1100	18.3	64.9	9.2	8.1	101	100	45	0.5		
A4-3145	DEER C A PONDEROSA WAY	08/18/98	1030	16.0	60.8	9.5	8.0	109	109	53	0.4		
A4-3145	DEER C A PONDEROSA WAY	09/15/98	1030	15.5	59.9	9.7	8.0	113	115	52	0.2		
A4-3145	DEER C A PONDEROSA WAY	10/20/98	1020	8.7	47.7	11.2	8.0	110	0	57			
A4-3145	DEER C A PONDEROSA WAY	11/16/98	1040	6.9	44.4	11.8	7.8	113	118	58	0.3	0.6	
A4-3145	DEER C A PONDEROSA WAY	04/20/99	1100	9.7	49.5	11.2	7.4	63	67	30	1.9	1	
A4-3145	DEER C A PONDEROSA WAY	05/18/99	1300	12.4	54.3	10.3	7.6	76	80	39	0.7	1.4	
A4-3145	DEER C A PONDEROSA WAY	06/23/99	1200	18.8	65.8	8.8	8.0	102	104	51	1.1	0	
A4-3145	DEER C A PONDEROSA WAY	07/20/99	1130	16.8	62.2	9.3	8.0	112	114	59	0.5	0.2	
A4-3145	DEER C A PONDEROSA WAY	08/18/99	0930	15.2	59.4	9.5	7.8	117	120	54	0.3	0.6	
A4-3145	DEER C A PONDEROSA WAY	11/08/99	1230	9.5	49.1	10.9	7.5	116	118	58	1.9	5	98
A4-3145	DEER C A PONDEROSA WAY	06/06/00	1115	15.4	59.7	10.0	8.1	109	110	64	0.2		
		Maximum		**21.3**	**70.3**	**12.6**	**8.1**	**121.0**	**135.0**	**154.0**	**2.5**	**5.0**	**98.0**
		Minimum		**4.9**	**40.8**	**8.8**	**7.4**	**63.0**	**0.4**	**30.0**	**0.2**	**0.0**	**98.0**
A4-3140	DEER C A APPERSON COW CAMP	06/21/97	0935	18.9	66.0	10.6	7.9	126	128	60	0.2		
A4-3140	DEER C A APPERSON COW CAMP	11/15/97	1110	7.9	46.2	12.0	7.9		140	46	0.66		
A4-3140	DEER C A APPERSON COW CAMP	05/23/98	0730	11.1	52.0	11.6	7.7	82	81	40	0.69	0.4	
		Maximum		**18.9**	**66.0**	**12.0**	**7.9**	**126.0**	**140.0**	**60.0**	**0.7**	**0.4**	
		Minimum		**7.9**	**46.2**	**10.6**	**7.7**	**82.0**	**81.0**	**40.0**	**0.2**	**0.4**	

Station Number	Station Name	Date	Time (pst)	Temp (degrees C)	Temp. (degrees F)	D.O. (ppm)	pH (field)	EC(field) (umhos/cm)	EC (lab) (umhos/cm)	Alkalinity RBLab(mg/L)	Turbidity (RBLab,NTU)	TSS mg/L	TDS mg/L
A0-4341	DEER C A UPPER DIV DM	04/28/97	1230	14.0	57.2	10.0	7.7	95	96	44	0.8		
A0-4341	DEER C A UPPER DIV DM	06/05/97	1150	18.0	64.4	11.1	8.2	116	116	52	0.5		
A0-4341	DEER C A UPPER DIV DM	07/10/97	1200	24.0	75.2	10.0	8.3	138	138	66	1.3		
A0-4341	DEER C A UPPER DIV DM	08/15/97	1245	24.3	75.7	10.1	8.3	147	145	134	0.7		
A0-4341	DEER C A UPPER DIV DM	09/19/97	0745	16.0	60.8	10.1	8.1	148	148	76	0.6		
A0-4341	DEER C A UPPER DIV DM	10/16/97	1220	14.4	57.9	11.1	8.3	153	150	66	0.2		
A0-4341	DEER C A UPPER DIV DM	11/13/97	1600	10.2	50.4	11.4	8.0	150	156	73	0.37		
A0-4341	DEER C A UPPER DIV DM	12/12/97	1130	5.8	42.4	13.0	8.0	128	132	62	0.25		
A0-4341	DEER C A UPPER DIV DM	01/23/98	1415	7.4	45.3	12.4	7.4	87	86	40	1.8		
A0-4341	DEER C A UPPER DIV DM	02/20/98	1000	6.9	44.4	13.2	7.4	72	73	35	2.5		
A0-4341	DEER C A UPPER DIV DM	03/19/98	1020	8.9	48.0	13.0	7.6	79	81	37	1.1	0.6	
A0-4341	DEER C A UPPER DIV DM	04/23/98	1210	11.9	53.4	11.9	7.6	74	75	37	1.2		
A0-4341	DEER C A UPPER DIV DM	05/20/98	1500	13.4	56.1	11.3	7.8	82	82	38	1.0		
A0-4341	DEER C A UPPER DIV DM	06/24/98	1600	18.8	65.8	9.6	7.9	80	86	42	0.75		
A0-4341	DEER C A UPPER DIV DM	07/21/98	1400	23.5	74.3	9.2	8.2	117	116	52	0.50		
A0-4341	DEER C A UPPER DIV DM	08/18/98	1325	21.8	71.2	9.3	8.3	128	130	59	0.5	6.2	
A0-4341	DEER C A UPPER DIV DM	09/15/98	1340	21.6	70.9	9.3	8.3	136	138	57	0.3		
A0-4341	DEER C A UPPER DIV DM	10/20/98	1330	12.9	55.2	11.1	8.3	146	144	63	0.4	2.2	
A0-4341	DEER C A UPPER DIV DM	11/16/98	1415	8.9	48.0	12.1	8.2	139	144	66	0.3	0.6	
A0-4341	DEER C A UPPER DIV DM	12/15/98	1400	5.5	41.9	11.9	7.6	107	109	52	0.7	4.6	
A0-4341	DEER C A UPPER DIV DM	01/19/99	1400	8.4	47.1	11.5	7.5	79	83	37	2.2	0.4	
A0-4341	DEER C A UPPER DIV DM	02/16/99	1320	7.0	44.6	11.4	7.4	83	89	40	3	2.2	
A0-4341	DEER C A UPPER DIV DM	03/16/99	1350	8.5	47.3	11.5	7.6	86	93	42	0.6	1.2	
A0-4341	DEER C A UPPER DIV DM	04/20/99	1330	13.3	55.9	12.4	7.6	73	77	33	1.6	1.6	
A0-4341	DEER C A UPPER DIV DM	05/18/99	1430	15.7	60.3	10.1	7.9	87	91	43	0.6	1	
A0-4341	DEER C A UPPER DIV DM	06/23/99	1430	23.9	75.0	8.2	8.1	121	122	58	0.2	2	
A0-4341	DEER C A UPPER DIV DM	07/20/99	1545	21.6	70.9	9.2	8.5	134	136	56	0.5	0.4	
A0-4341	DEER C A UPPER DIV DM	08/18/99	1300	21.5	70.7	9.7	8.2	139	144	61	0.5	1.2	
A0-4341	DEER C A UPPER DIV DM	11/08/99	1445	11.6	52.9	11.2	8.0	159	160	69	2.6	13	119
A0-4341	DEER C A UPPER DIV DM	01/20/00	1230	9.2	48.6	11.8	7.5	88	91	41	2.3		
A0-4341	DEER C A UPPER DIV DM	02/14/00	1410	9.0	48.2	11.5	7.9	56	59	26	35	145	60
A0-4341	DEER C A UPPER DIV DM	04/05/00	945	11	51.8	11.2	8.0	84	86	41	0.7		
A0-4341	DEER C A UPPER DIV DM	04/17/00	1240	10.4	50.7	11.2	8.1	80	84	37	1.4		
A0-4341	DEER C A UPPER DIV DM	06/06/00	1330	20.7	69.3	9.7	8.2	128	131	69	0.3		
A0-4341	DEER C A UPPER DIV DM	07/28/00	950	22.7	72.9	9.2	8.2	151	155	71	0.6		
A0-4341	DEER C A UPPER DIV DM	09/06/00	1200	16.7	62.1	9.9	8.3	155	157	71	0.4		
		Maximum		**24.3**	**75.7**	**13.2**	**8.5**	**159.0**	**160.0**	**134.0**	**35.0**	**145.0**	**119.0**
		Minimum		**5.5**	**41.9**	**8.2**	**7.4**	**56.0**	**59.0**	**26.0**	**0.2**	**0.4**	**60.0**

Station Number	Station Name	Date	Time (pst)	Temp (degrees C)	Temp. (degrees F)	D.O. (ppm)	pH (field)	EC(field) (umhos/cm)	EC (lab) (umhos/cm)	Alkalinity RBLab(mg/L)	Turbidity (RBLab,NTU)	TSS mg/L	TDS mg/L
A0-4321.01	DEER C A HWY 99	8/1/1996	1705	29.9	85.8	12.6	8.7	154					
A0-4321.01	DEER C A HWY 99	10/4/1996	1440	21.7	71.1	12.5	8.3	169					
A0-4321.01	DEER C A HWY 99	11/25/1996	1425	12	53.6	11.2	7.8	123					
A0-4321.01	DEER C A HWY 99	1/28/1997	1015	9.8	49.6	11.4	7.5	70					
A0-4321.01	DEER C A HWY 99	3/25/1997	1050	13.3	55.9	11	7.4	89					
A0-4321.01	DEER C A HWY 99	04/28/97	1130	15.4	59.7	9.8	7.8	99	100	52	0.5		
A0-4321.01	DEER C A HWY 99	06/05/97	1300	22.7	72.9	10.4	8.1	132	133	60	1.1		
A0-4321.01	DEER C A HWY 99	07/10/97	1045	23.4	74.1	10.0	7.6	195	192	92	1.6		
A0-4321.01	DEER C A HWY 99	08/15/97	0905	24.0	75.2	7.7	7.3	280	275	61	0.2		
A0-4321.01	DEER C A HWY 99	09/17/97	1645	19.2	66.6	9.7	8.0	170	170	37	0.9		
A0-4321.01	DEER C A HWY 99	10/16/97	1535	18.6	65.5	10.5	8.3	158	155	70	0.25		
A0-4321.01	DEER C A HWY 99	11/13/97	1700	11.8	53.2	11.1	7.6	153	153	48	0.44		
A0-4321.01	DEER C A HWY 99	12/12/97	1140	6.4	43.5	12.6	7.7	133	134	61	0.39		
A0-4321.01	DEER C A HWY 99	01/21/98	1750	7.3	45.1	12.4	7.5	81	82	39	3.5		
A0-4321.01	DEER C A HWY 99	02/20/98	1105	7.7	45.9	12.8	7.4	77	77	38	4.0		
A0-4321.01	DEER C A HWY 99	03/17/98	0830	10.0	50.0	12.0	7.4	83	85	40	1.7		
A0-4321.01	DEER C A HWY 99	04/23/98	0830	12.1	53.8	10.6	7.6	79	81	37	1.4		
A0-4321.01	DEER C A HWY 99	05/19/98	1530	14.9	58.8	10.6	7.6	84	82	39	1.2		
A0-4321.01	DEER C A HWY 99	06/24/98	1700	21.9	71.4	8.7	7.8	93	93	41	0.5		
A0-4321.01	DEER C A HWY 99	07/21/98	1510	29.0	84.2	7.9	8.1	123	123	51	0.9		
A0-4321.01	DEER C A HWY 99	08/18/98	1430	27.0	80.6	9.1	8.3	151	149	69	0.6		
A0-4321.01	DEER C A HWY 99	09/15/98	1500	26.6	79.9	9.1	8.3	151	153	66	0.5		
A0-4321.01	DEER C A HWY 99	10/20/98	1450	16.2	61.2	10.3	8.2	153	151	65	0.6		
A0-4321.01	DEER C A HWY 99	11/17/98	1420	12.0	53.6	12.9	8.0	142	145	65	0.5		
A0-4321.01	DEER C A HWY 99	12/21/98	1345	3.6	38.5	12.8	7.4	118	121	54	0.4		
A0-4321.01	DEER C A HWY 99	01/19/99	1545	10.3	50.5	11.2	7.4	81	2.7	36	2.6		
A0-4321.01	DEER C A HWY 99	02/08/99	1530	9.1	48.4	11.6	7.4	73					
A0-4321.01	DEER C A HWY 99	03/16/99	1530	13.1	55.6	10.6	7.6	91	95	43	0.6	0.6	67
A0-4321.01	DEER C A HWY 99	07/20/99	1645	28.4	83.1	10.6	8.4	168	169	80	0.7	0.2	105
A0-4321.01	DEER C A HWY 99	08/18/99	1300	27.0	80.6	11.4	7.8	198	201	87	0.6	0.6	130
A0-4321.01	DEER C A HWY 99	01/20/00	1330	10.4	50.7	11.6	7.6	92	94	43	3.1		
A0-4321.01	DEER C A HWY 99	02/14/00	1510	10.0	50.0	11.5	7.8	58	60	26	41	180	68
A0-4321.01	DEER C A HWY 99	02/22/00	1045	9.1	48.4	10.7	7.8	88	85	37	2.4		
A0-4321.01	DEER C A HWY 99	02/23/00	1220	7.3	45.1	11.7	7.3	63	71	30	11		
A0-4321.01	DEER C A HWY 99	02/29/00	1250	9.0	48.2	11.5	7.9	74	75	37	3.6		
A0-4321.01	DEER C A HWY 99	03/08/00	1335	9.6	49.3	11.5	7.9	78	78	43	2.4		
A0-4321.01	DEER C A HWY 99	03/09/00	1300	8.8	47.8	11.8	7.5	76	82	41	2.2		
A0-4321.01	DEER C A HWY 99	04/05/00	1015	12.8	55.0	10.7	7.8	87	91	44	1.2		
A0-4321.01	DEER C A HWY 99	06/06/00	1400	25.9	78.6	9.9	8.3	141	143	75	0.4		
A0-4321.01	DEER C A HWY 99	07/28/00	1020	24.1	75.4	7.5	6.8	290	295	140	0.5		
A0-4321.01	DEER C A HWY 99	09/08/00	1015	20.6	69.1	6.9	7.2	288	287	132	0.4		
		Maximum		**29.9**	**85.8**	**12.9**	**8.7**	**290.0**	**295.0**	**140.0**	**41.0**	**180.0**	**130.0**
		Minimum		**3.6**	**38.5**	**6.9**	**6.8**	**58.0**	**2.7**	**26.0**	**0.2**	**0.2**	**67.0**

Station Number	Station Name	Date	Time (pst)	Temp (degrees C)	Temp. (degrees F)	D.O. (ppm)	pH (field)	EC(field) (umhos/cm)	EC (lab) (umhos/cm)	Alkalinity RBLab(mg/L)	Turbidity (RBLab,NTU)	TSS mg/L	TDS mg/L
A0-4330	DEER C A RED BRIDGE ON LENINGER RD	06/05/97	1245	21.9	71.4	10.0	8.1	119	120	54	0.4		
A0-4330	DEER C A RED BRIDGE ON LENINGER RD	07/10/97	1300	26.8	80.2	9.4	8.2	139	137	63	0.4		
A0-4330	DEER C A RED BRIDGE ON LENINGER RD	08/15/97	1200	26.2	79.2	9.7	8.1	149	148	70	0.7		
A0-4330	DEER C A RED BRIDGE ON LENINGER RD	09/17/97	1640	18.9	66.0	9.7	8.1	188	149	68	0.7		
A0-4330	DEER C A RED BRIDGE ON LENINGER RD	05/20/98	1545	15.4	59.7	11.5	7.6	83	82	39	1.1		
A0-4330	DEER C A RED BRIDGE ON LENINGER RD	06/24/98	1640	20.7	69.3	9.2	7.8	81	84	39	0.46		
A0-4330	DEER C A RED BRIDGE ON LENINGER RD	07/21/98	1450	28.1	82.6	8.2	8.3	115	116	52	0.5		
A0-4330	DEER C A RED BRIDGE ON LENINGER RD	08/18/98	1415	26.4	79.5	8.5	8.4	128	129	58	0.5		
A0-4330	DEER C A RED BRIDGE ON LENINGER RD	09/15/98	1440	26.2	79.2	8.6	8.3	134	136	47	0.5		
A0-4330	DEER C A RED BRIDGE ON LENINGER RD	10/20/98	1430	16.6	61.9	10.0	8.3	145	142	61	0.5		
A0-4330	DEER C A RED BRIDGE ON LENINGER RD	07/23/99	1400	25.7	78.3	10.0	8.3	128	135	69	0.9		
A0-4330	DEER C A RED BRIDGE ON LENINGER RD	08/19/99	1500	26.6	79.9	9.6	8.2	137	142	60	0.7		
		Maximum		**28.1**	**82.6**	**11.5**	**8.4**	**188.0**	**149.0**	**70.0**	**1.1**		
		Minimum		**15.4**	**59.7**	**8.2**	**7.6**	**81.0**	**82.0**	**39.0**	**0.4**		

Station Number	Station Name	Date	Time (pst)	Temp (degrees C)	Temp. (degrees F)	D.O. (ppm)	pH (field)	EC(field) (umhos/cm)	EC (lab) (umhos/cm)	Alkalinity RBLab(mg/L)	Turbidity (RBLab,NTU)	TSS mg/L	TDS mg/L
A0-4310	DEER C A MOUTH	04/28/97	1030	15.6	60.1	9.7	7.6	109	109	51	1.1		
A0-4310	DEER C A MOUTH	06/05/97	1035	20.0	68.0	10.3	7.9	144	146	67	0.5		
A0-4310	DEER C A MOUTH	07/10/97	0850	22.5	72.5	6.8	7.3	216	209	99	1.1		
A0-4310	DEER C A MOUTH	08/15/97	1100	24.7	76.5	11.7	7.4	254	257	119	0.7		
A0-4310	DEER C A MOUTH	09/17/97	1430	20.4	68.7	9.9	8.0	190	109	36	0.8		
A0-4310	DEER C A MOUTH	10/14/97	1450	17.1	62.8	11.5	8.1	160	156	70	0.4		
A0-4310	DEER C A MOUTH	11/13/97	1450	11.7	53.1	11.0	7.9	156	150	73	0.2		
A0-4310	DEER C A MOUTH	12/11/97	1615	8.4	47.1	11.6	7.6	132	155	70	0.55		
A0-4310	DEER C A MOUTH	05/19/98	1530	14.9	58.8	8.7	7.6	84	82	39	1.2	0.8	
A0-4310	DEER C A MOUTH	06/24/98	1700	21.7	71.1	8.7	7.8	102	100	45	0.65	0	
A0-4310	DEER C A MOUTH	07/21/98	1540	28.3	82.9	6.9	7.9	148	148	60	0.7	29.4	
A0-4310	DEER C A MOUTH	08/18/98	1515	26.2	79.2	9.4	8.3	175	184	81	0.9	6.4	124
A0-4310	DEER C A MOUTH	09/15/98	1530	26.2	79.2	10.1	8.2	169	173	71	1.1	0.6	
A0-4310	DEER C A MOUTH	10/20/98	1540	16.0	60.8	11.4	8.3	161	158	70	0.7	4.4	117
A0-4310	DEER C A MOUTH	11/16/98	1540	10.4	50.7	11.3	7.9	151	154	69	0.4		132
A0-4310	DEER C A MOUTH	12/15/98	1620	10.3	50.5	10.7	7.4	113	119	34	1.7	0.6	84
A0-4310	DEER C A MOUTH	02/16/99	1520	7.8	46.0	11.8	7.4	88	91	40	6.1	1.6	74
A0-4310	DEER C A MOUTH	04/20/99	1440	16.6	61.9	10.0	7.6	66	82	36	2	2	100
A0-4310	DEER C A MOUTH	05/18/99	1630	21.0	69.8	9.6	7.9	97	99	45	0.8	1.4	73
A0-4310	DEER C A MOUTH	06/23/99	1600	27.7	81.9	8.4	7.8	146	149	32	1.1	1.4	104
A0-4310	DEER C A MOUTH	11/08/99	1600	14.0	57.2	10.5	8.2	154	155	71	1.2	14	91
A0-4310	DEER C A MOUTH	04/17/00	1345	11.4	52.5	10.9	7.7	79	86	40	1.3		
		Maximum		**28.3**	**82.9**	**11.8**	**8.3**	**254.0**	**257.0**	**119.0**	**6.1**	**29.4**	**132.0**
		Minimum		**7.8**	**46.0**	**6.8**	**7.3**	**66.0**	**82.0**	**32.0**	**0.2**	**0.0**	**73.0**

Appendix C. Coliform Bacteria Results

Station Number	Station Name	Date	Time (pst)	Total Coliform Sample size (mL)	Total Coliform # Colonies	Fecal Coliform Sample size (mL)	Fecal Coliform # Colonies
A4-3160	DEER C BL CHILDS MEADOWS	04/29/97	1610	100	21	100	22
A4-3160	DEER C BL CHILDS MEADOWS	06/11/97	1100	100	33	100	15
A4-3160	DEER C BL CHILDS MEADOWS	07/08/97	1140	10	27	100	29
A4-3160	DEER C BL CHILDS MEADOWS	07/08/97	1140	5	11		
A4-3160	DEER C BL CHILDS MEADOWS	07/08/97	1140	1	8		
A4-3160	DEER C BL CHILDS MEADOWS	08/06/97	1325			100	0
A4-3160	DEER C BL CHILDS MEADOWS	08/06/97	1325			50	0
A4-3160	DEER C BL CHILDS MEADOWS	09/15/97	1345			100	12
A4-3160	DEER C BL CHILDS MEADOWS	09/15/97	1345			50	6
A4-3160	DEER C BL CHILDS MEADOWS	10/21/97	1540			100	0
A4-3160	DEER C BL CHILDS MEADOWS	11/17/97	1335			100	11
A4-3160	DEER C BL CHILDS MEADOWS	12/09/97	1225			100	4
A4-3160	DEER C BL CHILDS MEADOWS	01/22/98	1335			100	6
A4-3160	DEER C BL CHILDS MEADOWS	02/18/98	1630			100	2
A4-3160	DEER C BL CHILDS MEADOWS	03/23/98	1200			100	16
A4-3160	DEER C BL CHILDS MEADOWS	04/24/98	1150			100	8
A4-3160	DEER C BL CHILDS MEADOWS	05/21/98	1000			100	1
A4-3160	DEER C BL CHILDS MEADOWS	06/24/98	0845			100	17
A4-3160	DEER C BL CHILDS MEADOWS	07/21/98	0800			100	10
A4-3160	DEER C BL CHILDS MEADOWS	08/18/98	0715			100	17
A4-3160	DEER C BL CHILDS MEADOWS	09/15/98	0745			100	15
A4-3160	DEER C BL CHILDS MEADOWS	10/20/98	0745			100	1
A4-3160	DEER C BL CHILDS MEADOWS	11/16/98	0845			100	8
A4-3160	DEER C BL CHILDS MEADOWS	12/15/98	1015			100	3 **
A4-3160	DEER C BL CHILDS MEADOWS	01/19/99	0830			100	41
A4-3160	DEER C BL CHILDS MEADOWS	02/16/99	0930			100	2
A4-3160	DEER C BL CHILDS MEADOWS	04/20/99	0715			100	3
A4-3160	DEER C BL CHILDS MEADOWS	05/18/99	0900			100	0
A4-3160	DEER C BL CHILDS MEADOWS	06/23/99	0800			100	29
A4-3160	DEER C BL CHILDS MEADOWS	07/20/99	0800			100	29
A4-3160	DEER C BL CHILDS MEADOWS	08/18/99	0730			100	2
A4-3160	DEER C BL CHILDS MEADOWS	11/08/99	0815			100	318
A4-3160	DEER C BL CHILDS MEADOWS	01/20/00	0900			50	10
A4-3160	DEER C BL CHILDS MEADOWS	02/14/00	1030			25	3
A4-3160	DEER C BL CHILDS MEADOWS	04/04/00	1000			100	0
A4-3160	DEER C BL CHILDS MEADOWS	04/17/00	0915			100	32

Station Number	Station Name	Date	Time (pst)	Total Coliform Sample size (mL)	Total Coliform # Colonies	Fecal Coliform Sample size (mL)	Fecal Coliform # Colonies
A4-3154	DEER C A UPPER FALLS	06/11/97	1000	100	11	100	8
A4-3154	DEER C A UPPER FALLS	07/08/97	1310	10	21	100	2
A4-3154	DEER C A UPPER FALLS	07/08/97	1310	5	4		
A4-3154	DEER C A UPPER FALLS	07/08/97	1310	1	0		
A4-3154	DEER C A UPPER FALLS	08/06/97	1525			100	0
A4-3154	DEER C A UPPER FALLS	08/06/97	1525			50	0
A4-3154	DEER C A UPPER FALLS	09/10/97	1645			100	0
A4-3154	DEER C A UPPER FALLS	09/10/97	1645			50	0
A4-3154	DEER C A UPPER FALLS	09/10/97	1645			10	0
A4-3154	DEER C A UPPER FALLS	10/24/97	1320			100	2
A4-3154	DEER C A UPPER FALLS	11/17/97	1430			100	3
A4-3154	DEER C A UPPER FALLS	12/09/97	1320			100	1
A4-3154	DEER C A UPPER FALLS	01/22/98	1300			100	3
A4-3154	DEER C A UPPER FALLS	02/17/98	1600			100	0
A4-3154	DEER C A UPPER FALLS	02/17/98	1600			50	0
A4-3154	DEER C A UPPER FALLS	03/23/98	1230			100	3
A4-3154	DEER C A UPPER FALLS	04/28/98	1115			100	2
A4-3154	DEER C A UPPER FALLS	05/22/98	0955			100	1
A4-3154	DEER C A UPPER FALLS	06/24/98	0945			100	14
A4-3154	DEER C A UPPER FALLS	07/21/98	0900			100	11
A4-3154	DEER C A UPPER FALLS	08/18/98	0815			100	3
A4-3154	DEER C A UPPER FALLS	09/15/98	0845			100	0
A4-3154	DEER C A UPPER FALLS	10/20/98	0830			100	2
A4-3154	DEER C A UPPER FALLS	11/17/98	0900			100	2
A4-3154	DEER C A UPPER FALLS	12/17/98	1000			100	4
A4-3154	DEER C A UPPER FALLS	01/21/99	1000			100	4
A4-3154	DEER C A UPPER FALLS	02/18/99	0845			100	8
A4-3154	DEER C A UPPER FALLS	03/18/99	0830			100	1
A4-3154	DEER C A UPPER FALLS	05/24/99	1120			100	1
A4-3154	DEER C A UPPER FALLS	06/24/99	1435			100	0
A4-3154	DEER C A UPPER FALLS	07/23/99	0900			100	0
A4-3154	DEER C A UPPER FALLS	08/19/99	0915			100	3
A4-3154	DEER C A UPPER FALLS	08/19/99	1030			100	0
A4-3154	DEER C A UPPER FALLS	04/04/00	1030			100	0

Station Number	Station Name	Date	Time (pst)	Total Coliform Sample size (mL)	Total Coliform # Colonies	Fecal Coliform Sample size (mL)	Fecal Coliform # Colonies
A4-3150	DEER C A A-LINE	04/29/97	1200	100	5	100	0
A4-3150	DEER C A A-LINE	06/11/97	0905	100	40	100	11
A4-3150	DEER C A A-LINE	07/08/97	1015	10	17	100	5
A4-3150	DEER C A A-LINE	07/08/97	1015	5	8	-	-
A4-3150	DEER C A A-LINE	07/08/97	1015	1	0	-	-
A4-3150	DEER C A A-LINE	08/07/97	1545	-	-	100	4
A4-3150	DEER C A A-LINE	09/18/97	1730	-	-	100	9
A4-3150	DEER C A A-LINE	09/18/97	1730	-	-	50	5
A4-3150	DEER C A A-LINE	10/21/97	1340	-	-	100	0
A4-3150	DEER C A A-LINE	11/17/97	1630	-	-	100	0
A4-3150	DEER C A A-LINE	12/09/97	1415	-	-	100	0
A4-3150	DEER C A A-LINE	01/22/98	1210	-	-	100	4
A4-3150	DEER C A A-LINE	02/18/98	1630	-	-	100	0
A4-3150	DEER C A A-LINE	02/18/98	1630	-	-	50	0
A4-3150	DEER C A A-LINE	03/18/98	1030	-	-	100	1
A4-3150	DEER C A A-LINE	04/28/98	1015	-	-	100	1
A4-3150	DEER C A A-LINE	05/22/98	0910	-	-	100	1
A4-3150	DEER C A A-LINE	06/24/98	1040	-	-	100	2
A4-3150	DEER C A A-LINE	07/21/98	0745	-	-	100	11
A4-3150	DEER C A A-LINE	08/18/98	0755	-	-	100	0
A4-3150	DEER C A A-LINE	09/15/98	0745	-	-	100	2
A4-3150	DEER C A A-LINE	10/20/98	0725	-	-	100	2
A4-3150	DEER C A A-LINE	11/17/98	1010	-	-	100	10
A4-3150	DEER C A A-LINE	12/17/98	1030	-	-	100	1
A4-3150	DEER C A A-LINE	01/19/99	1050	-	-	100	6
A4-3150	DEER C A A-LINE	05/24/99	1200	-	-	100	2
A4-3150	DEER C A A-LINE	07/23/99	1000	-	-	100	2
A4-3150	DEER C A A-LINE	08/19/99	1030	-	-	100	0
A4-3150	DEER C A A-LINE	01/20/00	1015	-	-	50	3
A4-3150	DEER C A A-LINE	02/14/00	1145	-	-	25	3
A4-3150	DEER C A A-LINE	04/04/00	1145	-	-	100	0
A4-3150	DEER C A A-LINE	04/17/00	1015	-	-	100	5

Station Number	Station Name	Date	Time (pst)	Total Coliform Sample size (mL)	Total Coliform # Colonies	Fecal Coliform Sample size (mL)	Fecal Coliform # Colonies
A4-3145	DEER C A PONDEROSA WAY	04/29/97	0930	100	3	100	1
A4-3145	DEER C A PONDEROSA WAY	6/4/1997	1545	50	TMTC	100	8
A4-3145	DEER C A PONDEROSA WAY	6/4/1997	1545	10	8		
A4-3145	DEER C A PONDEROSA WAY	07/09/97	1720			100	1
A4-3145	DEER C A PONDEROSA WAY	08/14/97	1700			100	1
A4-3145	DEER C A PONDEROSA WAY	09/16/97	1810			100	1
A4-3145	DEER C A PONDEROSA WAY	10/22/97	0955			100	0
A4-3145	DEER C A PONDEROSA WAY	11/18/97	0830			100	1
A4-3145	DEER C A PONDEROSA WAY	12/12/97	1500			100	1
A4-3145	DEER C A PONDEROSA WAY	01/26/98	1315			100	0
A4-3145	DEER C A PONDEROSA WAY	01/26/98	1315			50	1
A4-3145	DEER C A PONDEROSA WAY	04/21/98	1740			100	0
A4-3145	DEER C A PONDEROSA WAY	05/19/98	0845			100	0
A4-3145	DEER C A PONDEROSA WAY	06/24/98	1345			100	0
A4-3145	DEER C A PONDEROSA WAY	07/21/98	1100			100	1
A4-3145	DEER C A PONDEROSA WAY	08/18/98	1030			100	0
A4-3145	DEER C A PONDEROSA WAY	09/15/98	1030			100	2
A4-3145	DEER C A PONDEROSA WAY	10/20/98	1020			100	0
A4-3145	DEER C A PONDEROSA WAY	11/16/98	1040			100	0
A4-3145	DEER C A PONDEROSA WAY	04/20/99	1100			100	0
A4-3145	DEER C A PONDEROSA WAY	05/18/99	1300			100	0
A4-3145	DEER C A PONDEROSA WAY	06/23/99	1200			100	1
A4-3145	DEER C A PONDEROSA WAY	07/20/99	1130			100	2
A4-3145	DEER C A PONDEROSA WAY	08/18/99	0930			100	3
A4-3145	DEER C A PONDEROSA WAY	11/08/99	1230			100	36

Station Number	Station Name	Date	Time (pst)	Total Coliform Sample size (mL)	Total Coliform # Colonies	Fecal Coliform Sample size (mL)	Fecal Coliform # Colonies
A0-4341	DEER C A UPPER DIV DM	04/28/97	1230	100	6	100	3
A0-4341	DEER C A UPPER DIV DM	06/05/97	1150	50	TMTC	100	1
A0-4341	DEER C A UPPER DIV DM	06/05/97	1150	10	6		
A0-4341	DEER C A UPPER DIV DM	07/10/97	1200			100	1
A0-4341	DEER C A UPPER DIV DM	08/15/97	1245			100	1
A0-4341	DEER C A UPPER DIV DM	09/19/97	0745			100	3
A0-4341	DEER C A UPPER DIV DM	10/16/97	1220			100	0
A0-4341	DEER C A UPPER DIV DM	11/13/97	1600			100	23
A0-4341	DEER C A UPPER DIV DM	12/12/97	1130			100	1
A0-4341	DEER C A UPPER DIV DM	01/23/98	1415			100	2
A0-4341	DEER C A UPPER DIV DM	02/20/98	1000			100	0
A0-4341	DEER C A UPPER DIV DM	03/19/98	1020			100	1
A0-4341	DEER C A UPPER DIV DM	03/19/98	1020			50	1
A0-4341	DEER C A UPPER DIV DM	04/23/98	1210			100	7
A0-4341	DEER C A UPPER DIV DM	05/20/98	1500			100	0
A0-4341	DEER C A UPPER DIV DM	06/24/98	1600			100	1
A0-4341	DEER C A UPPER DIV DM	07/21/98	1400			100	0
A0-4341	DEER C A UPPER DIV DM	08/18/98	1325			100	1
A0-4341	DEER C A UPPER DIV DM	09/15/98	1340			100	3
A0-4341	DEER C A UPPER DIV DM	10/20/98	1330			100	0
A0-4341	DEER C A UPPER DIV DM	11/16/98	1415			100	3
A0-4341	DEER C A UPPER DIV DM	12/15/98	1400			100	2 **
A0-4341	DEER C A UPPER DIV DM	01/19/99	1400			100	0
A0-4341	DEER C A UPPER DIV DM	02/16/99	1320			100	14
A0-4341	DEER C A UPPER DIV DM	04/20/99	1330			100	2
A0-4341	DEER C A UPPER DIV DM	05/18/99	1430			100	0
A0-4341	DEER C A UPPER DIV DM	06/23/99	1430			100	1
A0-4341	DEER C A UPPER DIV DM	07/20/99	1545			100	0
A0-4341	DEER C A UPPER DIV DM	08/18/99	1300			100	0
A0-4341	DEER C A UPPER DIV DM	11/08/99	1445			100	44
A0-4341	DEER C A UPPER DIV DM	01/20/00	1230			50	2
A0-4341	DEER C A UPPER DIV DM	02/14/00	1410			25	3
A0-4341	DEER C A UPPER DIV DM	04/05/00	945			100	4
A0-4341	DEER C A UPPER DIV DM	04/17/00	1240			100	0

Station Number	Station Name	Date	Time (pst)	Total Coliform Sample size (mL)	Total Coliform # Colonies	Fecal Coliform Sample size (mL)	Fecal Coliform # Colonies
A0-4321.01	DEER C A HWY 99	04/28/97	1130	100	26	100	18
A0-4321.01	DEER C A HWY 99	06/05/97	1300	50	TMTC	100	N/A
A0-4321.01	DEER C A HWY 99	06/05/97	1300	10	TMTC		
A0-4321.01	DEER C A HWY 99	06/17/97	1030	10	5	100	22
A0-4321.01	DEER C A HWY 99	06/17/97	1030	5	12		
A0-4321.01	DEER C A HWY 99	06/17/97	1030	1	6		
A0-4321.01	DEER C A HWY 99	07/10/97	1045			100	14
A0-4321.01	DEER C A HWY 99	08/15/97	0905			100	12
A0-4321.01	DEER C A HWY 99	09/17/97	1645			100	36
A0-4321.01	DEER C A HWY 99	10/16/97	1535			100	2
A0-4321.01	DEER C A HWY 99	11/13/97	1700			100	40
A0-4321.01	DEER C A HWY 99	12/12/97	1140			100	11
A0-4321.01	DEER C A HWY 99	01/21/98	1750			100	1
A0-4321.01	DEER C A HWY 99	02/20/98	1105			100	2
A0-4321.01	DEER C A HWY 99	03/17/98	0830			100	6
A0-4321.01	DEER C A HWY 99	04/23/98	0830			100	21
A0-4321.01	DEER C A HWY 99	06/24/98	1700			100	3
A0-4321.01	DEER C A HWY 99	07/21/98	1510			100	5
A0-4321.01	DEER C A HWY 99	08/18/98	1430			100	8
A0-4321.01	DEER C A HWY 99	09/15/98	1500			100	3
A0-4321.01	DEER C A HWY 99	10/20/98	1450			100	3
A0-4321.01	DEER C A HWY 99	11/17/98	1420			100	14
A0-4321.01	DEER C A HWY 99	01/19/99	1545			100	9
A0-4321.01	DEER C A HWY 99	08/18/99	1300			100	3
A0-4321.01	DEER C A HWY 99	02/14/00	1510			20	19
A0-4321.01	DEER C A HWY 99	04/05/00	1015			100	15

Station Number	Station Name	Date	Time (pst)	Total Coliform Sample size (mL)	Total Coliform # Colonies	Fecal Coliform Sample size (mL)	Fecal Coliform # Colonies
A0-4310	DEER C A MOUTH	04/28/97	1030	100	30	100	25
A0-4310	DEER C A MOUTH	06/05/97	1035	50	TMTC	100	69
A0-4310	DEER C A MOUTH	06/05/97	1035	10	TMTC		
A0-4310	DEER C A MOUTH	06/17/97	1000	10	5	100	39
A0-4310	DEER C A MOUTH	06/17/97	1000	5	7		
A0-4310	DEER C A MOUTH	06/17/97	1000	1	10		
A0-4310	DEER C A MOUTH	07/10/97	0850			100	47
A0-4310	DEER C A MOUTH	08/15/97	1100			100	2
A0-4310	DEER C A MOUTH	09/17/97	1430			100	25
A0-4310	DEER C A MOUTH	10/14/97	1450			100	0
A0-4310	DEER C A MOUTH	11/13/97	1450			100	82
A0-4310	DEER C A MOUTH	12/11/97	1615			100	2
A0-4310	DEER C A MOUTH	05/19/98	1530			100	1
A0-4310	DEER C A MOUTH	06/24/98	1700			100	5
A0-4310	DEER C A MOUTH	07/21/98	1540			100	21
A0-4310	DEER C A MOUTH	08/18/98	1515			100	2
A0-4310	DEER C A MOUTH	09/15/98	1530			100	3
A0-4310	DEER C A MOUTH	10/20/98	1540			100	5
A0-4310	DEER C A MOUTH	11/16/98	1540			100	10
A0-4310	DEER C A MOUTH	02/16/99	1520			100	224
A0-4310	DEER C A MOUTH	04/20/99	1440			100	5
A0-4310	DEER C A MOUTH	05/18/99	1630			100	2
A0-4310	DEER C A MOUTH	06/23/99	1600			100	8
A0-4310	DEER C A MOUTH	07/20/99	1645			100	2
A0-4310	DEER C A MOUTH	11/08/99	1600			100	71
A0-4310	DEER C A MOUTH	01/20/00	1330			50	7
A0-4310	DEER C A MOUTH	04/17/00	1345			100	107

Station Name	Date	Time (pst)	Total Coliform Sample size (mL)	Total Coliform # Colonies	Fecal Coliform Sample size (mL)	Fecal Coliform # Colonies
DEER C BL ALDER C CAMPGROUND	6/11/1997	1135	100	25	100	5
DEER C BL ALDER C CAMPGROUND	07/08/97	1235	10	7	100	4
DEER C BL ALDER C CAMPGROUND	07/08/97	1235	5	4		
DEER C BL ALDER C CAMPGROUND	07/08/97	1235	1	0		
DEER C BL ALDER C CAMPGROUND	08/06/97	1420			100	0
DEER C BL ALDER C CAMPGROUND	08/06/97	1420			50	1
DEER C BL ALDER C CAMPGROUND	09/15/97	0910			100	42
DEER C BL ALDER C CAMPGROUND	09/15/97	0910			50	30
DEER C BL ALDER C CAMPGROUND	05/22/98	1040			100	4
DEER C BL ALDER C CAMPGROUND	06/24/98	0930			100	9
DEER C BL ALDER C CAMPGROUND	07/21/98	0845			100	12
DEER C BL ALDER C CAMPGROUND	08/18/98	0800			100	13
DEER C BL ALDER C CAMPGROUND	09/15/98	0930			100	8
DEER C BL ALDER C CAMPGROUND	05/24/99	1115			100	5
DEER C BL ALDER C CAMPGROUND	07/23/99	0845			100	15
DEER C BL ALDER C CAMPGROUND	08/19/99	0845			100	1
DEER C BL ELAM C CAMPGROUND	06/11/97	1120	100	45	100	14
DEER C BL ELAM C CAMPGROUND	07/08/97	1215	10	17	100	13
DEER C BL ELAM C CAMPGROUND	07/08/97	1215	5	11		
DEER C BL ELAM C CAMPGROUND	07/08/97	1215	1	6		
DEER C BL ELAM C CAMPGROUND	08/06/97	1400			100	1
DEER C BL ELAM C CAMPGROUND	08/06/97	1400			50	1
DEER C BL ELAM C CAMPGROUND	09/15/97	0930			100	96
DEER C BL ELAM C CAMPGROUND	09/15/97	0930			50	27
DEER C BL ELAM C CAMPGROUND	05/22/98	1025			100	2
DEER C BL ELAM C CAMPGROUND	06/24/98	0915			100	29
DEER C BL ELAM C CAMPGROUND	07/21/98	0830			100	30
DEER C BL ELAM C CAMPGROUND	08/18/98	0750			100	11
DEER C BL ELAM C CAMPGROUND	09/15/98	0815			100	3
DEER C BL ELAM C CAMPGROUND	05/24/99	1100			100	4
DEER C BL ELAM C CAMPGROUND	07/23/99	0815			100	31
DEER C BL ELAM C CAMPGROUND	08/19/99	0830			100	0

Station Name	Date	Time (pst)	Total Coliform Sample size (mL)	Total Coliform # Colonies	Fecal Coliform Sample size (mL)	Fecal Coliform # Colonies
DEER C BL POTATO PATCH CAMPGROUND	06/11/97	1200	100	24	100	7
DEER C BL POTATO PATCH CAMPGROUND	07/08/97	1355	10	20	100	9
DEER C BL POTATO PATCH CAMPGROUND	07/08/97	1355	5	4		
DEER C BL POTATO PATCH CAMPGROUND	07/08/97	1355	1	4		
DEER C BL POTATO PATCH CAMPGROUND	08/06/97	1545			100	0
DEER C BL POTATO PATCH CAMPGROUND	08/06/97	1545			50	0
DEER C BL POTATO PATCH CAMPGROUND	09/15/97	1410			100	22
DEER C BL POTATO PATCH CAMPGROUND	09/15/97	1410			50	10
DEER C BL POTATO PATCH CAMPGROUND	05/22/98	1050			100	0
DEER C BL POTATO PATCH CAMPGROUND	06/24/98	1000			100	4
DEER C BL POTATO PATCH CAMPGROUND	07/21/98	0915			100	8
DEER C BL POTATO PATCH CAMPGROUND	08/18/98	0830			100	1
DEER C BL POTATO PATCH CAMPGROUND	09/15/98	0900			100	4
DEER C BL POTATO PATCH CAMPGROUND	05/24/99	1130			100	0
DEER C BL POTATO PATCH CAMPGROUND	07/23/99	0930			100	5
DEER C BL POTATO PATCH CAMPGROUND	08/19/99	0930			100	2
DEER C A RED BRIDGE ON LENINGER RD	06/05/97	1245	50	TMTC	100	15
DEER C A RED BRIDGE ON LENINGER RD	06/05/97	1245	10	TMTC		
DEER C A RED BRIDGE ON LENINGER RD	06/17/97	1020	10	3	100	7
DEER C A RED BRIDGE ON LENINGER RD	06/17/97	1020	5	7		
DEER C A RED BRIDGE ON LENINGER RD	06/17/97	1020	1	3		
DEER C A RED BRIDGE ON LENINGER RD	07/10/97	1300			100	39
DEER C A RED BRIDGE ON LENINGER RD	08/15/97	1200			100	3
DEER C A RED BRIDGE ON LENINGER RD	09/17/97	1640			100	26
DEER C A RED BRIDGE ON LENINGER RD	05/20/98	1545			100	1
DEER C A RED BRIDGE ON LENINGER RD	06/24/98	1640			100	0
DEER C A RED BRIDGE ON LENINGER RD	07/21/98	1450			100	9
DEER C A RED BRIDGE ON LENINGER RD	08/18/98	1415			100	3
DEER C A RED BRIDGE ON LENINGER RD	09/15/98	1440			100	3
DEER C A RED BRIDGE ON LENINGER RD	10/20/98	1430			100	2
DEER C A RED BRIDGE ON LENINGER RD	07/23/99	1400			100	2
DEER C A RED BRIDGE ON LENINGER RD	08/19/99	1500			100	4

TC = too much background bacteria to count
TMTC = too many to count

Appendix D. Summary of Total Metals from Deer Creek

Deer Creek below Childs Meadow

	Aluminum T	Arsenic T	Cadmium T	Chromium T	Copper T	Iron T	Mercury T	Manganese T	Nickel T	Lead T	Selenium T	Silver T	Zinc T
Maximum detected	4470	0.645	0.028	3.38	5.00	1800	0.007	86.6	1.4	3.00	0.29	0.029	31
Minimum detected	12.1	0.129	<0.001	<0.04	<0.04	19.8	<0.0004	3.27	<0.01	<0.009	<0.06	<0.001	<0.2
Number of samples	32	30	30	33	33	33	33	30	26	33	30	26	31
Number of samples exceeding criteria or objectives													
Public Health Goal[1]	4	-	0	-	0	-	0	0	0	1	-	-	-
Primary MCL[2]	4	0	-	0	0	-	0	-	0	0	0	-	-
Secondary MCL[2]	11	0	-	-	0	4	-	1	-	-	-	0	0
Agricultural Goal[3]	0	0	0	0	0	0	-	0	0	0	0	-	0
Cal/EPA Cancer Potency Factor[4]	-	30	-	-	-	-	-	-	-	-	-	-	-
CTR[5] Humans	-	-	-	-	0	-	0	-	0	-	-	-	-
CTR[5] Aquatic Life	-	-	0	-	0	-	-	-	-	0	-	0	0
NTR[6]	-	-	-	0	-	-	-	-	-	-	0	-	-
NAWQC[7] Humans	-	30	-	-	-	-	-	-	-	-	-	-	-
NAWQC[7] Aquatic Life	16[9],4[10]	-	-	-	-	2[9]	0	-	-	-	-	-	-
USEPA IRIS Reference Dose[8]	-	-	-	0	-	-	-	-	-	-	0	0	0

Deer Creek above A-Line Road

	Aluminum T	Arsenic T	Cadmium T	Chromium T	Copper T	Iron T	Mercury T	Manganese T	Nickel T	Lead T	Selenium T	Silver T	Zinc T
Maximum detected	4290	0.452	0.027	3.37	3.97	2720	0.0081	101	3.96	1.16	<1	0.009	5.56
Minimum detected	72.1	0.191	<0.004	0.1	.15	43.5	<0.0004	1.34	<0.01	<0.01	<0.06	<0.002	.14
Number of samples	7	8	8	8	8	8	8	8	7	8	8	7	8
Number of samples exceeding criteria or objectives													
Public Health Goal[1]	1	-	0	-	0	-	0	0	0	0	-	-	-
Primary MCL[2]	1	0	-	0	0	-	0	-	0	0	0	-	-
Secondary MCL[2]	2	0	-	-	0	1	-	1	-	-	-	0	0
Agricultural Goal[3]	0	0	0	0	0	0	-	0	0	0	0	-	0
Cal/EPA Cancer Potency Factor[4]	-	8	-	-	-	-	-	-	-	-	-	-	-
CTR[5] Humans	-	-	-	-	0	-	0	-	0	-	-	-	-
CTR[5] Aquatic Life	-	-	0	-	0	-	-	-	-	0	-	0	0
NTR[6]	-	-	-	0	-	-	-	-	-	-	0	-	-
NAWQC[7] Humans	-	8	-	-	-	-	-	-	-	-	-	-	-
NAWQC[7] Aquatic Life	6[9],1[10]	-	-	-	-	1[9]	0	-	-	-	-	-	-
USEPA IRIS Reference Dose[8]	-	-	-	0	-	-	-	-	-	-	0	0	0

Deer Creek A Ponderosa Way

	Aluminum T	Arsenic T	Cadmium T	Chromium T	Copper T	Iron T	Mercury T	Manganese T	Nickel T	Lead T	Selenium T	Silver T	Zinc T
Maximum detected	767	19.8	0.007	1.29	1.0	318	0.00134	59.0	0.661	1.0	0.33	0.058	16.0
Minimum detected	0.1	0.058	<0.001	<0.06	0.11	16.1	0.00015	1.18	<0.006	<0.007	<0.10	0.001	<0.14
Number of samples	22	20	20	23	23	23	23	20	16	23	20	16	21
Number of samples exceeding criteria or													
Public Health Goal[1]	1	-	0	-	0	-	0	0	0	0	-	-	-
Primary MCL[2]	0	1	-	0	0	-	0	-	0	0	0	-	-
Secondary MCL[2]	5	0	-	-	0	1	-	1	-	-	-	0	0
Agricultural Goal[3]	0	0	0	0	0	0	-	0	0	0	0	-	0
Cal/EPA Cancer Potency Factor[4]	-	20	-	-	-	-	-	-	-	-	-	-	-
CTR[5] Humans	-	-	-	-	0	-	0	-	0	-	-	-	-
CTR[5] Aquatic Life	-	-	0	-	0	-	-	-	-	0	-	0	0
NTR[6]	-	-	-	0	-	-	-	-	-	-	0	-	-
NAWQC[7] Humans	-	20	-	-	-	-	-	-	-	-	-	-	-
NAWQC[7] Aquatic Life	7[9], 1[10]	-	-	-	-	0	0	-	-	-	-	-	-
USEPA IRIS Reference Dose[8]	-	-	-	0	-	-	-	-	-	-	0	0	0

Deer Creek A Upper Diversion Dam

	Aluminum T	Arsenic T	Cadmium T	Chromium T	Copper T	Iron T	Mercury T	Manganese T	Nickel T	Lead T	Selenium T	Silver T	Zinc T
Maximum detected	5130	7	0.022	4.45	5.88	3170	0.0103	106	6.95	2.00	0.28	0.2	19.0
Minimum detected	11.5	0.678	<0.001	<0.04	0.09	1.5	0.00022	1.33	<0.01	0.007	<0.01	<0.001	<0.004
Number of samples	33	31	31	34	34	34	34	31	27	34	31	27	32
Number of samples exceeding criteria or													
Public Health Goal[1]	3	-	0	-	0	-	0	0	0	0	-	-	-
Primary MCL[2]	3	0	-	0	0	-	0	-	0	0	0	-	-
Secondary MCL[2]	10	0	-	-	0	3	-	2	-	-	-	0	0
Agricultural Goal[3]	1	0	0	0	0	0	-	0	0	0	0	-	0
Cal/EPA Cancer Potency Factor[4]	-	31	-	-	-	-	-	-	-	-	-	-	-
CTR[5] Humans	-	-	-	-	0	-	0	-	0	-	-	-	-
CTR[5] Aquatic Life	-	-	0	-	0	-	-	-	-	0	-	0	0
NTR[6]	-	-	-	0	-	-	-	-	-	-	0	-	-
NAWQC[7] Humans	-	31	-	-	-	-	-	-	-	-	-	-	-
NAWQC[7] Aquatic Life	13[9], 3[10]	-	-	-	-	1[9]	0	-	-	-	-	-	-
USEPA IRIS Reference Dose[8]	-	-	-	0	-	-	-	-	-	-	0	0	0

Deer Creek A Highway 99E

	Aluminum	Arsenic	Cadmium	Chromium	Copper	Iron	Mercury	Manganese	Nickel	Lead	Selenium	Silver	Zinc
	T	T	T	T	T	T	T	T	T	T	T	T	T
Maximum detected	6070	4	0.016	4.98	6.56	3600	0.0093	119	7.68	3.0	0.14	0.024	12.0
Minimum detected	<15	0.732	0.003	<0.03	0.28	20.0	0.00045	3.11	<0.01	<0.01	<0.06	0.004	<0.05
Number of samples	13	12	12	14	14	14	14	12	9	14	12	9	13
Number of samples exceeding criteria or													
Public Health Goal[1]	3	-	0	-	0	-	0	0	0	1	-	-	-
Primary MCL[2]	3	0	-	0	0	-	0	-	0	0	0	-	-
Secondary MCL[2]	7	0	-	-	0	4	-	2	-	-	-	0	0
Agricultural Goal[3]	1	0	0	0	0	0	-	0	0	0	0	-	0
Cal/EPA Cancer Potency Factor[4]	-	12	-	-	-	-	-	-	-	-	-	-	-
CTR[5] Humans	-	-	-	-	0	-	0	-	0	-	-	-	-
CTR[5] Aquatic Life	-	-	0	-	0	-	-	-	-	0	-	0	0
NTR[6]	-	-	-	0	-	-	-	-	-	-	0	-	-
NAWQC[7] Humans	-	12	-	-	-	-	-	-	-	-	-	-	-
NAWQC[7] Aquatic Life	10[9],3[10]	-	-	-	-	1[9]	0	-	-	-	-	-	-
USEPA IRIS Reference Dose[8]	-	-	-	0	-	-	-	-	-	-	0	0	0

Deer Creek A Mouth

	Aluminum	Arsenic	Cadmium	Chromium	Copper	Iron	Mercury	Manganese	Nickel	Lead	Selenium	Silver	Zinc
	T	T	T	T	T	T	T	T	T	T	T	T	T
Maximum detected	1350	5.94	0.012	1.75	1.25	502	0.006	58	1.43	1.0	0.34	0.081	31.0
Minimum detected	37	0.576	<0.001	<0.05	0.31	24.2	0.00032	6.21	<0.01	<0.009	<0.10	<0.001	<0.18
Number of samples	20	19	20	21	21	21	21	20	16	21	20	16	20
Number of samples exceeding criteria or objectives													
Public Health Goal[1]	5	-	0	-	0	-	0	0	0	0	-	-	-
Primary MCL[2]	1	0	-	0	0	-	0	-	0	0	0	-	-
Secondary MCL[2]	10	0	-	-	0	5	-	1	-	-	-	0	0
Agricultural Goal[3]	0	0	0	0	0	0	-	0	0	0	0	-	0
Cal/EPA Cancer Potency Factor[4]	-	19	-	-	-	-	-	-	-	-	-	-	-
CTR[5] Humans	-	-	-	-	0	-	0	-	0	-	-	-	-
CTR[5] Aquatic Life	-	-	0	-	0	-	-	-	-	0	-	0	0
NTR[6]	-	-	-	0	-	-	-	-	-	-	0	-	-
NAWQC[7] Humans	-	19	-	-	-	-	-	-	-	-	-	-	-
NAWQC[7] Aquatic Life	13[9],4[10]	-	-	-	-	0	0	-	-	-	-	-	-
USEPA IRIS Reference Dose[8]	-	-	-	0	-	-	-	-	-	-	0	0	0

Footnotes:
1. California Environmental Protection Agency (Cal/EPA), Office of Environmental Health Hazard Assessment, *Public Health Goals for Chemicals in Drinking Wa*
2. California Department of Health Services, California Code of Regulations, Title 22, Division 4, Chapter 15, Domestic Water Quality and Monitoring
3. Food and Agriculture Organization of the United Nations, 1985. Water Quality for Agriculture.
4. Cal/EPA, Office of Environmental Health Hazard Assessment, Cal/EPA Toxicity Criteria Database
5. California State Water Resources Control Board, Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (2 March 2003)
6. U.S. Environmental Protection Agency, Federal Register, Volume 64, No. 216 (Tuesday, 9 November 1999) [National Toxics Rule revisions]
7. U.S. Environmental Protection Agency, Quality Criteria for Water, 1986 (May 1986) [The Gold Book] plus updates (various dates)
8. U.S. Environmental Protection Agency, Integrated Risk Information System [IRIS] database
9. Chronic (4 day average)
10. Acute (1 hr average)

Appendix E. Deer Creek Nutrient Results

Station Name	Date	Time (PST)	Diss. NO3 + NO2 (mg/L)	Diss. NH3 (mg/L)	Diss. Ortho.-PO4 (mg/L)	Total P (mg/L)	TOC mg/L as C
DEER C BL CHILDS MEADOWS	4/29/1997	1610	<0.01	<0.01	<0.01	0.01	
DEER C BL CHILDS MEADOWS	6/11/1997	1100	<0.01	<0.01	<0.01	0.02	
DEER C BL CHILDS MEADOWS	7/8/1997	1140	<0.01	<0.01	<0.01	0.02	
DEER C BL CHILDS MEADOWS	8/6/1997	1325	<0.01	<0.01	0.01	0.02	
DEER C BL CHILDS MEADOWS	9/15/1997	1345	<0.01	<0.01	<0.01	<0.2	
DEER C BL CHILDS MEADOWS	11/17/1997	1335	<0.01	<0.01	<0.01	<0.2	
DEER C BL CHILDS MEADOWS	12/9/1997	1225	<0.01	<0.01	<0.01	0.02	
DEER C BL CHILDS MEADOWS	1/22/1998	1335	0.01	0.01	0.01	0.02	
DEER C BL CHILDS MEADOWS	2/18/1998	1630	<0.01	<0.01	<0.01	0.02	
DEER C BL CHILDS MEADOWS	3/23/1998	1200	<0.01	<0.01	<0.01	0.03	
DEER C BL CHILDS MEADOWS	4/24/1998	1150	<0.01	0.01	<0.01	0.03	
DEER C BL CHILDS MEADOWS	5/21/1998	1000	<0.01	<0.01	<0.01	0.01	
DEER C BL CHILDS MEADOWS	6/24/1998	0845	<0.01	<0.01	<0.01	0.01	
DEER C BL CHILDS MEADOWS	7/21/1998	0800	<0.01	<0.01	<0.01	0.03	
DEER C BL CHILDS MEADOWS	8/18/1998	0715	<0.01	<0.01	<0.01	0.03	
DEER C BL CHILDS MEADOWS	9/15/1998	1545	0.02	<0.01	<0.01	<0.01	
DEER C BL CHILDS MEADOWS	10/20/1998	0745	<0.01	<0.01	<0.01	0.02	
DEER C BL CHILDS MEADOWS	11/16/1998	0845	<0.01	<0.01	0.01	0.04	
DEER C BL CHILDS MEADOWS	12/15/1998	1015	0.03	0.01	<0.01	0.02	
DEER C BL CHILDS MEADOWS	1/19/1999	0830	0.04	0.02	<.01	0.03	
DEER C BL CHILDS MEADOWS	2/16/1999	0930	<.01	<.01	<.01	0.01	
DEER C BL CHILDS MEADOWS	3/15/1999	0845	<0.01	<0.01	<0.01	<0.01	
DEER C BL CHILDS MEADOWS	4/20/1999	0715	<0.01	<0.01	<0.01	0.01	
DEER C BL CHILDS MEADOWS	5/18/1999	0900	<0.01	<0.01	<0.01	0.01	
DEER C BL CHILDS MEADOWS	6/23/1999	0800	<0.01	<0.01	<0.01	0.02	
DEER C BL CHILDS MEADOWS	7/20/1999	0800	<0.01	<0.01	<0.01	0.02	
DEER C BL CHILDS MEADOWS	8/18/1999	0730	<0.01	<0.01	0.01	0.02	
DEER C BL CHILDS MEADOWS	11/08/99	0815	<.01	<.01	0.01	0.04	4.8
DEER C BL CHILDS MEADOWS	01/20/00	0900					
DEER C BL CHILDS MEADOWS	02/14/00	1030	0.02	<.01	<.01	0.11	
DEER C BL CHILDS MEADOWS	04/17/00	0915	<0.01	<0.01	<0.01	0.01	
Maximum Concentration			**0.04**	**0.02**	**0.01**	**0.11**	**4.80**
Minimum Concentration			**0.01**	**0.01**	**0.01**	**0.01**	**4.80**
DEER C A UPPER FALLS	12/9/1997	1320	0.01	<0.01	<0.01	0.02	
DEER C A A-LINE	4/29/1997	1200	<0.01	<0.01	<0.01	0.01	
DEER C A A-LINE	2/18/1998	1445	<0.01	<0.01	<0.01	0.01	
DEER C A A-LINE	3/18/1998	1030	<0.01	<0.01	<0.01	<0.01	
DEER C A A-LINE	1/19/1999	1050	0.02	0.02	<.01	0.18	
DEER C A A-LINE	3/15/1999	1100	0.04	0.02	0.01	0.01	
DEER C A A-LINE	01/20/00	1015					
DEER C A A-LINE	02/14/00	1145	0.01	<.01	<.01	0.1	
DEER C A A-LINE	04/17/00	1015	<0.01	<0.01	<0.01	0.02	
Maximum Concentration			**0.04**	**0.02**	**0.01**	**0.18**	
Minimum Concentration			**0.01**	**0.02**	**0.01**	**0.01**	

Station Name	Date	Time (PST)	Diss. NO3 + NO2 (mg/L)	Diss. NH3 (mg/L)	Diss. Ortho.-PO4 (mg/L)	Total P (mg/L)	TOC mg/L as C
DEER C A PONDEROSA WAY	4/29/1997	0930	<0.01	<0.01	<0.01	<0.01	
DEER C A PONDEROSA WAY	6/4/1997	1545	0.03	<0.01	<0.01	0.03	
DEER C A PONDEROSA WAY	7/9/1997	1720	0.01	0.01	<0.01	0.02	
DEER C A PONDEROSA WAY	8/14/1997	1700	0.42	0.03	<0.01	0.03	
DEER C A PONDEROSA WAY	9/16/1997	1810	<0.01	<0.01	<0.01	<0.2	
DEER C A PONDEROSA WAY	10/22/1997	0955	<0.01	0.02	<0.01	<0.2	
DEER C A PONDEROSA WAY	11/18/1997	0830	<0.01	<0.01	<0.01	<0.2	
DEER C A PONDEROSA WAY	12/12/1997	1500	<0.01	<0.01	<0.01	0.02	
DEER C A PONDEROSA WAY	1/26/1998	1315	<0.01	<0.01	<0.01	0.02	
DEER C A PONDEROSA WAY	4/21/1998	1740	<0.01	0.02	<0.01	0.01	
DEER C A PONDEROSA WAY	5/19/1998	0845	<0.01	<0.01	<0.01	0.01	
DEER C A PONDEROSA WAY	6/24/1998	1345	<0.01	<0.01	<0.01	<0.01	
DEER C A PONDEROSA WAY	7/21/1998	1100	0.01	<0.01	<0.01	0.01	
DEER C A PONDEROSA WAY	8/18/1998	1030	0.01	<0.01	<0.01	0.02	
DEER C A PONDEROSA WAY	9/15/1998	1030	0.04	<0.01	<0.01	<0.01	
DEER C A PONDEROSA WAY	10/20/1998	1020	<0.01	<0.01	0.01	0.03	
DEER C A PONDEROSA WAY	11/16/1998	1040	0.03	0.01	<0.01	0.04	
DEER C A PONDEROSA WAY	4/20/1999	1100	<0.01	<0.01	<0.01	0.02	
DEER C A PONDEROSA WAY	5/18/1999	1300	<0.01	<0.01	<0.01	0.01	
DEER C A PONDEROSA WAY	6/23/1999	1200	<0.01	0.01	<0.01	0.03	
DEER C A PONDEROSA WAY	7/20/1999	1130	<0.01	<0.01	<0.01	0.03	
DEER C A PONDEROSA WAY	8/18/1999	0930	<0.01	<0.01	<0.01	0.02	
DEER C A PONDEROSA WAY	11/08/99	1230	0.02	<.01	<.01	0.03	1.8
Maximum Concentration			**0.42**	**0.03**	**0.01**	**0.04**	**1.80**
Minimum Concentration			**0.01**	**0.01**	**0.01**	**0.01**	**1.80**

Station Name	Date	Time (PST)	Diss. NO3 + NO2 (mg/L)	Diss. NH3 (mg/L)	Diss. Ortho.-PO4 (mg/L)	Total P (mg/L)	TOC mg/L as C
DEER C A UPPER DIV DM	4/28/1997	1230	<0.01	<0.01	<0.01	0.01	
DEER C A UPPER DIV DM	6/5/1997	1150	<0.01	<0.01	0.01	0.02	
DEER C A UPPER DIV DM	7/10/1997	1200	<0.01	<0.01	<0.01	0.01	
DEER C A UPPER DIV DM	8/14/1997	1245	<0.01	<0.01	<0.01	0.01	
DEER C A UPPER DIV DM	9/19/1997	0745	<0.01	<0.01	<0.01	<0.2	
DEER C A UPPER DIV DM	10/16/1997	1220	<0.01	<0.01	<0.01	<0.2	
DEER C A UPPER DIV DM	11/13/1997	1600	<0.01	<0.01	<0.01	<0.2	
DEER C A UPPER DIV DM	1/23/1998	1415	0.01	0.01	0.01	0.02	
DEER C A UPPER DIV DM	2/20/1998	1000	<0.01	<0.01	<0.01	0.02	
DEER C A UPPER DIV DM	3/19/1998	1020	<0.01	<0.01	<0.01	0.01	
DEER C A UPPER DIV DM	4/23/1998	1200	<0.01	0.01	<.01	0.04	
DEER C A UPPER DIV DM	5/20/1998	1500	<0.01	<0.01	<0.01	<0.01	
DEER C A UPPER DIV DM	6/24/1998	1600	<0.01	<0.01	<0.01	0.01	
DEER C A UPPER DIV DM	7/21/1998	1400	<0.01	<0.01	<0.01	0.01	
DEER C A UPPER DIV DM	8/18/1998	1325	0.02	<0.01	<0.01	0.02	
DEER C A UPPER DIV DM	9/15/1998	1340	<0.01	<0.01	<0.01	<0.01	
DEER C A UPPER DIV DM	10/20/1998	1330	<0.01	<0.01	0.01	0.02	
DEER C A UPPER DIV DM	11/16/1998	1415	0.20	<0.01	<0.01	0.03	
DEER C A UPPER DIV DM	12/15/1998	1400	0.02	<0.01	<0.01	0.02	
DEER C A UPPER DIV DM	1/19/1999	1400	0.02	0.01	0.01	0.02	
DEER C A UPPER DIV DM	2/16/1999	1320	0.04	0.01	<0.01	0.02	
DEER C A UPPER DIV DM	3/15/1999	1350	<0.01	<0.01	0.01	<0.01	
DEER C A UPPER DIV DM	4/20/1999	1330	<0.01	<0.01	<0.01	0.03	
DEER C A UPPER DIV DM	5/18/1999	1430	<0.01	<0.01	<0.01	0.01	
DEER C A UPPER DIV DM	6/23/1999	1430	<0.01	0.01	<0.01	0.02	
DEER C A UPPER DIV DM	7/20/1999	1545	<0.01	<0.01	<0.01	0.02	
DEER C A UPPER DIV DM	8/18/1999	1200	<0.01	<0.01	<0.01	0.02	
DEER C A UPPER DIV DM	11/08/99	1445	0.02	<.01	0.01	0.05	1.4
DEER C A UPPER DIV DM	01/20/00	1230					
DEER C A UPPER DIV DM	02/14/00	1410	<.01	<.01	<.01	0.14	
DEER C A UPPER DIV DM	04/17/00	1240	<0.01	<0.01	<0.01	0.02	
Maximum Concentration			**0.20**	**0.01**	**0.01**	**0.14**	**1.40**
Minimum Concentration			**0.01**	**0.01**	**0.01**	**0.01**	**1.40**

Station Name	Date	Time (PST)	Diss. NO3 + NO2 (mg/L)	Diss. NH3 (mg/L)	Diss. Ortho.-PO4 (mg/L)	Total P (mg/L)	TOC mg/L as C
DEER C A HWY 99	4/28/1997	1130	0.01	<0.01	<0.01	0.01	
DEER C A HWY 99	6/5/1997	1300	<0.01	<0.01	<0.01	0.02	
DEER C A HWY 99	7/10/1997	1045	0.04	<0.01	<0.01	0.01	
DEER C A HWY 99	1/21/1998	1750	0.04	0.01	<0.01	0.03	
DEER C A HWY 99	2/20/1998	1150	0.30	<0.01	<0.01	0.02	
DEER C A HWY 99	3/17/1998	0830	0.01	<0.01	<0.01	0.02	
DEER C A HWY 99	4/23/1998	0850	<0.01	<0.01	<0.01	0.02	
DEER C A HWY 99	5/20/1998	1530	<0.01	<0.01	<0.01	0.01	
DEER C A HWY 99	1/19/1999	1545	<0.01	0.01	<0.01	0.02	2.2
DEER C A HWY 99	3/15/1999	1600	0.03	<0.01	0.01	0.01	1.0
DEER C A HWY 99	7/20/1999	1645	0.03	<0.01	<0.01	<0.01	1.5
DEER C A HWY 99	8/18/1999	1300	0.04	<0.01	<0.01	0.02	1.7
DEER C A HWY 99	01/20/00	1330					
DEER C A HWY 99	02/14/00	1510	0.02	<.01	<.01	0.19	4.1
Maximum Concentration			**0.30**	**0.01**	**0.01**	**0.19**	**4.10**
Minimum Concentration			**0.01**	**0.01**	**0.01**	**0.01**	**1.00**
DEER C A MOUTH	4/28/1997	1030	0.10	<0.01	<0.01	0.02	
DEER C A MOUTH	6/5/1997	1035	0.11	<0.01	<0.01	0.02	
DEER C A MOUTH	7/10/1997	0850	0.33	<0.01	<0.01	0.02	
DEER C A MOUTH	8/14/1997	1100	<0.01	<0.01	<0.01	0.02	
DEER C A MOUTH	9/17/1997	1430	0.09	0.01	<0.01	<0.2	
DEER C A MOUTH	10/14/1997	1450	0.02	<0.01	<0.01	<0.2	
DEER C A MOUTH	11/13/1997	1450	0.02	<0.01	<0.01	<0.2	
DEER C A MOUTH	12/11/1997	1615	0.06	<0.01	<0.01	0.02	
DEER C A MOUTH	6/24/1998	1800	0.07	<0.01	<0.01	0.02	
DEER C A MOUTH	7/21/1998	1540	0.26	<0.01	<0.01	0.02	
DEER C A MOUTH	8/18/1998	1515	0.32	<0.01	<0.01	0.02	1.5
DEER C A MOUTH	9/15/1998	1020	0.2	<0.01	<0.01	1.00	
DEER C A MOUTH	10/20/1998	1540	0.06	<0.01	<0.01	0.03	1.1
DEER C A MOUTH	11/16/1998	1540	0.05	<0.01	<0.01	0.03	1.0
DEER C A MOUTH	12/15/1998	1620	0.06	0.01	<0.01	.0.02	1.8
DEER C A MOUTH	2/16/1999	1520	0.05	<.01	<0.01	0.04	
DEER C A MOUTH	4/20/1999	1440	<0.01	<0.01	<0.01	0.04	1.1
DEER C A MOUTH	5/18/1999	1630	0.03	<0.01	<0.01	0.01	0.9
DEER C A MOUTH	6/23/1999	1600	0.09	<0.01	<0.01	0.03	1.1
DEER C A MOUTH	11/18/99	1600	<.01	<.01	<.01	0.04	1.4
DEER C A MOUTH	04/17/00	1345	<0.01	<0.01	<0.01	0.04	1.7
Maximum Concentration			**0.33**	**0.01**	**0.00**	**1.00**	**1.80**
Minimum Concentration			**0.02**	**0.01**	**0.00**	**0.01**	**0.90**

Appendix F. Deer Creek Mineral Results

Station Number	Station Name	Date	Time (PST)	Diss Ca (mg/L)	Diss Mg (mg/L)	Diss Na (mg/L)	Diss K (mg/L)	Diss SO4 (mg/L)	Diss Cl (mg/L)	Diss B (mg/L)	Diss Hardness (as CaCO3 mg/L)
A4-3160	DEER C BL CHILDS MEADOWS	04/29/97	1610	5.00	2.00	3.00	2.00	<1.	<1.	<0.1	20
A4-3160	DEER C BL CHILDS MEADOWS	06/11/97	1100	5.00	3.00	5.00	2.60	1	<1.	<0.1	25
A4-3160	DEER C BL CHILDS MEADOWS	07/08/97	1140	5.00	2.00	5.00	2.70	<1	<1	<0.1	20
A4-3160	DEER C BL CHILDS MEADOWS	08/06/97	1325	5.00	2.00	5.00	2.70	<1	<1	<0.1	20
A4-3160	DEER C BL CHILDS MEADOWS	09/15/97	1345	6.00	3.00	5.00	2.70	<1	1	<0.1	28
A4-3160	DEER C BL CHILDS MEADOWS	10/21/97	1540	5.00	3.00	5.00	2.80	1	1	<0.1	25
A4-3160	DEER C BL CHILDS MEADOWS	11/17/97	1335	5.00	3.00	5.00	2.90	<1	1	<0.1	25
A4-3160	DEER C BL CHILDS MEADOWS	12/09/97	1225	5.00	3.00	4.00	2.40	<1	<1	<0.1	25
A4-3160	DEER C BL CHILDS MEADOWS	01/22/98	1335	4.00	2.00	3.00	1.90	<1	<1	<0.1	18
A4-3160	DEER C BL CHILDS MEADOWS	02/18/98	1630	4.00	2.00	4.00	1.90	<1	<1	<0.1	18
A4-3160	DEER C BL CHILDS MEADOWS	03/23/98	1200	3.00	1.00	2.00	1.90	<1	<1	<0.1	12
A4-3160	DEER C BL CHILDS MEADOWS	04/24/98	1150	3.00	2.00	2.00	0.97	<1	2	<0.1	16
A4-3160	DEER C BL CHILDS MEADOWS	05/21/98	1000	4.00	2.00	3.00	1.30	<1	<1	<0.1	18
A4-3160	DEER C BL CHILDS MEADOWS	06/24/98	0845	3.96	1.68	2.74	1.11	1	<1	<0.1	18
A4-3160	DEER C BL CHILDS MEADOWS	08/18/98	0715	4.76	2.34	4.18	2.23	2	<1.0	<0.1	21
A4-3160	DEER C BL CHILDS MEADOWS	10/20/98	0745	5.00	2.00	5.00	2.50	<1	<1	<0.1	21
A4-3160	DEER C BL CHILDS MEADOWS	11/16/98	0845	5.00	3.00						25
A4-3160	DEER C BL CHILDS MEADOWS	12/15/98	1015	3.00	1.00	4.00	1.90	1	<1	<0.1	12
A4-3160	DEER C BL CHILDS MEADOWS	01/19/99	0830	4.00	2.00						18
A4-3160	DEER C BL CHILDS MEADOWS	02/16/99	0930	4.36	2.02	2.99	1.48	<1	<1	0.02	19
A4-3160	DEER C BL CHILDS MEADOWS	03/15/99	0845	4.00	2.00						18
A4-3160	DEER C BL CHILDS MEADOWS	04/20/99	0715	4.00	2.00	3.00	1.20	1	<1	<.1	18
A4-3160	DEER C BL CHILDS MEADOWS	05/18/99	0900	4.00	2.00						18
A4-3160	DEER C BL CHILDS MEADOWS	06/23/99	0800	5.00	2.00	4.00	3.00	1	<1	<0.1	21
A4-3160	DEER C BL CHILDS MEADOWS	07/20/99	0800	5.00	2.00						21
A4-3160	DEER C BL CHILDS MEADOWS	08/18/99	0730	5.00	2.00	5.00	2.10	<1	<1	<.1	21
A4-3160	DEER C BL CHILDS MEADOWS	11/08/99	0815	5.00	2.00	4.00	2.60	<1.0	1	<.1	21
A4-3160	DEER C BL CHILDS MEADOWS	01/20/00	0900								
A4-3160	DEER C BL CHILDS MEADOWS	02/14/00	1030	2.00	1.00	2.00	0.70	2	<1	<.1	9
A4-3160	DEER C BL CHILDS MEADOWS	4/17/2000	915	4	2	3	1.2	1	<1	<0.1	18
	Maximum concentration			**6.00**	**3.00**	**5.00**	**3.00**	**2.00**	**2.00**	**0.02**	**28.00**
	Minimum concentration			**2.00**	**1.00**	**2.00**	**0.70**	**1.00**	**1.00**	**0.02**	**9.00**

Station Number	Station Name	Date	Time (PST)	Diss Ca (mg/L)	Diss Mg (mg/L)	Diss Na (mg/L)	Diss K (mg/L)	Diss SO4 (mg/L)	Diss Cl (mg/L)	Diss B (mg/L)	Diss Hardness (as CaCO3 mg/L)
A4-3150	DEER C A A-LINE	04/29/97	1200	7.00	3.00	3.00	1.50	<1.	<1.	<0.1	30
A4-3150	DEER C A A-LINE	02/18/98	1445	7.00	3.00	4.00	1.20	1	<1	<0.1	30
A4-3150	DEER C A A-LINE	03/18/98	1030	6.00	2.00	3.00	1.90	<1	<1	<0.1	24
A4-3150	DEER C A A-LINE	01/19/99	1050	6.00	3.00						27
A4-3150	DEER C A A-LINE	03/15/99	1100	6.00	3.00						27
A4-3150	DEER C A A-LINE	01/20/00	1015								
A4-3150	DEER C A A-LINE	02/14/00	1145	4.00	2.00	2.00	0.73	2	<1	<.1	18
A4-3150	DEER C A A-LINE	04/17/00	1015	6.00	3.00	3.00	0.90	<1	<1	<0.1	27
	Maximum concentration			**7.00**	**3.00**	**3.00**	**0.90**	**2.00**	**0.00**	**0.00**	**27.00**
	Minimum concentration			**4.00**	**2.00**	**2.00**	**0.73**	**2.00**	**0.00**	**0.00**	**18.00**
A4-3145	DEER C A PONDEROSA WAY	04/29/97	0930	8.00	4.00	4.00	1.50	<1.	<1.	<0.1	36
A4-3145	DEER C A PONDEROSA WAY	06/04/97	1545	8.00	4.00	5.00	1.10	2	1	<0.1	36
A4-3145	DEER C A PONDEROSA WAY	07/09/97	1720	9.00	5.00	6.00	2.00	<1.	1	<0.1	43
A4-3145	DEER C A PONDEROSA WAY	08/14/97	1100	11.00	5.00	6.00	2.10	2	1	<0.1	48
A4-3145	DEER C A PONDEROSA WAY	09/16/97	1810	11.00	6.00	6.00	2.50	2	2	<0.1	52
A4-3145	DEER C A PONDEROSA WAY	10/22/97	0955	10.00	6.00	6.00	1.90	2	1	<0.1	50
A4-3145	DEER C A PONDEROSA WAY	11/18/97	0830	10.00	5.00	6.00	2.10	1	1	<0.1	46
A4-3145	DEER C A PONDEROSA WAY	12/12/97	1500	10.00	5.00	5.00	2.30	1	1	<0.1	46
A4-3145	DEER C A PONDEROSA WAY	01/26/98	1315	6.00	3.00	3.00	1.10	1	<1	<0.1	28
A4-3145	DEER C A PONDEROSA WAY	04/21/98	1740	6.00	3.00	3.00	1.10	<1	<1	<0.1	28
A4-3145	DEER C A PONDEROSA WAY	05/19/98	0845	7.00	3.00	3.00	1.30	<1	<1	<0.1	30
A4-3145	DEER C A PONDEROSA WAY	06/24/98	1345	6.78	3.34	3.00	1.00	1	<1	<0.1	30
A4-3145	DEER C A PONDEROSA WAY	8/18/1998	1030	9.00	5.00	5.00	2.00	1	1	<.1	43
A4-3145	DEER C A PONDEROSA WAY	10/20/1998	1020	10.00	6.00	6.00	1.90	<1	<1	0.1	50
A4-3145	DEER C A PONDEROSA WAY	11/16/98	1040	10.00	5.00						46
A4-3145	DEER C A PONDEROSA WAY	04/20/99	1100	6.00	3.00	3.00	1.10	1	<1	<.1	27
A4-3145	DEER C A PONDEROSA WAY	05/18/99	1300	7.00	3.00						30
A4-3145	DEER C A PONDEROSA WAY	06/23/99	1200	9.00	5.00	5.00	2.70	1	1	<.1	43
A4-3145	DEER C A PONDEROSA WAY	07/20/99	1130	10.00	5.00						46
A4-3145	DEER C A PONDEROSA WAY	08/18/99	0930	10.00	6.00	6.00	2.20	<1	1	<.1	50
A4-3145	DEER C A PONDEROSA WAY	11/08/99	1230	10.00	5.00	5.00	1.80	<1.0	1	<.1	46
	Maximum concentration			**11.00**	**6.00**	**6.00**	**2.70**	**2.00**	**2.00**	**0.10**	**52.00**
	Minimum concentration			**6.00**	**3.00**	**3.00**	**1.00**	**1.00**	**1.00**	**0.10**	**27.00**

Station Number	Station Name	Date	Time (PST)	Diss Ca (mg/L)	Diss Mg (mg/L)	Diss Na (mg/L)	Diss K (mg/L)	Diss SO4 (mg/L)	Diss Cl (mg/L)	Diss B (mg/L)	Diss Hardness (as CaCO3 mg/L)
A0-4341	DEER C A UPPER DIV DM	04/28/97	1230	8.00	4.00	5.00	2.00	1	2	<0.1	36
A0-4341	DEER C A UPPER DIV DM	06/05/97	1150	9.00	5.00	7.00	1.50	3	2	<0.1	43
A0-4341	DEER C A UPPER DIV DM	07/10/97	1200	11.00	6.00	10.00	2.00	<1.	3	0.1	52
A0-4341	DEER C A UPPER DIV DM	08/14/97	1245	12.00	6.00	10.00	2.10	3	4	0.2	54
A0-4341	DEER C A UPPER DIV DM	09/19/97	0745	11.00	6.00	11.00	2.60	2	5	0.1	52
A0-4341	DEER C A UPPER DIV DM	10/16/97	1220	11.00	6.00	11.00	1.80	3	4	0.1	52
A0-4341	DEER C A UPPER DIV DM	11/13/97	1600	11.00	6.00	11.00	1.60	3	4	0.1	52
A0-4341	DEER C A UPPER DIV DM	01/23/98	1415	7.00	4.00	4.00	1.20	1	2	<0.1	34
A0-4341	DEER C A UPPER DIV DM	02/20/98	1000	7.00	3.00	3.00	1.00	1	1	<0.1	30
A0-4341	DEER C A UPPER DIV DM	03/19/98	1020	7.00	3.00	4.00	1.90	1	1	<0.1	31
A0-4341	DEER C A UPPER DIV DM	04/23/98	1200	6.00	3.00	4.00	1.00	1	2	<0.1	28
A0-4341	DEER C A UPPER DIV DM	05/20/98	1500	7.00	4.00	4.00	1.20	<1.	1	<0.1	34
A0-4341	DEER C A UPPER DIV DM	06/24/98	1600	7.00	4.00	5.00	1.20	2	2	<.1	34
A0-4341	DEER C A UPPER DIV DM	8/18/1998	1325	10.00	5.00	8.00	2.00	2	3	0.112	46
A0-4341	DEER C A UPPER DIV DM	10/20/1998	1330	11.00	6.00	10.00	2.10	<1.0	3	0.1	52
A0-4341	DEER C A UPPER DIV DM	11/16/98	1415	10.00	6.00						50
A0-4341	DEER C A UPPER DIV DM	12/15/98	1400	7.00	4.00	7.00	1.10	2	2	<.1	34
A0-4341	DEER C A UPPER DIV DM	01/19/99	1400	6.00	3.00						27
A0-4341	DEER C A UPPER DIV DM	02/16/99	1320	7.00	4.00	5.00	1.60	2	2	<.01	34
A0-4341	DEER C A UPPER DIV DM	03/15/99	1350	7.00	4.00						34
A0-4341	DEER C A UPPER DIV DM	04/20/99	1330	6.00	3.00	4.00	1.10	1	<1	<.1	27
A0-4341	DEER C A UPPER DIV DM	05/18/99	1430	7.00	4.00						34
A0-4341	DEER C A UPPER DIV DM	06/23/99	1430	10.00	5.00	8.00	2.60	2	2	0.1	46
A0-4341	DEER C A UPPER DIV DM	07/20/99	1545	10.00	6.00						50
A0-4341	DEER C A UPPER DIV DM	08/18/99	1200	11.00	6.00	10.00	1.80	<1	4	0.1	52
A0-4341	DEER C A UPPER DIV DM	11/08/99	1445	11.00	6.00	12.00	1.70	2	6	0.2	52
A0-4341	DEER C A UPPER DIV DM	01/20/00	1230								
A0-4341	DEER C A UPPER DIV DM	02/14/00	1410	5.00	3.00	3.00	1.40	2	1	<.1	25
A0-4341	DEER C A UPPER DIV DM	04/17/00	1240	7.00	4.00	4.00	1.10	1	2	<0.1	34
	Maximum concentration			**12.00**	**6.00**	**12.00**	**2.60**	**3.00**	**6.00**	**0.20**	**54.00**
	Minimum concentration			**5.00**	**3.00**	**3.00**	**1.00**	**1.00**	**1.00**	**0.10**	**25.00**

Station Number	Station Name	Date	Time (PST)	Diss Ca (mg/L)	Diss Mg (mg/L)	Diss Na (mg/L)	Diss K (mg/L)	Diss SO4 (mg/L)	Diss Cl (mg/L)	Diss B (mg/L)	Diss Hardness (as CaCO3 mg/L)
A0-4321.01	DEER C A HWY 99	04/28/97	1130	8.00	4.00	6.00	1.80	1	2	<0.1	36
A0-4321.01	DEER C A HWY 99	06/05/97	1300	10.00	6.00	8.00	2.00	3	3	<0.1	50
A0-4321.01	DEER C A HWY 99	07/10/97	1045	14.00	9.00	10.00	2.30	3	4	0.1	72
A0-4321.01	DEER C A HWY 99	01/21/98	1750	7.00	4.00	4.00	0.90	1	1	<0.1	34
A0-4321.01	DEER C A HWY 99	02/20/98	1105	7.00	4.00	4.00	0.90	1	1	<0.1	34
A0-4321.01	DEER C A HWY 99	03/17/98	0830	7.00	4.00	4.00	1.90	1	1	<0.1	34
A0-4321.01	DEER C A HWY 99	04/23/98	0850	7.00	4.00	4.00	0.77	<1	2	<.1	34
A0-4321.01	DEER C A HWY 99	05/20/98	1530	7.00	4.00	4.00	1.10	<1	1	<0.1	34
A0-4321.01	DEER C A HWY 99	01/19/99	1545	6.00	3.00						27
A0-4321.01	DEER C A HWY 99	03/15/99	1600	7.00	4.00						34
A0-4321.01	DEER C A HWY 99	07/20/99	1645	14.00	8.00						68
A0-4321.01	DEER C A HWY 99	08/18/99	1300	16.00	10.00	11.00	2.20	2	4	0.2	81
A0-4321.01	DEER C A HWY 99	01/20/00	1330								
A0-4321.01	DEER C A HWY 99	02/14/00	1510	5.00	3.00	3.00	<.5	3	1	<.1	25
		Maximum concentration		**16.00**	**10.00**	**11.00**	**2.30**	**3.00**	**4.00**	**0.20**	**81.00**
		Minimum concentration		**5.00**	**3.00**	**3.00**	**0.77**	**1.00**	**1.00**	**0.10**	**25.00**

Station Number	Station Name	Date	Time (PST)	Diss Ca (mg/L)	Diss Mg (mg/L)	Diss Na (mg/L)	Diss K (mg/L)	Diss SO4 (mg/L)	Diss Cl (mg/L)	Diss B (mg/L)	Diss Hardness (as CaCO3 mg/L)
A0-4310	DEER C A MOUTH	04/28/97	1030	8.00	5.00	6.00	2.30	2	2	<0.1	36
A0-4310	DEER C A MOUTH	06/05/97	1035	11.00	7.00	8.00	1.70	4	3	<0.1	56
A0-4310	DEER C A MOUTH	07/10/97	0850	16.00	10.00	11.00	2.70	3	4	0.1	81
A0-4310	DEER C A MOUTH	08/14/97	1700	22.00	14.00	12.00	2.80	8	4	0.2	113
A0-4310	DEER C A MOUTH	09/17/97	1430	15.00	10.00	11.00	2.60	4	7	0.2	78
A0-4310	DEER C A MOUTH	10/14/97	1450	12.00	7.00	10.00	2.20	3	4	0.1	59
A0-4310	DEER C A MOUTH	11/13/97	1450	12.00	7.00	11.00	2.10	3	4	0.1	59
A0-4310	DEER C A MOUTH	12/11/97	1615	10.00	6.00	8.00	1.70	2	3	<0.1	50
A0-4310	DEER C A MOUTH	6/24/1998	1800	8.00	5.00	5.00	1.10	2	2	<0.1	41
A0-4310	DEER C A MOUTH	8/18/1998	1515	14.00	10.00	9.00	2.40	4	3	0.12	57
A0-4310	DEER C A MOUTH	10/20/1998	1540	12.00	7.00	10.00	1.70	<1	3	0.1	59
A0-4310	DEER C A MOUTH	11/16/1998	1540	12.00	7.00						59
A0-4310	DEER C A MOUTH	12/15/1998	1620	8.00	4.00	7.00	1.30	3	2	<.1	36
A0-4310	DEER C A MOUTH	2/16/1999	1520	7.00	4.00	5.00	1.10	1	2	<.01	34
A0-4310	DEER C A MOUTH	4/20/1999	1440	6.00	4.00	5.00	1.60	1	<1	<.1	31
A0-4310	DEER C A MOUTH	5/18/1999	1630	8.00	4.00						36
A0-4310	DEER C A MOUTH	6/23/1999	1600	11.00	7.00	8.00	1.80	2	3	0.1	56
A0-4310	DEER C A MOUTH	11/18/99	1600	12.00	7.00	10.00	1.50	1	4	0.2	59
A0-4310	DEER C A MOUTH	04/17/00	1345	7.00	4.00	5.00	1.40	2	2	<0.1	34
		Maximum concentration		**22.00**	**14.00**	**12.00**	**2.80**	**8.00**	**7.00**	**0.20**	**113.00**
		Minimum concentration		**6.00**	**4.00**	**5.00**	**1.10**	**1.00**	**2.00**	**0.10**	**31.00**

Appendix G. Deer Creek Organics

	BL CHILDS MEADOW	AB A-LINE	A UPPER DIV DM		A HWY 99		A MOUTH		
	2/8/1999 15:00	4/17/2000 10:15	2/8/1999 14:30	11/8/1999 14:45	12/7/2000 7:55	3/7/2001 10:00	2/8/1999 15:30	11/8/1999 16:00	4/17/2000 13:45
1,1,1,2-Tetrachloroethane µg/L [1]*	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
1,1,1-Trichloroethane µg/L [1]*	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
1,1,2,2-Tetrachloroethane µg/L [1]*	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
1,1,2-Trichloroethane µg/L [1]*	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
1,1-Dichloroethane µg/L [1]*	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
1,1-Dichloroethene µg/L [1]*	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
1,1-Dichloropropene µg/L [1]*	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
1,2,3-Trichlorobenzene µg/L [1]*	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
1,2,3-Trichloropropane µg/L [1]*	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
1,2,4-Trichlorobenzene µg/L [1]*	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
1,2,4-Trimethylbenzene µg/L [1]*	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
1,2-Dibromo-3-chloropropane (DBCP) µg/L [1]*	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
1,2-Dibromoethane (EDB) µg/L [1]*	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
1,2-Dichlorobenzene µg/L [1]*	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
1,2-Dichloroethane µg/L [1]*	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
1,2-Dichloropropane µg/L [1]*	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
1,3,5-Trimethylbenzene µg/L [1]*	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
1,3-Dichlorobenzene µg/L [1]*	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
1,3-Dichloropropane µg/L [1]*	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
1,4-Dichlorobenzene µg/L [1]*	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
2,2-Dichloropropane µg/L [1]*	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
2,4,5-T µg/L [1]*	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1
2,4,5-TP (Silvex) µg/L [1]*	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1
2,4-D µg/L [1]*	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1
2,4-DB µg/L [1]*	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1
2-Chlorotoluene µg/L [1]*	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
3-Hydroxycarbofuran µg/L [1]*	<2	<2	<2	<2	<2	<3	<2	<2	<2
4-Chlorotoluene µg/L [1]*	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
4-Isopropyltoluene µg/L [1]*	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
Alachlor µg/L [1]*	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05
Aldicarb µg/L [1]*	<2	<2	<2	<2	<2	<3	<2	<2	<2
Aldicarb sulfone µg/L [1]*	<2	<2	<2	<2	<2	<4	<2	<2	<2
Aldicarb sulfoxide µg/L [1]*	<2	<2	<2	<2	<2	<3	<2	<2	<2
Aldrin µg/L [1]*	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
Aminomethylphosphonic Acid (AMPA) µg/L [1]*	<100	<100	<100	<100	<100	N/A	<100	<100	<100
Atrazine µg/L [1]*	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02
Azinphos methyl (Guthion) µg/L [1]*	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05
BHC-alpha µg/L [1]*	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
BHC-beta µg/L [1]*	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
BHC-delta µg/L [1]*	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
BHC-gamma (Lindane) µg/L [1]*	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
Benfluralin µg/L [1]*	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
Benzene µg/L [1]*	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
Bromacil µg/L [1]*	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromobenzene µg/L [1]*	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
Bromochloromethane µg/L [1]*	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
Bromodichloromethane µg/L [1]*	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
Bromoform µg/L [1]*	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
Bromomethane µg/L [1]*	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
Captan µg/L [1]*	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02

Appendix H. Deer Creek Benthic Macroinvertebrates

Order	Family	Genus	Species	Stage	Deer Creek			
					blw Childs Meadows	at Hwy 99	blw Upper Falls	above A-Line
					9/22/1998	10/8/1998	9/22/1998	10/7/1998
Amphipoda	Talitridae	Hyalella	azteca	Adult				
Aranae				Adult				
Coleoptera	Dytiscidae	Dytiscus		Larva				
Coleoptera	Dytiscidae	Hydrovatus		Adult				
Coleoptera	Dytiscidae	Uvarus		Adult				
Coleoptera	Dytiscidae	Oreodytes		Adult		19	2	
Coleoptera	Elmidae	Ampumixus	dispar	Larva	98	29	316	463
Coleoptera	Elmidae	Ampumixus		Adult				
Coleoptera	Elmidae	Atractelmis		Larva				
Coleoptera	Elmidae	Cleptelmis		Larva				
Coleoptera	Elmidae	Cleptelmis		Adult				
Coleoptera	Elmidae	Lara		Larva				
Coleoptera	Elmidae	Microcylloepus		Larva		20		
Coleoptera	Elmidae	Microcylloepus		Adult		10		
Coleoptera	Elmidae	Narpus		Larva	19			
Coleoptera	Elmidae	Optioservus		Larva	336	504	75	190
Coleoptera	Elmidae	Optioservus		Adult	93	84	10	
Coleoptera	Elmidae	Ordobrevia		Larva		67	5	
Coleoptera	Elmidae	Ordobrevia		Adult				
Coleoptera	Elmidae	Zaitzevia	parvula	Larva	34	45	42	11
Coleoptera	Elmidae	Zaitzevia		Adult	15	36	13	
Coleoptera	Elmidae	Unidentified		Larva				
Coleoptera	Elmidae	Unidentified		Adult				
Coleoptera	Helophoridae	Helophorus		Larva				
Coleoptera	Hydrophilidae	Enochrus		Larva		10		
Coleoptera	Hydrophilidae	Tropisternus		Larva				
Coleoptera	Hydrophilidae	Unidentified		Adult				
Coleoptera	Psephenidae	Eubrianax	edwardsii	Larva				54
Coleoptera	Psephenidae	Psephenus		Larva				

Order	Family	Genus	Species	Stage	Deer Creek			
					blw Childs Meadows	at Hwy 99	blw Upper Falls	above A-Line
					9/22/1998	10/8/1998	9/22/1998	10/7/1998
Coleoptera	Ptilodactylidae	Stenocolus		Larva				
Decapoda	Astacidae	Pacifasticus	leniusculus	Larva				
Diptera	Athericidae	Atherix		Larva		10	4	
Diptera	Blepheraceridae	Agathon		Larva				
Diptera	Blepheraceridae	Blepharicera		Larva		29		
Diptera	Blepheraceridae	Philorus		Larva			4	
Diptera	Blepheraceridae	Unidentified		Pupa				
Diptera	Ceratapogonidae	Atrichopogon		Larva				
Diptera	Ceratapogonidae	Bezzia/Palpomyia		Larva				
Diptera	Ceratapogonidae	Probezzia		Larva	10			
Diptera	Chironomidae	Chironominae		Larva	129	2555	279	448
Diptera	Chironomidae	Diamesinae		Larva				
Diptera	Chironomidae	Orthocladiinae		Larva	3683	3585	531	2157
Diptera	Chironomidae	Tanypodinae		Larva		33		
Diptera	Chironomidae	Unidentified		Larva				
Diptera	Chironomidae	Unidentified		Pupa	229	449	43	312
Diptera	Deuterophlebiidae	Deuterophlebia		Larva				
Diptera	Dixidae	Dixa		Larva				
Diptera	Dixidae	Unidentified		Pupa				
Diptera	Empididae	Chelifera		Larva	10			
Diptera	Empididae	Clinocera		Larva			6	10
Diptera	Empididae	Hemerodromia		Larva				
Diptera	Empididae	Oreogeton		Larva				11
Diptera	Empididae	Unidentified		Larva				
Diptera	Empididae	Unidentified		Pupa	5			
Diptera	Pelecorhynchidae	Glutops		Larva	10			
Diptera	Simuliidae	Simulium		Larva	1773	1310	266	394
Diptera	Simuliidae	Prosilium		Larva				
Diptera	Simuliidae	Unidentified		Larva				
Diptera	Simuliidae	Unidentified		Pupa	264	163	7	86
Diptera	Tipulidae	Antocha		Larva	194		30	46

Order	Family	Genus	Species	Stage	Deer Creek			
					blw Childs Meadows	at Hwy 99	blw Upper Falls	above A-Line
					9/22/1998	10/8/1998	9/22/1998	10/7/1998
Diptera	Tipulidae	Dicranota		Larva	11		12	29
Diptera	Tipulidae	Hexatoma		Larva	19			
Diptera	Tipulidae	Tipula		Larva				
Diptera	Tipulidae	Unidentified		Larva				
Diptera	Tipulidae	Unidentified		Pupa		29	2	48
Ephemeroptera	Ameletidae	Ameletus		Nymph			6	16
Ephemeroptera	Baetidae	Acentrella		Nymph		130	7	53
Ephemeroptera	Baetidae	Baetis		Nymph	1006	1970	447	469
Ephemeroptera	Baetidae	Camelobaetidius		Nymph		234		
Ephemeroptera	Baetidae	Unidentified		Nymph		136	12	10
Ephemeroptera	Ephemerellidae	Caudatella		Nymph	21		3	
Ephemeroptera	Ephemerellidae	Drunella	coloradensis	Nymph				
Ephemeroptera	Ephemerellidae	Drunella	doddsii	Nymph	37		20	19
Ephemeroptera	Ephemerellidae	Drunella	proserpina	Nymph	15		6	18
Ephemeroptera	Ephemerellidae	Unidentified		Nymph				11
Ephemeroptera	Ephemerellidae	Ephemerella		Nymph	269	123	78	442
Ephemeroptera	Ephemerellidae	Serratella		Nymph	48			
Ephemeroptera	Ephemerellidae	Unidentified		Nymph	29	19	14	106
Ephemeroptera	Isonychiidae	Isonychia		Nymph				
Ephemeroptera	Heptageniidae	Cinygmula		Nymph	18		26	
Ephemeroptera	Heptageniidae	Epeorus		Nymph	241	10	738	779
Ephemeroptera	Heptageniidae	Ironodes		Nymph	74		3	157
Ephemeroptera	Heptageniidae	Cinygmula		Nymph				
Ephemeroptera	Heptageniidae	Rhithrogena		Nymph	936	187	204	443
Ephemeroptera	Heptageniidae	Unidentified		Nymph				
Ephemeroptera	Leptophlebiidae	Paraleptophlebia		Nymph	42		17	35
Ephemeroptera	Tricorythidae	Tricorythodes	fallax	Nymph		122		
Ephemeroptera	Unidentified			Nymph				
Gastropoda	Unidentified			Adult				
Gastropoda	Physidae	Physella		Adult				
Gastropoda	Planorbidae	Gyraulus		Larva		10		

Order	Family	Genus	Species	Stage	Deer Creek			
					blw Childs Meadows	at Hwy 99	blw Upper Falls	above A-Line
					9/22/1998	10/8/1998	9/22/1998	10/7/1998
Hydracarina	Unidentified			Adult	141	24	4	8
Lepidoptera	Pyralidae	Petrophila		Larva		47		
Lepidoptera	Pyralidae	Crambus		Larva				
Lepidoptera	Nepticulidae	Unidentified		Larva		10		
Megaloptera	Corydalidae	Orohermes		Larva			11	10
Megaloptera	Corydalidae	Unidentified		Larva			3	
Nematoda	Mermithidae	Unidentified		Adult	5		4	
Odonata	Coenagrionidae	Argia		Adult				
Odonata	Corduliidae	Unidentified		Pupa				
Odonata	Gomphidae	Ophiogomphus		Nymph		14		
Odonata	Gomphidae	Octogomphus		Nymph				
Odonata	Gomphidae	Unidentified		Nymph				
Odonata	Libellulidae	Brechmorhoga		Nymph		59		
Odonata	Libellulidae	Paltothemis		Nymph				
Odonata	Unidentified			Nymph		10		
Oligochaeta	Unidentified			Adult				
Oligochaeta	Enchytraeidae	Unidentified		Adult	232		118	
Oligochaeta	Lumbriculidae	Lumbriculus		Adult				
Oligochaeta	Lumbriculidae	Unidentified		Adult	48		25	88
Oligochaeta	Naididae	Nais		Adult	336	10		16
Oligochaeta	Naididae	Unidentified		Adult				
Ostracoda	Unidentified			Adult		7		
Pelecypoda	Unionidae-A	Unidentified		Adult				
Pelecypoda	Spaeriidae	Pisidium		Adult				
Pelecypoda	Hydrobiidae	Fluminicula		Adult			4	
Plecoptera	Capniidae	Unidentified		Nymph				
Plecoptera	Capniidae	Capnia		Nymph			10	
Plecoptera	Chloroperlidae	Suwallia		Nymph				8
Plecoptera	Chloroperlidae	Sweltsa		Nymph	51		6	
Plecoptera	Chloroperlidae	Unidentified		Nymph				
Plecoptera	Leuctridae	Unidentified		Nymph				

Order	Family	Genus	Species	Stage	Deer Creek			
					blw Childs Meadows	at Hwy 99	blw Upper Falls	above A-Line
					9/22/1998	10/8/1998	9/22/1998	10/7/1998
Plecoptera	Leuctridae	Moselia		Nymph			2	
Plecoptera	Leuctridae	Despaxia		Nymph				
Plecoptera	Nemouridae	Malenka		Nymph				
Plecoptera	Nemouridae	Zapada		Nymph	49		36	68
Plecoptera	Nemouridae	Unidentified		Nymph				
Plecoptera	Perlidae	Calineuria	californica	Nymph	125		134	200
Plecoptera	Perlidae	Doroneuria	baumanni	Nymph				
Plecoptera	Perlidae	Hesperoperla	pacifica	Nymph				69
Plecoptera	Perlidae	Unidentified		Nymph				
Plecoptera	Perlodidae	Cultus		Nymph			3	21
Plecoptera	Perlodidae	Isoperla		Nymph	48	10	5	19
Plecoptera	Perlodidae	Oroperla	barbara	Nymph	10			11
Plecoptera	Perlodidae	Perlinodes	aureus	Nymph	24		20	24
Plecoptera	Perlodidae	Skwala		Nymph	5			
Plecoptera	Perlodidae	Unidentified		Nymph				8
Plecoptera	Pteronarcyiidae	Pteronarcys	californica	Nymph		19		
Trichoptera	Pteronarcyiidae	Unidentified		Larva			4	
Trichoptera	Pteronarcyiidae	Unidentified		Pupa	10	10	24	66
Trichoptera	Brachycentridae	Amiocentrus		Larva	38			
Trichoptera	Brachycentridae	Brachycentrus		Larva		19		
Trichoptera	Brachycentridae	Micrasema		Larva	264		9	379
Trichoptera	Brachycentridae	Unidentified		Pupa				
Trichoptera	Calamoceralidae	Heteroplectron		Larva				8
Trichoptera	Glossosomatidae	Agapetus		Larva	15		2	64
Trichoptera	Glossosomatidae	Glossosoma		Larva	579		93	150
Trichoptera	Glossosomatidae	Protoptila		Larva		91		
Trichoptera	Glossosomatidae	Unidentified		Pupa			79	237
Trichoptera	Helicopsychidae	Helicopsyche		Larva				
Trichoptera	Hydropsychidae	Arctopsyche		Larva	126		60	143
Trichoptera	Hydropsychidae	Cheumatopsyche		Larva		837	7	
Trichoptera	Hydropsychidae	Hydropsyche		Larva	1797	4664	264	1367

Order	Family	Genus	Species	Stage	Deer Creek			
					blw Childs Meadows	at Hwy 99	blw Upper Falls	above A-Line
					9/22/1998	10/8/1998	9/22/1998	10/7/1998
Trichoptera	Hydropsychidae	Unidentified		Larva	117	399		18
Trichoptera	Hydropsychidae	Unidentified		Pupa		27		
Trichoptera	Hydroptilidae	Hydroptila		Larva	21			5
Trichoptera	Hydroptilidae	Leucotrichia		Larva				
Trichoptera	Hydroptilidae	Neotrichia		Larva				
Trichoptera	Hydroptilidae	Ochrotrichia		Larva	5	29		
Trichoptera	Hydroptilidae	Unidentified		Pupa	10	19	3	
Trichoptera	Lepidostomatidae	Lepidostoma		Larva	80		53	222
Trichoptera	Leptoceridae	Ceraclea		Larva				
Trichoptera	Leptoceridae	Oecetis		Larva				
Trichoptera	Leptoceridae	Nectopsyche		Larva				
Trichoptera	Limnephilidae	Unidentified		Pupa				8
Trichoptera	Odontoceridae	Marilia	flexuosa	Larva		7		
Trichoptera	Philopotamidae	Chimarra		Larva		7	3	
Trichoptera	Philopotamidae	Dolophilodes		Larva				27
Trichoptera	Philopotamidae	Wormaldia		Larva	10	20		
Trichoptera	Philopotamidae	Unidentified		Pupa		10		32
Trichoptera	Polycentropodidae	Polycentropus		Larva				
Trichoptera	Rhyacophilidae	Rhyacophila	w/gills	Larva	32		70	81
Trichoptera	Rhyacophilidae	Rhyacophila	w/o gills	Larva	134		42	51
Trichoptera	Rhyacophilidae	Rhyacophila	w/bumps	Larva				
Trichoptera	Rhyacophilidae	Unidentified		Pupa	18			75
Trichoptera	Sericostomatidae	Gumaga		Larva				
Trichoptera	Uenoidae	Neophylax		Larva			11	8
Trichoptera	Uenoidae	Neothremma		Larva			3	
Trichoptera	Uenoidae	Unidentified		Larva				
Tricladida	Planariidae	Dugesia		Adult		19	2	

					Deer Creek				
Order	**Family**	**Genus**	**Species**	**Stage**	**at Upper Diversion Dam 11/12/99**	**below Childs Meadow 09/18/99**	**at Hwy 99 11/12/99**	**blw Upper Falls 10/22/99**	**above A-Line 10/22/99**
Amphipoda	Talitridae	Hyalella	azteca	Adult					
Aranae				Adult					
Coleoptera	Dytiscidae	Dytiscus		Larva					
Coleoptera	Dytiscidae	Hydrovatus		Adult					
Coleoptera	Dytiscidae	Uvarus		Adult					
Coleoptera	Dytiscidae	Oreodytes		Adult					
Coleoptera	Elmidae	Ampumixus	dispar	Larva	124	48	10	382	576
Coleoptera	Elmidae	Ampumixus		Adult					
Coleoptera	Elmidae	Atractelmis		Larva	24				
Coleoptera	Elmidae	Cleptelmis		Larva			10		
Coleoptera	Elmidae	Cleptelmis		Adult					
Coleoptera	Elmidae	Lara		Larva					16
Coleoptera	Elmidae	Microcylloepus		Larva					
Coleoptera	Elmidae	Microcylloepus		Adult					
Coleoptera	Elmidae	Narpus		Larva					64
Coleoptera	Elmidae	Optioservus		Larva	1016	504	420	204	352
Coleoptera	Elmidae	Optioservus		Adult	17	96	38		
Coleoptera	Elmidae	Ordobrevia		Larva	128		38		
Coleoptera	Elmidae	Ordobrevia		Adult					
Coleoptera	Elmidae	Zaitzevia	parvula	Larva	16	12	19	46	64
Coleoptera	Elmidae	Zaitzevia		Adult		12	38		
Coleoptera	Elmidae	Unidentified		Larva				10	16
Coleoptera	Elmidae	Unidentified		Adult					
Coleoptera	Helophoridae	Helophorus		Larva					
Coleoptera	Hydrophilidae	Enochrus		Larva					
Coleoptera	Hydrophilidae	Tropisternus		Larva					
Coleoptera	Hydrophilidae	Unidentified		Adult					
Coleoptera	Psephenidae	Eubrianax	edwardsii	Larva					16
Coleoptera	Psephenidae	Psephenus		Larva	48		48		
Coleoptera	Ptilodactylidae	Stenocolus		Larva					

Order	Family	Genus	Species	Stage	Deer Creek				
					at Upper Diversion Dam	below Childs Meadow	at Hwy 99	blw Upper Falls	above A-Line
					11/12/99	09/18/99	11/12/99	10/22/99	10/22/99
Decapoda	Astacidae	Pacifasticus	leniusculus	Adult					
Diptera	Athericidae	Atherix		Larva					
Diptera	Blepheraceridae	Agathon		Larva					
Diptera	Blepheraceridae	Blepharicera		Larva					
Diptera	Blepheraceridae	Philorus		Larva					
Diptera	Blepheraceridae	Unidentified		Pupa					
Diptera	Ceratapogonidae	Atrichopogon		Larva					
Diptera	Ceratapogonidae	Bezzia /Palpomyia		Larva					
Diptera	Ceratapogonidae	Probezzia		Larva				10	
Diptera	Chironomidae	Chironominae		Larva	40	228	557	238	656
Diptera	Chironomidae	Diamesinae		Larva					16
Diptera	Chironomidae	Orthocladiinae		Larva	3600	3828	3192	1387	2496
Diptera	Chironomidae	Tanypodinae		Larva					16
Diptera	Chironomidae	Unidentified		Larva					
Diptera	Chironomidae	Unidentified		Pupa	400	96	353	96	160
Diptera	Deuterophlebiidae	Deuterophlebia		Larva					
Diptera	Dixidae	Dixa		Larva					
Diptera	Dixidae	Unidentified		Pupa					
Diptera	Empididae	Chelifera		Larva	16	24		10	
Diptera	Empididae	Clinocera		Larva					
Diptera	Empididae	Hemerodromia		Larva	48	12		10	
Diptera	Empididae	Oreogeton		Larva					16
Diptera	Empididae	Unidentified		Larva					
Diptera	Empididae	Unidentified		Pupa					
Diptera	Pelecorhynchidae	Glutops		Larva					
Diptera	Simuliidae	Simulium		Larva	480	264	6902	22	
Diptera	Simuliidae	Prosilium		Larva					
Diptera	Simuliidae	Unidentified		Larva					
Diptera	Simuliidae	Unidentified		Pupa		12	38		
Diptera	Tipulidae	Antocha		Larva	1080	276	10	79	224

					Deer Creek				
Order	**Family**	**Genus**	**Species**	**Stage**	**at Upper Diversion Dam 11/12/99**	**below Childs Meadow 09/18/99**	**at Hwy 99 11/12/99**	**blw Upper Falls 10/22/99**	**above A-Line 10/22/99**
Diptera	Tipulidae	Dicranota		Larva					48
Diptera	Tipulidae	Hexatoma		Larva				34	304
Diptera	Tipulidae	Tipula		Larva					
Diptera	Tipulidae	Unidentified		Larva					
Diptera	Tipulidae	Unidentified		Pupa					
Ephemeroptera	Ameletidae	Ameletus		Nymph				70	80
Ephemeroptera	Baetidae	Acentrella		Nymph	80		125		128
Ephemeroptera	Baetidae	Baetis		Nymph	512	492	1740	547	688
Ephemeroptera	Baetidae	Camelobaetidius		Nymph			12		
Ephemeroptera	Baetidae	Unidentified		Nymph	40		96		32
Ephemeroptera	Caenidae	Canis		Nymph			48		
Ephemeroptera	Ephemerellidae	Caudatella		Nymph		636		62	
Ephemeroptera	Ephemerellidae	Drunella	coloradensis	Nymph				10	
Ephemeroptera	Ephemerellidae	Drunella	doddsii	Nymph		24		53	32
Ephemeroptera	Ephemerellidae	Drunella	proserpina	Nymph					32
Ephemeroptera	Ephemerellidae	Unidentified		Nymph				130	
Ephemeroptera	Ephemerellidae	Ephemerrella		Nymph	968	936	38	1613	1632
Ephemeroptera	Ephemerellidae	Serratella		Nymph		24		115	16
Ephemeroptera	Ephemerellidae	Unidentified		Nymph	32			58	64
Ephemeroptera	Isonychiidae	Isonychia		Nymph					
Ephemeroptera	Heptageniidae	Cinygmula		Nymph		36		98	16
Ephemeroptera	Heptageniidae	Epeorus		Nymph	16	780	19	1584	1776
Ephemeroptera	Heptageniidae	Ironodes		Nymph				65	
Ephemeroptera	Heptageniidae	Cinygmula		Nymph					
Ephemeroptera	Heptageniidae	Rhithrogena		Nymph	16	792		331	256
Ephemeroptera	Heptageniidae	Unidentified		Nymph					
Ephemeroptera	Leptophlebiidae	Paraleptophlebia		Nymph		180		156	208
Ephemeroptera	Tricorythidae	Tricorythodes	fallax	Nymph	2936		478		
Ephemeroptera	Unidentified			Nymph					
Gastropoda	Unidentified			Adult					

					Deer Creek				
					at Upper Diversion Dam	below Childs Meadow	at Hwy 99	blw Upper Falls	above A-Line
Order	**Family**	**Genus**	**Species**	**Stage**	**11/12/99**	**09/18/99**	**11/12/99**	**10/22/99**	**10/22/99**
Gastropoda	Physidae	Physella		Adult			84		
Gastropoda	Planorbidae	Gyraulus		Adult					
Gastropoda	Planorbidae	Heliosoma		Adult				12	
Gastropoda	Planorbidae	Menetus		Adult			72		
Hydracarina	Unidentified			Adult	336	24	60	19	16
Lepidoptera	Pyralidae	Petrophila		Larva	1114		101		
Lepidoptera	Pyralidae	Crambus		Larva					
Lepidoptera	Nepticulidae	Unidentified		Larva					
Megaloptera	Corydalidae	Orohermes		Larva		24		41	16
Megaloptera	Corydalidae	Unidentified		Larva					
Nematoda	Mermithidae	Unidentified		Adult		60		29	48
Odonata	Coenagrionidae	Argia		Nymph					
Odonata	Corduliidae	Unidentified		Nymph					
Odonata	Gomphidae	Ophiogomphus		Nymph					
Odonata	Gomphidae	Octogomphus		Nymph					
Odonata	Gomphidae	Unidentified		Nymph					
Odonata	Libellulidae	Brechmorhoga		Nymph					
Odonata	Libellulidae	Paltothemis		Nymph					
Odonata	Libellulidae	Unidentified		Nymph					
Oligochaeta	Libellulidae	Unidentified		Adult					
Oligochaeta	Enchytraeidae	Unidentified		Adult			156		
Oligochaeta	Lumbriculidae	Lumbriculus		Adult			156		
Oligochaeta	Lumbriculidae	Unidentified		Adult		120	10	317	496
Oligochaeta	Naididae	Nais		Adult	2872		326		160
Oligochaeta	Naididae	Unidentified		Adult					
Ostracoda	Naididae	Unidentified		Adult					
Pelecypoda	Unionidae	Unidentified		Adult					
Pelecypoda	Spaeriidae	Pisidium		Adult					
Pelecypoda	Hydrobiidae	Fluminicula		Adult					
Plecoptera	Capniidae	Unidentified		Nymph					

					Deer Creek				
Order	**Family**	**Genus**	**Species**	**Stage**	**at Upper Diversion Dam 11/12/99**	**below Childs Meadow 09/18/99**	**at Hwy 99 11/12/99**	**blw Upper Falls 10/22/99**	**above A-Line 10/22/99**
Plecoptera	Capniidae	Capnia		Nymph					
Plecoptera	Chloroperlidae	Alloperla		Nymph					
Plecoptera	Chloroperlidae	Suwallia		Nymph					
Plecoptera	Chloroperlidae	Sweltsa		Nymph		36			64
Plecoptera	Chloroperlidae	Unidentified		Nymph					
Plecoptera	Leuctridae	Unidentified		Nymph					
Plecoptera	Leuctridae	Paraleuctra		Nymph					16
Plecoptera	Leuctridae	Moselia		Nymph					
Plecoptera	Leuctridae	Despaxia		Nymph					
Plecoptera	Nemouridae	Malenka		Nymph					
Plecoptera	Nemouridae	Zapada		Nymph		144		190	16
Plecoptera	Nemouridae	Unidentified		Nymph					
Plecoptera	Perlidae	Calineuria	californica	Nymph		192		295	816
Plecoptera	Perlidae	Doroneuria	baumanni	Nymph					
Plecoptera	Perlidae	Hesperoperla	pacifica	Nymph		48			16
Plecoptera	Perlidae	Unidentified		Nymph					
Plecoptera	Perlodidae	Cultus		Nymph	64	12			
Plecoptera	Perlodidae	Isoperla		Nymph	48	72		41	64
Plecoptera	Perlodidae	Oroperla	barbara	Nymph					
Plecoptera	Perlodidae	Perlinodes	aureus	Nymph					16
Plecoptera	Perlodidae	Skwala		Nymph				31	
Plecoptera	Perlodidae	Unidentified		Nymph					
Plecoptera	Pteronarcyiidae	Pteronarcys	californica	Nymph			38		
Trichoptera	Pteronarcyiidae	Unidentified		Larva				10	16
Trichoptera	Pteronarcyiidae	Unidentified		Pupa		12			
Trichoptera	Apataniidae	Apatania		Larva		24		36	32
Trichoptera	Brachycentridae	Amiocentrus		Larva				10	16
Trichoptera	Brachycentridae	Brachycentrus		Larva		24			
Trichoptera	Brachycentridae	Micrasema		Larva		720	10	214	2624
Trichoptera	Brachycentridae	Unidentified		Pupa					

					Deer Creek				
					at Upper Diversion Dam	below Childs Meadow	at Hwy 99	blw Upper Falls	above A-Line
Order	**Family**	**Genus**	**Species**	**Stage**	**11/12/99**	**09/18/99**	**11/12/99**	**10/22/99**	**10/22/99**
Trichoptera	Calamoceralidae	Heteroplectron		Larva					
Trichoptera	Glossosomatidae	Agapetus		Larva		12		12	16
Trichoptera	Glossosomatidae	Glossosoma		Pupa					
Trichoptera	Glossosomatidae	Glossosoma		Larva	16	108		22	16
Trichoptera	Glossosomatidae	Protoptila		Larva	48				
Trichoptera	Glossosomatidae	Unidentified		Pupa		36		55	16
Trichoptera	Helicopsychidae	Helicopsyche		Larva			12		
Trichoptera	Hydropsychidae	Arctopsyche		Larva		48		228	16
Trichoptera	Hydropsychidae	Cheumatopsyche		Larva	1952	12	202	36	
Trichoptera	Hydropsychidae	Hydropsyche		Larva	1712	1920	4644	2472	704
Trichoptera	Hydropsychidae	Unidentified		Larva	16	36	101	101	16
Trichoptera	Hydropsychidae	Unidentified		Pupa					
Trichoptera	Hydroptilidae	Hydroptila		Larva					16
Trichoptera	Hydroptilidae	Leucotrichia		Larva					
Trichoptera	Hydroptilidae	Neotrichia		Larva					
Trichoptera	Hydroptilidae	Ochrotrichia		Larva					
Trichoptera	Hydroptilidae	Unidentified		Pupa		12			
Trichoptera	Lepidostomatidae	Lepidostoma		Larva		144		96	704
Trichoptera	Leptoceridae	Ceraclea		Larva					
Trichoptera	Leptoceridae	Oecetis		Larva	184				
Trichoptera	Leptoceridae	Mystacides		Larva				12	
Trichoptera	Leptoceridae	Nectopsyche		Larva			36		
Trichoptera	Limnephilidae	Unidentified		Pupa				10	
Trichoptera	Odontoceridae	Marilia	flexuosa	Larva					
Trichoptera	Philopotamidae	Chimarra		Larva	33		242		
Trichoptera	Philopotamidae	Dolophilodes		Larva					16
Trichoptera	Philopotamidae	Wormaldia		Larva					
Trichoptera	Philopotamidae	Unidentified		Pupa					
Trichoptera	Polycentropodidae	Polycentropus		Larva	16				
Trichoptera	Rhyacophilidae	Rhyacophila	w/gills	Larva		12		91	16

					Deer Creek				
					at Upper Diversion Dam	below Childs Meadow	at Hwy 99	blw Upper Falls	above A-Line
Order	**Family**	**Genus**	**Species**	**Stage**	**11/12/99**	**09/18/99**	**11/12/99**	**10/22/99**	**10/22/99**
Trichoptera	Rhyacophilidae	Rhyacophila	w/o gills	Larva					
Trichoptera	Rhyacophilidae	Rhyacophila	w/bumps	Larva					
Trichoptera	Rhyacophilidae	Rhyacophila	w/o gills w/o bumps	Larva		96		156	112
Trichoptera	Rhyacophilidae	Unidentified		Pupa				12	
Trichoptera	Sericostomatidae	Gumaga		Larva		24		19	48
Trichoptera	Uenoidae	Neophylax		Larva		12		31	64
Trichoptera	Uenoidae	Neothremma		Larva					
Trichoptera	Uenoidae	Oligophlebodes		Larva				10	
Trichoptera	Uenoidae	Unidentified		Larva					
Tricladida	Planariidae	Dugesia		Adult	32		310	24	16

Appendix I. Fish Tissue Results

			Deer Creek/	Deer Creek/
			Hwy 99	Ponderosa Way
	Reporting Limit(RL)	Method Blank	DC/H99-3F	DC/PW-4F
	fresh weight	fresh weight	fresh weight	fresh weight
	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)
naphthalene	10	<RL	<RL	<RL
2-methylnaphthalene	10	<RL	<RL	<RL
1-methylnaphthalene	10	<RL	<RL	<RL
biphenyl	10	<RL	<RL	<RL
2,6-dimethylnaphthalene	10	<RL	<RL	<RL
acenaphthylene	10	<RL	<RL	<RL
acenaphthene	10	<RL	<RL	<RL
2,3,5-trimethylnaphthaler	10	<RL	<RL	<RL
fluorene	10	<RL	<RL	<RL
phenanthrene	10	<RL	<RL	<RL
anthracene	10	<RL	<RL	<RL
1-methylphenanthrene	10	<RL	<RL	<RL
fluoranthene	10	<RL	<RL	<RL
pyrene	10	<RL	<RL	<RL
benz[a]anthracene	10	<RL	<RL	<RL
chrysene	10	<RL	<RL	<RL
benzo[b]fluoranthene	10	<RL	<RL	<RL
benzo[k]fluoranthene	10	<RL	<RL	<RL
benzo[e]pyrene	10	<RL	<RL	<RL
benzo[a]pyrene	10	<RL	<RL	<RL
perylene	10	<RL	<RL	<RL
indeno[1,2,3-cd]pyrene	10	<RL	<RL	<RL
dibenz[a,h]anthracene	10	<RL	<RL	<RL
benzo[ghi]perylene	10	<RL	<RL	<RL
Surrogate % Recovery				
naphthalene-d8		114	112	90
biphenyl-d10		140	127	103
acenaphthene-d10		150	148	111
pyrene-d10		131	127	122
benz[a]anthracene-d12		71	93	106
benz[e]pyrene-d12		79	93	102
perylene-d12		79	93	77
benzo(g,h,l)perylene-d12		46	93	87
Average recovery		101	111	100
<RL= less than reporting limit				

		Method	Deer Creek below	Deer Creek below	Deer Creek	Deer Creek
		Blank	Childs Meadow	Childs Meadow	@ Hwy 99	@ Hwy 99
			8/13/99	8/13/99	8/24/99	8/24/99
			RCP	RBT	RCP	SMB
	Reporting Limit		Riffle sculpin	Rainbow trout	Riffle sculpin	Small mouth bass
	Fresh Wt.	**Fresh Wt.**	**Fresh Wt.**	**Fresh Wt.**	**Fresh Wt.**	**Fresh Wt.**
	ppb (ng/g)	**ppb (ng/g)**	**ppb (ng/g)**	**ppb (ng/g)**	**ppb (ng/g)**	**ppb (ng/g)**
naphthalene	**10**	< RL	< RL	< RL	< RL	< RL
2-methylnaphthalene	**10**	< RL	< RL	< RL	< RL	< RL
1-methylnaphthalene	**10**	< RL	< RL	< RL	< RL	< RL
biphenyl	**10**	< RL	< RL	< RL	< RL	< RL
2,6-dimethylnaphthalene	**10**	< RL	< RL	< RL	< RL	< RL
acenaphthylene	**10**	< RL	< RL	< RL	< RL	< RL
acenaphthene	**10**	< RL	< RL	< RL	< RL	< RL
2,3,5-trimethylnaphthalene	**10**	< RL	< RL	< RL	< RL	< RL
fluorene	**10**	< RL	< RL	< RL	< RL	< RL
phenanthrene	**10**	< RL	< RL	< RL	< RL	< RL
anthracene	**10**	< RL	< RL	< RL	< RL	< RL
1-methylphenanthrene	**10**	< RL	< RL	< RL	< RL	< RL
fluoranthene	**10**	< RL	< RL	< RL	< RL	< RL
pyrene	**10**	< RL	< RL	< RL	< RL	< RL
benz[a]anthracene	**10**	< RL	< RL	< RL	< RL	< RL
chrysene	**10**	< RL	< RL	< RL	< RL	< RL
benzo[b]fluoranthene	**10**	< RL	< RL	< RL	< RL	< RL
benzo[k]fluoranthene	**10**	< RL	< RL	< RL	< RL	< RL
benzo[e]pyrene	**10**	< RL	< RL	< RL	< RL	< RL
benzo[a]pyrene	**10**	< RL	< RL	< RL	< RL	< RL
perylene	**10**	< RL	< RL	< RL	< RL	< RL
indeno[1,2,3-cd]pyrene	**10**	< RL	< RL	< RL	< RL	< RL
dibenz[a,h]anthracene	**10**	< RL	< RL	< RL	< RL	< RL
benzo[ghi]perylene	**10**	< RL	< RL	< RL	< RL	< RL
Percent Moisture		**NA**	**77.9**	**76.8**	**77.2**	**79.2**
<RL= less than reporting limit						
Surrogate Percent Recovery						
naphthalene-d8		**87**	**91**	**87**	**91**	**93**
biphenyl-d10		**93**	**96**	**93**	**99**	**96**
acenaphthene-d10		**88**	**97**	**88**	**103**	**101**
pyrene-d10		**105**	**110**	**105**	**128**	**113**
benz[a]anthracene-d12		**107**	**113**	**107**	**138**	**116**
benz[e]pyrene-d12		**104**	**100**	**104**	**114**	**91**
perylene-d12		**101**	**88**	**101**	**110**	**93**
benzo(g,h,I)perylene-d12		**87**	**84**	**87**	**93**	**67**
Average Surrogate Recovery		**96**	**97**	**96**	**109**	**96**

Pesticide	Reporting Limit (RL) fresh weight ppb (ng/g)	Deer Creek/ Ponderosa Way DC/PW-4F fresh weight ppb (ng/g)	Deer Creek/ Ponderosa Way DC/PW-4F DUP fresh weight ppb (ng/g)	Mill Creek/ Black Rock MC/BR-5F fresh weight ppb (ng/g)
aldrin	1	<RL	<RL	<RL
chlordane, cis	2	<RL	<RL	<RL
chlordane, trans	2	<RL	<RL	<RL
chlordene, alpha	1	<RL	<RL	<RL
chlordene, gamma	1	<RL	<RL	<RL
chlorpyrifos	2	UJ	UJ	UJ
dacthal	2	<RL	<RL	<RL
DCBP, p,p'	10	<RL	<RL	<RL
DDD, o,p'	2	<RL	<RL	<RL
DDD, p,p'	2	<RL	<RL	<RL
DDE, o,p'	2	<RL	<RL	<RL
DDE, p,p'	2	<RL	<RL	<RL
DDMU, p,p'	3	<RL	<RL	<RL
DDT, o,p'	3	<RL	<RL	<RL
DDT, p,p'	5	<RL	<RL	<RL
diazinon	20	<RL	<RL	<RL
dicofol	10	<RL	<RL	<RL
dieldrin	2	<RL	<RL	<RL
endosulfan I	2	<RL	<RL	<RL
endosulfan II	10	<RL	<RL	<RL
endosulfan sulfate	10	<RL	<RL	<RL
endrin	2	<RL	<RL	<RL
ethion	6	UJ	UJ	UJ
HCH, alpha	1	<RL	<RL	<RL
HCH, beta	2	<RL	<RL	<RL
HCH, delta	2	<RL	<RL	<RL
HCH, gamma	1	<RL	<RL	<RL
heptachlor	2	UJ	UJ	UJ
heptachlor epoxide	1	<RL	<RL	<RL
hexachlorobenzene	0.3	<RL	<RL	<RL
methoxychlor	5	<RL	<RL	<RL
mirex	3	<RL	<RL	<RL
nonachlor, cis	3	<RL	<RL	<RL
nonachlor, trans	1	<RL	<RL	<RL
oxadiazon	3	<RL	<RL	<RL
oxychlordane	1	<RL	<RL	<RL
parathion, ethyl	2	UJ	UJ	UJ
parathion, methyl	4	UJ	UJ	UJ
tedion	2	<RL	<RL	<RL
toxaphene	40	<RL	<RL	<RL
Aroclor 1248	30	<RL	<RL	<RL
Aroclor 1254	15	<RL	<RL	<RL
Aroclor 1260	15	<RL	<RL	<RL
Surrogate % Recovery				
207		85.2	96.6	93.5
DBOB		62.1	64.1	64.9
ppDDD*		82.5	79.5	81.0
DBCE		63.2	59.5	58.6
Percent Moisture:		79.5	79.7	79.5
Percent Lipid:		0.932	1.09	0.907

<RL = less than reporting limit

UJ = the analyte was not detected above the reported sample quantitation limit. However, the reported quantitatin limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

		Method	Deer Creek below	Deer Creek below	Deer Creek below	Deer Creek @ Hwy 99	Deer Creek @ Hwy 99
		Blank	Childs Meadow	Childs Meadow	Childs Meadow		
			8/13/99	8/13/99	8/13/99	8/24/99	8/24/99
			RCP	RBT	RBT	RCP	SMB
			Riffle sculpin	Rainbow trout	Rainbow trout	Riffle sculpin	Small mouth bass
	Reporting Limit	**Fresh Wt.**	**Fresh Wt.**	**Fresh Wt.**	**Fresh Wt.**	**Fresh Wt.**	**Fresh Wt.**
	Fresh Wt. ppb	**ppb (ng/g)**	**ppb (ng/g)**	**ppb (ng/g)**	**ppb (ng/g)**	**ppb (ng/g)**	**ppb (ng/g)**
aldrin	1.0	ND	ND	ND	ND	ND	ND
chlordane, cis	2.0	ND	ND	<RL	<RL	ND	ND
chlordane, trans	2.0	ND	ND	<RL	ND	<RL	ND
chlordene, alpha	1.0	ND	ND	ND	ND	ND	ND
chlordene, gamma	1.0	ND	ND	ND	ND	ND	ND
chlorpyrifos	2.0	ND	ND	ND	ND	<RL	<RL
DACTHAL	2.0		<RL	ND	ND	ND	ND
DDD, o,p'	2.0	ND	ND	ND	ND	ND	ND
DDD, p,p'	2.0	ND	ND	<RL	<RL	ND	ND
DDE, o,p'	2.0	ND	ND	ND	ND	ND	ND
DDE, p,p'	2.0	ND	<RL	**4.89**	**4.01**	<RL	<RL
DDMU, p,p'	3.0	ND	ND	<RL	ND	ND	ND
DDT, o,p'	3.0	ND	ND	ND	ND	ND	ND
DDT, p,p'	5.0	ND	ND	<RL	<RL	ND	ND
diazinon	20.0	ND	<RL	<RL	<RL	<RL	ND
dieldrin	2.0	ND	ND	<RL	ND	ND	ND
endosulfan I	2.0	ND	ND	ND	ND	ND	ND
endosulfan II	10.0	ND	ND	ND	ND	ND	ND
endosulfan sulfate	10.0	ND	ND	ND	ND	ND	ND
endrin	2.0	ND	ND	ND	ND	ND	ND
ethion	6.0	ND	ND	ND	ND	ND	ND
hch, alpha	1.0	ND	ND	ND	ND	ND	ND
hch, beta	2.0	ND	ND	ND	ND	ND	ND
hch, gamma	1.0	ND	ND	ND	ND	ND	ND
heptachlor	2.0	ND	ND	ND	ND	ND	ND
heptachlor epoxide	1.0	ND	ND	ND	ND	ND	ND
hexachlorobenzene	0.3	ND	<RL	<RL	<RL	<RL	ND
methoxychlor	5.0	**5.69**	ND	ND	ND	ND	ND
mirex	3.0	ND	ND	<RL	<RL	ND	ND
nonachlor, cis	2.0	ND	ND	<RL	<RL	ND	ND
nonachlor, trans	1.0	ND	<RL	<RL	<RL	<RL	ND
oxadiazon	3.0	ND	ND	<RL	ND	ND	ND
oxychlordane	1.0	ND	ND	<RL	ND	ND	ND
parathion, ethyl	2.0	ND	ND	ND	ND	ND	ND
parathion, methyl	4.0	ND	ND	ND	ND	ND	ND
tedion	2.0	ND	ND	ND	ND	ND	ND
toxaphene	50.0	ND	ND	ND	ND	ND	ND
Aroclor 1248	50.0	ND	ND	ND	ND	ND	ND
Aroclor 1254	10.0	ND	ND	ND	ND	ND	ND
Aroclor 1260	10.0	ND	ND	ND	ND	ND	ND
Percent Moisture:		NA	77.9	76.8	76.9	77.2	79.2
Percent Lipid:		NA	2.11	3.28	2.42	2.84	0.930
Surrogate Percent Recovery							
207		92.3	110.6	104.5	100.5	100.8	102.6
DBOB		70.9	86.2	84.0	78.6	86.4	84.4
DDD*, p,p'		89.3	101.6	106.9	94.6	111.1	111.4
DBCE		80.3	99.3	84.8	92.6	96.9	76.8

Appendix J. Stream Gravel Results

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

CLASSIFICATION TEST SUMMARY

DIVISION OF ENGINEERING
CIVIL ENGINEERING
CANALS AND LEVEES SECTION

PROJECT: NORTHERN DISTRICT **FEATURE:** DEER CREEK below CHILD'S MEADOW

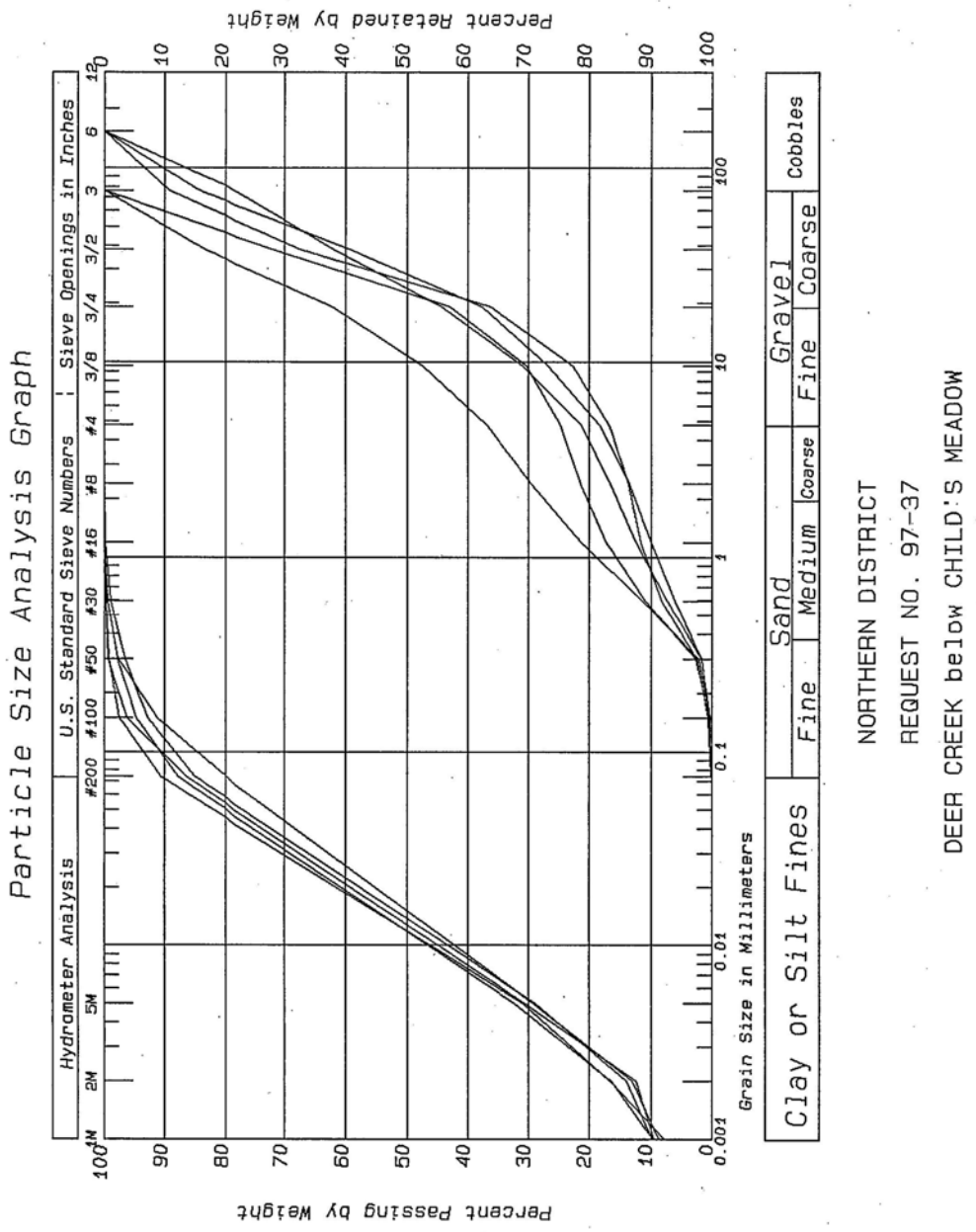
LAB NO.	HOLE NO.	FIELD SAMPLE NO.	TYPE	PERCENT FINER															DRY WEIGHT		CLASSIFICATION	
				MECHANICAL ANALYSIS												HYDROMETER						
				GRAVEL						SAND						SILT & CLAY					GROUP SYMBOL	GROUP NAME
				150mm	75mm	37.5mm	19mm	9.5mm	4.75mm	2.36mm	1.18mm	0.6mm	0.3mm	0.15mm	.075mm	.005mm	.002mm	.001mm	GRAMS	POUNDS		
97-877	#1	97-490	water**									100	99	96	86	31	12	10	14	0.031		Fine-grained***
97-878	#2	97-492	water**									100	98	91	80	29	13	9	9	0.020		Fine-grained***
97-879	#3	97-494	water**									100	99	97	91	31	17	8	17	0.037		Fine-grained***
97-880	#4	97-496	water**								100	99	98	95	88	32	17	10	15	0.033		Fine-grained***
97-881	#5	97-498	water**								100	99	97	93	85	29	14	10	10	0.022		Fine-grained***
97-882	#1	97-491	gravel*	100	84	60	38	27	18	14	10	6	2	0	0				5126	11.28	GW	Well-graded gravel w/ sand & cobbles
97-883	#2	97-493	gravel*	100	78	62	44	31	21	17	12	7	2	0	0				5364	11.80	GW	Well-graded gravel w/ sand & cobbles
97-884	#3	97-495	gravel*		100	72	43	30	25	21	17	11	3	1	0				5477	12.05	GP	Poorly graded gravel w/ sand
97-885	#4	97-497	gravel*	100	89	68	36	23	17	14	12	8	2	1	0				5506	12.11	GP	Poorly graded gravel w/ sand & cobbles
97-886	#5	97-499	gravel*		100	83	62	47	37	30	21	11	2	1	0				4181	9.20	GP	Poorly graded gravel w/ sand

Sheet 1 of 7

DATE: 12/29/97
INITIAL: RGJ
REQUEST NO.: 97-37

REMARKS:
* Canvas bag "gravel" samples.
** Plastic container "water" samples.
*** Accurate classification would require Atterberg Limits testing.

IM - INSUFFICIENT MATERIAL
NP - NON-PLASTIC
NG - NO GOOD


Particle Size Analysis Graph
Hydrometer Analysis
U.S. Standard Sieve Numbers
Sieve Openings in Inches
1M 2M 5M #200 #100 #50 #30 #16 #8 #4 3/8 3/4 3/2 3 6 12
Percent Passing by Weight
Percent Retained by Weight
Grain Size in Millimeters
0.004 0.01 0.1 1 10 100
Clay or Silt Fines
Sand
Fine Medium Coarse
Gravel
Fine Coarse
Cobbles
NORTHERN DISTRICT
REQUEST NO. 97-37
DEER CREEK below CHILD'S MEADOW

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

CLASSIFICATION TEST SUMMARY

DIVISION OF ENGINEERING
CIVIL ENGINEERING
CANALS AND LEVEES SECTION

PROJECT: NORTHERN DISTRICT **FEATURE:** DEER CREEK at UPPER FALLS

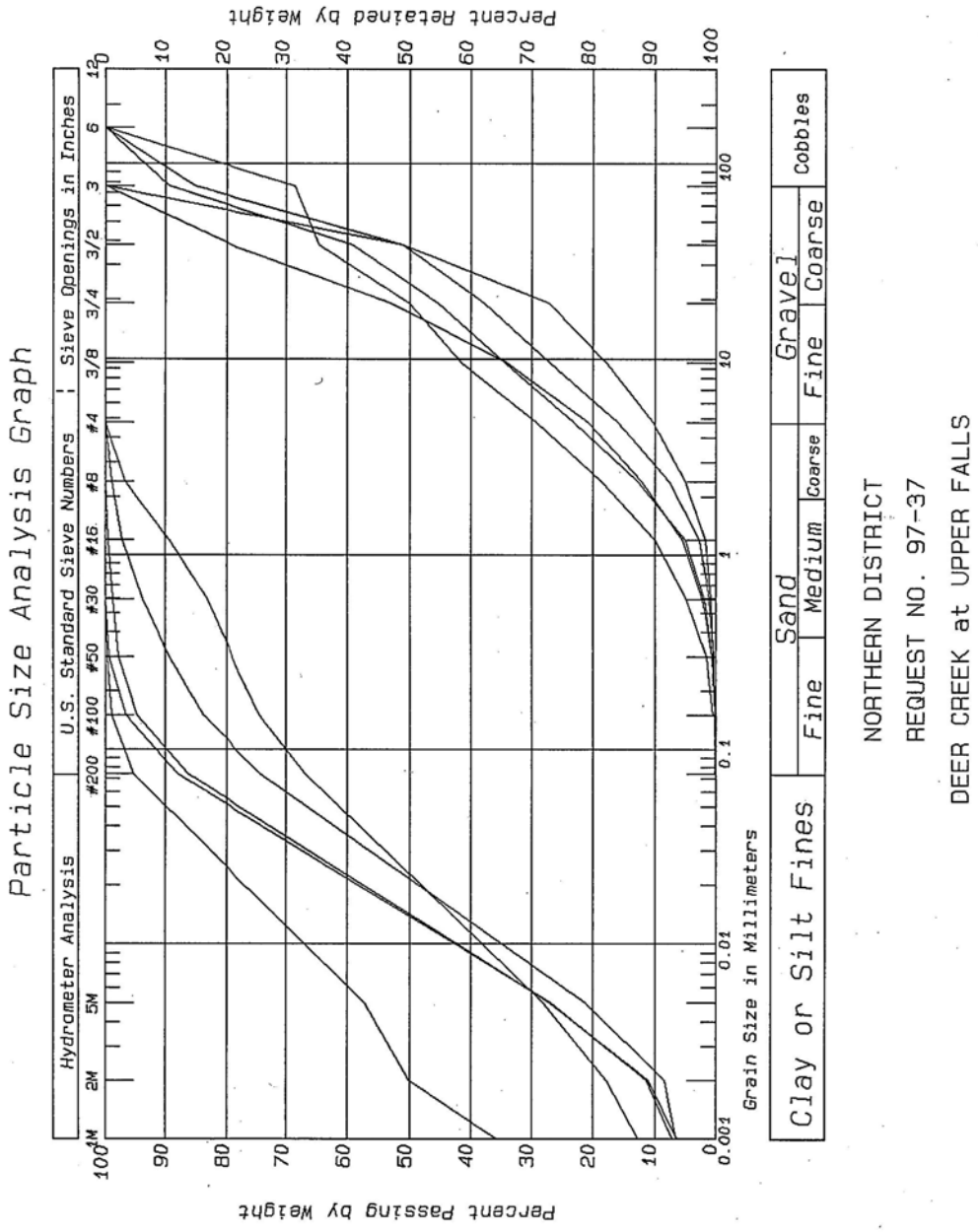
LAB. NO.	HOLE NO.	FIELD SAMPLE NO.	TYPE	PERCENT FINER															DRY WEIGHT		CLASSIFICATION	
				MECHANICAL ANALYSIS												HYDROMETER						
				GRAVEL					SAND							SILT & CLAY						
				150mm	75mm	37.5mm	19mm	9.5mm	4.75mm	2.36mm	1.18mm	0.6mm	0.3mm	0.15mm	.075mm	.005mm	.002mm	.001mm	GRAMS	POUNDS	GROUP SYMBOL	GROUP NAME
97-887	#1	97-500	water**								100	99	98	95	86	27	11	6	6	0.013		Fine-grained ***
97-888	#2	97-502	water**						100	97	89	83	79	75	67	28	18	13	8	0.018		Fine-grained ***
97-889	#3	97-504	water**										100	99	95	57	50	36	3	0.007		Fine-grained ***
97-890	#4	97-506	water**						100	99	97	94	89	84	74	21	8	7	22	0.048		Fine-grained ***
97-891	#5	97-508	water**									100	99	97	88	27	11	7	22	0.048		Fine-grained ***
97-892	#1	97-501	gravel*	100	85	51	38	27	16	8	3	1	0	0	0				5431	11.95	GP	Poorly graded gravel w/ sand & cobbles
97-893	#2	97-503	gravel*	100	89	59	46	34	23	13	5	2	1	0	0				6202	13.64	GP	Poorly graded gravel w/ sand & cobbles
97-894	#3	97-505	gravel*	100	69	65	50	42	29	19	10	5	2	1	0				5677	12.49	GP	Poorly graded gravel w/ sand & cobbles
97-895	#4	97-507	gravel*		100	79	53	34	21	12	6	2	1	0	0				6420	14.12	GW	Well-graded gravel w/ sand
97-896	#5	97-509	gravel*		100	51	27	18	10	5	2	1	0	0	0				5734	12.61	GW	Well-graded gravel

Sheet 2 of 7

DATE: 12/29/97
INITIAL: RGJ
REQUEST NO.: 97-37

REMARKS:
* Canvas bag "gravel" samples.
** Plastic container "water" samples.
*** Accurate classification would require Atterberg Limits testing.

IM - INSUFFICIENT MATERIAL
NP - NON-PLASTIC
NG - NO GOOD


Particle Size Analysis Graph
Hydrometer Analysis
U.S. Standard Sieve Numbers
Sieve Openings in Inches
#200 #100 #50 #30 #16 #8 #4 3/8 3/4 3/2 3 6 12
1M 2M 5M
Percent Passing by Weight
Percent Retained by Weight
Grain Size in Millimeters
0.001 0.01 0.1 1 10 100
Clay or Silt Fines
Sand
Fine Medium Coarse
Gravel
Fine Coarse
Cobbles
NORTHERN DISTRICT
REQUEST NO. 97-37
DEER CREEK at UPPER FALLS

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

CLASSIFICATION TEST SUMMARY

DIVISION OF ENGINEERING
CIVIL ENGINEERING
CANALS AND LEVEES SECTION

PROJECT: NORTHERN DISTRICT **FEATURE:** DEER CREEK at A-LINE

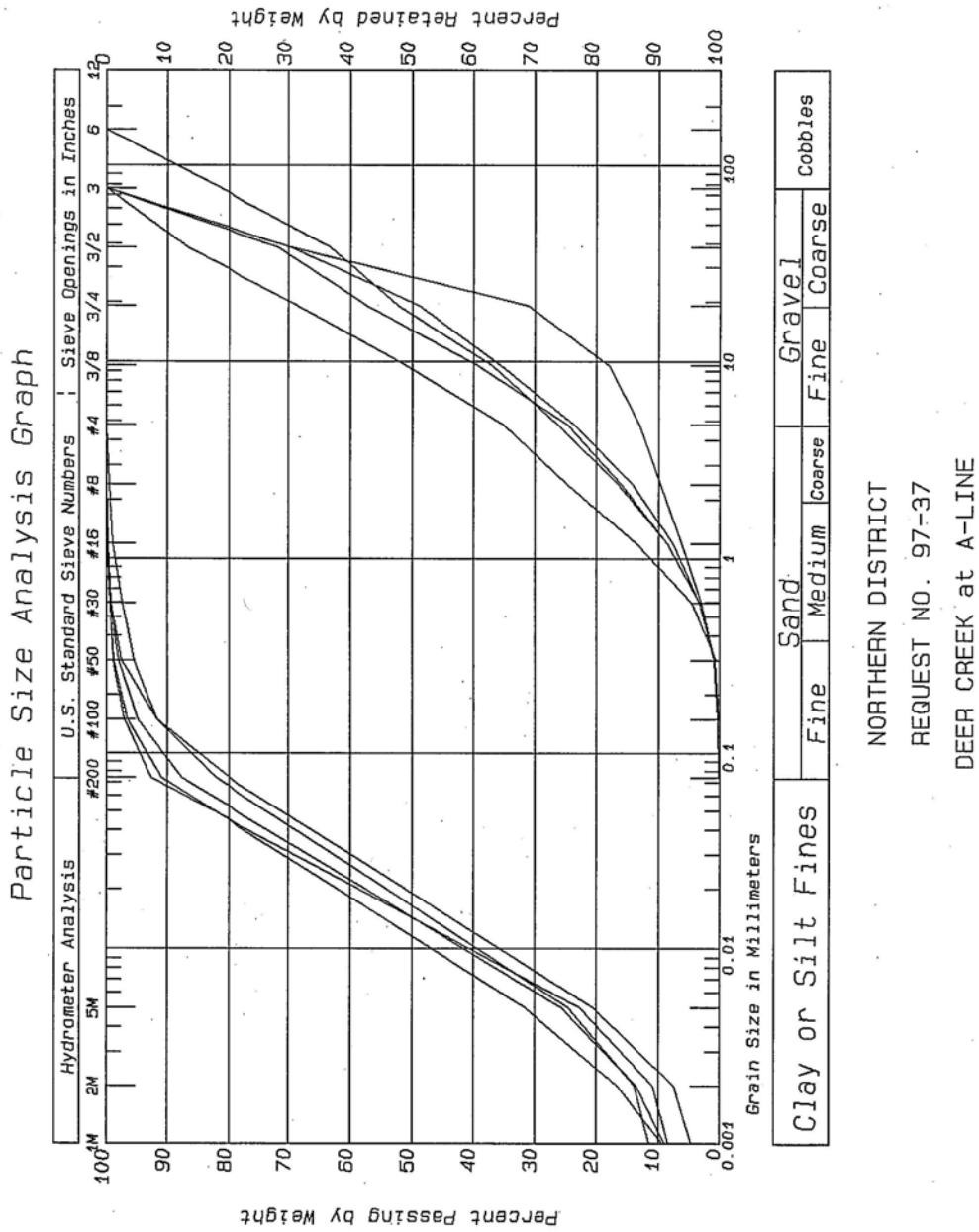
LAB NO.	HOLE NO.	FIELD SAMPLE NO.	TYPE	PERCENT FINER: MECHANICAL ANALYSIS: GRAVEL 150mm	75mm	37.5mm	19mm	9.5mm	4.75mm	SAND 2.36mm	1.18mm	0.6mm	0.3mm	0.15mm	.075mm	HYDROMETER: SILT & CLAY .005mm	.002mm	.001mm	DRY WEIGHT GRAMS	POUNDS	CLASSIFICATION: GROUP SYMBOL	GROUP NAME
97-897	#1	97-510	water**							100	99	97	95	92	82	25	14	12	13	0.029		Fine-grained ***
97-898	#2	97-512	water**								100	99	99	97	93	23	11	8	12	0.026		Fine-grained ***
97-899	#3	97-514	water**								100	99	98	95	88	26	14	9	7	0.015		Fine-grained ***
97-900	#4	97-516	water**								100	99	98	92	80	21	8	5	11	0.024		Fine-grained ***
97-901	#5	97-518	water**								100	99	99	97	91	32	17	9	6	0.013		Fine-grained ***
97-902	#1	97-511	gravel*		100	70	49	36	24	14	8	3	1	0	0				5118	11.26	GW	Well-graded gravel w/ sand
97-903	#2	97-513	gravel*		100	72	57	39	25	16	9	3	1	0	0				5285	11.63	GW	Well-graded gravel w/ sand
97-904	#3	97-515	gravel*		100	87	69	51	35	25	14	5	1	0	0				4944	10.88	GP	Poorly graded gravel w/ sand
97-905	#4	97-517	gravel*		100	70	31	18	13	10	6	3	1	0	0				5094	11.21	GP	Poorly graded gravel
97-906	#5	97-519	gravel*	100	81	63	52	37	26	(sand portion of test specimen was contaminated)									3861	8.49	GP	Poorly graded gravel w/ sand & cobbles

Sheet 3 of 7

DATE: 12/29/97
INITIAL: RGJ
REQUEST NO.: 97-37

REMARKS:
* Canvas bag "gravel" samples.
** Plastic container "water" samples.
*** Accurate classification would require Atterberg Limits testing.

IM - INSUFFICIENT MATERIAL
NP - NON-PLASTIC
NG - NO GOOD


Particle Size Analysis Graph
Hydrometer Analysis
U.S. Standard Sieve Numbers
Sieve Openings in Inches
#200 #100 #50 #30 #16 #8 #4 3/8 3/4 3/2 3 6 12
4M 2M 5M
Percent Passing by Weight
Percent Retained by Weight
Grain Size in Millimeters
0.001 0.01 0.1 1 10 100
Clay or Silt Fines
Sand
Fine Medium Coarse
Gravel
Fine Coarse
Cobbles
NORTHERN DISTRICT
REQUEST NO. 97-37
DEER CREEK at A-LINE

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

CLASSIFICATION TEST SUMMARY

DIVISION OF ENGINEERING
CIVIL ENGINEERING
CANALS AND LEVEES SECTION

PROJECT: NORTHERN DISTRICT **FEATURE:** DEER CREEK at PONDEROSA WAY

LAB. NO.	HOLE NO.	FIELD SAMPLE NO.	TYPE	PERCENT FINER															DRY WEIGHT		CLASSIFICATION	
				MECHANICAL ANALYSIS												HYDROMETER						
				GRAVEL						SAND						SILT & CLAY						
				150mm	75mm	37.5mm	19mm	9.5mm	4.75mm	2.36mm	1.18mm	0.6mm	0.3mm	0.15mm	.075mm	.005mm	.002mm	.001mm	GRAMS	POUNDS	GROUP SYMBOL	GROUP NAME
97-907	#1	97-520	water**									100	99	97	89	37	37	28	2	0.004		Fine-grained ***
97-908	#2	97-522	water**									100	99	97	89	35	29	19	3	0.007		Fine-grained ***
97-909	#3	97-524	water**								100	99	99	97	89	24	16	0	3	0.007		Fine-grained ***
97-910	#4	97-526	water**							100	99	98	97	93	82	39	35	28	3	0.007		Fine-grained ***
97-911	#5	97-528	water**						100	98	93	89	86	83	76	22	15	7	3	0.007		Fine-grained ***
97-912	#1	97-521	gravel*		100	99	78	59	39	23	12	6	2	0	0				6358	13.99	GW	Well-graded gravel w/ sand
97-913	#2	97-523	gravel*		100	78	54	40	29	19	10	5	2	0	0				6522	14.35	GP	Poorly graded gravel w/ sand
97-914	#3	97-525	gravel*		100	67	44	30	22	14	7	3	1	0	0				5861	12.89	GW	Well-graded gravel w/ sand
97-915	#4	97-527	gravel*		100	72	52	42	32	21	11	6	2	0	0				5244	11.54	GP	Poorly graded gravel w/ sand
97-916	#5	97-529	gravel*		100	87	61	46	31	19	9	5	1	0	0				5311	11.68	GP	Poorly graded gravel w/ sand

Sheet 4 of 7

DATE: 12/29/97
INITIAL: RGJ
REQUEST NO.: 97-37

REMARKS:
* Canvas bag "gravel" samples.
** Plastic container "water" samples.
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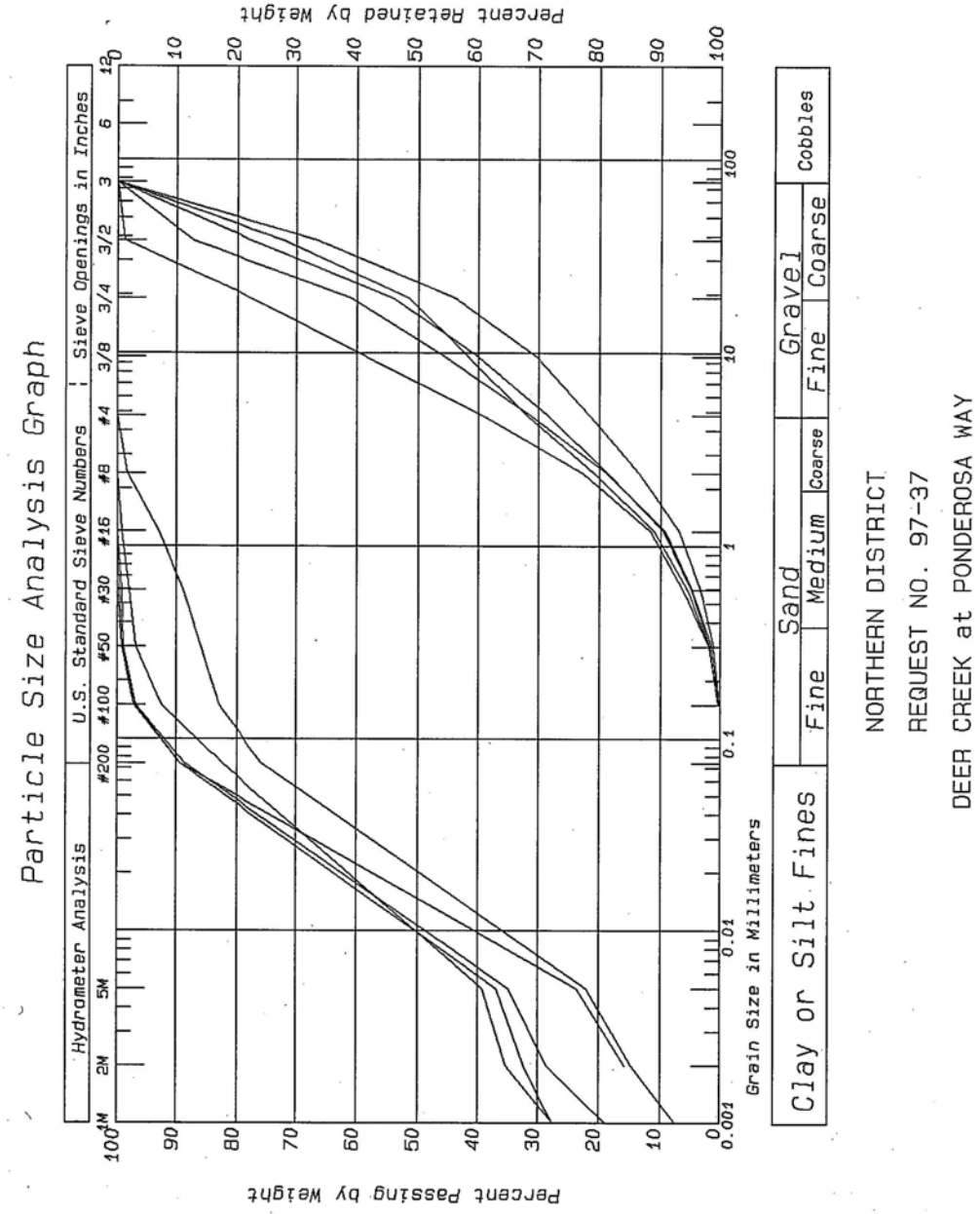
IM - INSUFFICIENT MATERIAL
NP - NON-PLASTIC
NG - NO GOOD



NORTHERN DISTRICT
REQUEST NO. 97-37
DEER CREEK at PONDEROSA WAY

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

CLASSIFICATION TEST SUMMARY

DIVISION OF ENGINEERING
CIVIL ENGINEERING
CANALS AND LEVEES SECTION

PROJECT: NORTHERN DISTRICT **FEATURE:** DEER CREEK at UPPER DIVERSION DAM

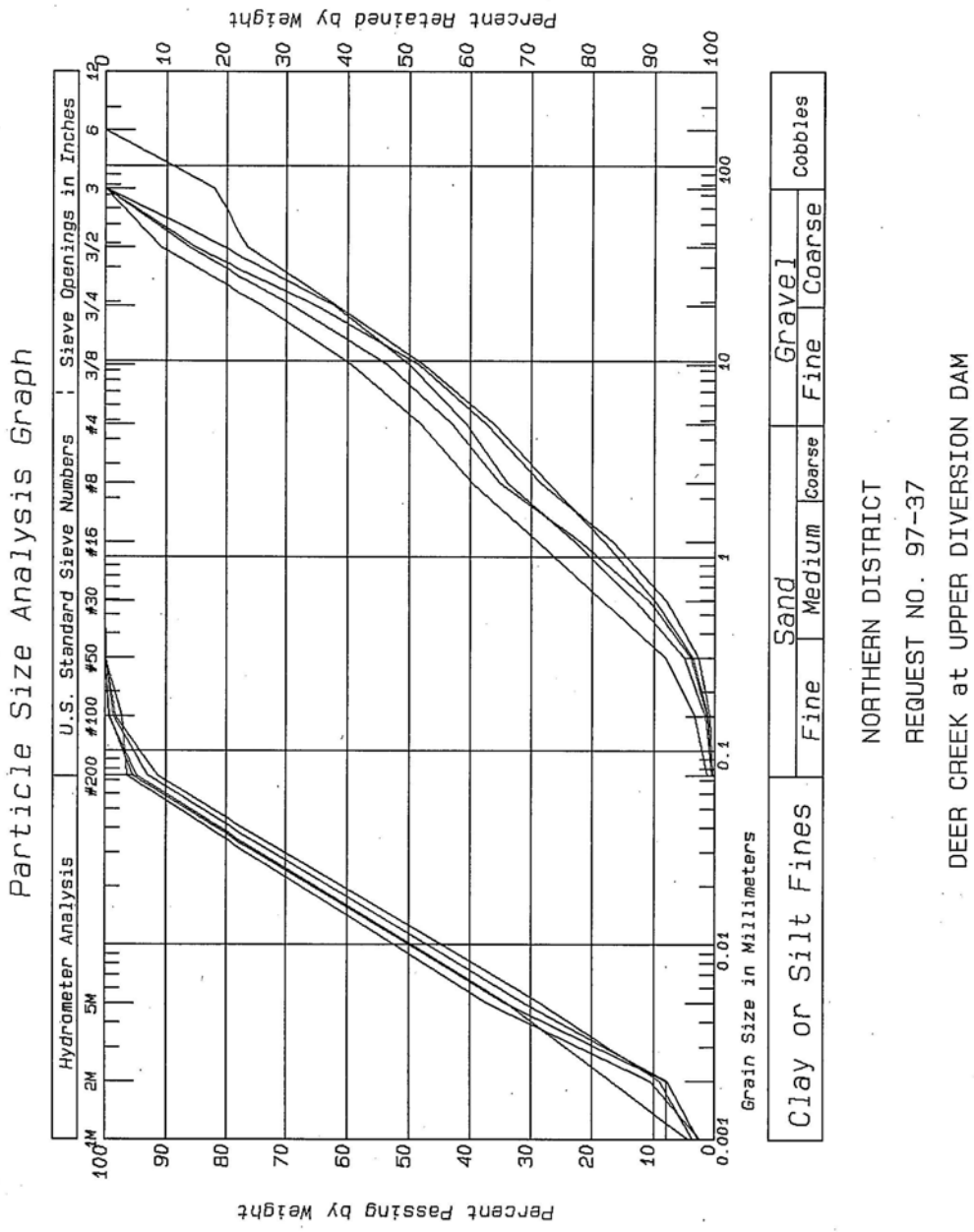
LAB. NO.	HOLE NO.	FIELD SAMPLE NO.	TYPE	PERCENT FINER															DRY WEIGHT		CLASSIFICATION	
				MECHANICAL ANALYSIS												HYDROMETER						
				GRAVEL						SAND						SILT & CLAY					GROUP SYMBOL	GROUP NAME
				150mm	75mm	37.5mm	19mm	9.5mm	4.75mm	2.36mm	1.18mm	0.6mm	0.3mm	0.15mm	.075mm	.005mm	.002mm	.001mm	GRAMS	POUNDS		
97-917	#1	97-530	water**										100	97	96	37	11	2	22	0.05		Fine-grained ***
97-918	#2	97-532	water**										100	99	95	34	8	8	8	0.02		Fine-grained ***
97-919	#3	97-534	water**										100	99	93	31	8	3	20	0.04		Fine-grained ***
97-920	#4	97-536	water**										100	98	91	28	9	4	15	0.03		Fine-grained ***
97-921	#5	97-538	water**										100	99	95	34	17	4	14	0.03		Fine-grained ***
97-922	#1	97-531	gravel*		100	91	74	60	48	40	29	18	8	3	1				6418	14.12	GP	Poorly graded gravel w/ sand
97-923	#2	97-533	gravel*		100	86	69	54	43	35	22	11	4	1	0				4955	10.90	GP	Poorly graded gravel w/ sand
97-924	#3	97-535	gravel*	100	82	76	62	48	36	27	18	10	4	1	0				5052	11.11	GP	Poorly graded gravel w/ sand & cobbles
97-925	#4	97-537	gravel*		100	85	65	48	37	29	17	8	3	1	0				4459	9.81	GP	Poorly graded gravel w/ sand
97-926	#5	97-539	gravel*		100	80	62	50	41	34	23	13	5	2	1				5943	13.07	GP	Poorly graded gravel w/ sand

Sheet 5 of 7

DATE: 12/29/97
INITIAL: RGJ
REQUEST NO.: 97-37

REMARKS:
* Canvas bag "gravel" samples.
** Plastic container "water" samples.
*** Accurate classification would require Atterberg Limits testing.

IM - INSUFFICIENT MATERIAL
NP - NON-PLASTIC
NG - NO GOOD



NORTHERN DISTRICT
REQUEST NO. 97-37
DEER CREEK at UPPER DIVERSION DAM

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

CLASSIFICATION TEST SUMMARY

DIVISION OF ENGINEERING
CIVIL ENGINEERING
CANALS AND LEVEES SECTION

PROJECT: NORTHERN DISTRICT **FEATURE:** DEER CREEK at HWY 99

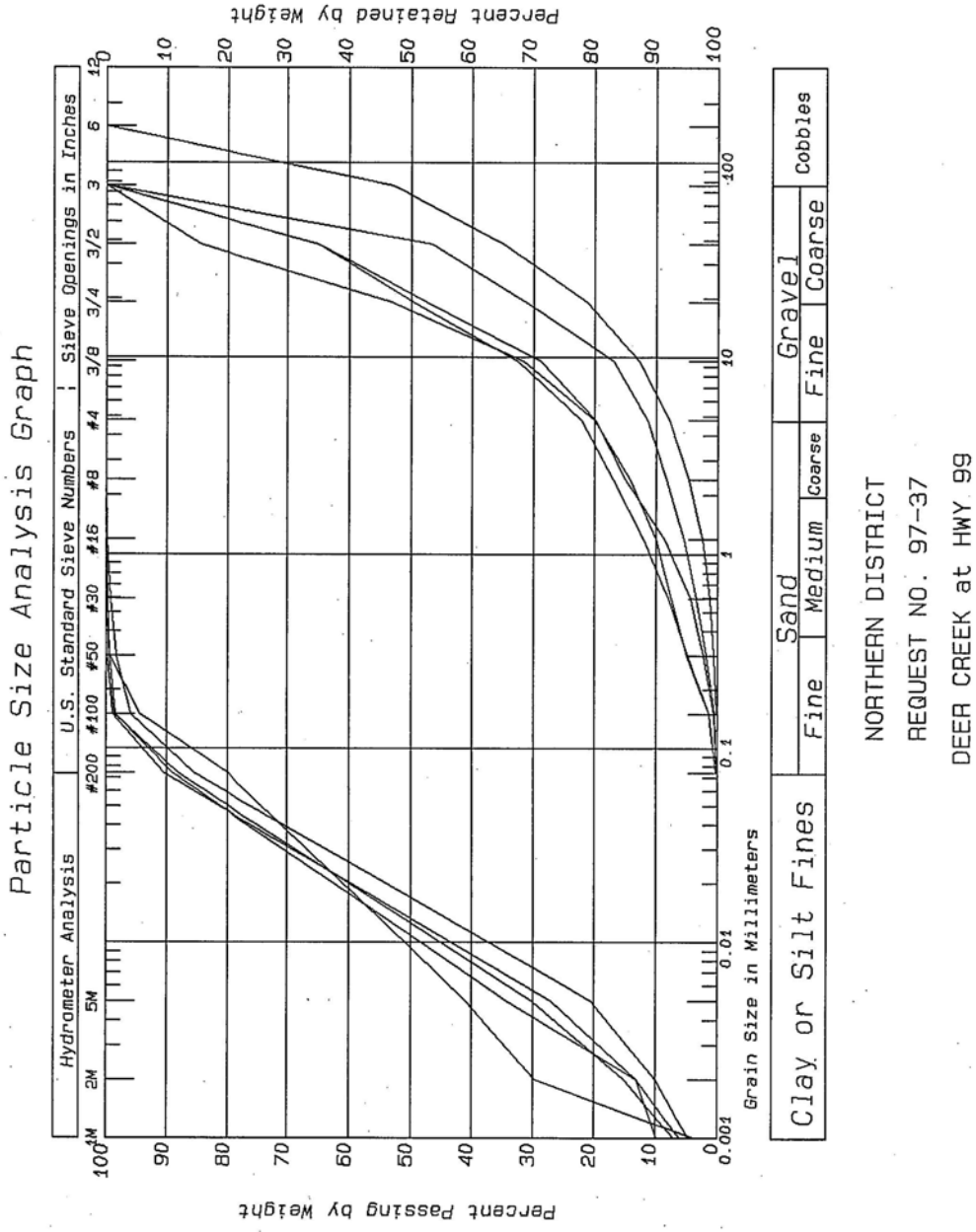
LAB. NO.	HOLE NO.	FIELD SAMPLE NO.	TYPE	PERCENT FINER															DRY WEIGHT		CLASSIFICATION	
				MECHANICAL ANALYSIS												HYDROMETER						
				GRAVEL						SAND						SILT & CLAY						
				150mm	75mm	37.5mm	19mm	9.5mm	4.75mm	2.36mm	1.18mm	0.6mm	0.3mm	0.15mm	.075mm	.005mm	.002mm	.001mm	GRAMS	POUNDS	GROUP SYMBOL	GROUP NAME
97-927	#1	97-540	water**										100	98	89	34	13	10	6	0.01		Fine-grained ***
97-928	#2	97-542	water**									100	99	94	80	41	30	4	3	0.01		Fine-grained ***
97-929	#3	97-544	water**										100	99	88	30	15	7	9	0.02		Fine-grained ***
97-930	#4	97-546	water**										100	99	90	27	13	6	10	0.02		Fine-grained ***
97-931	#5	97-548	water**								100	99	98	96	85	21	10	5	13	0.03		Fine-grained ***
97-932	#1	97-541	gravel*		100	65	48	29	20	15	9	4	2	1	0				5193	11.42	GW	Well-graded gravel w/ sand
97-933	#2	97-543	gravel*	100	53	35	21	13	8	5	3	1	1	0	0				5295	11.65	GW	Well-graded gravel w/ cobbles
97-934	#3	97-545	gravel*		100	47	31	17	11	8	5	3	2	1	0				4780	10.52	GW	Well-graded gravel
97-935	#4	97-547	gravel*		100	65	50	33	22	17	12	8	5	1	0				5810	12.78	GW	Well-graded gravel w/ sand
97-936	#5	97-549	gravel*		100	85	53	32	20	14	10	8	5	1	0				3802	8.36	GW	Well-graded gravel w/ sand

Sheet 6 of 7

DATE: 12/29/97
INITIAL: RGJ
REQUEST NO.: 97-37

REMARKS:
* Canvas bag "gravel" samples.
** Plastic container "water" samples.
*** Accurate classification would require Atterberg Limits testing.

IM - INSUFFICIENT MATERIAL
NP - NON-PLASTIC
NG - NO GOOD


Particle Size Analysis Graph
Hydrometer Analysis
U.S. Standard Sieve Numbers
Sieve Openings in Inches
#200 #100 #50 #30 #16 #8 #4 3/8 3/4 3/2 3 6 12
1M 2M 5M
Percent Passing by Weight
Percent Retained by Weight
Grain Size in Millimeters
0.001 0.01 0.1 1 10 100
Clay or Silt Fines
Sand
Fine Medium Coarse
Gravel
Fine Coarse
Cobbles
NORTHERN DISTRICT
REQUEST NO. 97-37
DEER CREEK at HWY 99

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

CLASSIFICATION TEST SUMMARY

DIVISION OF ENGINEERING
CIVIL ENGINEERING
CANALS AND LEVEES SECTION

PROJECT: NORTHERN DISTRICT **FEATURE:** DEER CREEK at MOUTH

LAB. NO.	HOLE NO.	FIELD SAMPLE NO.	TYPE	PERCENT FINER															DRY WEIGHT		CLASSIFICATION	
				MECHANICAL ANALYSIS												HYDROMETER						
				GRAVEL						SAND						SILT & CLAY						
				150mm	75mm	37.5mm	19mm	9.5mm	4.75mm	2.36mm	1.18mm	0.6mm	0.3mm	0.15mm	.075mm	.005mm	.002mm	.001mm	GRAMS	POUNDS	GROUP SYMBOL	GROUP NAME
97-937	#1	97-550	water**										100	97	84	32	23	17	4	0.01		Fine-grained ***
97-938	#2	97-552	water**										100	99	93	40	20	9	7	0.02		Fine-grained ***
97-939	#3	97-554	water**										100	99	92	23	11	5	12	0.03		Fine-grained ***
97-940	#4	97-556	water**										100	98	87	28	13	6	10	0.02		Fine-grained ***
97-941	#5	97-558	water**									100	99	96	82	19	12	3	20	0.04		Fine-grained ***
97-942	#1	97-551	gravel*		100	99	69	47	34	26	19	13	6	1	0				6530	14.37	GW	Well-graded gravel with sand
97-943	#2	97-553	gravel*		100	87	70	50	39	33	28	20	7	2	1				6001	13.20	GP	Poorly graded gravel with sand
97-944	#3	97-555	gravel*		100	95	74	50	36	28	21	11	4	2	1				5993	13.18	GW	Well-graded gravel with sand
97-945	#4	97-557	gravel*		100	95	71	53	40	32	26	17	6	2	1				6608	14.54	GP	Poorly graded gravel with sand
97-946	#5	97-559	gravel*		100	88	63	44	32	25	18	10	4	1	0				5434	11.95	GW	Well-graded gravel with sand

Sheet 7 of 7

DATE: 12/29/97
INITIAL: RGJ
REQUEST NO.: 97-37

REMARKS:
* Canvas bag "gravel" samples.
** Plastic container "water" samples.
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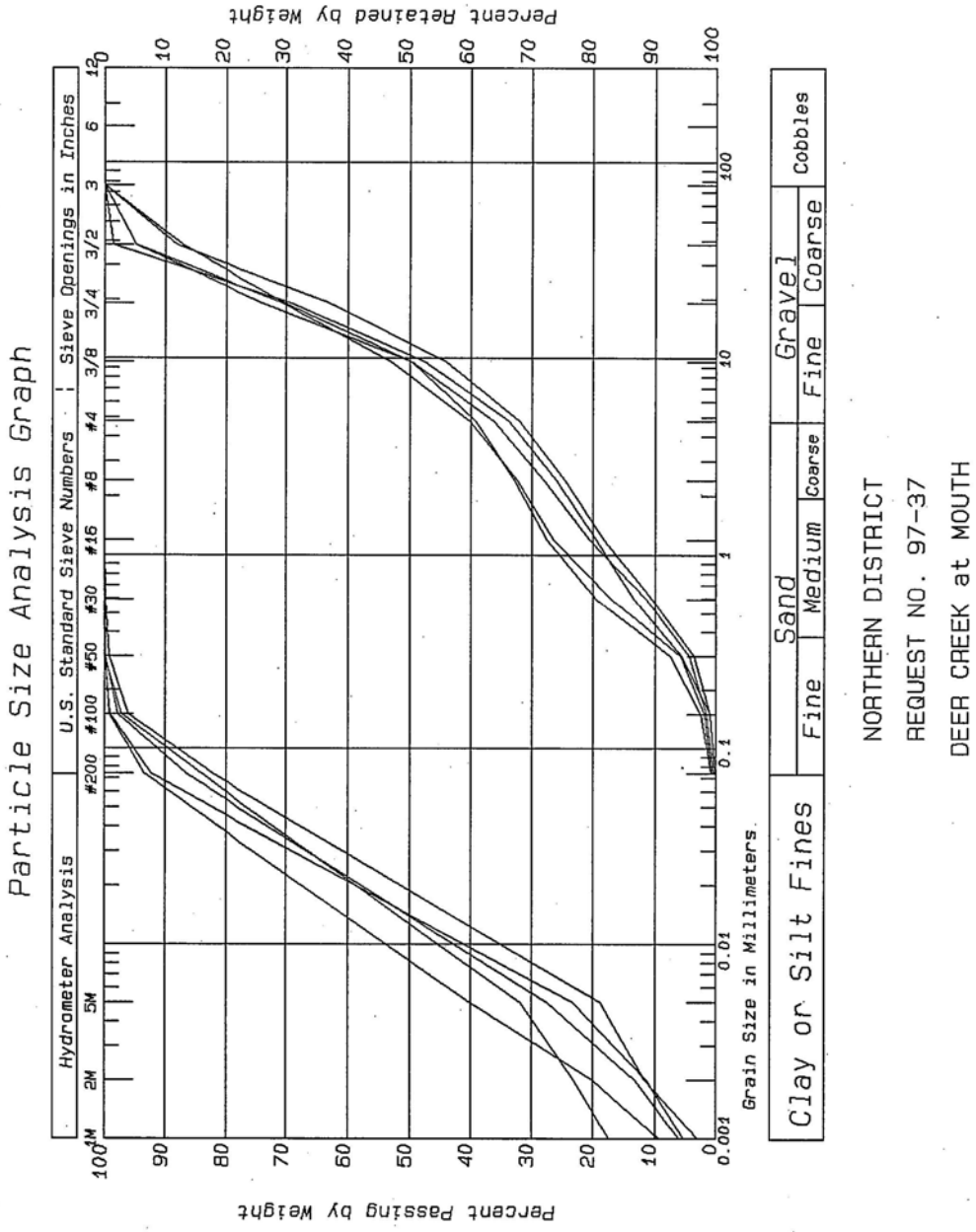
IM - INSUFFICIENT MATERIAL
NP - NON-PLASTIC
NG - NO GOOD


Particle Size Analysis Graph
Hydrometer Analysis
U.S. Standard Sieve Numbers
Sieve Openings in Inches
#200 #100 #50 #30 #16 #8 #4 3/8 3/4 3/2 3 6 12
1M 2M 5M
Percent Passing by Weight
Percent Retained by Weight
Grain Size in Millimeters
0.001 0.01 0.1 1 10 100
Clay or Silt Fines
Sand
Fine Medium Coarse
Gravel
Fine Coarse
Cobbles
NORTHERN DISTRICT
REQUEST NO. 97-37
DEER CREEK at MOUTH

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

CLASSIFICATION TEST SUMMARY

DIVISION OF ENGINEERING
CIVIL ENGINEERING
CANALS AND LEVEES SECTION

PROJECT: NORTHERN DISTRICT **FEATURE:** DEER CREEK at HWY 99

LAB. NO.	HOLE NO.	FIELD SAMPLE NO.	TYPE	PERCENT FINER															DRY WEIGHT		CLASSIFICATION	
				MECHANICAL ANALYSIS												HYDROMETER						
				GRAVEL						SAND						SILT & CLAY					GROUP SYMBOL	GROUP NAME
				150mm	75mm	37.5mm	19mm	9.5mm	4.75mm	2.36mm	1.18mm	0.6mm	0.3mm	0.15mm	.075m	.005mm	.002mm	.001mm	GRAMS	POUNDS		
98-742	#1	98-550	water**												100	70	9	0	3.55	0.008		Fine-grained ***
98-743	#2	98-552	water**												100	83	19	0	1.53	0.003		Fine-grained ***
98-744	#3	98-554	water**												100	86	8	8	2.75	0.006		Fine-grained ***
98-745	#4	98-556	water**												100	53	20	12	6.17	0.014		Fine-grained ***
98-746	#5	98-558	water**												100	41	18	7	10.92	0.024		Fine-grained ***
98-747	#1	98-551	gravel*		100	30	16	9	6	5	3	2	0	0	0				4553	10.02	GW	Well-graded gravel
98-748	#2	98-553	gravel*	100	70	34	15	6	3	2	2	1	1	0	0				6518	14.34	GW	Well-graded gravel with cobbles
98-749	#3	98-555	gravel*	100	76	45	25	14	10	7	6	3	1	0	0				5001	11.00	GP	Poorly graded gravel with cobbles
98-750	#4	98-557	gravel*		100	70	38	26	19	14	10	7	2	0	0				5072	11.16	GP	Poorly graded gravel with sand
98-751	#5	98-559	gravel*	100	86	68	41	25	18	14	11	7	2	0	0				5546	12.20	GP	Poorly graded gravel with sand & cobbles

Sheet 1 of 6

DATE: 1/13/99
INITIAL: RGJ
REQUEST NO.: 98-46

REMARKS:
* Canvas bag "gravel" samples.
** Plastic container "water" samples.
*** Accurate classification would require Atterberg Limits testing.

IM - INSUFFICIENT MATERIAL
NP - NON-PLASTIC
NG - NO GOOD

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

CLASSIFICATION TEST SUMMARY

DIVISION OF ENGINEERING
CIVIL ENGINEERING
CANALS AND LEVEES SECTION

PROJECT: NORTHERN DISTRICT **FEATURE:** DEER CREEK @ UPPER FALLS

LAB NO.	HOLE NO.	FIELD SAMPLE NO.	TYPE	PERCENT FINER															DRY WEIGHT		CLASSIFICATION	
				MECHANICAL ANALYSIS												HYDROMETER						
				GRAVEL						SAND						SILT & CLAY						
				150mm	75mm	37.5mm	19mm	9.5mm	4.75mm	2.36mm	1.18mm	0.6mm	0.3mm	0.15mm	.075m	.005mm	.002mm	.001mm	GRAMS	POUNDS	GROUP SYMBOL	GROUP NAME
98-752	#1	98-560	water**												100	40	22	0	3.50	0.008		Fine-grained ***
98-753	#2	98-562	water**												100	67	19	19	1.11	0.002		Fine-grained ***
98-754	#3	98-564	water**												100	49	19	10	7.05	0.016		Fine-grained ***
98-755	#4	98-566	water**												100	39	39	0	1.07	0.002		Fine-grained ***
98-756	#5	98-568	water**												100	35	17	0	1.13	0.002		Fine-grained ***
98-757	#1	98-561	gravel*	100	57	8	0	0	0	0	0	0	0	0	0				4793	10.54	GP	Poorly graded gravel with cobbles
98-758	#2	98-563	gravel*		100	2	0	0	0	0	0	0	0	0	0				3233	7.11	GP	Poorly graded gravel
98-759	#3	98-565	gravel*		100	34	16	6	3	2	1	1	1	0	0				4584	10.08	GP	Poorly graded gravel
98-760	#4	98-567	gravel*	100	33	12	4	0	0	0	0	0	0	0	0				5276	11.61	GP	Poorly graded gravel with cobbles
98-761	#5	98-569	gravel*	100	50	13	1	0	0	0	0	0	0	0	0				3669	8.07	GP	Poorly graded gravel with cobbles

Sheet 2 of 6

DATE: 1/13/99
INITIAL: RGJ
REQUEST NO.: 98-46

REMARKS:
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THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

CLASSIFICATION TEST SUMMARY

DIVISION OF ENGINEERING
CIVIL ENGINEERING
CANALS AND LEVEES SECTION

PROJECT: NORTHERN DISTRICT **FEATURE:** DEER CREEK at UPPER DIVERSION DAM

LAB. NO.	HOLE NO.	FIELD SAMPLE NO.	TYPE	PERCENT FINER															DRY WEIGHT		CLASSIFICATION	
				MECHANICAL ANALYSIS												HYDROMETER						
				GRAVEL						SAND						SILT & CLAY					GROUP SYMBOL	GROUP NAME
				150mm	75mm	37.5mm	19mm	9.5mm	4.75mm	2.36mm	1.18mm	0.6mm	0.3mm	0.15mm	.075m	.005mm	.002mm	.001mm	GRAMS	POUNDS		
98-762	#1	98-570	water**												100	32	21	3	6.05	0.013		Fine-grained ***
98-763	#2	98-572	water**												100	34	13	3	7.38	0.016		Fine-grained ***
98-764	#3	98-574	water**												100	42	13	2	10.45	0.023		Fine-grained ***
98-765	#4	98-576	water**												100	31	8	3	11.17	0.025		Fine-grained ***
98-766	#5	98-578	water**												100	34	11	2	13.31	0.029		Fine-grained ***
98-767	#1	98-571	gravel*	100	62	48	24	17	14	12	9	5	2	0	0				5044	11.10	GP	Poorly graded gravel with sand & cobbles
98-768	#2	98-573	gravel*	100	54	44	29	22	18	15	10	5	1	0	0				6354	13.98	GP	Poorly graded gravel with sand & cobbles
98-769	#3	98-575	gravel*	100	57	43	35	26	22	18	11	5	2	0	0				5308	11.68	GP	Poorly graded gravel with sand & cobbles
98-770	#4	98-577	gravel*	100	57	27	24	19	17	14	10	4	1	0	0				6300	13.86	GP	Poorly graded gravel with sand & cobbles
98-771	#5	98-579	gravel*		100	66	40	28	23	20	14	7	2	1	0				5573	12.26	GP	Poorly graded gravel with sand

Sheet 3 of 6

DATE: 1/13/99
INITIAL: RGJ
REQUEST NO.: 98-46

REMARKS:
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STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

CLASSIFICATION TEST SUMMARY

DIVISION OF ENGINEERING
CIVIL ENGINEERING
CANALS AND LEVEES SECTION

PROJECT: NORTHERN DISTRICT **FEATURE:** DEER CREEK at PONDEROSA WAY

LAB. NO.	HOLE NO.	FIELD SAMPLE NO.	TYPE	PERCENT FINER															DRY WEIGHT		CLASSIFICATION	
				MECHANICAL ANALYSIS												HYDROMETER						
				GRAVEL						SAND						SILT & CLAY						
				150mm	75mm	37.5mm	19mm	9.5mm	4.75mm	2.36mm	1.18mm	0.6mm	0.3mm	0.15mm	.075mm	.005mm	.002mm	.001mm	GRAMS	POUNDS	GROUP SYMBOL	GROUP NAME
98-772	#1	98-580	water**												100	38	18	6	5.24	0.012		Fine-grained ***
98-773	#2	98-582	water**												100	40	5	5	3.79	0.008		Fine-grained ***
98-774	#3	98-584	water**												100	45	13	0	5.50	0.012		Fine-grained ***
98-775	#4	98-586	water**												100	46	15	3	9.98	0.022		Fine-grained ***
98-776	#5	98-588	water**												100	46	12	0	7.69	0.017		Fine-grained ***
98-777	#1	98-581	gravel*	100	90	67	55	44	32	22	12	5	2	0	0				7718	16.98	GP	Poorly graded gravel with sand & cobbles
98-778	#2	98-583	gravel*	100	50	45	36	28	21	14	7	3	1	0	0				9218	20.28	GP	Poorly graded gravel with sand & cobbles
98-779	#3	98-585	gravel*	100	76	49	33	25	19	14	8	4	1	0	0				6858	15.09	GW	Well-graded gravel with sand & cobbles
98-780	#4	98-587	gravel*	100	83	55	45	36	30	24	14	7	2	1	0				6166	13.57	GP	Poorly graded gravel with sand & cobbles
98-781	#5	98-589	gravel*	100	88	66	51	39	30	22	13	6	2	1	0				6754	14.86	GP	Poorly graded gravel with sand & cobbles

Sheet 4 of 6

DATE: 1/13/99
INITIAL: RGJ
REQUEST NO.: 98-46

REMARKS:
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STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

CLASSIFICATION TEST SUMMARY

DIVISION OF ENGINEERING
CIVIL ENGINEERING
CANALS AND LEVEES SECTION

PROJECT: NORTHERN DISTRICT **FEATURE:** DEER CREEK below CHILDS MEADOW

LAB. NO.	HOLE NO.	FIELD SAMPLE NO.	TYPE	PERCENT FINER															DRY WEIGHT		CLASSIFICATION	
				MECHANICAL ANALYSIS												HYDROMETER						
				GRAVEL						SAND						SILT & CLAY						
				150mm	75mm	37.5mm	19mm	9.5mm	4.75mm	2.36mm	1.18mm	0.6mm	0.3mm	0.15mm	.075mm	.005mm	.002mm	.001mm	GRAMS	POUNDS	GROUP SYMBOL	GROUP NAME
98-782	#1	98-590	water**										100	98	91	54	0	0	3.67	0.008		Fine-grained ***
98-783	#2	98-592	water**										100	97	88	51	0	0	1.87	0.004		Fine-grained ***
98-784	#3	98-594	water**										100	97	85	29	0	0	4.59	0.010		Fine-grained ***
98-785	#4	98-596	water**										100	99	92	38	0	0	4.46	0.010		Fine-grained ***
98-786	#5	98-598	water**										100	99	92	30	14	0	6.71	0.015		Fine-grained ***
98-787	#1	98-591	gravel*	100	69	47	28	18	12	9	8	6	2	0	0				5173	11.38	GP	Poorly graded gravel with sand & cobbles
98-788	#2	98-593	gravel*	100	61	45	24	12	6	4	3	2	1	0	0				5275	11.61	GW	Well-graded gravel with cobbles
98-789	#3	98-595	gravel*	100	72	53	31	23	15	11	9	6	2	0	0				3393	7.46	GW	Well-graded gravel with sand & cobbles
98-790	#4	98-597	gravel*	100	75	47	28	18	12	8	6	4	1	0	0				4143	9.11	GW	Well-graded gravel with cobbles
98-791	#5	98-599	gravel*	100	76	54	39	28	19	14	11	7	2	0	0				4402	9.68	GW	Well-graded gravel with sand & cobbles

Sheet 5 of 6

DATE: 1/13/99
INITIAL: RGJ
REQUEST NO.: 98-46

REMARKS:
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NG - NO GOOD

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

CLASSIFICATION TEST SUMMARY

DIVISION OF ENGINEERING
CIVIL ENGINEERING
CANALS AND LEVEES SECTION

PROJECT: NORTHERN DISTRICT **FEATURE:** DEER CREEK at A-LINE

LAB. NO.	HOLE NO.	FIELD SAMPLE NO.	TYPE	PERCENT FINER															DRY WEIGHT		CLASSIFICATION	
				MECHANICAL ANALYSIS												HYDROMETER						
				GRAVEL						SAND						SILT & CLAY						
				150mm	75mm	37.5mm	19mm	9.5mm	4.75mm	2.36mm	1.18mm	0.6mm	0.3mm	0.15mm	.075mm	.005mm	.002mm	.001mm	GRAMS	POUNDS	GROUP SYMBOL	GROUP NAME
98-792	#1	98-600	water**										100	98	92	24	5	0	8.11	0.018		Fine-grained ***
98-793	#2	98-602	water**								100	99	99	98	91	49	0	0	2.03	0.004		Fine-grained ***
98-794	#3	98-604	water**									100	99	98	92	19	9	0	10.33	0.023		Fine-grained ***
98-795	#4	98-606	water**						100	98	94	92	91	89	80	19	9	0	10.23	0.023		Fine-grained ***
98-796	#5	98-608	water**											100	97	26	0	0	9.85	0.022		Fine-grained ***
98-797	#1	98-601	gravel*	100	45	39	23	14	7	4	2	1	1	0	0				5975	13.15	GW	Well-graded gravel with sand & cobbles
98-798	#2	98-603	gravel*	100	52	33	20	11	5	1	0	0	0	0	0				5671	12.48	GW	Well-graded gravel with & cobbles
98-799	#3	98-605	gravel*	100	85	45	36	26	14	7	3	1	0	0	0				5454	12.00	GP	Poorly graded gravel with sand & cobbles
98-800	#4	98-607	gravel*	100	70	62	51	39	26	16	8	4	1	0	0				5439	11.97	GW	Well-graded gravel with sand & cobbles
98-801	#5	98-609	gravel*		100	48	26	15	10	8	5	3	1	0	0				3764	8.28	GW	Well-graded gravel

Sheet 6 of 6

DATE: 1/13/99
INITIAL: RGJ
REQUEST NO.: 98-46

REMARKS:
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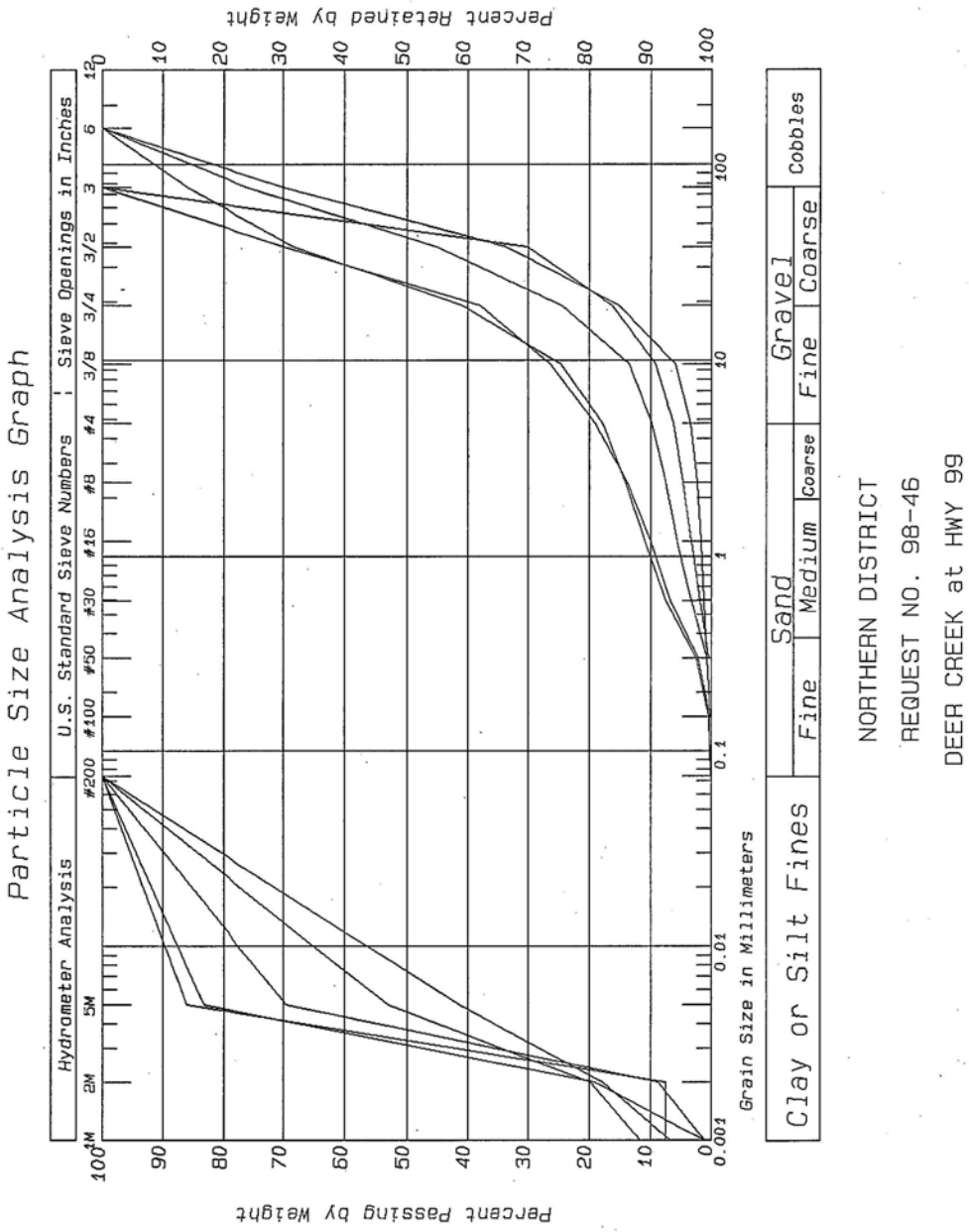
IM - INSUFFICIENT MATERIAL
NP - NON-PLASTIC
NG - NO GOOD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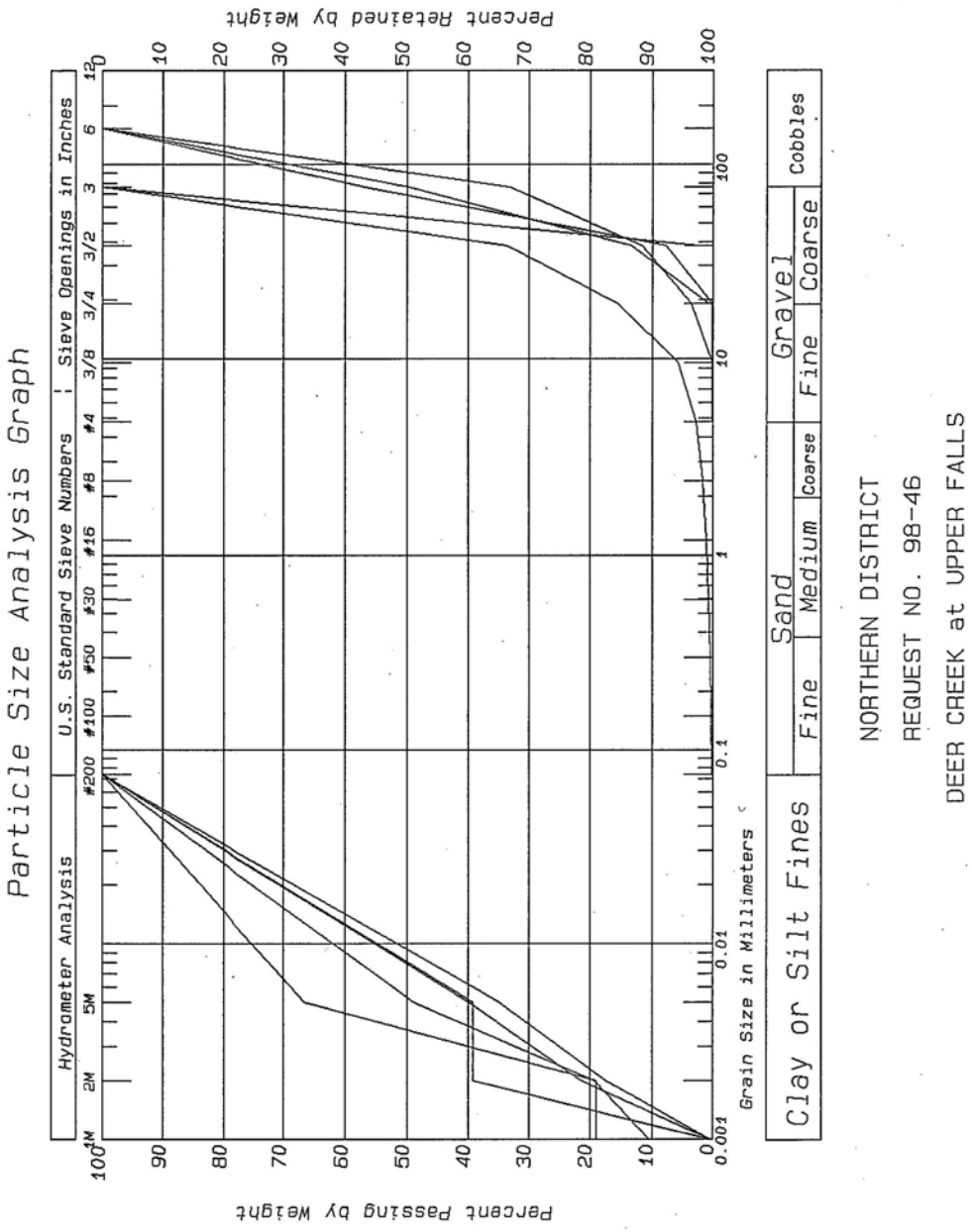
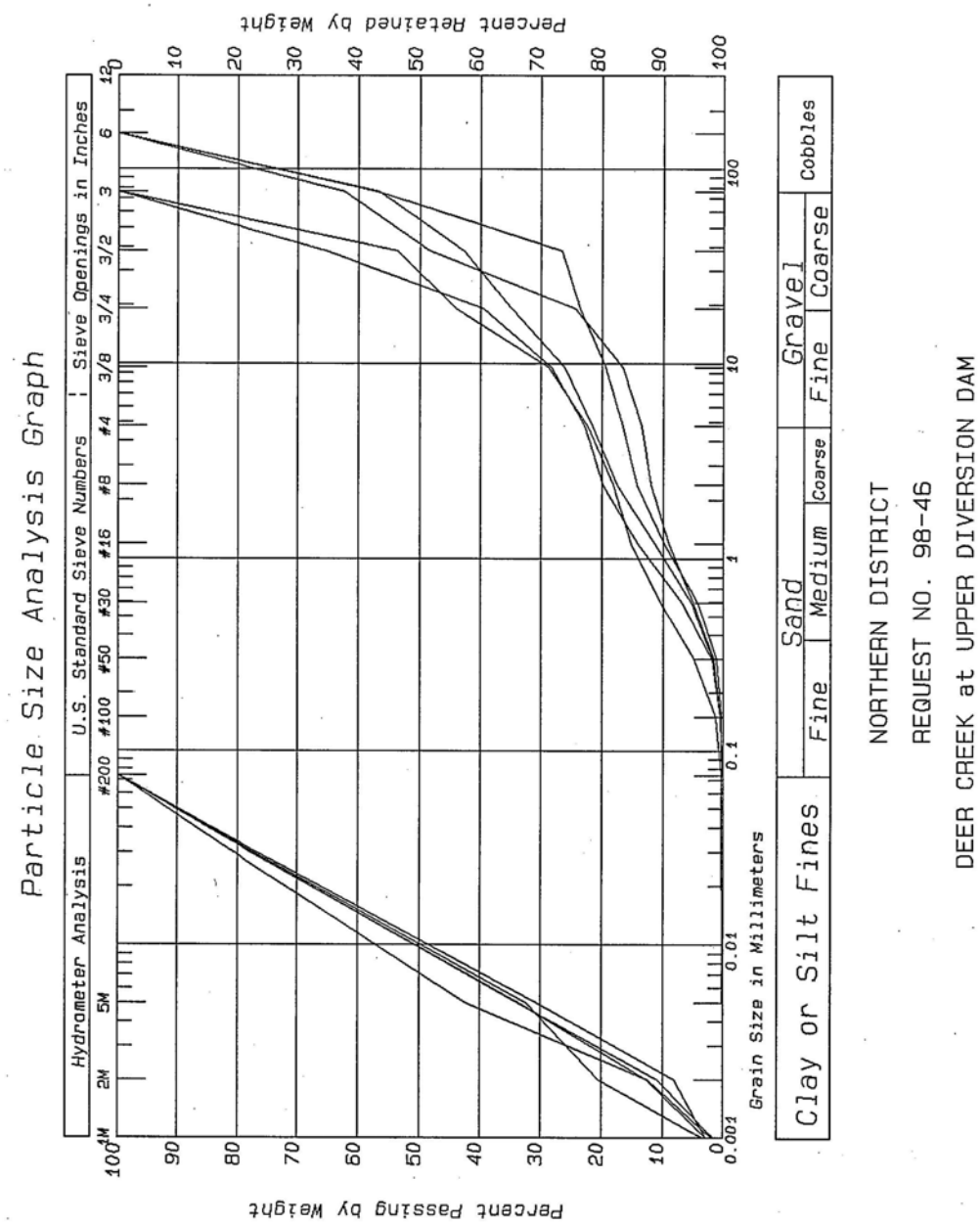
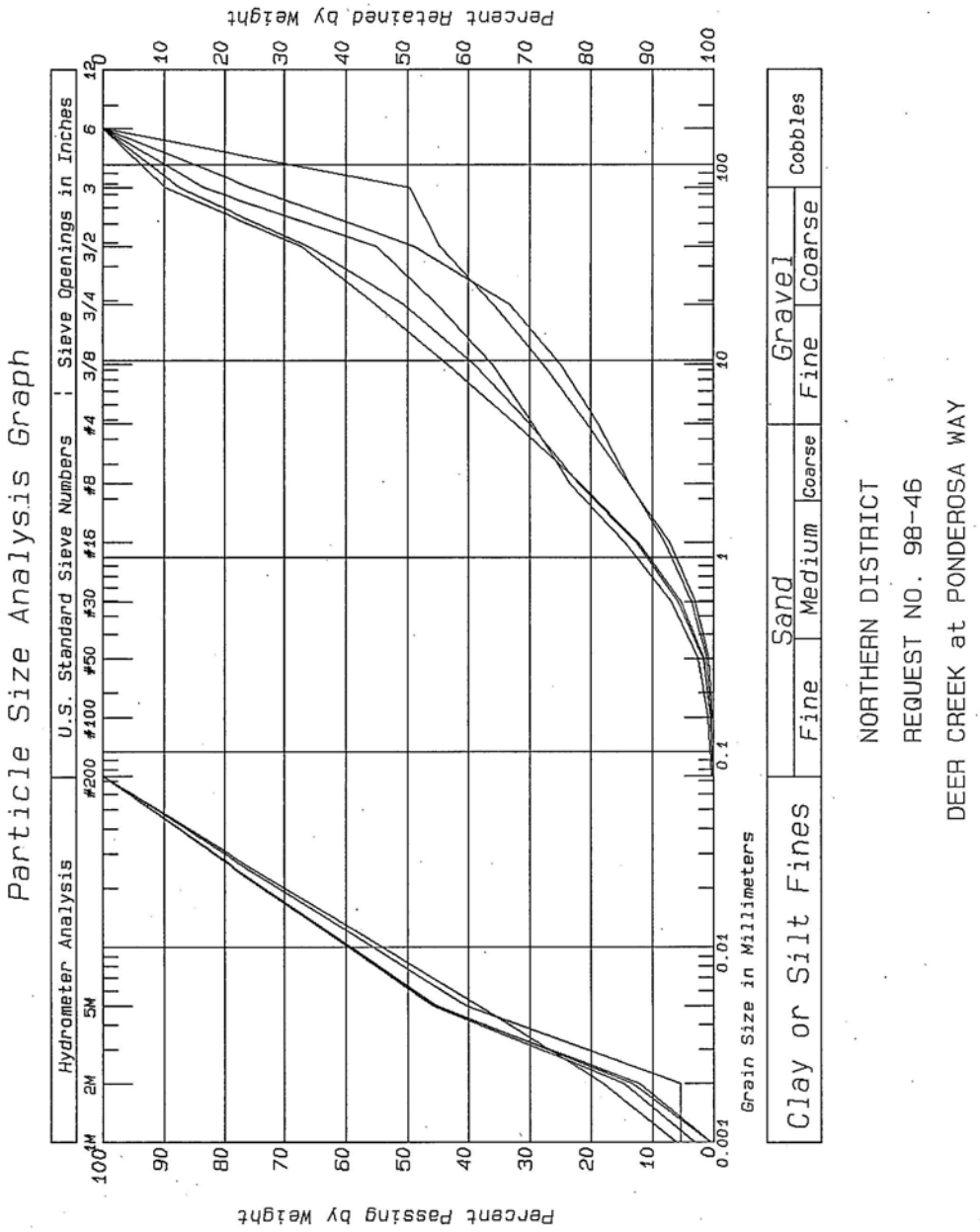
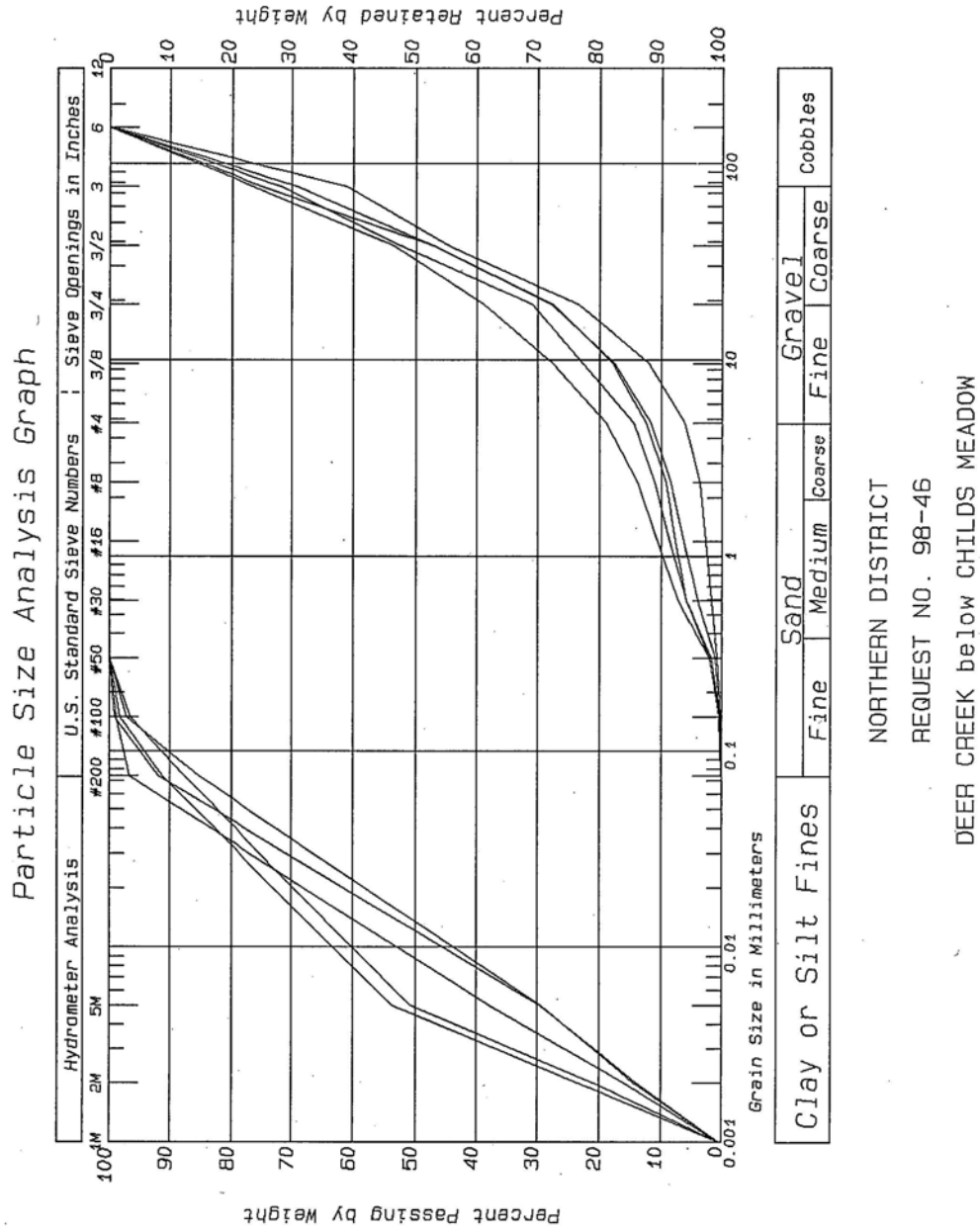
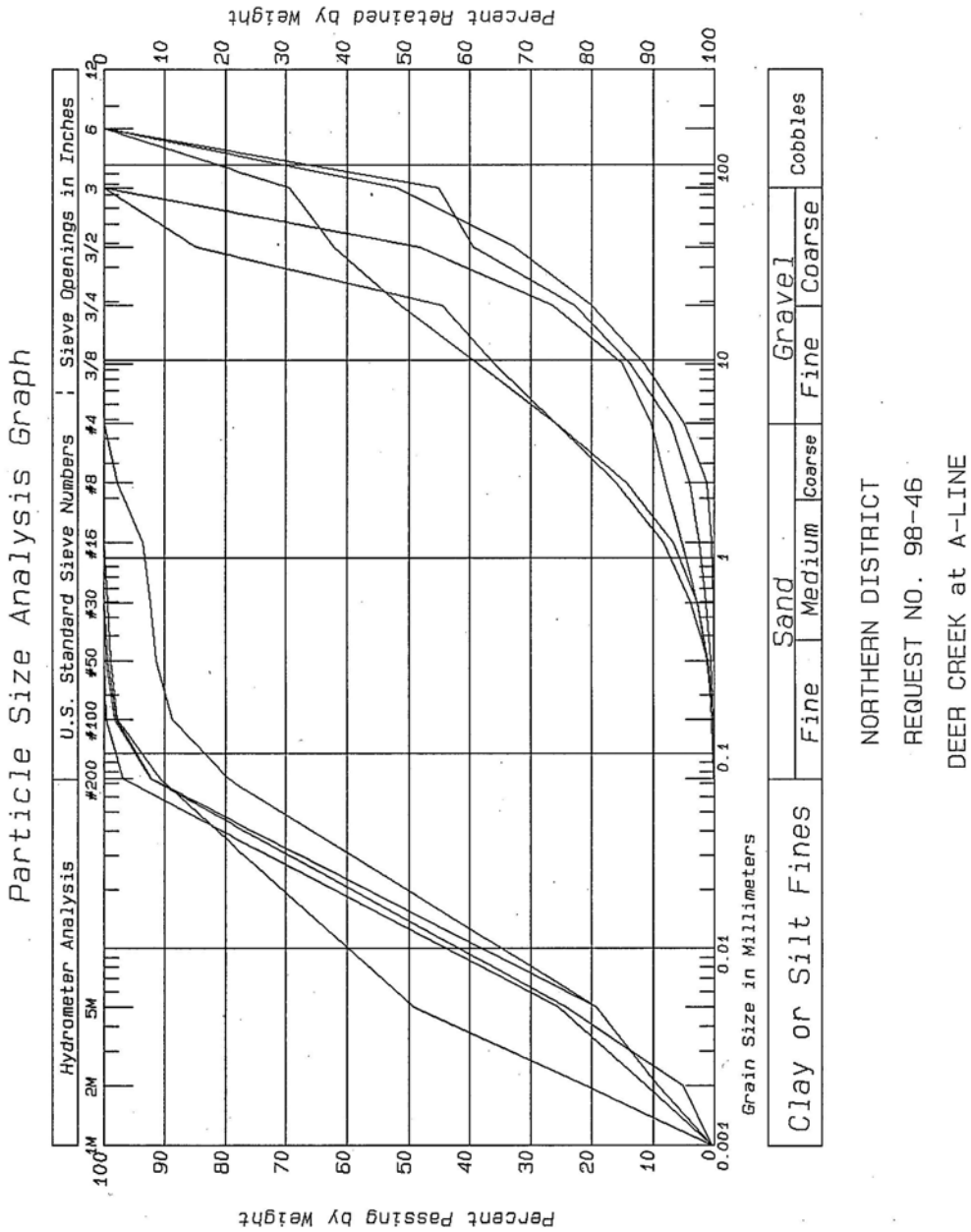
Hydrometer Analysis
U.S. Standard Sieve Numbers
Sieve Openings in Inches
#200 #100 #50 #30 #16 #8 #4 3/8 3/4 3/2 3 6 12
1M 2M 5M
Percent Passing by Weight
Percent Retained by Weight
Grain Size in Millimeters
0.001 0.01 0.1 1 10 100
Clay or Silt Fines
Sand
Fine Medium Coarse
Gravel
Fine Coarse
Cobbles
NORTHERN DISTRICT
REQUEST NO. 98-46
DEER CREEK at HWY 99


Particle Size Analysis Graph
Hydrometer Analysis
U.S. Standard Sieve Numbers
Sieve Openings in Inches
#200 #100 #50 #30 #16 #8 #4 3/8 3/4 3/2 3 6 12
1M 2M 5M
Percent Passing by Weight
Percent Retained by Weight
Grain Size in Millimeters
0.004 0.01 0.1 1 10 100
Clay or Silt Fines
Sand
Fine Medium Coarse
Gravel
Fine Coarse
Cobbles
NORTHERN DISTRICT
REQUEST NO. 98-46
DEER CREEK at UPPER FALLS


Particle Size Analysis Graph
Hydrometer Analysis
U.S. Standard Sieve Numbers
Sieve Openings in Inches
Percent Passing by Weight
Percent Retained by Weight
Grain Size in Millimeters
Clay or Silt Fines
Sand
Fine
Medium
Coarse
Gravel
Fine
Coarse
Cobbles
NORTHERN DISTRICT
REQUEST NO. 98-46
DEER CREEK at UPPER DIVERSION DAM


Particle Size Analysis Graph
Hydrometer Analysis
U.S. Standard Sieve Numbers
Sieve Openings in Inches
#200 #100 #50 #30 #16 #8 #4 3/8 3/4 3/2 3 6 12
1M 2M 5M
Percent Passing by Weight
Percent Retained by Weight
Grain Size in Millimeters
0.001 0.01 0.1 1 10 100
Clay or Silt Fines
Sand
Fine Medium Coarse
Gravel
Fine Coarse
Cobbles
NORTHERN DISTRICT
REQUEST NO. 98-46
DEER CREEK at PONDEROSA WAY


Particle Size Analysis Graph
Hydrometer Analysis
U.S. Standard Sieve Numbers
Sieve Openings in Inches
1M 2M 5M #200 #100 #50 #30 #16 #8 #4 3/8 3/4 3/2 3 6 12
Percent Passing by Weight
Percent Retained by Weight
Grain Size in Millimeters
0.001 0.01 0.1 1 10 100
Clay or Silt Fines
Sand
Fine Medium Coarse
Gravel
Fine Coarse
Cobbles
NORTHERN DISTRICT
REQUEST NO. 98-46
DEER CREEK below CHILDS MEADOW


Particle Size Analysis Graph
Hydrometer Analysis
U.S. Standard Sieve Numbers
Sieve Openings in Inches
#200 #100 #50 #30 #16 #8 #4 3/8 3/4 3/2 3 6 12
1M 2M 5M
Percent Passing by Weight
Percent Retained by Weight
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
0.001 0.01 0.1 1 10 100
Grain Size in Millimeters
Clay or Silt Fines
Sand
Fine Medium Coarse
Gravel
Fine Coarse
Cobbles
NORTHERN DISTRICT
REQUEST NO. 98-46
DEER CREEK at A-LINE