Table 1.1 Results of the Stakeholder Survey of Issues and Concerns

Issue or Concern	IMPORTANCE *High*	*Moderate*	*Low*
Water pollution sources and effects	50	13	1
Urban pesticides	41	20	5
Agricultural pesticides	33	26	7
Teichert Ponds	25	26	13
Humboldt dump site	30	23	8
Possible restrictions on farming practices	19	26	22
Dumping of garbage in the watershed	46	14	3
Trespassing	12	20	36
Non-native plants	19	30	16
Proposed gravel pit/aggregate mines	39	12	12
Homeless encampments and water pollution	28	25	13
FEMA mapping of flood zones in Chico	17	21	28
Little Chico Creek flood capacity and diversions	20	28	20
Fish	32	28	6
LCC watershed boundaries	13	32	17
Year-round flow status of LCC	16	28	15
Organization issues: "Stakeholder" definition; voting by stakeholders	16	24	22

NOTE: There were 69 Surveys returned

Table 2.1 Peak flows at Little Chico Creek gage sites

	Station			
Year	**Taffee Road (A04270)**	**Near Chico (A04280)**	**Diversion (A04910)**	**Total (A04280 + A04910)**
1959	NR	DU	DU	DU
1960	NR	DU	DU	DU
1961	NR	DU	DU	DU
1962	NR	1,150	233	1,383
1963	NR	DU	DU	DU
1964	NR	DU	DU	DU
1965	NR	1,790	1,204	2,994
1966	NR	915	-	915
1968	NR	908	-	908
1969	NR	1,450	ID	1,450
1970	NR	1,570	ID	1,570
1971	NR	DU	DU	DU
1972	NR	DU	DU	DU
1973	NR	DU	DU	DU
1974	NR	DU	DU	DU
1975	NR	DU	DU	DU
1976	NR	DU	DU	DU
1977	NR	DU	DU	DU
1978	NR	1,730	1,460	3,190
1979	NR	1,050	108	1,158
1980	NR	1,280	950	2,230
1981	NR	764	-	764
1982	NR	1,300	556	1,856
1983	NR	1,330	649	1,979
1984	NR	1,220	664	1,884
1985	NR	478	-	478
1986	NR	1,230	**733**	1,963
1987	NR	1,090	**485**	1,575
1988	NR	418	-	418
1989	NR	1,380	**943**	2,323
1990	NR	231	-	231
1991	968	660	-	660
1992	1,230	669	-	669
1993	1,690	1,050	**925**	1,975
1994	587	545	-	545
1995	2,330	1,640	**1,030**	2,670
1996	1,260	1,160	**595**	1,755
1997	2,400	NR	**1,410**	NE
1998	2,670	NR	NR	NE
1999	1,350	NR	NR	NE
2000	1,650	NR	NR	NE

NOTES: Flows in cubic feet per second (cfs)
NR - No flow records available
DU - Data currently unavailable
ID - Insufficient data to estimate flow
Flows in bold were estimated due to debris accumulation at diversion
NE - Total flow not estimated due to missing data at main channel gage

Table 2.2. Vegetation data collected approximately 2 kilometers upstream of the end of Blackberry road as an example of Mountain Zone vegetation. Native species are in **bold.** Species with an asterisk (*) were obvious in the understory as well. Nomenclature follows the Jepson Manual (1993).

Common Name	Scientific Name	Estimated Abundance
Canopy species		
big-leaf maple*	***Acer macrophyllum***	common
white alder	***Alnus rhombifolia***	less common
Pacific madrone	***Arbutus menziesii***	less common
Douglas-fir	***Pseudotsuga menziesii***	less common
canyon live oak	***Quercus chrysolepis***	less common
interior live oak	***Quercus wislizenii***	less common
incense cedar*	***Calocedrus decurrens***	less common
hazelnut	***Corylus cornuta***	uncommon
Pacific ponderosa pine	***Pinus ponderosa***	uncommon
Sub-canopy species		
dogwood*	***Cornus sessilis***	common
Oregon ash*	***Fraxinus latifolia***	less common
California bay	***Umbellularia californica***	less common
pacific yew*	***Taxus brevifolia***	less common
California nutmeg*	***Torreya californica***	less common
Understory woody species		
spicebush	***Calycanthus occidentalis***	less common
Himalyan blackberry	*Rubus discolor*	less common
red elderberry	***Sambucus racemosa***	less common
vine maple	***Acer circinatum***	less common
cut-leaved blackberry	*Rubus laciniatus*	uncommon
California blackberry	***Rubus ursinus***	uncommon
western poison oak	***Toxicodendron diversilobum***	uncommon

Table 2.3. Occurrence of introduced plant species (predominantly woody) identified in survey samples by zone. Nomenclature follows the Jepson Manual (1993).

Common Name			**Zone**			
Trees	**Scientific Name**	**Family**	**Mountain**	**Canyon**	**Urban**	**Agriculture**
silver maple	*Acer saccharinum*	Aceraceae			x	x
pistachio	*Pistacia atlantica*	Anacardiaceae			x	
date palm	*Phoenix* species	Arecaceae			x	
northern catalpa	*Catalpa speciosa*	Bignoniaceae			x	x
black locust	*Robinia pseudoacacia*	Fabaceae	x	x	x	x
honey-locust	*Gleditsia triacanthos*	Fabaceae			x	x
pecan	*Carya illinoinensis*	Juglandaceae			x	
English walnut	*Juglans regia*	Junglandaceae			x	x
white mulberry	*Morus alba*	Moraceae			x	x
eucalyptus species	*Eucalyptus* species	Myrtaceae			x	x
olive	*Olea europaea*	Oleaceae			x	
privet species 1	*Ligustrum* species1	Oleaceae			x	x
privet species 2	*Ligustrum* species2	Oleaceae			x	
American sycamore	*Platanus occidentalis*	Platanaceae			x	
London planetree	*Platanus x acerifolia*	Platanaceae			x	
sycamore hybrid	*Platanus* hybrid	Platanaceae			x	x
almond	*Prunus dulcis*	Rosaceae			x	x
tree of heaven	*Ailanthus altissima*	Simaroubaceae			x	x
elm	*Ulmus* species	Ulmaceae			x	
persimmon	*Diospyros* species	Ebenaceae			x	
goldenrain tree	*Koelreuteria paniculata*	Sapindaceae			x	
Shrubs						
oleander	*Oleander* species	Apocynaceae			x	
heavenly bamboo	*Nandina domestica*	Berberidaceae			x	
manzanita species (horticultural var.)	*Arctostaphylos* species	Ericaceae			x	
spanish broom	*Spartium junceum*	Fabaceae		x		
edible fig	*Ficus carica*	Moraceae		x	x	x
lilac	*Syringa vulgaris*	Oleaceae			x	
Himalyan blackberry	*Rubus discolor*	Rosaceae	x	x	x	x
cut-leaved blackberry	*Rubus laciniatus*	Rosaceae	x			
firethorn	*Pyracantha angustifolia*	Rosaceae			x	
Vines						
English ivy	*Hedera helix*	Araliaceae			x	
Herbs					x	
giant reed	*Arundo donax*	Poaceae			x	x
star thistle	*Centaurea solstitialis*	Asteraceae			x	x

Table 2.4. Vegetation data collected at the end of Ten Mile House Trail as an example of upper canyon zone vegetation. Native species are in bold. Species with an asterisk (*) were obvious in the understory as well. Nomenclature follows the Jepson Manual (1993).

Common Name	**Scientific Name**	**Estimated Abundance**
Canopy species		
big-leaf maple*	***Acer macrophyllum***	common
blue oak*	***Quercus douglasii***	common
canyon live oak*	***Quercus chrysolepis***	common
interior live oak*	***Quercus wislizenii***	common
Oregon ash*	***Fraxinus latifolia***	common
white alder*	***Alnus rhombifolia***	common
foothill pine	***Pinus sabiniana***	less common
valley oak	***Quercus lobata***	less common
black locust*	*Robinia pseudoacacia*	less common
California black oak*	***Quercus kelloggii***	less common
Goodding's black willow*	***Salix gooddingii***	less common
incense cedar*	***Calocedrus decurrens***	less common
Pacific ponderosa pine*	***Pinus ponderosa***	less common
western sycamore*	***Platanus racemosa***	less common
California black walnut*	***Juglans californica* var.*hindsii***	uncommon
Sub-canopy species		
California bay	***Umbellularia californica***	common
California buckeye	***Aesculus californica***	common
dogwood*	***Cornus sessilis***	less common
plum/cherry species*	*Prunus* species	uncommon
Understory woody species		
Himalyan blackberry	*Rubus discolor*	common
honey suckle	*Lonicera* species	common
western poison oak	***Toxicodendron diversilobum***	common
hoary coffeeberry	***Rhamnus tomentella***	less common
spicebush	***Calycanthus occidentalis***	less common
toyon, Christmas berry	***Heteromeles arbutifolia***	less common
willow species 1	*Salix* species 1	less common
red elderberry	***Sambucus racemosa***	uncommon
red willow	***Salix laevigata***	uncommon
wild mock orange	***Philadelphus lewisii***	uncommon
California rose	***Rosa californica***	uncommon
Vines		
California wild grape	***Vitis californica***	less common
pipevine	***Aristolochia californica***	less common
virgin's bower	***Clematis ligusticifolia***	uncommon

Table 2.5. The total number of woody species (species richness) sampled in the riparian corridor of each zone. Native and introduced species richness are shown as well. Note that the later two do not sum to the total as any unknown species could not be classified as native or introduced.

	Species richness		
Zone	**Total**	**Native**	**Introduced**
Mountain	47	38	3
Canyon	43	36	4
Urban	61	29	29
Agricultural	40	26	13

Table 2.6. Bird species abundance, richness, and diversity in the Little Chico Creek riparian corridor of each zone. Data were collected at 19 point count stations in June 2002, Little Chico Creek, Butte County, CA.

Zone	No. of Point Count Stations	Total No. of Individuals	Species Richness	Shannon-Weiner Species Diversity Index
Mountain	4	118	28	1.49
Canyon	3	127	35	1.63
Urban	5	73	17	1.11
Agriculture	7	326	40	1.19
LCC Riparian Corridor	19	644	69	1.69

Table 3.1. Constituents measured for the LCCWQP monitoring program

Parameter
Fecal Coliform
Total Coliform

Trace Metals
Arsenic (As)
Cadmium (Cd)
Chromium (Cr)
Copper (Cu)
Lead (Pb)
Mercury (Hg)
Nickel (Ni)
Selenium (Se)
Silver (Ag)
Zinc (Zn)

Nutrients
Nitrite as NO_2_N
Nitrate as NO_3_N
Ammonia as NH_3
Orthophosphate as PO_4
Total phosphorus as P

Table 3.2. Water quality sampling schedule

Pollutant type	Sampling schedule	Station		
		Stilson Canyon: Above Chico urban area (LCCA)	**Pomona Avenue: Below Chico urban area (LCCB)**	**Ord Ferry Bridge: End of LCC main channel (LCCD)[a]**
Pathogens	monthly	x	x	x
Trace metals	event	x	x	
	monthly			x
Nutrients	monthly + event	x	x	x

[a] Lowermost sampling access above significant inflows or mixing with other surface waters.

Table 3.3. Sample handling protocols

Parameter	Sample Container	Sample Volume (1)	Immediate Processing and Storage	Holding Time (2)
Metals				
Mercury, Total	Teflon™	250mL	Store at 4° C; Preserve to ≤ pH 2 with HCl	28 days
Total Metals	Glass	500 mL	Store at 4° C; Preserve to ≤ pH 2 with HNO_3	6 months
Nutrients				
Nitrate, Nitrite, Ammonia	Polyethylene	2 L	Store at 4° C; Preserve to ≤ pH 2 with H_2SO_4	28 days
Ortho-Phosphate	Polyethylene	125 mL	Filtered; Store at 4° C	
Total Phosphate	Polyethylene	125 mL	Unfiltered; Store at 4° C; Preserve to ≤ pH 2 with H_2SO_4	
Pathogens				
Fecal Coliform	Polyethylene	100 mL	Store at 4° C	24 hours
Total Coliform	Polyethylene	100 mL	Store at 4° C	24 hours

(1) Additional volumes may be required for QC analyses
(2) Holding time after initial preservation

Table 3.4. Field Water Quality Monitoring Data by Station

site		date	time	Temp. °C	EC µS/cm	pH	DO mg/L
Schott Rd.		3/21/2002	942	8.0	43	7.71	na
Crown Point Rd.		3/21/2002	1000	10.9	77	7.74	8.02
10-mile House Trail		3/21/2002	1040	10.6	70	7.91	8.23
Stilson Canyon		3/28/2001	1020	15.9	116	8.0	9.6
LCCA		4/24/2001	930	16.2	99	7.8	9.7
		5/18/2001	940	20.4	142	7.9	8.3
	event	10/30/2001	1300	14.9	167	7.9	na
		11/29/2001	1250	9.1	106	7.5	9.4
		12/18/2001	1030	10.6	82	7.4	10.8
		1/15/2002	945	6.1	85	7.3	12.2
	event	2/20/2002	740	10.9	59	7.3	na
		2/28/2002	1130	11.0	70	7.2	10.0
		3/21/2002	1120	12.2	85	8.1	8.3
	event	3/24/2002	1040	10.8	78	8.0	7.8
		4/9/2002	m	14.8	92	7.9	5.8
		5/2/2002	850	13.2	113	7.6	8.9
Pomona Ave.		3/28/2001	1140	18.7	165	8.0	10.8
LCCB		4/24/2001	1015	17.1	128	7.5	9.3
		5/18/2001	1030	20.0	193	7.7	8.6
	event	10/30/2001	1400	15.7	71	7.0	na
		11/29/2001	1220	9.3	131	7.6	9.2
		12/18/2001	1110	10.3	94	6.2	10.3
		1/15/2002	1020	7.8	123	7.1	11.1
	event	2/20/2002	830	11.1	67	7.3	na
		2/28/2002	1230	11.4	85	8.2	11.4
		3/21/2002	1245	13.7	104	8.8	10.7
	event	3/24/2002	1100	11.3	88	8.2	7.9
		4/9/2002	m	14.8	125	7.5	5.3
		5/2/2002	945	16.3	152	6.9	8.0
Alberton Ave.		5/18/2001			dry		
LCCC		10/30/2001			dry		
		11/29/2001	1145	9.4	133.4	8.02	9.15
Ord Ferry Rd.		3/28/2001	1240	18.3	176	7.3	8.5
LCCD		4/24/2001	1100	19.4	129	7.2	7.8
		5/18/2001	ns	ns	ns	ns	ns
	event	10/30/2001	1600	14.9	145	7.1	na
		11/29/2001	1045	8.8	173	7.2	8.0
		12/18/2001	1145	9.6	92	6.9	9.1
		1/15/2002	1110	7.9	146	7.0	9.8
	event	2/20/2002	900	11.5	89	7.2	na
		2/28/2002	1245	13.6	101	8.2	8.9
		3/21/2002	115	14.3	111	8.0	8.2
	event	3/24/2002	1200	12.2	75	7.6	6.5
		4/9/2002	m	16.5	135	7.5	4.9
		5/2/2002	1020	15.6	143	7.3	6.4

NOTES: na - not analyzed
ns - not sampled (dry)
m - missing

Table 3.5. Nutrient Sampling Results

Station		Ammonia @ N mg/L	Nitrate @ N mg/L	Nitrite @ N mg/L	Total Phosphorus @ P mg/L	Ortho Phosphorus @ P mg/L
	MDL	0.05	0.05	0.01	0.02	0.01
Stilson Canyon	3/28/2001	n	n	0.01	n	n
LCCA	4/24/2001	n	n	n	n	n
	5/18/2001	n	0.1	n	n	n
event	10/30/2001	0.09	n	n	0.65	n
	11/29/2001	n	0.29	0.01	0.26	n
	12/18/2001	n	0.17	n	0.18	n
	1/15/2002	n	0.2	n	0.2	n
event	2/20/2002	n	0.08	n	0.27	0.2
	2/28/2002	n	n	n	0.62	0.25
	3/21/2002	n	n	n	0.1	0.32
event	3/24/2002	n	n	n	0.34	0.19
	5/2/2002	0.08	0.05	n	0.26	0.14
Pomona Ave.	3/28/2001	n	0.15	0.01	n	n
LCCB	4/24/2001	n	0.09	n	n	n
	5/18/2001	n	0.25	n	n	n
event	10/30/2001	0.33	0.39	n	0.45	0.26
	11/29/2001	0.05	0.44	0.01	0.17	0.05
	12/18/2001	n	0.27	n	0.09	0.05
	1/15/2002	n	0.43	n	0.14	n
event	2/20/2002	0.05	0.11	n	0.26	0.29
	2/28/2002	n	0.08	n	0.26	0.18
	3/21/2002	n	0.08	n	0.07	0.3
event	3/24/2002	0.07	n	n	0.28	0.24
	5/2/2002	0.06	0.2	0.01	0.13	0.18
Alberton Ave.	11/29/2001	0.05	0.4	0.01	0.25	0.07
LCCC						
Ord Ferry Rd.	3/28/2001	n	0.06	0.01	n	n
LCCD	4/24/2001	n	n	0.01	n	n
	5/18/2001	ns	ns	ns	ns	ns
event	10/30/2001	0.06	n	n	0.57	0.14
	11/29/2001	0.05	0.41	0.02	0.18	0.08
	12/18/2001	n	0.25	0.01	0.13	0.05
	1/15/2002	0.06	0.48	n	n	n
event	2/20/2002	0.06	0.14	n	0.28	0.22
	2/28/2002	n	0.05	n	0.23	0.26
	3/21/2002	0.05	0.06	n	0.14	0.24
event	3/24/2002	n	0.14	n	0.33	0.25
	5/2/2002	0.05	0.08	n	0.24	0.12

n: not detected at the reporting limit
ns: not sampled/not analyzed

Table 3.6. Metals data by station

Station	Date	Total Cr ug/L	Total Ni ug/L	Total Cu ug/L	Total Zn ug/L	Total Hg ng/L	Total As ug/L	Total Se ug/L	Total Ag ug/L	Total Cd ug/L	Total Pb ug/L
Stilson Canyon	3/28/2001										
LCCA	4/24/2001										
	5/18/2001										
event	10/30/2001	<0.02	0.53	0.94	0.61	3.47	0.639	<0.13	0.002	<0.004	0.082
	11/29/2001										
	12/18/2001										
	1/15/2002										
event	2/20/2002	0.9	0.74	1.02	0.79	2.85	0.173	<0.10	0.003	0.004	0.188
	2/28/2002										
	3/21/2002										
event	3/24/2002	1	0.68	0.75	0.85	62.7	0.039	<0.07	<0.006	<0.003	0.128
	5/2/2002	0.19	0.22	0.25	0.11	0.36	0.241	<0.15	<0.006	<0.003	0.006
Pomona Ave.	3/28/2001										
LCCB	4/24/2001										
	5/18/2001										
event	10/30/2001	2.39	4.05	8.47	40.2	21.3	0.76	0.21	0.017	0.103	5.33
	11/29/2001										
	12/18/2001										
	1/15/2002										
event	2/20/2002	1.23	1.06	1.53	2.55	3.23	0.189	<0.10	0.004	0.009	0.657
	2/28/2002										
	3/21/2002										
event	3/24/2002	1.31	0.945	1.35	2.22	24.7	0.042	0.14	<0.006	0.006	0.431
	5/2/2002	0.2	0.29	0.51	1.09	0.51	0.235	<0.15	<0.006	0.004	0.051
Ord Ferry Rd.	3/28/2001	0.98	1.54	1.62	1.66	1.62	0.394	0.21	0.003	0.008	0.257
LCCD	4/24/2001	1.45	1.5	2.04	2.89	2.12	0.317	<0.09	0.002	0.02	0.638
	5/18/2001					dry					
event	10/30/2001										
	11/29/2001	2.6	3.09	3.81	3.57	2.97	0.475	<0.06	0.005	0.009	0.409
	12/18/2001	1.06	1.13	2.08	1.8	2.78	0.231	<0.12	0.004	0.004	0.215
	1/15/2002	0.49	1.23	1.13	1.21	1.27	0.332	<0.19	0.003	0.007	0.14
event	2/20/2002										
	2/28/2002	5.5	5.54	4.14	9.8	2.07	0.649	0.06	0.008	0.018	0.69
	3/21/2002	1.35	1.44	1.32	1.58	1.27	0.259	<0.18	0.003	0.007	0.317
event	3/24/2002										
	5/2/2002	2.4	2.38	2.34	3.05	2.18	0.482	<0.15	0.013	0.011	0.583

Table 3.7. Laboratory analytical performance requirements for trace metals

Analyte	Method[1]	EPA #[2]	MDL[3], µg/L	RL[4], µg/L	Accuracy[5], *X*	Precision[6], *s*	MS Rec[7]	MS/MSD RPD[8]
Arsenic	HGFAA	1632	0.002	0.005	59-134%	< 42%	55-146%	20%
Cadmium	GFAA	1639	0.0024	0.01	64-125	23	64-145	20
Chromium	GFAA	1639	0.1	0.2	74-131	26	74-131	20
Copper	GFAA	1639	0.024	0.1	67-154	43	63-159	20
Lead	GFAA	1639	0.0081	0.02	56-144	44	52-144	20
Mercury	CVAFS	1631	0.00005	0.0002	70-130	21	70-130	24
Nickel	GFAA	1639	0.029	0.1	65-145	27	65-145	20
Selenium	GFAA	1639	0.83	2	56-131	31	56-131	20
Silver	GFAA	1639	0.029	0.1	55-142	19	55-142	20
Zinc	GFAA	1639	0.14	0.5	67-142	43	46-146	20

(1) HGFAA- Hydride Generation Flame Atomic Absorption;
GFAA- Graphite Furnace Atomic Absorption
CVAFS – Cold Vapor Atomic Fluorescence Spectrometry
(2) EPA Method number
(3) Method Detection Limit: minimum concentration that can be reported with 99% confidence that the analyte is greater than zero.
(4) Target Project Reporting Limit: MDL multiplied by 3.18 and rounded to the nearest multiple of 1, 2, 5, 10, 20, 50, etc.,
(5) X = Average recovery for demonstration of initial performance
(6) s = standard deviation of recovery for demonstration of initial performance
(7) Percent recovery of matrix spike
(8) Relative percent difference of matrix spike duplicates
(9) Sample collection, cleaning procedures, and evapo-concentration methods differ from EPA 1639

Table 3.8. Pathogen data by station

Station	Date	Total Coliform MPN/100mL	Fecal Coliform MPN/100mL
Stilson Canyon	3/28/2001	300	23
LCCA	4/24/2001	300	300
	5/18/2001	900	240
	11/29/2001	≥ 1600	≥ 1600
	12/18/2001	≥ 1600	130
	1/15/2002	1600	50
	2/28/2002	500	30
	3/21/2002	≥ 1600	23
	5/2/2002	900	500
Pomona Ave.	3/28/2001	≥ 1600	240
LCCB	4/24/2001	≥ 1600	500
	5/18/2001	≥ 1600	1600
	11/29/2001	≥ 1600	900
	12/18/2001	≥ 1600	30
	1/15/2002	≥ 1600	170
	2/28/2002	1600	130
	3/21/2002	1600	130
	5/2/2002	900	900
Alberton Ave.	11/29/2001	≥ 1600	≥ 1600
LCCC			
Ord Ferry Rd.	3/28/2001	≥ 1600	30
LCCD	4/24/2001	≥ 1600	900
dry	5/18/2001	ns	ns
	11/29/2001	≥ 1600	240
	12/18/2001	≥ 1600	500
	1/15/2002	≥ 1600	170
	2/28/2002	≥ 1600	50
	3/21/2002	≥ 1600	23
	5/2/2002	≥ 1600	130

MDL: Minimum Detection Limit (2/100mL)
n: not detected at the reporting limit
ns: not sampled/not analyzed - dry channel

Table 3.9. Pathogen data by sampling date

Total Coliform

	Sampling Date								
Station	**3/28/2001**	**4/24/2001**	**5/18/2001**	**11/29/2001**	**12/18/2001**	**1/15/2002**	**2/28/2002**	**3/21/2002**	**5/2/2002**
LCCA	300	300	900	≥ 1600	≥ 1600	1600	500	≥ 1600	900
LCCB	≥ 1600	≥ 1600	≥ 1600	≥ 1600	≥ 1600	≥ 1600	1600	1600	900
LCCD	≥ 1600	≥ 1600	ns	≥ 1600	≥ 1600	≥ 1600	≥ 1600	≥ 1600	≥ 1600

Fecal Coliform

	Sampling Date								
Station	**3/28/2001**	**4/24/2001**	**5/18/2001**	**11/29/2001**	**12/18/2001**	**1/15/2002**	**2/28/2002**	**3/21/2002**	**5/2/2002**
LCCA	23	300	240	≥ 1600	130	50	30	23	500
LCCB	240	500	1600	900	30	170	130	130	900
LCCD	30	900	ns	240	500	170	50	23	130

Table 3.10. Summary bioassessment metrics and ranking score by reach for macroinvertebrates sampled from Little Chico Creek April 2002

	StationID		
Bioassessment metric	**LCCA4/02**	**LCCB4/02**	**LCCD4/02**
Taxonomic Richness	24	11	15
stdev	4	1	0
Cumulative Taxa	31	15	18
Percent Dominant Taxon	23	55	31
stdev	8	7	11
EPT Taxa	11	2	2
stdev	3	1	1
EPT Index (%)	64	6	13
stdev	9	2	3
Sensitive EPT Index (%)	44	6	12
stdev	10	2	2
Cumulative EPT Taxa	14	2	4
Percent Chironomidae	31	85	43
stdev	11	2	18
Shannon Diversity	2.4	1.3	2.1
stdev	0.2	0.1	0.1
Tolerance Value	2.8	5.2	5.4
stdev	0.5	0.2	0.1
Percent Intolerant Taxa (0-2)	46	11	8
stdev	10	5	7
Percent Tolerant Taxa (8-10)	1	12	20
stdev	0	3	13
Percent Collectors	42	93	67
stdev	5	3	12
Percent Filterers	16	5	15
stdev	3	4	16
Percent Grazers	39	2	17
stdev	8	1	15
Percent Predators	1	1	1
stdev	1	1	0
Percent Shredders	2	0	0
stdev	1	0	0

NOTE: Each of the metrics above represents a mean of three samples at each station.
stdev: Sample standard deviation

TABLE 3.11. Surface Water Quality Criteria for Selected Constituents

Constituent	Objective
Temperature (^{o}F)	< 5 ^{o}F increase over background
pH	6.5-8.5
Electrical Conductivity (µmhos/cm)	<230
Turbidity (NTU)	< 20% increase over background
Dissolved Oxygen, % of Saturation	85%
Total Phosphorus (mg/l as P)	nc(1)
ortho-Phosphate (mg/L)	nc(1)
Total Kjeldahl Nitrogen (mg/l as N)	nc(1)
Nitrate (mg/l as N)	10(2)
Total Arsenic	nc(1)
Dissolved Arsenic (µg/l)	10
Total Cadmium (µg/l)	nc(1)
Dissolved Cadmium (µg/l)	0.22(2)
Total Chromium (µg/l)	50(2)
Dissolved Chromium (µg/l)	50(2)
Total Copper (µg/l)	nc(1)
Dissolved Copper (µg/l)	10(2)
Total Lead (µg/l)	nc(1)
Dissolved Lead (µg/l)	15(2)
Total Mercury (µg/l)	nc(1)
Dissolved Mercury (µg/l)	2(2)
Total Nickel (µg/l)	nc(1)
Dissolved Nickel (µg/l)	100(2)
Total Selenium (µg/l)	nc(1)
Dissolved Selenium (µg/l)	50(2)
Total Silver (µg/l)	nc(1)
Dissolved Silver (µg/l)	10
Total Zinc (µg/l)	nc(1)
Dissolved Zinc (µg/l)	100(2)
Fecal coliform (per 100 ml)	400
Total coliform	nc(3)

NOTES:

nc(1) No criteria, Water Quality Objective or Maximum Contaminant Level (MCL) for municipal/domestic use has not been established.

(2) Where Basin Plan does not specifically establish a Water Quality Objective, DHS primary, or secondary (as applicable), drinking water MCL used.

nc(3) No criteria, Water Quality Objective or Maximum Contaminant Level (MCL) for contact recreation use not established.

SOURCES:

Sacramento River Basin Water Quality Control Plan, 1995, Central Valley RWQCB.
Calif. Dept. Health Services, Drinking Water Standards.

Table 3.12. STORET Data for Little Chico Creek at the Highway 99 E Bridge

	Sample Date							
Constituent	**11/30/1973**	**1/16/74**	**5/11/77**	**12/23/77**	**01/12/79**	**01/14/80**	**01/24/83**	**02/18/86**
Streamflow (cubic feet/second)	50	175	25	60	45	250	75	60
pH	7.7			8	7.5		7.2	7.4
Dissolved Oxygen (mg/l)					9.1			
Temperature (^{o}C)					12.5	13.5	11	
Conductivity (µmhos/cm)	94	75	198	133	119	78	70	68
Turbidity (FTU)	11	25	2	18	12	20	33	24
Nitrate (mg/l as N)	1.6			0.22				
Total Kjeldahl Nitrogen (mg/l as N)				0.3				
Total Phosphorus (mg/l as P)				0.02				
Hardness (mg/l as CaCO3)	38			53				
Alkalinity (mg/l as CaCO3)	39			52				
Boron, Dissolved (µg/l) as B)	200			0				
Calcium, Dissolved (mg/l as Ca)	7.9							
Chloride (mg/l)	0			1.1				
Magnesium, Dissolved (mg/l as Mg)	4.5							
Potassium, Dissolved (mg/l as K)	1.5							
Sodium, Dissolved (mg/l as Na)	3.5			5				
Sulfate, Dissolved (mg/l as SO4)	3.3							

Table 3.13. Historic water quality data for Station LCCB Pomona St. Bridge

Constituent	05/24/95	01/15/96
Temperature (EF)	68.8	50
PH	7.5	6.9
Electrical Conductivity (µmhos)	214	110
Turbidity (NTU)	15	44
Hardness (mg/l as $CaCO_3$)	NA	42
Total Suspended Solids (mg/l)	45	71
Total Dissolved Solids (mg/l)	NA	82
Total Phosphorus (mg/l as P)	0.98	0.44
Total Kjeldahl Nitrogen (mg/l as N)	16.8	1.35
Nitrite + Nitrate (mg/l as N)	0.31	0.46
Oil and Grease (mg/l)	ND	ND
MBAS (surfactants, mg/l)	0.07	NA
Motor Oil (mg/l)	NA	ND
Diesel (mg/l)	NA	ND
Gasoline (mg/l)	ND	ND
Benzene (µg/l)	ND	ND
Toluene (µg/l)	0.5	ND
Ethyl-benzene (µg/l)	ND	ND
Total Xylenes (µg/l)	ND	ND
Total Cadmium (µg/l)	ND	ND
Dissolved Cadmium (µg/l)	NA	ND
Total Chromium (µg/l)	8	5
Dissolved Chromium (µg/l)	NA	ND
Total Copper (µg/l)	17	10
Dissolved Copper (µg/l)	NA	ND
Total Lead (µg/l)	18	19
Dissolved Lead (µg/l)	NA	ND
Total Zinc (µg/l)	85	83
Dissolved Zinc (µg/l)	NA	11

NOTES:
NA not analyzed
ND not detected at or above minimum practical laboratory reporting limit

SOURCE: Correspondence to Mr. Matt Thompson, City of Chico, from Metcalf & Eddy, Inc., dated November 22, 1995, and March 25, 1996.

Table 3.14. Nutrient data by sampling date

Station	Nutrient (mg/L)	3/28/01	4/24/01	5/18/01	event 10/30/01	11/29/01	12/18/01	1/15/02	event 2/20/02	2/28/02	3/21/02	event 3/24/02	5/2/02
LCCA	Ammonia @ N	n	n	n	0.09	n	n	n	n	n	n	n	0.08
LCCB		n	n	n	0.33	0.05	n	n	0.05	n	n	0.07	0.06
LCCD		n	n	ns	0.06	0.05	n	0.06	0.06	n	0.05	n	0.05
LCCA	Nitrate @ N	n	n	0.1	n	0.29	0.17	0.2	0.08	n	n	n	0.05
LCCB		0.15	0.09	0.25	0.39	0.44	0.27	0.43	0.11	0.08	0.08	n	0.2
LCCD		0.06	n	ns	n	0.41	0.25	0.48	0.14	0.05	0.06	0.14	0.08
LCCA	Nitrite @ N	0.01	n	n	n	0.01	n	n	n	n	n	n	n
LCCB		0.01	n	n	n	0.01	n	n	n	n	n	n	0.01
LCCD		0.01	0.01	ns	n	0.02	0.01	n	n	n	n	n	n
LCCA	Total Phosphorus	n	n	n	0.65	0.26	0.18	0.2	0.27	0.62	0.1	0.34	0.26
LCCB		n	n	n	0.45	0.17	0.09	0.14	0.26	0.26	0.07	0.28	0.13
LCCD		n	n	ns	0.57	0.18	0.13	n	0.28	0.23	0.14	0.33	0.24
LCCA	Ortho Phosphate	n	n	n	n	n	n	n	0.2	0.25	0.32	0.19	0.14
LCCB		n	n	n	0.26	0.05	0.05	n	0.29	0.18	0.3	0.24	0.18
LCCD		n	n	ns	0.14	0.08	0.05	n	0.22	0.26	0.24	0.25	0.12

NOTE:

Nutrient	MDL (mg/L)
Ammonia @ N	0.05
Nitrate @ N	0.05
Nitrite @ N	0.01
Total Phosphorus	0.02
Ortho Phosphate	0.01

Table 3.15. Metals data by rain event sampling date

Station	Date	Total Cr ug/L	Total Ni ug/L	Total Cu ug/L	Total Zn ug/L	Total Hg ng/L	Total As ug/L	Total Se ug/L	Total Ag ug/L	Total Cd ug/L	Total Pb ug/L
	10/30/2001										
Above Urban		<0.02	0.53	0.94	0.61	3.47	0.639	<0.13	0.002	<0.004	0.082
Below Urban		2.39	4.05	8.47	40.2	21.3	0.76	0.21	0.017	0.103	5.33
	2/20/2002										
Above Urban		0.9	0.74	1.02	0.79	2.85	0.173	<0.10	0.003	0.004	0.188
Below Urban		1.23	1.06	1.53	2.55	3.23	0.189	<0.10	0.004	0.009	0.657
	3/24/2002										
Above Urban		1	0.68	0.75	0.85	62.7	0.039	<0.07	<0.006	<0.003	0.128
Below Urban		1.31	0.945	1.35	2.22	24.7	0.042	0.14	<0.006	0.006	0.431

Table 3.16. Metals sampling results for May 2, 2002

	Station LCCA		Station LCCB		Station LCCD	
Metal (μg/L)	**Total**	**Dissolved**	**Total**	**Dissolved**	**Total**	**Dissolved**
Cr	0.19	0.12	0.2	0.13	2.4	0.07
Ni	0.22	0.16	0.29	0.29	2.38	0.85
Cu	0.25	0.24	0.51	0.46	2.34	0.94
Zn	0.11	0.13a	1.09	0.94	3.05	0.31
As	0.241	0.223	0.235	0.231	0.482	0.379
Se	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Ag	<0.006	<0.006	<0.006	0.012a	0.013	<0.006
Cd	<0.003	<0.003	0.004	<0.003	0.011	0.003
Pb	0.006	<0.002	0.051	0.017	0.583	0.055
Hg (ng/L)	0.36	0.27	0.51	0.34	2.18	0.58
MHg (ng/L)	0.03	-	0.03	-	0.177	-

Table 4.1. Existing Land Use in LCCW Project Area

Land Use	Number of Acres	Percentage of Total
Misc. Agriculture	15,803	18.6%
Orchards	15,461	18.2%
Residential	14,356	16.9%
Rice	12,082	14.3%
Grazing	8,921	10.5%
Field and Row Crops	5,162	6.1%
Unknown	4,538	5.4%
Refuge	3,740	4.4%
Commercial	1,827	2.2%
Dry Farming	1,011	1.2%
Forestry	945	1.1%
Industrial	860	1.0%
Irrigated Pasture	74	0.1%
TOTAL	**84,780**	

NOTE: *Due to rounding, percentages don't add up to 100%

Table 4.2. The 10 largest private land owners

Owner	Acreage	Zone
MELINE EDW R & CHARLENE MIRR	3,530.9	Canyon
SIMMONS FAMILY TRUST	2,690.2	Canyon
HALL & ISOM INVESTMENT COMPANY	1,998.8	Canyon
GEMSTONE PROPERTIES INC	1,275.2	Canyon
INTERPACIFIC PROPERTIES INC	1,146.5	Canyon
PARROTT INVESTMENT CO INC	11,821.6	Agricultural
PACIFIC REALTY ASSOCIATES	5,483.0	Agricultural
FENN EUGENE	1,463.2	Agricultural
JOHNSON C WILLIAM & CAROLE R	1,272.3	Agricultural
ORD BEND FARMS INC	1,219.1	Agricultural
TOTAL	**31,900.8**	

Table 4.3. Public land owners. The following are the largest public landowners within the Little Chico Creek Watershed. The two largest public landowners are United States Fish and Wildlife and California Department of Fish and Game.

Owner	Acreage	Zone
BLM	671.7	Mountain
U S PLANT INTRODUCTION GARDENS	205.8	Canyon
CITY OF CHICO	461.1	Urban
CALIFORNIA STATE UNIVERSITY CHICO	0.4	Urban
U S F&WS	2,632.5	Agricultural
STATE DF&G	1,805.1	Agricultural
STATE OF CALIFORNIA (other)	860.2	Agricultural
UNIVERSITY FOUNDATION CSUC THE	118.4	Agricultural
TOTAL	**6,755.2**	

Table 5.1. Invasive introduced plant species problematic within the riparian corridor. Nomenclature follows the Jepson Manual (1993).

Common Name	**Scientific Name**	**Zones where a problem**
Himalayan blackberry	*Rubus discolor*	All
Spanish broom	*Spartium junceum*	Canyon
black locust	*Robinia pseudoacacia*	Urban, Agricultural
privet species 1	*Ligustrum* species1	Urban, Agricultural
privet species 2	*Ligustrum* species2	Urban, Agricultural
giant reed	*Arundo donax*	Urban, Agricultural
tree of heaven	*Ailanthus altissima*	Urban, Agricultural