Cache Creek
Total Suspended Solids and Turbidity Monitoring Program

2005 Annual Report

Cache Creek in flood. Photo taken looking upstream from Road 85 (Capay) Bridge on January 11, 2005. (Photo: Chris Hammersmark)

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Prepared for:
Community Development Agency
292 West Beamer St
Woodland CA 95695

S. Geoffrey Schladow, Ph.D.
and
Christopher T. Hammersmark, P.E.

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1.0 Introduction

A monitoring program was implemented in January 2004 to provide baseline data on the spatial and temporal variation of sediment concentration and turbidity along the lower reaches of Cache Creek. This monitoring program has been continued through 2005. Sampling was conducted at six locations along the creek within the CCRMP project area and one site just upstream of the CCRMP at one month intervals throughout the year. In addition several monitoring trips were made in response to precipitation events, which caused high discharge conditions in Cache Creek.

Suspended sediment concentration is of interest as a water quality indicator. Aside from the aesthetic impact of high concentrations of particulate material in water, other water quality pollutants, such as herbicides and pesticides, and nutrients are frequently sorbed to particulate material (Stone and Droppo 1994). In the particular case of Cache Creek, where mercury concentrations are of concern, there is frequently an association between suspended sediment and mercury. It is not the intention of the present monitoring program to measure or identify any other contaminants associated with suspended sediment. Rather, it is intended to quantify the natural variations in suspended sediment so as to provide a context in which to consider future actions.

The measurement of total suspended solids (TSS) is time consuming and expensive, and much research has been done to correlate secondary parameters such as turbidity to TSS (Gippel, 1995; Sidle and Campbell, 1985). The results of Packman et al. (1999) show turbidity to be a viable surrogate measurement for determining TSS concentrations

This document reports the results of this sediment monitoring program for the 2005 monitoring season.

2.0 Definitions

Calibration – the process by which an instrument reading is checked and adjusted to match a known value (standard).

Discharge – the measured stream flow rate cubic feet per second (cfs).

Shear stress – the force per unit area exerted by the water flow on the stream bed in the direction parallel to the bed. The shear stress is proportional to the square of the water velocity and is directly related to the erosive tendency of the flow.

Turbidity - expression of the optical property that causes light to be scattered and absorbed in water. It is caused by suspended and colloidal matter such as clay, silt, finely divided organic and inorganic matter, and plankton and other microscopic organisms. While less quantitative and subjective than TSS, turbidity measurements have the advantage of being able to be measured directly in the stream without the necessity of collecting samples for later laboratory analysis.

Total Suspended Solids (TSS) – the concentration of particles that are suspended in water, determined through a process of laboratory filtering, drying and weighing.

3.0 Methods

Six of the locations shown in Figure 1 were sampled 13 times during the 2005 calendar year. Sampling began on January 11, 2005 and concluded on December 14, 2005. Dates for each of the 13 sampling trips are provided in Table 1. Two sampling trips (January 11, 2005 and February 22, 2005) were conducted to capture event based high flow conditions and the remaining 11 trips followed the scheduled monthly sampling. The January 11, 2005 event run was substituted for the monthly run, which would have occurred a few days later. In addition a seventh location, the outlet of Gordon Slough, was sampled six times during periods of agricultural return flow beginning May 18, 2005 and concluding October 14, 2005. On one occasion, June 15, 2005, no surface flow occurred at Rd 87 (Esparto Bridge). On this occasion, a scour hole with standing water, located beneath and downstream of the bridge was sampled.

For each sampling trip, sampling commenced at the furthest upstream site, Arbuckle Road (Rumsey Bridge), proceeded downstream to Road 85 (Capay Bridge), Road 87 (Esparto Bridge), Road 89, Road 94B, Gordon Slough, and concluded at Road 99W (Yolo). During periods of agricultural irrigation return flow from Gordon Slough, sampling was conducted first within Cache Creek upstream of the Gordon Slough confluence, and then within Gordon Slough just above the confluence with Cache Creek.

At each location, two 250 ml water samples were collected for laboratory analysis of turbidity and TSS. The laboratory turbidity samples were done to provide a backup for the field turbidity measurements. After collection, samples were kept cool until delivery to the University of California ANR Analytical Lab at UC Davis. In addition, at each location, turbidity was measured *in situ* with a Hydrolab Quanta multi-parameter probe. Before each sampling session, the probe was calibrated with a turbidity calibration standard in the range of the expected creek water turbidity. After each session the calibration of the probe was verified with a turbidity calibration standard. When discharge was less than ~3000 cubic feet per second (cfs) measurements and water samples were taken by wading directly in the main channel and sampling at a depth of one foot below the water surface. At discharges above ~3000 cfs, samples were collected from bridges at each site with a depth integrating suspended sampler lowered to a depth of approximately one foot from the water surface. Under all flow conditions, sampling at the Road 89 was conducted by wading, because no bridge exists at the site and sampling from the HWY 505 Bridge was deemed too dangerous.

Figure 1 – TSS and turbidity monitoring sites along Cache Creek.

4.0 Results and Discussion

Turbidity and suspended sediment data for each of the 13 sampling dates are summarized in Table 1. In addition, the flow rate (discharge) at Road 99W (Yolo) at the approximate time of sampling is also provided. Turbidity values have been reported to the precision prescribed by Andersen, 2004. For most field measurements, turbidity was observed to vary during each sampling interval at each site. At each site turbidity was recorded every minute until three consecutive measurements were within 10% of the others. In Table 1, the average of these three readings are reported. At each site two 250 ml samples were collected. The two values reported by the analytical lab have been averaged in Table 1. All data from the University of California ANR Analytical Lab are provided in Appendix A. In addition, data from the 2004 monitoring season have been provided in Table B1, located in Appendix B.

Data from the 2005 monitoring season show a number of apparent correlations. Specifically, the correlation between turbidity and TSS, and the correlation between TSS and discharge are readily apparent. Turbidity and TSS concentrations are often correlated. It is for this reason, turbidity is often used as a proxy for TSS. Higher turbidity values generally correspond to higher values of suspended sediment. It should be noted that a number factors including sediment composition and particle size, biological activity (bio-film growth), air entrainment and turbulence affect this correlation. Figure 3 provides a graphical display of the correlation between the turbidity and TSS data collected during the 2005 monitoring period. Each sampling trip is represented as a separate series of data points in Figure 3. Figure 4 provides a graphical display of the correlation between turbidity and TSS for both the 2004 and 2005 monitoring periods. Upon observation of both figures, a positive correlation in the form of a linear relationship is apparent between turbidity and TSS.

TSS and discharge are also often correlated. Higher TSS concentrations are generally observed at higher discharges because more sediment particles are resuspended due to the increased wetted channel, increased shear stresses due to a deeper water column, and increased turbulence associated with increased discharge. Figure 5 provides a graphical display of TSS vs. discharge for samples taken at the Road 99W (Yolo) sampling location during the 2005 monitoring period. Only Road 99W samples are displayed because accurate discharge values are not available for the other sampling locations. A power law relationship can be fitted to the 2005 data yielding the expression

$$TSS = 0.228Q^{0.9284}$$

where Q (discharge) is in units of cfs and TSS is in units of mg/l. The R^2 of this trendline is R^2=0.85.

The 2005 relationship, shown above, is different than the 2004 relationship reported in the 2004 monitoring report. The power law relationship fitted to the 2004 data yields the expression

$$TSS = 0.6224Q^{0.7967}$$

where Q (discharge) is in units of cfs and TSS is in units of mg/l. The R^2 of this trend line is R^2=0.93.

The two data sets can be combined (Figure 6), and a power law relationship can be fitted to the combined 2004 and 2005 data set, yielding the expression

$$TSS = 0.5736Q^{0.8048}$$

where Q (discharge) is in units of cfs and TSS is in units of mg/l. The R^2 of this trend line is R^2=0.90.

Samples, which the TSS was reported as <4 mg/l by the ANR laboratory have been excluded from Figures 5 and 6 and the development of the three power law relationships.

It is important to note that many factors influence the turbidity/discharge correlation including, stage of the hydrograph (rising limb vs. falling limb), the timing of the flood pulse (early season vs. late season), and the recent flow history (big flood preceding vs. low flows preceding). These factors all contribute to the hysteresis, which is often observed in the relationship between TSS/turbidity and discharge. In the above equations, the correlation between TSS and discharge is linear. In this way, for a given discharge, only one value exists for TSS. In reality the TSS concentration will be different for the exact same discharge on the rising and falling limbs of the same hydrograph, or for the same discharge, which occurs early in the season compared to late in the flood season. Further explanation is found by comparing Road 99W (Yolo) data from two samples collected with similar discharge values, February 19, 2005 and April 15, 2005 with discharges of 555 cfs and 727 cfs, respectively. These two samples have very different values for TSS, however the February 19, 2005 sample, collected at a lower discharge (555 cfs vs. 727 cfs), has a higher value for TSS, 120 mg/l, compared to the 57 mg/l value obtained on April 15, 2005. The explanation of this incongruity lies in the flow conditions preceding the sampling. The first sample was collected on the rising limb of the hydrograph, while the second sample was collected on the falling limb of the hydrograph. This example is provided to illustrate to the reader that while TSS and discharge are typically correlated with linear relationships, a physical basis for the scatter of data points exists.

Table 1 – Cache Creek sampling date, discharge, field turbidity, laboratory turbidity and laboratory TSS values for the 2005 monitoring period.

Date	Yolo Q (cfs)[1]	Parameter [2]	Arbuckle Rd	Rd 85	Rd 87[3]	Rd 89	Rd 94B	Gordon Slough[4]	Rd 99W
1/11/05	4410	Field Turb. (NTU)	abv	abv	abv	abv	abv	ns	abv
		Lab Turb. (NTU)	1450	1450	1750	2000	1800	ns	1150
		Lab TSS (mg/l)	1210	1440	1485	1610	1570	ns	1155
2/19/05	555	Field Turb. (NTU)	68	41	42	44	61	ns	120
		Lab Turb. (NTU)	41	20	29	27	40	ns	93
		Lab TSS (mg/l)	46.0	43.0	44.0	54.5	71.0	ns	143.0
2/22/05	2460	Field Turb. (NTU)	710	610	590	520	580	ns	630
		Lab Turb. (NTU)	740	670	630	560	660	ns	690
		Lab TSS (mg/l)	462.0	452.5	418.5	369.0	404.0	ns	475.5
3/16/05	226	Field Turb. (NTU)	3.2	4.8	5.9	6.6	6.4	ns	12.0
		Lab Turb. (NTU)	2.4	5.2	4.8	4.9	4.5	ns	7.2
		Lab TSS (mg/l)	<4	6.5	5.0	5.5	6.5	ns	13.0
4/15/05	727	Field Turb. (NTU)	29	32	31	31	41	ns	57
		Lab Turb. (NTU)	20	17	21	23	27	ns	36
		Lab TSS (mg/l)	26.0	25.0	24.5	28.0	37.5	ns	59.0
5/18/05	310	Field Turb. (NTU)	30	31	28	17	11	56	21
		Lab Turb. (NTU)	22	21	22	12	8.3	41	15
		Lab TSS (mg/l)	30.0	25.5	24.0	12.0	8.0	37.5	14.0
6/15/05	1	Field Turb. (NTU)	23	13	13	5.1	5.7	98	9.7
		Lab Turb. (NTU)	16	9.8	8.1	3.4	4.3	77	5.3
		Lab TSS (mg/l)	26.5	10.0	9.5	4.0	<4	64.0	<4
7/19/05	18	Field Turb. (NTU)	22	16	2.4	0.2	6.4	130	12
		Lab Turb. (NTU)	15	15	2.2	1.4	4.1	130	11
		Lab TSS (mg/l)	20.5	11.0	<4	<4	4.0	91.0	7.0
8/15/05	20	Field Turb. (NTU)	15	7.4	1.2	0.7	3.6	220	6.8
		Lab Turb. (NTU)	13	6.1	1.4	1.1	3.7	210	6.2
		Lab TSS (mg/l)	15.0	6.0	<4	<4	5.0	109.0	5.0
9/21/05	4	Field Turb. (NTU)	24	3.9	1.9	0.0	0.9	58	0.7
		Lab Turb. (NTU)	18	4.3	2.0	0.4	1.8	37	0.8
		Lab TSS (mg/l)	25.0	<4	<4	<4	<4	22.0	<4
10/14/05	41	Field Turb. (NTU)	16	5.1	2.1	1.5	5.1	84	3.8
		Lab Turb. (NTU)	9.2	4.5	1.2	0.7	4.5	66	3.7
		Lab TSS (mg/l)	14.0	<4	<4	<4	4.0	42.0	<4
11/16/05	42	Field Turb. (NTU)	3.5	4.0	1.8	1.4	2.0	ns	1.4
		Lab Turb. (NTU)	1.0	1.5	0.4	1.1	0.9	ns	0.3
		Lab TSS (mg/l)	<4	<4	<4	<4	<4	ns	<4
12/14/05	32	Field Turb. (NTU)	2.4	3.8	1.1	0.9	4.5	ns	1.8
		Lab Turb. (NTU)	0.6	1.2	0.3	0.2	1.1	ns	0.6
		Lab TSS (mg/l)	<4	<4	<4	<4	<4	ns	<4

***Notes follow on next page.**

Table 1 Notes:

1. Provisional discharge values obtained from the California Data Exchange Center (http://cdec.water.ca.gov). Data is provisional and is subject to change.
2. Each 'lab' value reported is the average of the two samples submitted to University of California ANR Analytical Lab. Reporting precision follows the guidelines prescribed by Andersen 2004. Nephelometric Turbidity Units (NTU) are used for turbidity, and units of mg/L used for TSS.
3. No surface flow at Rd 87 (Esparto Bridge) on 6/15/05 sample. Standing water scour hole sampled.
4. Gordon Slough not sampled in winter. Sampling began 5/18/05 and ended 10/14/05 in response to agricultural return flow in Gordon Slough.
5. Values reported as "abv" indicate that the in situ turbidity was above the range of the turbidity probe. Values reported, as "ns" indicate no sample was collected, or measurement made.

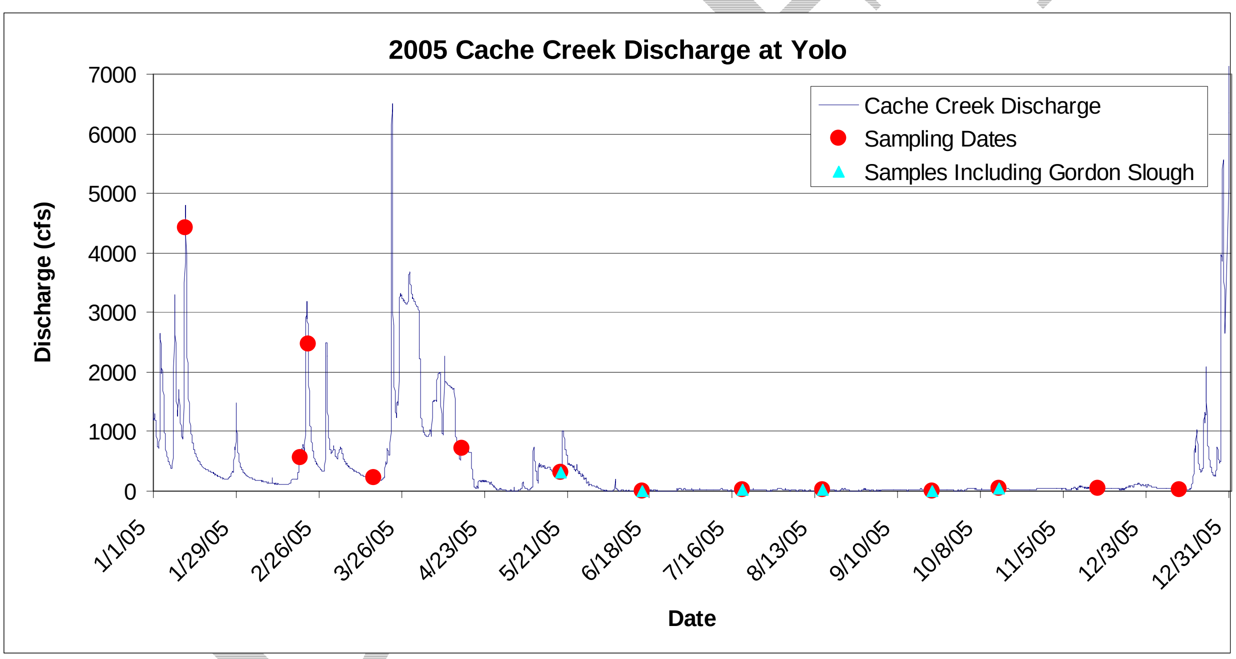

Figure 2 – Cache Creek discharge reported at the Road 99W (Yolo) monitoring site. TSS and turbidity sampling dates are shown as red circles. Sampling sessions, which included sampling of Gordon Slough, are displayed as turquoise triangles. Provisional discharge data obtained from the California Data Exchange Center (http://cdec.water.ca.gov).

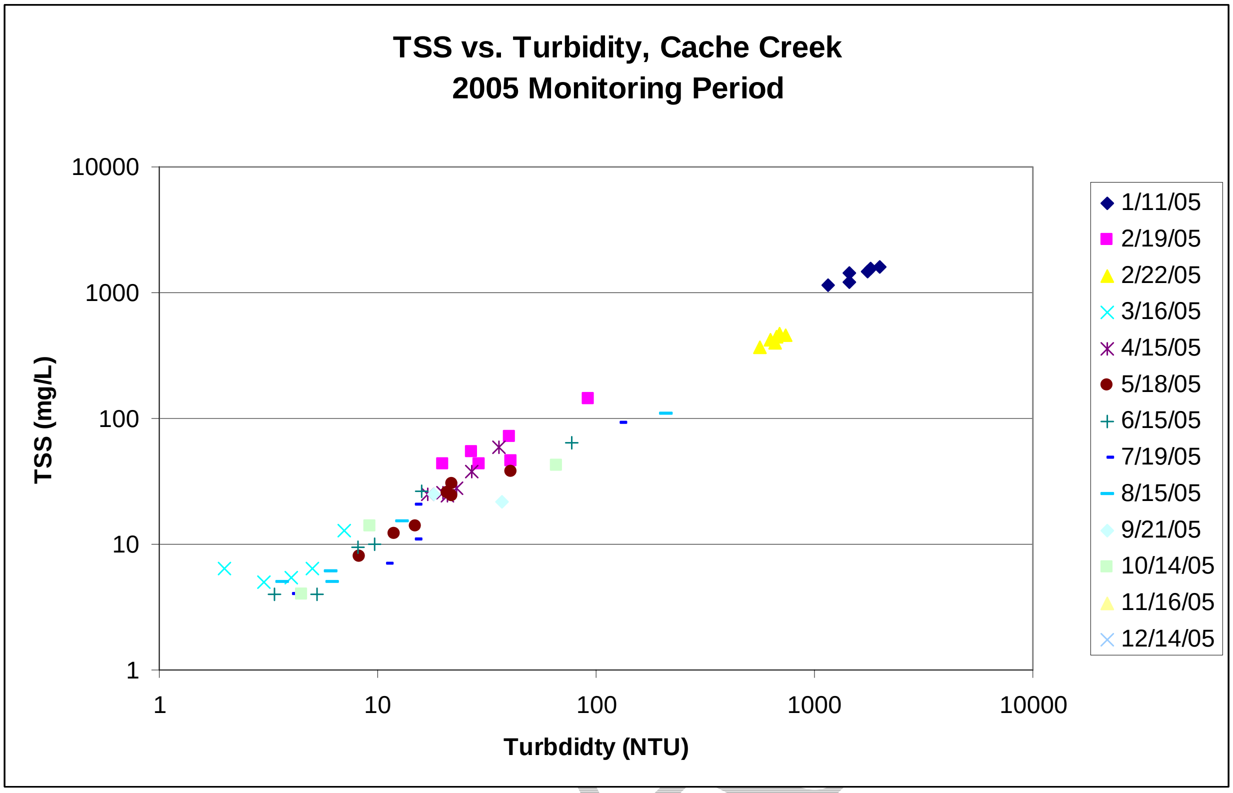

Figure 3 – TSS vs. turbidity for Cache Creek (including Gordon Slough samples) for the 2005 monitoring period, separated by sampling date. Values are plotted on logarithmic scales. Laboratory TSS values reported as <4 mg/l have been excluded. A correlation between TSS and turbidity is apparent. Higher turbidity values indicate higher values of TSS.

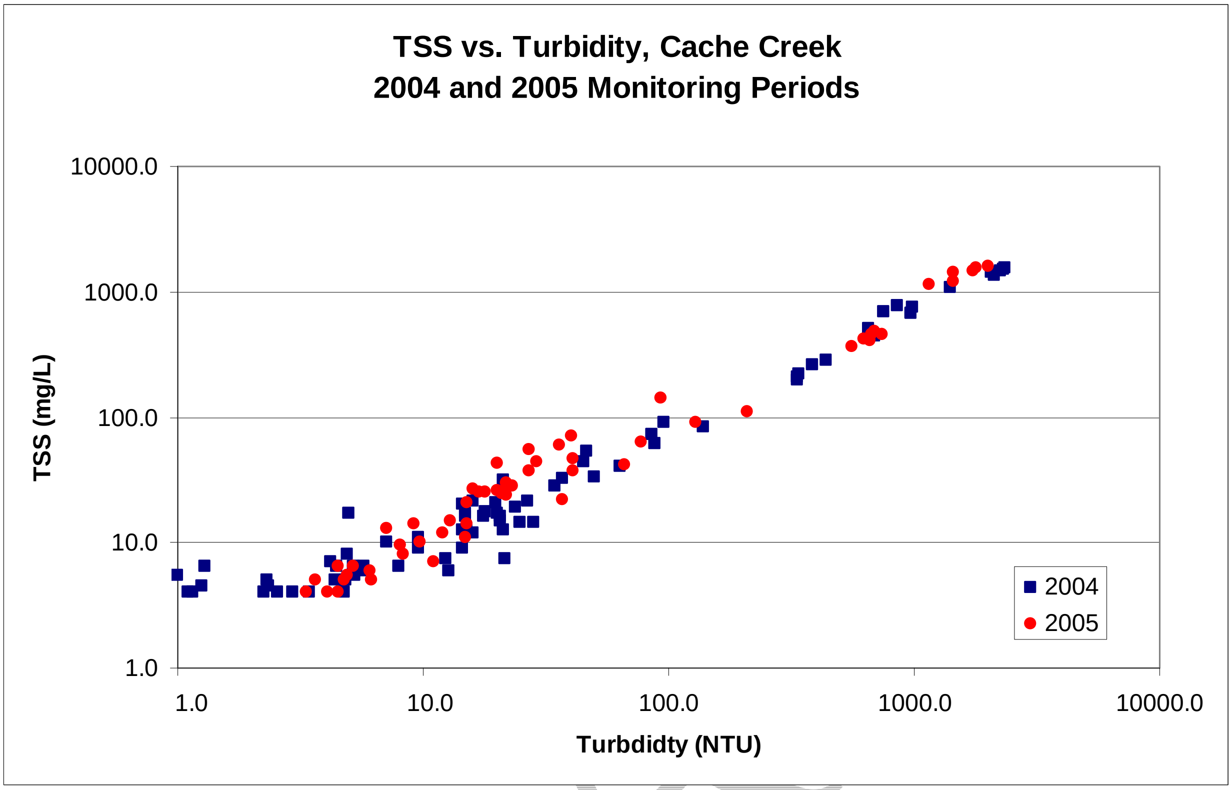

Figure 4 – TSS vs. turbidity for Cache Creek (including Gordon Slough samples) for the 2004 and 2005 monitoring periods. Values are plotted on logarithmic scales. Laboratory TSS values reported as <4 mg/l have been excluded.

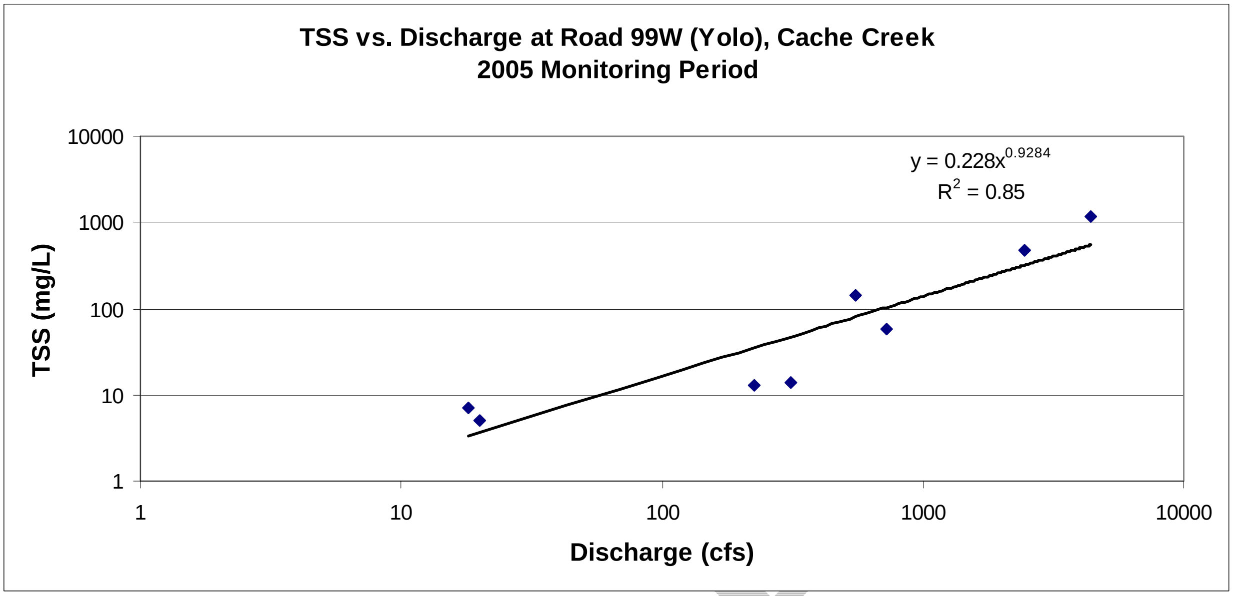

Figure 5 – TSS vs. Cache Creek discharge at Road 99W (Yolo), for the 2005 monitoring period. Values are plotted on logarithmic scales. Laboratory TSS values reported as <4 mg/l have been excluded. The power law trend line between TSS and discharge is shown. Higher TSS values are present under elevated creek discharge.

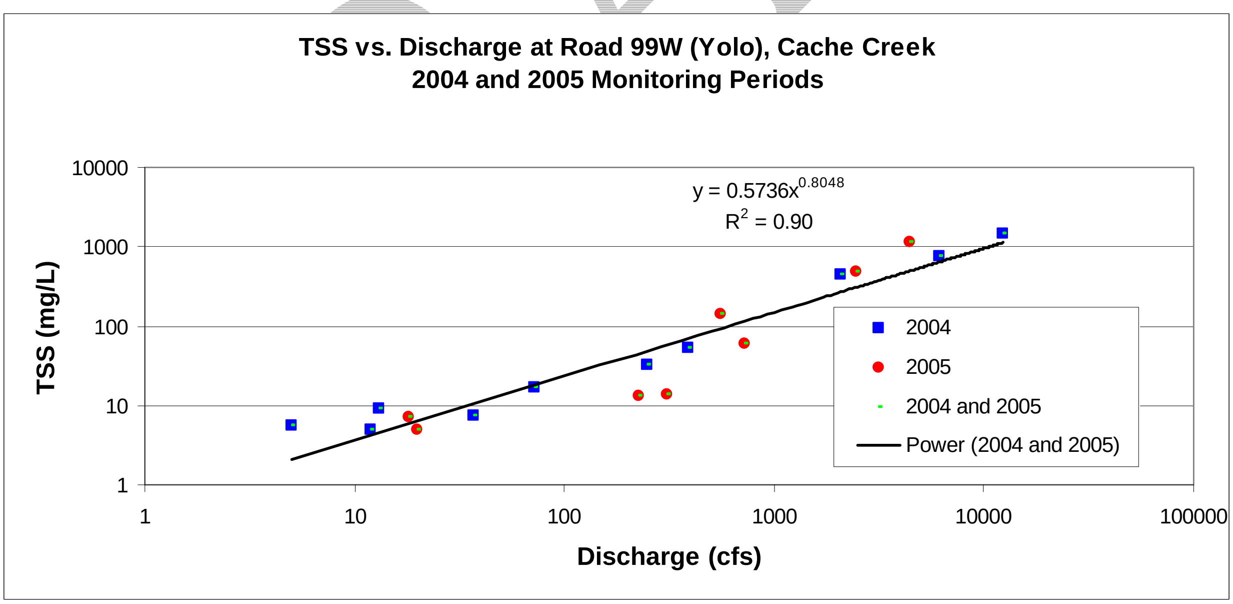

Figure 6 – TSS vs. Cache Creek discharge at Road 99W (Yolo), for the 2004 and 2005 monitoring periods. Values are plotted on logarithmic scales. Laboratory TSS values reported as <4 mg/l have been excluded. The power law trend line between TSS and discharge data for 2004 and 2005 combined is shown. Higher TSS values are present under elevated creek discharge.

Turbidity and TSS measurements made in Gordon Slough continue to demonstrate this slough's impacts upon Cache Creek's water quality. Every time that Gordon Slough was sampled its turbidity was found to be significantly higher than the creek waters. Through the low flow periods when Gordon slough was sampled, it was found to be 5 to 58 more turbid than Cache Creek prior to mixing (based on laboratory turbidity data). On average it was found to be 25 times more turbid. Flow data were not available for Gordon Slough so a quantitative check on the amount of dilution of Gordon Slough water was not possible. It was beyond the scope of the present study to measure any other contaminants that may be associated with discharges from Gordon Slough.

Strong agreement between the laboratory measured turbidity and the in situ measured is not observed in the present data set. This is not altogether surprising. Different, properly calibrated turbidity probes often yield different values for identical samples. These differences are due to variations between instruments regarding beam wavelength used, sensor orientation, and dynamic (in situ) vs. static (in lab) measurement. Furthermore, turbidity is known to change rapidly after sampling. Turbidity monitoring protocols strongly advise the immediate measurement of turbidity, and suggest that sample preservation is not practical (ASTM 2003). Storage at the lab DANR lab prior to measurement ranged from 10 to 26 days for the 2005 monitoring samples. In addition, static (lab) measurements will likely be biased low if sand or coarse silt are present (Andersen 2004), as is common in Cache Creek suspended sediments collected under flood conditions. Laboratory measured values have been favored in this report because the field data set is incomplete (January 11, 2005 sample beyond the probe's range). It is important to note that while the turbidity values vary from instrument to instrument, the relative difference between measurements taken with the same calibrated probe are of the most value. In situ measurement continues to be tremendously valuable when used properly in a direct comparison framework, for the purpose of assessing the water clarity impacts of monitoring in channel activities, when immediate feedback is required. For more information regarding variations in turbidity measurement the reader is referred to Andersen (2004).

The measured values for TSS in Cache Creek are not dissimilar to other systems in California, particularly during the low flow times of year. For example, Schoellhamer (2001) observed TSS in the range 15-150 mg/l in the Sacramento River at Freeport between July 1998 and September 1999. For the period 1957 to 2001, the annual average TSS concentration at the same location decreased from approximately 150 mg/l in the 1950s to approximately 60 mg/l in more recent years (Wright and Schoellhamer 2004). Between June 15, 2005 and December 14, 2005, TSS on Cache Creek varied between a high of 11 mg/l and a low of less than 4 mg/l (excluding values from the most upstream site which is outside the CCRMP area and Gordon Slough). During this period the highest flow rate was 42 cfs at Yolo. It is not possible to make similar comparisons between turbidity at these two locations. However, as TSS is the more fundamental quantity (turbidity is used as a surrogate) the comparison is considered valid. The annual average TSS concentration for 2005 was 53 mg/l. By comparison the annual average TSS concentration for 2004 was 72 mg/l. For the high flow periods, Cache Creek appears to have significantly elevated TSS concentrations. For example, on January 11, 2005 when the flow at Road 99W (Yolo) was 4410 cfs, the TSS concentration along the creek was in the range of 1155-1610 mg/l. The reason for a lower annual average TSS in 2005 is due to the fact that fewer high flow events occurred on the creek. The maximum flow event for 2005 prior to December 31, was 6500 cfs on March 22 at Yolo. On December 31, flow rose to 26000 cfs in a matter of a few hours. By contrast in 2004, there were 2 flow events in excess of 17000 cfs. The total volume of water passing Yolo in 2005 was 10,000 million cu. ft, whereas the equivalent flow in 2004 was 14,000 million cu. ft.

The relationship between high flow rates and high TSS concentration has the effect of making the overall sediment flux dominated by winter time flows. Assuming the power law relationship between TSS and flow rate shown for 2005 data, and applying it to the hourly flow data measured at Yolo, it is possible to calculate the cumulative sediment mass passing Yolo. This is shown in Figure 7. The total mass of suspended sediment that was discharged downstream of Yolo was 104,101 Tonnes. The majority of this occurred in association with high flow events, which occurred in late March through April and in the last few days of December. By comparison during the period June 2, 2005 to December 17, 2005, only 154 Tonnes of sediment passed the same point, less than 0.15% of the total annual mass. By contrast, in 2004 the total mass of suspended sediment that was discharged downstream of Yolo was 265,664 Tonnes.

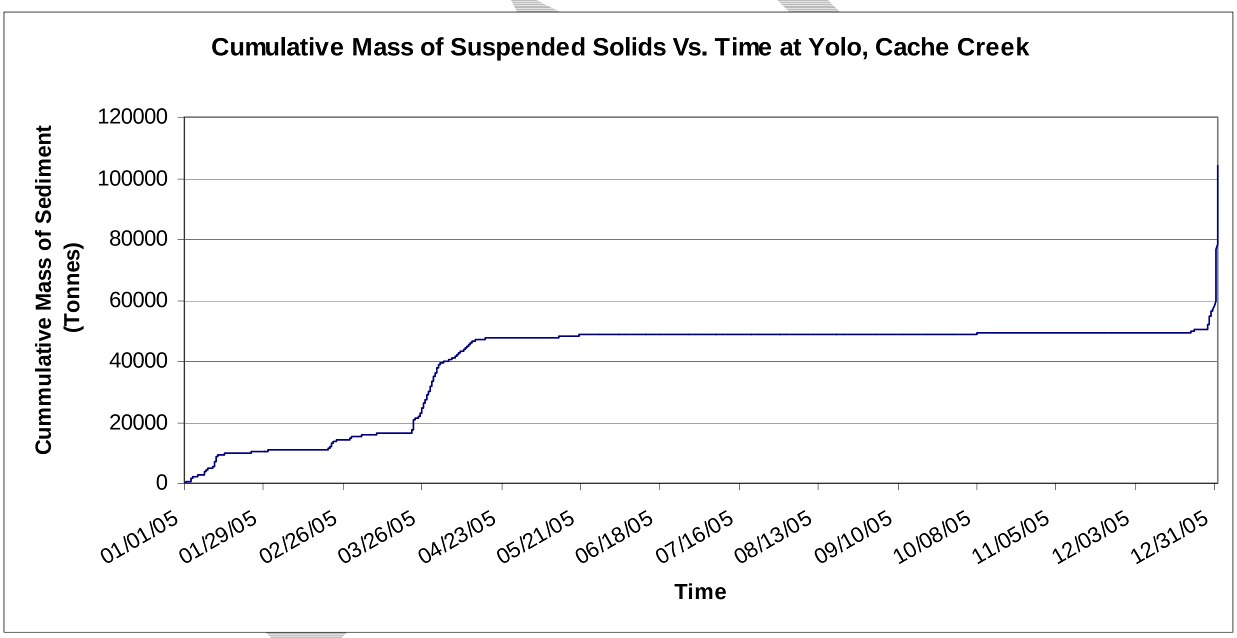

Figure 7 - Cumulative mass of suspended sediment passing Road 99W (Yolo) during 2005.

5.0 Conclusions

The data provided in this report are the continuation of efforts to form a baseline for subsequent consideration of the effects to water quality of near-channel activities, such as vegetation removal, channel modification and various other restoration activities. Such activities, which generally occur during low flow conditions, are highly constrained by CVWQCB compliance standards regarding impacts to turbidity. A major concern driving the establishment of these standards is the introduction of mercury into the water column.

Data from the second year of this study demonstrate that:

1. Turbidity and TSS concentration are reasonably well correlated on lower Cache Creek
2. TSS and stream discharge may be correlated through a power law relationship with an R^2 of 0.85.
3. Over 99% of the sediment mass flux passing Yolo was associated with the 2 or 3 large flow events that occurred on Cache Creek in 2005, a similar result to 2004
4. Total mass of sediment passing Yolo in 2005 was 104, 101 Tonnes. This was considerably less than the equivalent quantity for 2004, which was 265,664 Tonnes. This can be explained by the higher flow events in 2004, and the highly non-linear relationship between flow and sediment transport
5. Annual average TSS concentration in Cache Creek is of similar magnitude to that of the Sacramento River at Freeport.
6. Summer TSS concentrations in Cache Creek are lower than the Sacramento River, while peak (winter) flow values are an order of magnitude higher
7. Gordon Slough represents a significant source of high turbidity water to Cache Creek during the summer irrigation season.
8. There is considerable interannual variability in the year-to-year flux of TSS passing through cache Creek. For the two years measured, the difference was a factor of 2.5, arthough in both years summer fluxes were small.

6.0 References

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7.0 Appendix A

University of California
ANR Analytical Lab Data

SUBMITTED BY:	SCHLADOW, S. GEOFF	WORK REQ #:	05W138
DANR SECTION:	FAC: CIV & ENV ENG, UCD	# OF SAMPLES:	12
COPY TO:	HAMMERSMARK, CHRIS	DATE RECEIVED:	01/18/05
COMMODITY:	River Water	DATE REPORTED:	02/11/05
		DANR CLIENT #:	SCHS1
		TURN AROUND TIME IN WORKING DAYS:	19

http://danranlab.ucanr.org

Sample Type: WATER Date Sampled: 1/11/05; Grower/Location/Project: Not Specified

SAMPLE #	DESC	TSS [SOP 870] mg/L	Turbidity [SOP 810] NTU										
1		1220	1480										
1 dup		1210	1510										
2		1200	1440										
3		1460	1410										
4		1420	1500										
5		1500	1750										
6		1470	1770										
7		1630	1980										
8		1590	2000										
9		1590	1820										
10		1550	1820										
10 dup		1570	1830										
11		1130	1160										
12		1180	1160										
12 dup		1180	1190										
Method Detection Limit:		4	0.1										
Blank Concentration:		0	0										
Standard Ref as Tested:		153	210										
Standard Ref Acceptable:		146±14	200±20										
Standard Reference:		SOLIDS	200 NTU										

NOTE: The SOP # (Standard Operating Procedure number) is a reference to the laboratory method used.
The SOP heading in this Excel file is linked to the method summary on the Laboratory website. http://danranlab.ucanr.org

NOTE: No result within this report is accurate to more than 3 significant figures. More figures may be present due to software rounding rules.

Checked and Approved: *{electronically signed by Traci Francis}*
Traci Francis, Laboratory Supervisor

Reviewed and Approved: *{electronically signed by Dirk Holstege}*
Dirk Holstege, Director

Please address questions regarding these results to Lab Director Dirk Holstege at (530) 752-0148 or dmholstege@ucdavis.edu.

SUBMITTED BY:	SCHLADOW, S. GEOFF		WORK REQ #:	05W164
DANR SECTION:	FAC: CIV & ENV ENG, UCD	http://danranlab.ucanr.org	# OF SAMPLES:	12
COPY TO:	HAMMERSMARK, CHRIS		DATE RECEIVED:	02/23/05
COMMODITY:	River Water		DATE REPORTED:	03/22/05
			DANR CLIENT #:	SCHS1
			TURN AROUND TIME IN WORKING DAYS:	20

Sample Type: WATER Date Sampled: 2/19/05; Grower/Location/Project: Not Specified

SAMPLE #	DESC	TSS [SOP 870] mg/L	Turbidity [SOP 810] NTU										
1		43	43.6										
1 dup		NES	45.8										
2		49	38.5										
3		43	21.5										
4		43	19.1										
5		43	28.8										
6		45	30.0										
7		54	27.6										
8		55	25.8										
9		71	36.2										
10		71	43.4										
10 dup		NES	44.9										
11		146	84.2										
12		140	102.0										
12 dup		NES	104.0										
Method Detection Limit:		4	0.1										
Blank Concentration:		0	0.0										
Standard Ref as Tested:		149	209										
Standard Ref Acceptable:		146±14	200±20										
Standard Reference:		SOLIDS	200 NTU										

NOTE: The SOP # (Standard Operating Procedure number) is a reference to the laboratory method used.
The SOP heading in this Excel file is linked to the method summary on the Laboratory website. http://danranlab.ucanr.org

NOTE: No result within this report is accurate to more than 3 significant figures. More figures may be present due to software rounding rules.

Checked and Approved: *{electronically signed by Traci Francis}*
Traci Francis, Laboratory Supervisor

Please address questions regarding these results to Lab Director Dirk Holstege at (530) 752-0148 or dmholstege@ucdavis.edu.

SUBMITTED BY:	SCHLADOW, S. GEOFF	WORK REQ #:	05W168
DANR SECTION:	FAC: CIV & ENV ENG, UCD	# OF SAMPLES:	12
COPY TO:	HAMMERSMARK, CHRIS	DATE RECEIVED:	02/25/05
COMMODITY:	River Water	DATE REPORTED:	03/24/05
		DANR CLIENT #:	SCHS1
		TURN AROUND TIME IN WORKING DAYS:	20

http://danranlab.ucanr.org

Sample Type: WATER Date Sampled: 2/22/05; Grower/Location/Project: Not Specified

SAMPLE #	DESC	TSS [SOP 870] mg/L	Turbidity [SOP 810] NTU
1		460	732
1 dup		435	741
2		464	744
3		460	689
4		445	658
5		420	632
6		417	636
7		350	552
8		388	557
9		400	657
10		408	659
10 dup		425	651
11		488	661
12		463	712
12 dup		473	708
Method Detection Limit:		4	0.1
Blank Concentration:		0	0
Standard Ref as Tested:		153	209
Standard Ref Acceptable:		146±14	200±20
Standard Reference:		SOLIDS	200 NTU

NOTE: The SOP # (Standard Operating Procedure number) is a reference to the laboratory method used.
The SOP heading in this Excel file is linked to the method summary on the Laboratory website. http://danranlab.ucanr.org

NOTE: No result within this report is accurate to more than 3 significant figures. More figures may be present due to software rounding rules.

Checked and Approved: *{electronically signed by Rani Singh}*
Rani Singh, Chemist

Please address questions regarding these results to Lab Director Dirk Holstege at (530) 752-0148 or dmholstege@ucdavis.edu.

SUBMITTED BY:	SCHLADOW, S. GEOFF	WORK REQ #:	05W177
DANR SECTION:	FAC: CIV & ENV ENG, UCD	# OF SAMPLES:	12
COPY TO:	HAMMERSMARK, CHRIS	DATE RECEIVED:	03/17/05
COMMODITY:	River Water	DATE REPORTED:	04/12/05
		DANR CLIENT #:	SCHS1
		TURN AROUND TIME IN WORKING DAYS:	18

http://danranlab.ucanr.org

Sample Type: WATER Date Sampled: 3/16/05; Grower/Location/Project: Not Specified

SAMPLE #	DESC	TSS [SOP 870] mg/L	Turbidity [SOP 810] NTU
1		<4	3.0
1 dup		NES	2.9
2		<4	1.8
3		7	4.9
4		6	5.5
5		<4	4.7
6		7	4.9
7		4	5.0
8		7	4.8
9		5	4.3
10		8	4.7
10 dup		NES	4.8
11		14	8.4
12		12	5.9
12 dup		NES	6.4
Method Detection Limit:		4	0.1
Blank Concentration:		0	0.0
Standard Ref as Tested:		153	210
Standard Ref Acceptable:		146±14	200±20
Standard Reference:		SOLIDS	200 NTU

NOTE: The SOP # (Standard Operating Procedure number) is a reference to the laboratory method used.
The SOP heading in this Excel file is linked to the method summary on the Laboratory website. http://danranlab.ucanr.org
NOTE: No result within this report is accurate to more than 3 significant figures. More figures may be present due to software rounding rules.

Checked and Approved: *{electronically signed by Traci Francis}*
Traci Francis, Laboratory Supervisor

Reviewed and Approved: *{electronically signed by Dirk Holstege}*
Dirk Holstege, Director

Please address questions regarding these results to Lab Director Dirk Holstege at (530) 752-0148 or dmholstege@ucdavis.edu.

SUBMITTED BY: SCHLADOW, S. GEOFF
DANR SECTION: FAC: CIV & ENV ENG, UCD
COPY TO: HAMMERSMARK, CHRIS
COMMODITY: River Water

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WORK REQ #: 05W209
OF SAMPLES: 12
DATE RECEIVED: 04/25/05
DATE REPORTED: 05/11/05
DANR CLIENT #: SCHS1
TURN AROUND TIME IN WORKING DAYS: 13

Sample Type: WATER Date Sampled: 4/15/05; Grower/Location/Project: Not Specified

SAMPLE #	DESC	TSS [SOP 870] mg/L	Turbidity [SOP 810] NTU
1		25	20.5
1 dup		NES	21.7
2		27	18.4
3		25	17.5
4		25	16.9
5		24	22.3
6		25	18.7
7		29	24.2
8		27	20.7
9		38	25.7
10		37	28.3
10 dup		NES	27.1
11		61	31.2
12		57	40.8
12 dup		NES	38.5
Method Detection Limit:		4	0.1
Blank Concentration:		0	0.0
Standard Ref as Tested:		147	191
Standard Ref Acceptable:		130±22	200±20
Standard Reference:		SOLIDSB	200 NTU

NOTE: The SOP # (Standard Operating Procedure number) is a reference to the laboratory method used.
The SOP heading in this Excel file is linked to the method summary on the Laboratory website. http://danranlab.ucanr.org

NOTE: No result within this report is accurate to more than 3 significant figures. More figures may be present due to software rounding rules.

Checked and Approved: *{electronically signed by Traci Francis}*
Traci Francis, Laboratory Supervisor

Reviewed and Approved: *{electronically signed by Dirk Holstege}*
Dirk Holstege, Director

Please address questions regarding these results to Lab Director Dirk Holstege at (530) 752-0148 or dmholstege@ucdavis.edu.

SUBMITTED BY: SCHLADOW, S. GEOFF
DANR SECTION: FAC: CIV & ENV ENG, UCD
COPY TO: HAMMERSMARK, CHRIS
COMMODITY: Riverwater

http://danranlab.ucanr.org

WORK REQ #: 05W227
OF SAMPLES: 14
DATE RECEIVED: 05/20/05
DATE REPORTED: 06/10/05
DANR CLIENT #: SCHS1
TURN AROUND TIME IN WORKING DAYS: 15

Sample Type: WATER Date Sampled: 5/18/05; Grower/Location/Project: Not Specified

SAMPLE #	DESC	TSS [SOP 870] mg/L	Turbidity [SOP 810] NTU
1		28	22.0
1 dup		NES	23.2
2		32	21.8
3		27	22.4
4		24	20.4
5		23	23.2
6		25	20.5
7		13	12.0
8		11	12.0
9		9	8.3
10		7	8.3
10 dup		NES	8.5
11		12	15.3
12		16	15.0
13		40	40.8
14		35	40.3
14 dup		NES	41.2
Method Detection Limit:		4	0.1
Blank Concentration:		0	0.0
Standard Ref as Tested:		118	189
Standard Ref Acceptable:		130±22	200±20
Standard Reference:		SOLIDSB	200 NTU

NOTE: The SOP # (Standard Operating Procedure number) is a reference to the laboratory method used.
The SOP heading in this Excel file is linked to the method summary on the Laboratory website. http://danranlab.ucanr.org
NOTE: No result within this report is accurate to more than 3 significant figures. More figures may be present due to software rounding rules.

Checked and Approved: *{electronically signed by Traci Francis}*
Traci Francis, Laboratory Supervisor

Reviewed and Approved: *{electronically signed by Dirk Holstege}*
Dirk Holstege, Director

Please address questions regarding these results to Lab Director Dirk Holstege at (530) 752-0148 or dmholstege@ucdavis.edu.

SUBMITTED BY:	SCHLADOW, S. GEOFF	WORK REQ #:	05W243
DANR SECTION:	FAC: CIV & ENV ENG, UCD	# OF SAMPLES:	14
COPY TO:	HAMMERSMARK, CHRIS	DATE RECEIVED:	06/17/05
COMMODITY:	River Water	DATE REPORTED:	07/07/05
		DANR CLIENT #:	SCHS1
		TURN AROUND TIME IN WORKING DAYS:	14

http://danranlab.ucanr.org

Sample Type: WATER   Date Sampled: 6/15/05; Grower/Location/Project: Not Specified

SAMPLE #	DESC	TSS [SOP 870] mg/L	Turbidity [SOP 810] NTU
1		29	17.5
1 dup		NES	17.8
2		24	15.1
3		12	9.4
4		8	10.1
5		9	8.0
6		10	8.2
7		5	3.4
8		<4	3.3
9		<4	4.2
10		<4	4.3
10 dup		NES	4.2
11		<4	5.2
12		4	5.4
13		63	76.1
14		65	78.0
14 dup		NES	80.6
Method Detection Limit:		4	0.1
Blank Concentration:		0	0.0
Standard Ref as Tested:		121	186
Standard Ref Acceptable:		130±22	200±20
Standard Reference:		SOLIDSB	200 NTU

NOTE: The SOP # (Standard Operating Procedure number) is a reference to the laboratory method used.
The SOP heading in this Excel file is linked to the method summary on the Laboratory website. http://danranlab.ucanr.org

NOTE: No result within this report is accurate to more than 3 significant figures. More figures may be present due to software rounding rules.

Checked and Approved: *{electronically signed by Traci Francis}*
Traci Francis, Laboratory Supervisor

Please address questions regarding these results to Lab Director Dirk Holstege at (530) 752-0148 or dmholstege@ucdavis.edu.

SUBMITTED BY:	SCHLADOW, S. GEOFF	WORK REQ #:	06W015
DANR SECTION:	FAC: CIV & ENV ENG, UCD	# OF SAMPLES:	14
COPY TO:	HAMMERSMARK, CHRIS	DATE RECEIVED:	07/20/05
COMMODITY:	River Water	DATE REPORTED:	08/09/05
		DANR CLIENT #:	SCHS1
		TURN AROUND TIME IN WORKING DAYS:	15

http://danranlab.ucanr.org

Sample Type: WATER   Date Sampled: 7/19/05; Grower/Location/Project: Not Specified

SAMPLE #	DESC	TSS [SOP 870] mg/L	Turbidity [SOP 810] NTU
1		23	14.6
1 dup		NES	14.3
2		18	14.9
3		12	15.4
4		10	14.5
5		<4	2.5
6		<4	1.9
7		<4	1.4
8		<4	1.4
9		4	4.0
10		<4	4.2
10 dup		NES	4.3
11		9	10.8
12		5	10.9
13		93	126.4
14		89	127.4
14 dup		NES	123.3
Method Detection Limit:		4	0.1
Blank Concentration:		0	0.0
Standard Ref as Tested:		143	186
Standard Ref Acceptable:		130±22	200±20
Standard Reference:		SOLIDS B	200 NTU

NOTE: The SOP # (Standard Operating Procedure number) is a reference to the laboratory method used.
The SOP heading in this Excel file is linked to the method summary on the Laboratory website. http://danranlab.ucanr.org

NOTE: No result within this report is accurate to more than 3 significant figures. More figures may be present due to software rounding rules.

Checked and Approved: *{electronically signed by Traci Francis}*
Traci Francis, Laboratory Supervisor

Please address questions regarding these results to Lab Director Dirk Holstege at (530) 752-0148 or dmholstege@ucdavis.edu.

SUBMITTED BY: SCHLADOW, S. GEOFF
DANR SECTION: FAC: CIV & ENV ENG, UCD
COPY TO: HAMMERSMARK, CHRIS
COMMODITY: River Water

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WORK REQ #: 06W034
OF SAMPLES: 14
DATE RECEIVED: 08/15/05
DATE REPORTED: 08/30/05
DANR CLIENT #: SCHS1
TURN AROUND TIME IN WORKING DAYS: 12

Sample Type: WATER Date Sampled: 8/13/05; Grower/Location/Project: Not Specified

SAMPLE #	DESC	TSS [SOP 870] mg/L	Turbidity [SOP 810] NTU
1		16	12.2
1 dup		NES	12.5
2		14	12.8
3		5	6.3
4		7	5.9
5		<4	1.4
6		<4	1.3
7		<4	1.1
8		<4	1.0
9		5	3.6
10		5	3.7
10 dup		NES	3.7
11		6	6.5
12		<4	5.8
13		110	208.1
14		108	208.1
14 dup		NES	216.5
Method Detection Limit:		4	0.1
Blank Concentration:		0	0.0
Standard Ref as Tested:		146	185
Standard Ref Acceptable:		130±22	200±20
Standard Reference:		SOLIDS B	200 NTU

NOTE: The SOP # (Standard Operating Procedure number) is a reference to the laboratory method used.
The SOP heading in this Excel file is linked to the method summary on the Laboratory website. http://danranlab.ucanr.org
NOTE: No result within this report is accurate to more than 3 significant figures. More figures may be present due to software rounding rules.

Checked and Approved: *{electronically signed by Rani Singh}*
Rani Singh, Chemist

Reviewed and Approved: *{electronically signed by Dirk Holstege}*
Dirk Holstege, Director

Please address questions regarding these results to Lab Director Dirk Holstege at (530) 752-0148 or dmholstege@ucdavis.edu.

SUBMITTED BY: SCHLADOW, S. GEOFF
DANR SECTION: FAC: CIV & ENV ENG, UCD
COPY TO: HAMMERSMARK, CHRIS
COMMODITY: River Water

http://danranlab.ucanr.org

WORK REQ #: 06W064
OF SAMPLES: 14
DATE RECEIVED: 09/22/05
DATE REPORTED: 10/27/05
DANR CLIENT #: SCHS1
TURN AROUND TIME IN WORKING DAYS: 26

Sample Type: WATER Date Sampled: 9/20/05; Grower/Location/Project: Not Specified

SAMPLE #	DESC	TSS [SOP 870] mg/L	Turbidity [SOP 810] NTU
1		24	18.3
1 dup		NES	17.4
2		26	16.8
3		<4	4.2
4		<4	4.4
5		<4	1.9
6		<4	2.0
7		<4	0.5
8		<4	0.2
9		<4	1.8
10		<4	1.8
10 dup		NES	1.6
11		<4	0.7
12		<4	0.8
13		20	36.0
14		24	36.9
14 dup		NES	37.9
Method Detection Limit:		4	0.1
Blank Concentration:		0	0.0
Standard Ref as Tested:		120	185
Standard Ref Acceptable:		130±22	200±20
Standard Reference:		SOLIDS B	200 NTU

NOTE: The SOP # (Standard Operating Procedure number) is a reference to the laboratory method used.
The SOP heading in this Excel file is linked to the method summary on the Laboratory website. http://danranlab.ucanr.org
NOTE: No result within this report is accurate to more than 3 significant figures. More figures may be present due to software rounding rules.

Checked and Approved: *{electronically signed by Traci Francis}*
Traci Francis, Laboratory Supervisor

Reviewed and Approved: *{electronically signed by Dirk Holstege}*
Dirk Holstege, Director

Please address questions regarding these results to Lab Director Dirk Holstege at (530) 752-0148 or dmholstege@ucdavis.edu.

SUBMITTED BY: SCHLADOW, S. GEOFF
DANR SECTION: FAC: CIV & ENV ENG, UCD
COPY TO: HAMMERSMARK, CHRIS
COMMODITY:

http://danranlab.ucanr.org

WORK REQ #: 06W077
OF SAMPLES: 14
DATE RECEIVED: 10/14/05
DATE REPORTED: 11/07/05
DANR CLIENT #: SCHS1
TURN AROUND TIME IN WORKING DAYS: 17

Sample Type: WATER   Date Sampled: 10/14/05; Grower/Location/Project: Not Specified

SAMPLE #	DESC	TSS [SOP 870] mg/L	Turbidity [SOP 810] NTU
1		14	9.0
1 dup		NES	9.2
2		14	9.4
3		<4	4.5
4		<4	4.5
5		<4	1.2
6		<4	1.1
7		<4	0.6
8		<4	0.7
9		5	4.5
10		<4	4.5
10 dup		NES	4.4
11		<4	3.8
12		<4	3.5
13		42	65.7
14		42	66.9
14 dup		NES	67.4
Method Detection Limit:		4	0.1
Blank Concentration:		0	0.0
Standard Ref as Tested:		98	191
Standard Ref Acceptable:		108±14	200±20
Standard Reference:		SOLIDS	200 NTU

NOTE: The SOP # (Standard Operating Procedure number) is a reference to the laboratory method used.
The SOP heading in this Excel file is linked to the method summary on the Laboratory website. http://danranlab.ucanr.org
NOTE: No result within this report is accurate to more than 3 significant figures. More figures may be present due to software rounding rules.

Checked and Approved: *{electronically signed by Traci Francis}*
Traci Francis, Laboratory Supervisor

Reviewed and Approved: *{electronically signed by Dirk Holstege}*
Dirk Holstege, Director

Please address questions regarding these results to Lab Director Dirk Holstege at (530) 752-0148 or dmholstege@ucdavis.edu.

SUBMITTED BY: SCHLADOW, S. GEOFF
DANR SECTION: FAC: CIV & ENV ENG, UCD
COPY TO: HAMMERSMARK, CHRIS
COMMODITY: River Water

http://danranlab.ucanr.org

WORK REQ #: 06W104
OF SAMPLES: 12
DATE RECEIVED: 11/17/05
DATE REPORTED: 12/02/05
DANR CLIENT #: SCHS1
TURN AROUND TIME IN WORKING DAYS: 10

Sample Type: WATER   Date Sampled: 11/16/05; Grower/Location/Project: Not Specified

SAMPLE #	DESC	TSS [SOP 870] mg/L	Turbidity [SOP 810] NTU
1		<4	1.0
1 dup		NES	1.0
2		<4	1.0
3		<4	1.3
4		<4	1.6
5		<4	0.3
6		<4	0.4
7		<4	1.1
8		<4	1.0
9		<4	0.9
10		<4	0.9
10 dup		NES	0.9
11		<4	0.3
12		<4	0.3
12 dup		NES	0.3
Method Detection Limit:		4	0.1
Blank Concentration:		0	0.0
Standard Ref as Tested:		96	187
Standard Ref Acceptable:		108±14	200±20
Standard Reference:		SOLIDS	200 NTU

NOTE: The SOP # (Standard Operating Procedure number) is a reference to the laboratory method used.
The SOP heading in this Excel file is linked to the method summary on the Laboratory website. http://danranlab.ucanr.org
NOTE: No result within this report is accurate to more than 3 significant figures. More figures may be present due to software rounding rules.

Checked and Approved: *{electronically signed by Traci Francis}*
Traci Francis, Laboratory Supervisor

Reviewed and Approved: *{electronically signed by Dirk Holstege}*
Dirk Holstege, Director

Please address questions regarding these results to Lab Director Dirk Holstege at (530) 752-0148 or dmholstege@ucdavis.edu.

SUBMITTED BY:	SCHLADOW, S. GEOFF		WORK REQ #:	06W120
DANR SECTION:	FAC: CIV & ENV ENG, UCD	http://danranlab.ucanr.org	# OF SAMPLES:	12
COPY TO:	HAMMERSMARK, CHRIS		DATE RECEIVED:	12/14/05
COMMODITY:	River Water		DATE REPORTED:	01/12/06
			DANR CLIENT #:	SCHS1
			TURN AROUND TIME IN WORKING DAYS:	16

Sample Type: WATER Date Sampled: 12/14/05; Grower/Location/Project: Cache Creek

SAMPLE #	DESC	TSS [SOP 870] mg/L	Turbidity [SOP 810] NTU
1		<4	0.6
1 dup		ISM	0.6
2		<4	0.6
3		<4	1.2
4		<4	1.2
5		<4	0.3
6		<4	0.3
7		<4	0.2
8		<4	0.2
9		<4	1.1
10		<4	1.0
10 dup		ISM	1.0
11		<4	0.6
12		<4	0.5
12 dup		ISM	0.6
Method Detection Limit:		4	0.1
Blank Concentration:		0	0.0
Standard Ref as Tested:		106	186
Standard Ref Acceptable:		108±14	200±20
Standard Reference:		SOLIDS	200 NTU

NOTE: The SOP # (Standard Operating Procedure number) is a reference to the laboratory method used.
The SOP heading in this Excel file is linked to the method summary on the Laboratory website. http://danranlab.ucanr.org
NOTE: No result within this report is accurate to more than 3 significant figures. More figures may be present due to software rounding rules.
ISM: There was insufficient sample material to perform the requested analysis.

Checked and Approved: *{electronically signed by Traci Francis}*
Traci Francis, Laboratory Supervisor

Reviewed and Approved: *{electronically signed by Dirk Holstege}*
Dirk Holstege, Director

Please address questions regarding these results to Lab Director Dirk Holstege at (530) 752-0148 or dmholstege@ucdavis.edu.

8.0 Appendix B

2004 Monitoring Period
TSS and Turbidity Data

Table B1 – Cache Creek discharge, field turbidity, laboratory turbidity and laboratory TSS values for the 2004 monitoring period. Notes follow on next page.

Date	Yolo Q (cfs)[1]	Parameter [2]	Arbuckle Rd	Rd 85	Rd 87[3]	Rd 89/I-505[4]	Rd 94B	Gordon Slough[5]	Rd 99W[6]
01/17/04	250	Field Turb. (NTU)	12	19	18	22	27	ns	40
		Lab Turb. (NTU)	10	15	15	18	20	ns	37
		Lab TSS (mg/l)	9.0	17.0	13.0	16.0	21.0	ns	32.0
02/16/04	72	Field Turb. (NTU)	28	60	18	20	35	ns	24
		Lab Turb. (NTU)	25	45	22	18	28	ns	20
		Lab TSS (mg/l)	14.5	43.5	7.5	17.5	14.5	ns	17.0
02/18/04	12300	Field Turb. (NTU)	abv	abv	abv	abv	abv	ns	abv
		Lab Turb. (NTU)	1400	2100	2050	2300	2300	ns	2250
		Lab TSS (mg/l)	1074.5	1361.0	1438.0	1511.0	1567.0	ns	1465.0
02/27/04	6120	Field Turb. (NTU)	590	790	840	880	930	ns	980
		Lab Turb. (NTU)	650	760	970	970	980	ns	860
		Lab TSS (mg/l)	504.0	689.0	682.0	665.0	748.0	ns	765.0
03/18/04	388	Field Turb. (NTU)	33	21	22	24	27	ns	49
		Lab Turb. (NTU)	21	21	21	24	27	ns	46
		Lab TSS (mg/l)	12.5	16.0	15.0	19.0	21.5	ns	53.0
04/19/04	37	Field Turb. (NTU)	19	4.6	2.4	1.8	2.0	71	15
		Lab Turb. (NTU)	15	4.8	2.4	3.0	2.2	63	12
		Lab TSS (mg/l)	12.5	4.0	<4	4.0	<4	40.0	7.5
05/17/04	12	Field Turb. (NTU)	23	5.3	20	0.0	0.8	140	2.5
		Lab Turb. (NTU)	21	5.6	16	2.6	2.4	140	4.9
		Lab TSS (mg/l)	31.5	6.0	12.0	4.0	4.5	83.5	5.0
06/17/04	5	Field Turb. (NTU)	25	4.8	14	0.4	2.2	47	3.2
		Lab Turb. (NTU)	16	5.2	13	2.5	4.5	34	5.3
		Lab TSS (mg/l)	21.5	6.5	6.0	<4	6.5	28.0	5.5
07/18/04	13	Field Turb. (NTU)	32	19	7.1	0.0	3.8	140	14
		Lab Turb. (NTU)	9.6	15	8.0	1.8	5.8	95	15
		Lab TSS (mg/l)	11.0	16.0	6.5	<4	6.5	90.5	9.0
08/17/04	0	Field Turb. (NTU)	16	7.7	1.6	0.0	0.6	75	ns
		Lab Turb. (NTU)	14	7.1	2.3	0.7	2.3	50	ns
		Lab TSS (mg/l)	20.0	10.0	4.0	4.0	5.0	33.5	ns
09/18/04	0	Field Turb. (NTU)	8.1	1.1	5.0	0.0	0.0	110	ns
		Lab Turb. (NTU)	4.9	1.1	4.4	0.9	1.0	85	ns
		Lab TSS (mg/l)	8.0	4.0	5.0	5.5	5.5	72.0	ns
10/18/04	0	Field Turb. (NTU)	9.3	2.3	1.3	0.6	0.0	100	ns
		Lab Turb. (NTU)	5.0	1.3	1.3	0.2	0.4	88	ns
		Lab TSS (mg/l)	17.0	6.5	4.5	9.0	<4	61.5	ns
11/17/04	12	Field Turb. (NTU)	2.0	1.5	0.0	0.0	0.0	ns	1.8
		Lab Turb. (NTU)	1.6	1.6	0.5	0.5	0.5	ns	1.4
		Lab TSS (mg/l)	<4	<4	<4	<4	<4	ns	<4
12/15/04	45	Field Turb. (NTU)	3.8	6.7	3.2	2.6	8.7	ns	5.6
		Lab Turb. (NTU)	1.5	2.2	1.2	0.7	4.2	ns	3.5
		Lab TSS (mg/l)	<4	<4	4.0	<4	7.0	ns	4.0
12/31/04	2080	Field Turb. (NTU)	460	360	350	360	460	ns	750
		Lab Turb. (NTU)	440	330	330	340	390	ns	690
		Lab TSS (mg/l)	282.0	208.0	198.0	219.0	258.0	ns	444.0

Table B1 Notes:

1. Provisional discharge values obtained from the California Data Exchange Center (http://cdec.water.ca.gov). Data is provisional and is subject to change.
2. Each 'lab' value reported is the average of the two samples submitted to UC Davis DANR analytical lab. Reporting precision follows the guidelines prescribed by Andersen 2004. Nephelometric Turbidity Units (NTU) are used for turbidity, and units of mg/L used for TSS.
3. No surface flow at Rd 87 (Esparto Bridge) on 4/19/04, 5/17/04, 6/17/04, 7/18/04 9/18/04 samples. Standing water scour hole sampled.
4. 2/18/04 and 2/27/04 samples collected from the I-505 bridge. All others collected at Road 89.
5. Gordon Slough not sampled in winter. Sampling began 4/19/04 and ended 10/18/04 in response to agricultural return flow in Gordon Slough.
6. No surface flow at Road 99W on 8/17/04, 9/18/04, 10/18/04 samples. No sampling conducted.
7. Values reported, as "ns" indicate no sample or measurement was made.