



California Regional Water Quality Control Board

Central Coast Region



Winston H. Hickox
Secretary for
Environmental
Protection

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Gray Davis
Governor

INTEROFFICE MEMORANDUM

TO: Melenee Emanuel,
Division of Water Quality
State Water Resource Control Board
1001 I Street
Sacramento, CA 95814

FROM:  Roger W. Briggs
Executive Officer

DATE: April 23, 2002

SUBJECT: ADDITIONAL 303(D) LIST INFORMATION

You asked me to provide you with additional information to support our proposed 303(d) List revisions. The following items are attached.

1. Majors Creek Listing Support Information—Letter from Citizens for Responsible Forest Management, August 31, 2001
2. Santa Maria River organochlorine pesticide listing support documents—(a) Excerpt from *Chemical and Biological Measures of Sediment Quality in the Central Coast Region, Final Report*, October 1998 and (b) 1999 Toxic Substances Monitoring Program data.

You also asked we provide you with a statement of our control mechanisms in place for San Lorenzo River Nitrate impairment. This information is contained with our Basin Plan. The Basin Plan contains the following language in the Individual, Alternative, and Community Systems Prohibitions section of Chapter Four (page IV-65):

“Discharges shall be allowed, providing the County of Santa Cruz, as lead agency, implements the “Wastewater Management Plan for the San Lorenzo River Watershed, County of Santa Cruz, Health Services Agency, Environmental Health Service”, February 1995 and “San Lorenzo Nitrate Management Plan, Phase II Final Report”, February 1995, County of Santa Cruz, Health Services Agency, Environmental Health Service (Wastewater Management Plan) and assures the Regional Board that areas of the San Lorenzo River Watershed are serviced by wastewater disposal systems to protect and enhance water quality, to protect and restore beneficial uses of water, and to abate and prevent nuisance, pollution, and contamination.

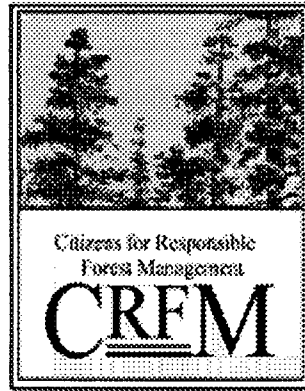
In fulfilling the responsibilities identified above, the County of Santa Cruz shall submit annual reports beginning on January 15, 1996. The report shall state the status and progress of the Wastewater Management Plan in the San Lorenzo River Watershed. The County of Santa Cruz annual report shall document the results of:

- a. Existing disposal system performance evaluations,
- b. Disposal system improvements,
- c. Inspection and maintenance of on-site systems,
- d. Community disposal system improvements,
- e. New development and expansion of existing system protocol and standards,
- f. Water quality monitoring and evaluation,
- g. Program administration management, and
- h. Program information management.

The report shall also document progress on each element of the Nitrate Management Plan, including:

- a. Parcel size limit,
- b. Wastewater Management Plan implementation,
- c. Boulder Creek Country Club Wastewater Treatment Plant Upgrade,
- d. Shallow leachfield installation,
- e. Enhanced wastewater treatment for sandy soils,
- f. Enhanced wastewater treatment for large on-site disposal systems,
- g. Inclusion of nitrogen reduction in Waste Discharge Permits,
- h. Livestock and stable management,
- i. Protection of ground water recharge areas,
- j. Protection of riparian corridors and erosion control,
- k. Nitrate control for new uses,
- l. Scotts Valley nitrate discharge reduction, and
- m. Monitoring for nitrate in surface and ground water.”

If you need further assistance, please contact Angela G. Carpenter at (805) 542-4624.



01 SEP 10 PM 4:06
SAN LUIS OBISPO, CA 93401

PO Box 167, Boulder Creek, CA 95006 Ph/Fax(831)426-1697 JodiFred@aol.com

August 31, 2001

Angela G. Carpenter
Central Coast Regional
Water Quality Control Board
81 Higuera St., Ste. 200
San Luis Obispo, CA 93401

Revised Version

Dear Angela,

I am writing in regards to the request of the City of Santa Cruz Water Department to list Majors Creek in Santa Cruz County as impaired for sediment. As a 30 year resident of the watershed, I completely concur that the creek is degraded and urge you to list it as impaired for sediment.

Twenty years ago, my then seven year old son used to catch trout in the clear pools of Majors Creek south of Smith Grade. On hot summer afternoons, my friends and family would head for the creek where we cooled off in swimming holes so deep the water covered our heads while standing. Since then those pools have filled with sediment and have never scoured clean. Today, with a few exceptions, one can walk the same stretch of creek without getting ones knees wet.

In addition to the resident trout which inhabit the creek, the watershed supports California red-legged frogs and Western Pond Turtles. I have spotted red-legged frogs on my property and a neighbor, who's property fronts directly on the creek, has also observed red-legged frogs on her land. In addition, I have observed Western Pond Turtles on two separate occasions in two locations at least 1/2 mile apart, close to the banks of the creek.

Over the past twenty years I have observed numerous sources of sediment dump into Majors Creek, the majority a result of human activity. I have spent many hours on foot and on horseback traversing the watershed in and adjacent to the various branches and tributaries of Majors during that time. As Chair of the Sierra Club Forestry Task Force for more than 15 years and as Executive Director of Citizens for Responsible Forest Management, I feel that my observations have been informed and accurate.

Following is a list of various sources that have delivered sediment into the creek in the past (not necessarily in chronological order), including some which continue to be problems.

CULVERT FAILURES

Public Roads:

In 1982 a substantial slide occurred at the Empire Grade end of Smith Grade delivering an unknown quantity of earth and asphalt into the creek system. While the slide was a direct result of the excessive rains that season, neighbors who were present in the early 1950's, when the County re-routed that segment of Smith Grade, chided the engineers because, they said, there was a spring at that exact location. After the road failed in '82, water was observed running at the base of the slide directly under the location of the failed road bed.

In 1998 a major segment of Smith Grade failed at a culvert crossing where a section of the East Branch of the creek crosses the road. This culvert clogged as a result of woody debris most likely deposited as a result of upstream logging. Logging operations in that reach of the creek had been allowed to take place in the "alluvial plane", or the channel of the creek bed itself. This failure also deposited substantial amounts of earth and asphalt into the creek. The culvert has been replaced with another culvert built with a cement headwall.

At the same time, further upstream a second culvert failure (#1) occurred where the creek crosses under Smith Grade. This failure was caused by logging road failure just upslope at a culvert crossing (#2a & 2b) on what is currently State Park lands. Much of that logging road slipped, overwhelming the Smith Grade crossing and forcing the creek to bypass the culvert and undermine the road. The upslope culvert is still in place waiting to fail further.

Private Access Roads:

Two culvert crossings that serve residents south of the East Branch of the creek have failed completely delivering large volumes of earth into the watercourse. One of those failed on three separate occasions, beginning in the early 1980's, and was finally replaced by a bridge, and the other was rebuilt and is currently in place in the creek. A third culvert on private property south of Smith Grade also failed approximately 20 years ago delivering a large quantity of soils directly into the main stem at that time.

Logging Roads:

In addition to the culvert crossing on Grey Whale mentioned above, numerous logging roads criss-cross the State Park lands of Grey Whale Ranch in the watershed of the East Branch of Majors. Several of these culverts plus other segments of road failure along what is know as the Woodcutters Trail (#3a & 3b) are on-going with sediment delivery. In addition, a branch trail off the Woodcutters has several culvert failures (#4), including a culvert delivering water into the opposite bank currently undermining a clump of redwoods and surface erosion which enters the creek. Some of these culverts were installed under CDF approved Timber Harvest Plans and others were illegally installed under CDF approved Firewood Exemptions.

More logging roads exist on the north side of Smith Grade on State Parks land, are not currently being maintained by State Parks, and may also be contributing sediment.

The bridge approach on Grey Whale Ranch which serves the Don Campbell property was put in under a Timber Harvest Plan and is currently used as a residential access road as well as a log haul road. While the Campbells do maintain that road, the crossing approach was cut through a 15' +/- bank of sand just upslope of the creek channel. While currently shored up it has the capacity to deliver sediment into the creek.

OTHER HUMAN ACTIVITIES:

Bank Clearing:

Ongoing clearing of under-story has occurred along a 1/2 mile stretch of creek bank along the west side of the Paisley property (#5). Many of the woody stems up to 5" in diameter have entered the creek contributing to downstream log jams. One such logjam is of such a magnitude as to be a contributing factor in re-routing the stream flow and undercutting the steep creek bank. This section of bank became unstable after the property owner re-opened an old logging road directly above the slide area and the creek below. Large chunks of earth fell into the creek bed as well as trees which uprooted after the road was reopened.

Illegal Logging and other activities:

In the 1980's, 40 acres of the watershed on the Meyer's property along the West Branch of the creek were clearcut with slash deposited directly into Class III drainages (#6), then covered over with soil. Following rains, the soil was washed into the creek and more soil was graded over the uncovered slash. This again washed into the creek. The County required erosion control measures and replanting of the site, but it is unknown how that area has recovered. The slash was not required to be removed from the Class III.

Also, in the 1980's, Paisley placed a pump in the creek and took a bulldozer to the creek bed creating a dam (which failed) from slash in the creek and bulldozed soil from the creek bed. CDFG was informed and stopped any further activity at that location. The pump was abandoned.

A road illegally put in probably as early as the late 1970's, on what is now the Brown's property, failed directly into the mainstem of Majors Creek most likely in the 1980's.

Other roads leading directly to the creek exist on several private properties in the watershed. Many of these are unmaintained and may continue to bleed into the creek.

NATURAL SOURCES

Landslides:

Certainly land-sliding can be considered a natural part of sediment delivery into the creeks of the Santa Cruz Mountains. Two particularly significant slides exist that I am aware of along Majors Creek. The first is on Gray Whale Ranch along a tributary to the East Branch. Contributing factors may include an adjacent trail (previously an old log road) or increased sediment in the creek bed, leading to high flows reaching above bedrock and undercutting the higher sandy soils. The elevated level of the creek bed may be a result of upstream logging activities.

A second area of land-sliding exists in the gorge area further downstream. While it is not clear whether there have been contributing factors to this slide, there is evidence of human activity in that area of the creek including old water lines running along the bank.

Feral Pigs:

Feral pigs are found in large numbers (some groups with as many as 20 pigs) on State Parks lands as well as the private lands of Don Campbell. While feral pigs can be considered 'natural' sources of sediment delivery, they are not a native species and, in fact, were introduced in the past to provide sport for hunters.

The above list is most likely incomplete, but does give a picture of the types of activities which have impacted the creek over the past 20+ years. While the bulk of the watershed is in State Parks hands, there are several residential properties in the watershed. These range in size from 3-365 acres in size. The State owns lands both above and below the privately owned section. Logging activities, access roads, culvert failure and bank clearing are the main impacts from those private parcels.

The main activities on State owned lands which are negatively impacting the creek are the same as those from privately owned lands, minus bank clearing.

I understand that enforcement actions and/or working with property owners to get voluntary compliance may be the quickest way to correct the current problems. However, I do not believe that those measures should replace efforts to list Majors Creek as impaired for sediment. At least 600 acres of private forest land are found within the Majors Creek watershed. A 303d listing of the watershed would require any future timber harvest activities to comply with more stringent Forest Practice Rules. For this reason alone, I believe this creek should be listed. In addition, I would expect that an impaired listing would be useful in accessing funds for restoration efforts.

Enclosed are photos of a number of the hotspots, past and present. I also have a parcel map showing the location of some of the problems areas which I can make available. I would also be happy to take any members of the RWQCB on a tour of these sediment sources.

Thank you for your time and attention to this matter.

Sincerely,



Jodi Frediani
Executive Director

P.S. I have included page 7# to show the importance of listing all tributaries of the San Lorenzo River system as impaired for sediment. While this is a particularly egregious harvest, other poor practices have occurred & continue to occur in local logging operations.



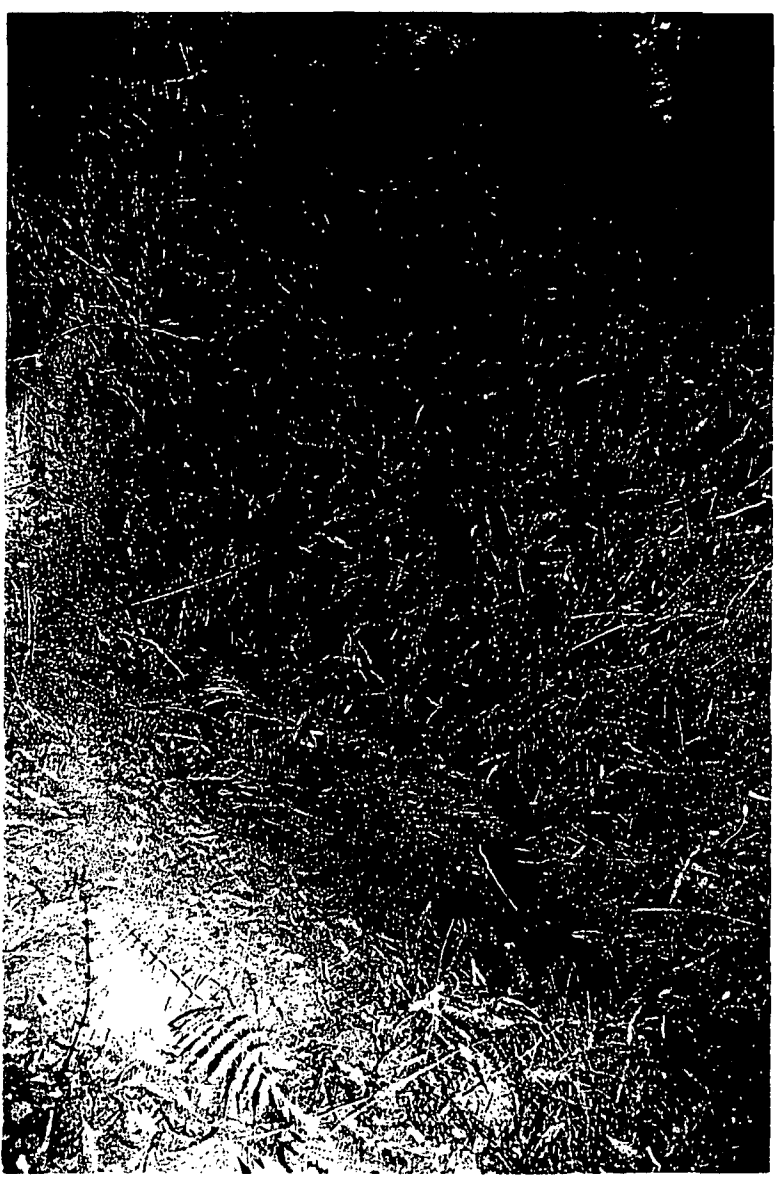
Majors Creek, East Branch, Grey Whale
Log road failure; culvert crossing
2a



Majors Creek
East Branch

Smith Grade
culvert
failure -
blocked by
log road failure

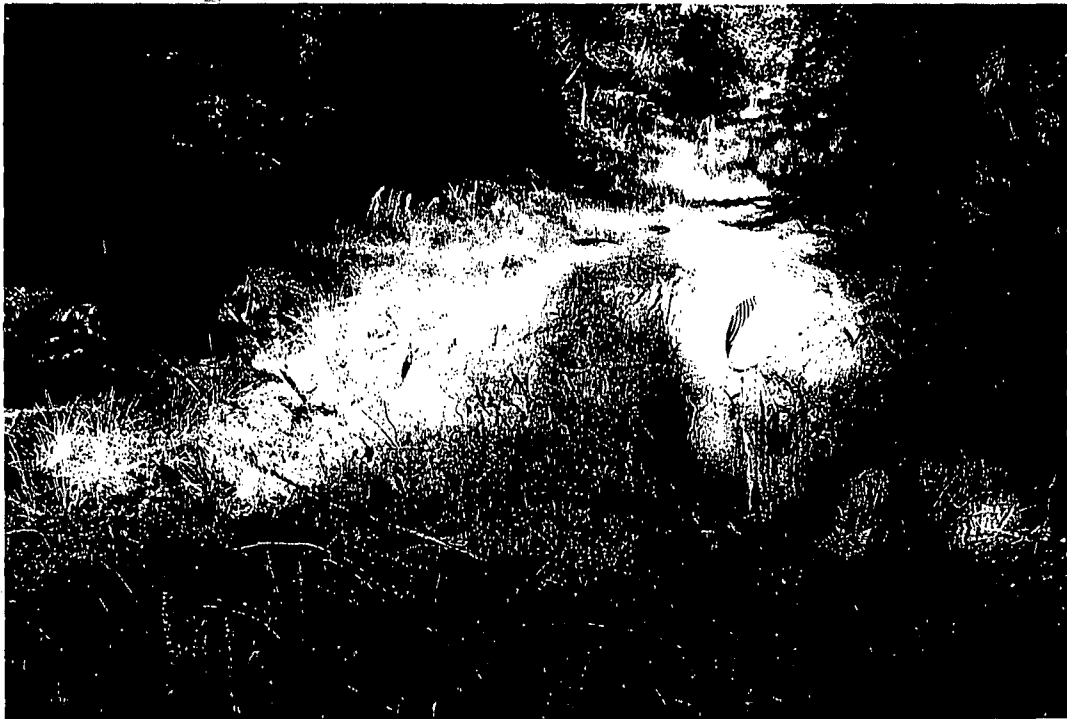
#1



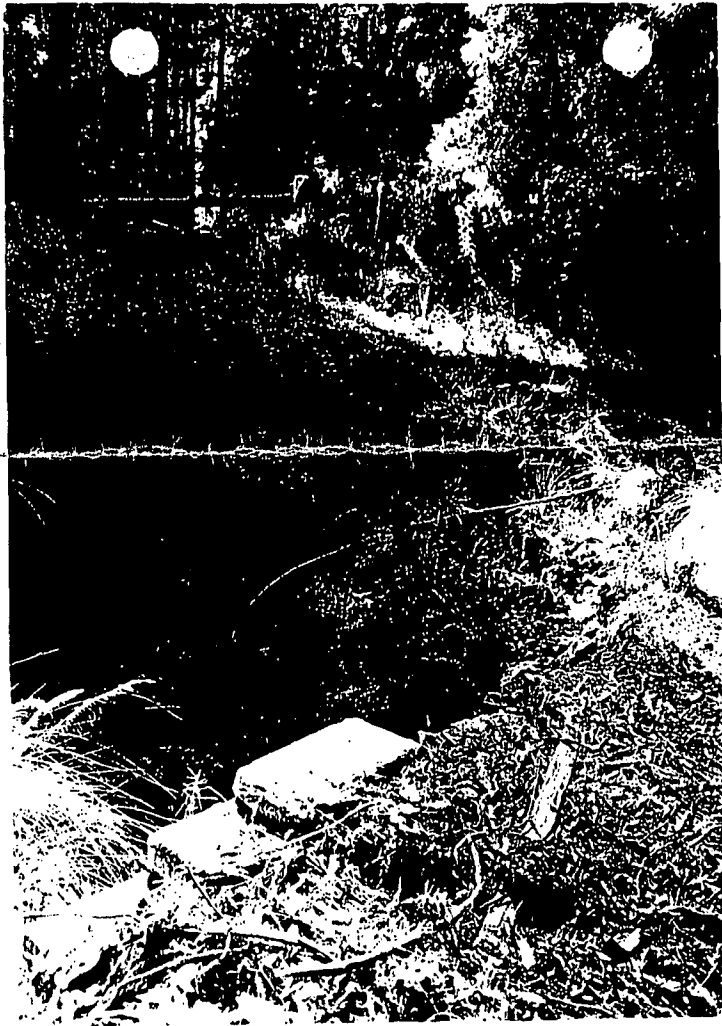
Majors Creek
East Branch
GreyWhale



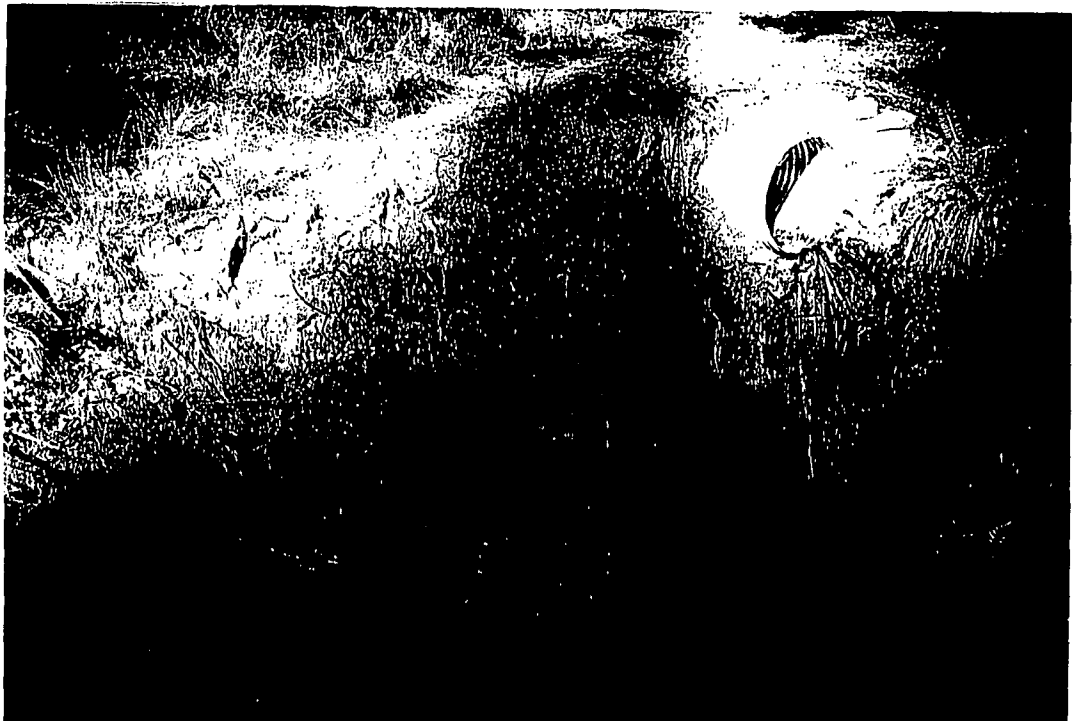
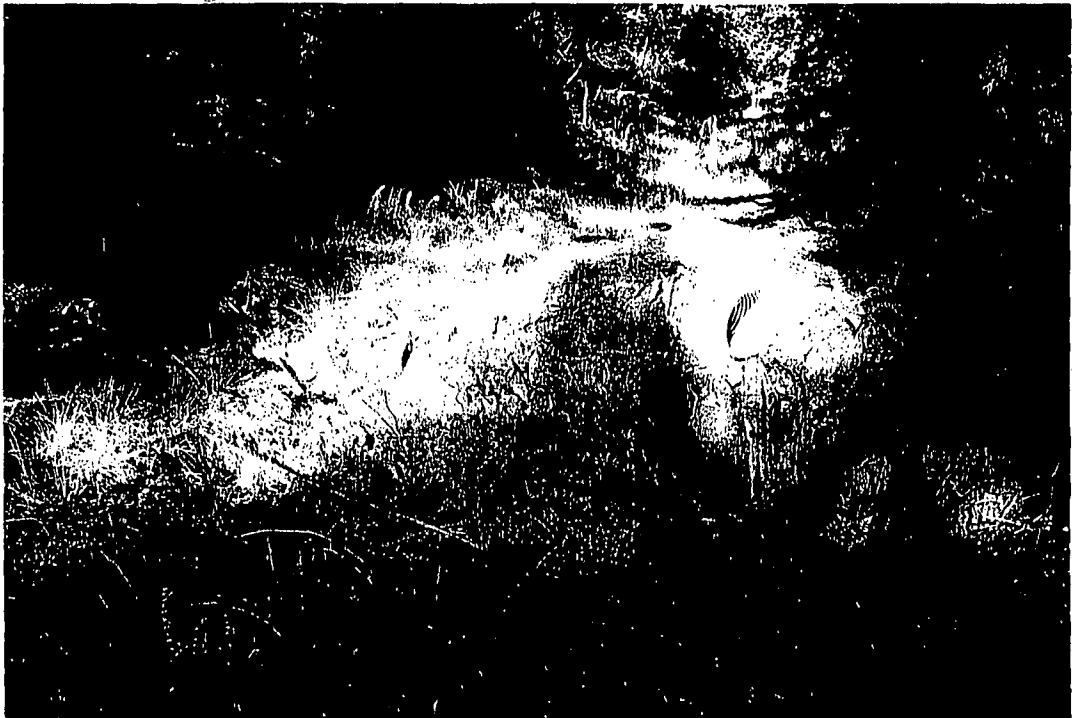
Log road failure
Culvert crossing
2b



Majors Creek
East Branch
Grey Whale

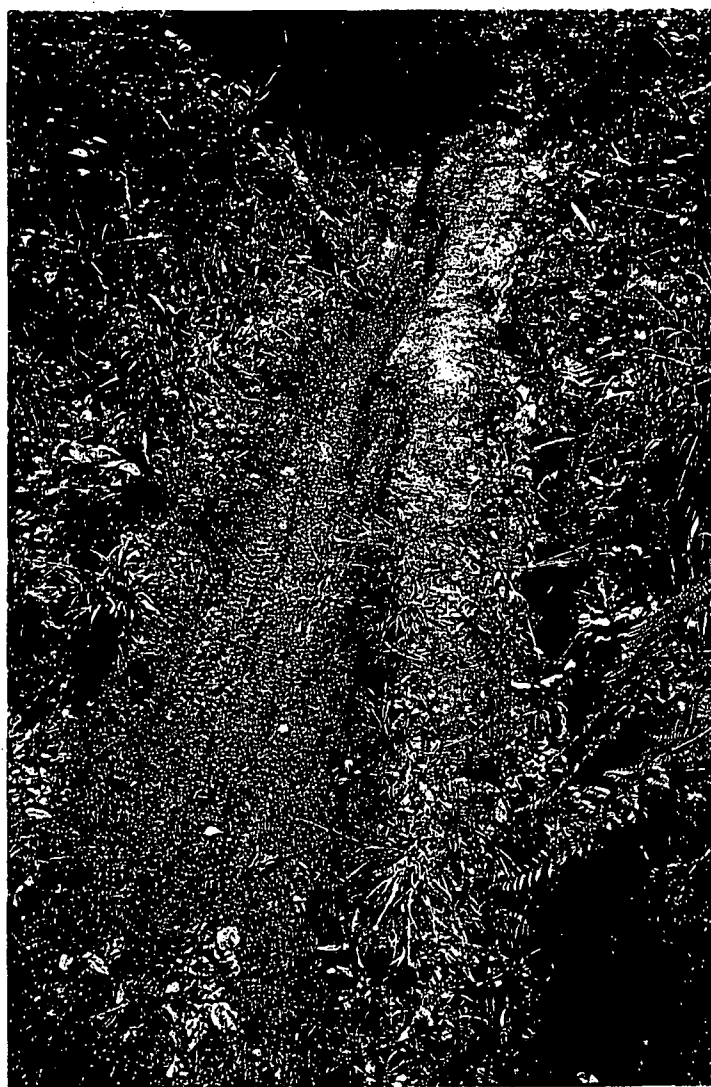


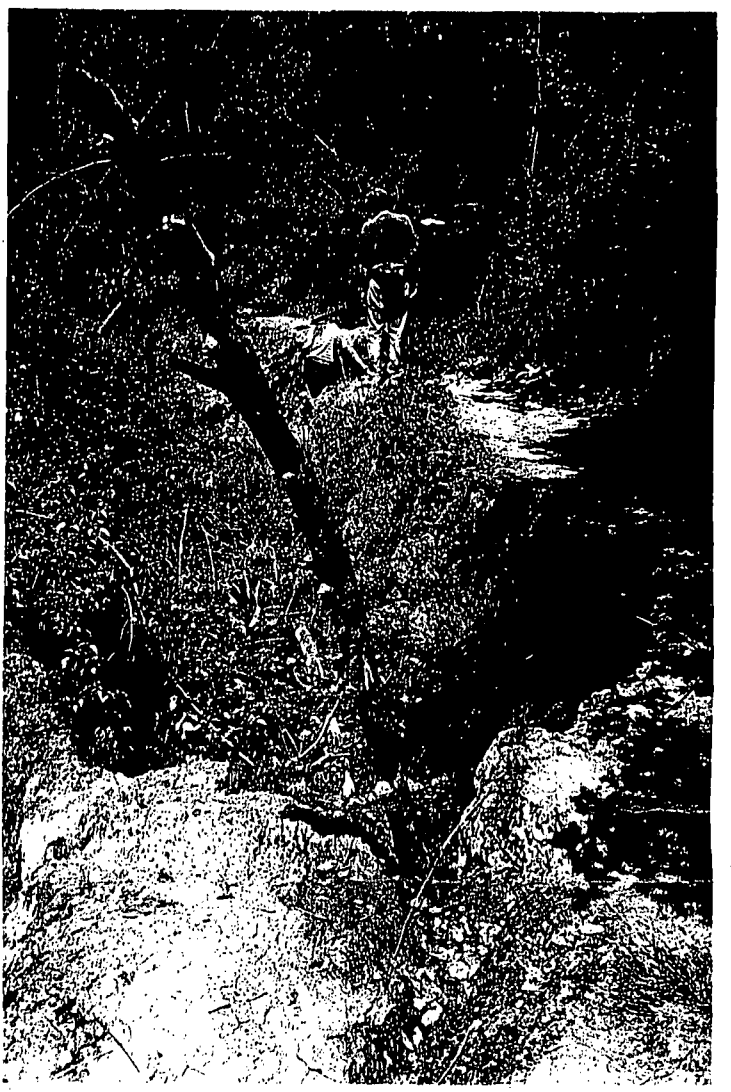
Log road failure
Culvert crossing
2b



1. Majors Creek - East Branch
Grey Whale Ranch - 1. Roadcutters Road
Logroad failure, continued erosion

#3a

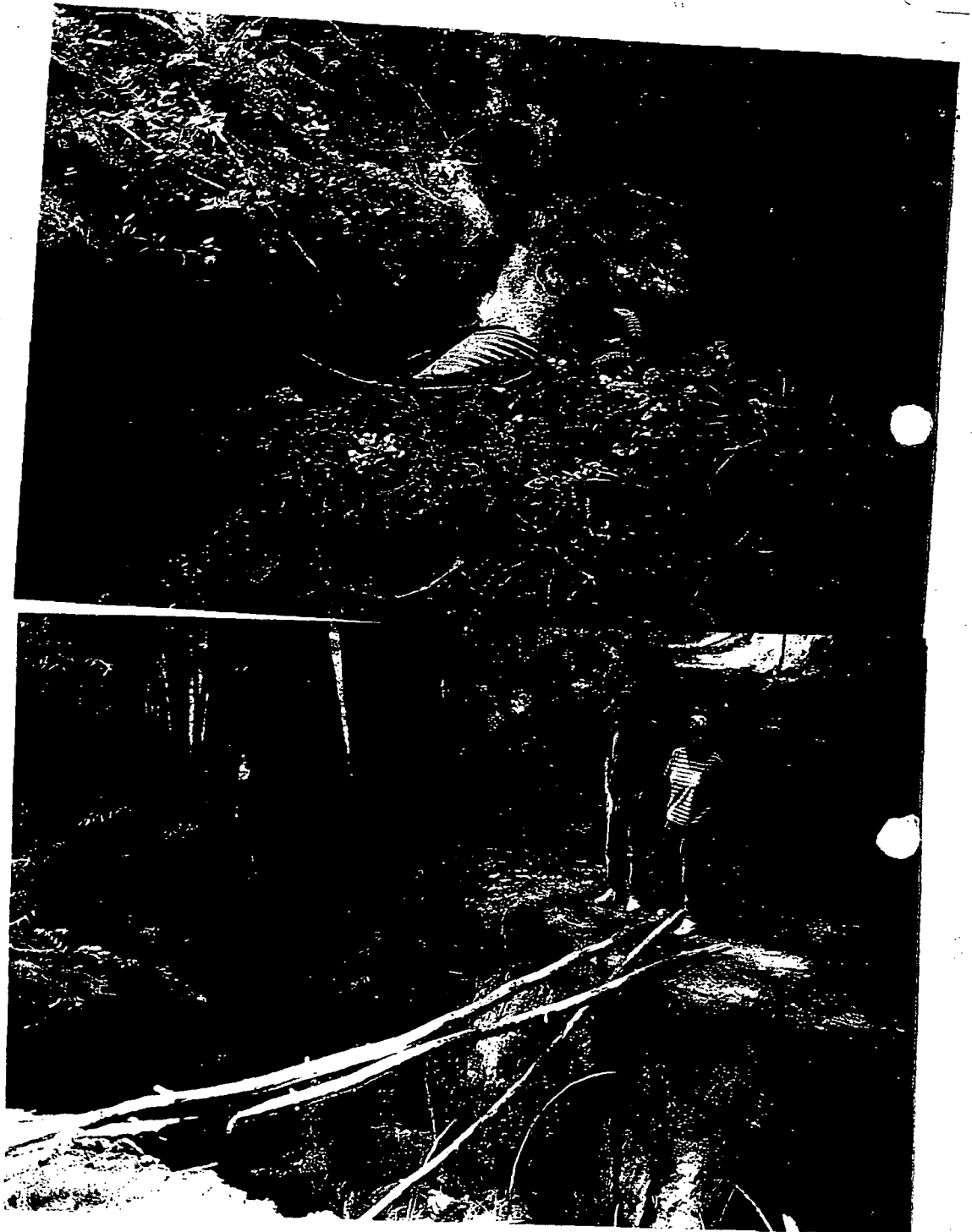




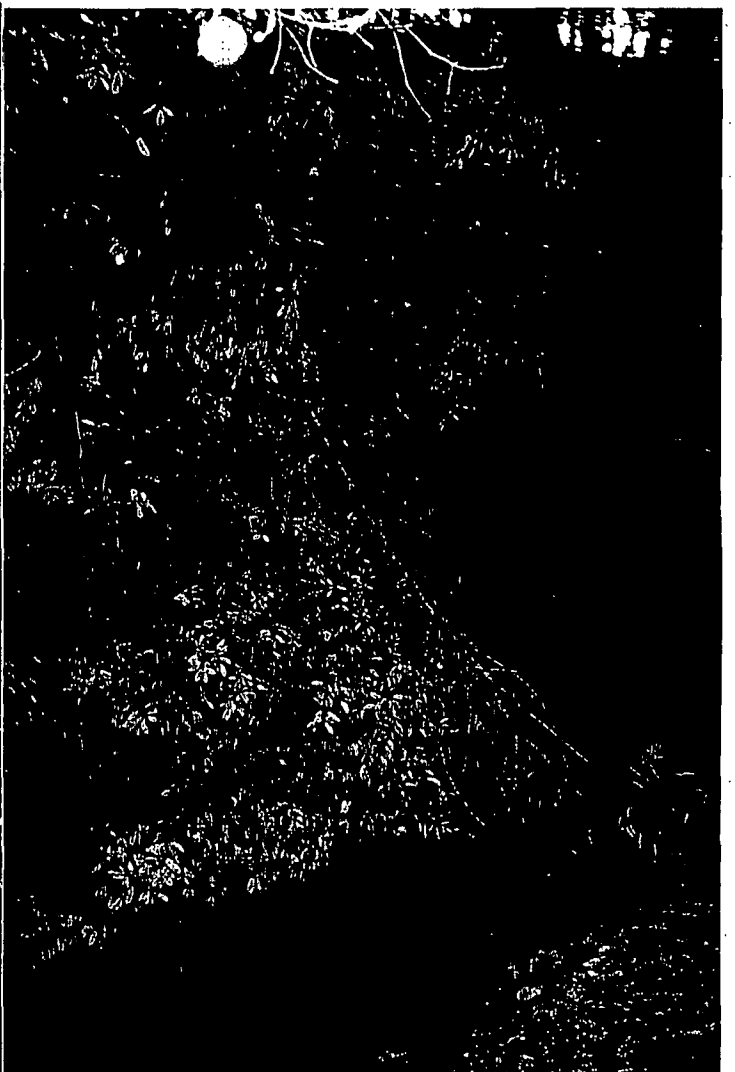
Majors Creek - East Branch
 Greywhale Ranch - Woodcutters road
 Log road failure, continued erosion

3b

Majors Creek - East Branch
Greywhale Ranch - fork off
Log road failures Woodcutters



#4



Mayons
Creek,
Main stem

1/2 mile
understory
clearing,
Paisley
(current)



#5



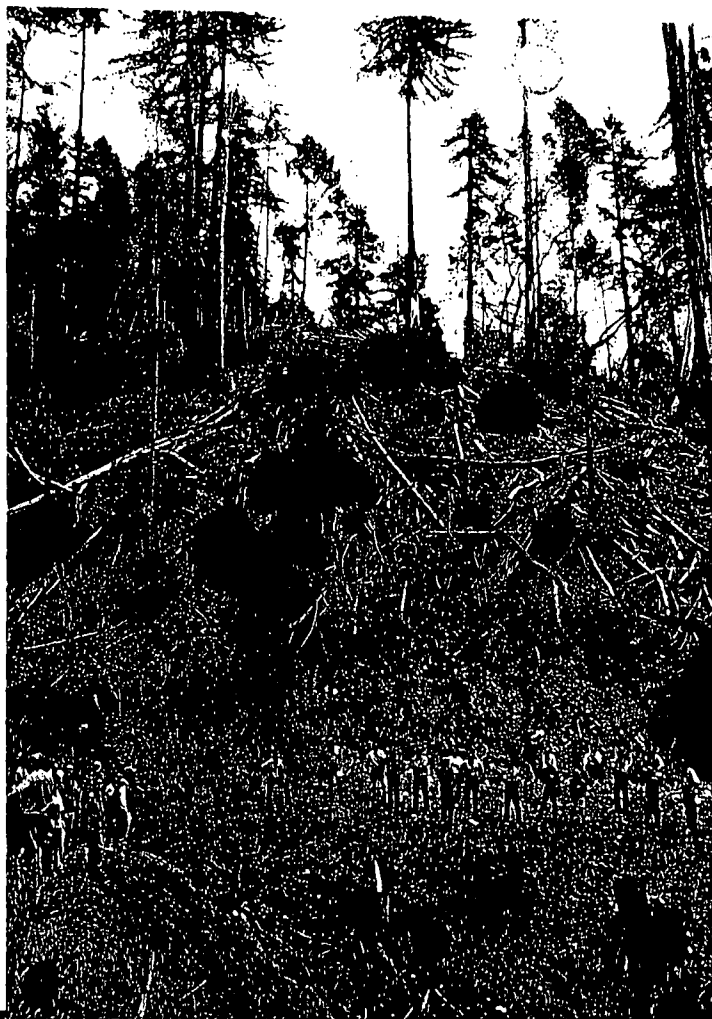
Majors Creek
Illegal
Clearcut &
grading
(main stem)



Majors illegal 40 acre clear cut.
Slash deposited into Class III of
West branch Majors Creek

Fritch Creek
(Tributary to
the San Lorenzo
River)
Timber Harvest

#7



Angela: I think this will work. I had to re-route the information since my computer is not working correctly. Let me know if there is anything missing.

Steve

----- Original Message -----

From: "Angela Carpenter" <Acarpent@rb3.swrcb.ca.gov>

To: <env032@co.santa-cruz.ca.us>

Sent: Monday, June 25, 2001 2:45 PM

Subject: Beach Closure Data

> I am interested in receiving bacteria data for Santa Cruz County beaches.
> I oldest data I'd like to see is 1998.

>

> Thank you.

>

> Angela G. Carpenter

> Water Resources Control Engineer

> Central Coast Regional Water Quality Control Board

>

> (805) 542-4624

> acarpent@rb3.swrcb.ca.gov

>

>

>

Angela: Units for bacteria are in colony-forming units per 100 mls. of water.

Steve

..... Original Message

From: "Angela Carpenter" <Acarpent@rb3.swrcb.ca.gov>

To: <env032@co.santa-cruz.ca.us>

Cc: <dave_paradies@thegrid.net>

Sent: Monday, July 02, 2001 3:55 PM

Subject: Re: Beach Closure Data

> Steve,

>

> What units are you reporting the sample results?

>

> Angela

>

> >>> "Steve Peters" <env032@co.santa-cruz.ca.us> 07/02/01 03:18PM >>>

> Angela: I think this will work. I had to re-route the information since my

> computer is not working correctly. Let me know if there is anything

> missing.

>

> Steve

> Original Message

> From: "Angela Carpenter" <Acarpent@rb3.swrcb.ca.gov>

> To: <env032@co.santa-cruz.ca.us>

> Sent: Monday, June 25, 2001 2:45 PM

> Subject: Beach Closure Data

>

>

> > I am interested in receiving bacteria data for Santa Cruz County beaches.

> I oldest data I'd like to see is 1998.

>

>

> > Thank you.

>

>

> > Angela G. Carpenter

> > Water Resources Control Engineer

> > Central Coast Regional Water Quality Control Board

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> > (805) 542-4624

> > acarpent@rb3.swrcb.ca.gov

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April 20, 2001

Angela G. Carpenter
Central Coast Regional Water Quality Control Board
81 Higuera St, Suite 200
San Luis Obispo, CA 93401

RE: 303(d) Sediment Listing for Majors Creek, Santa Cruz County

Dear Angela,

Please accept this water quality data in your consideration of 303(d) listing for Majors Creek, Santa Cruz County California. This watershed is experiencing increasingly frequent periods of high turbidity associated with the heavy sedimentation attributed to natural background erosion sources, the large network of unmaintained seasonal roads, logjam related stream bank erosion, feral pig activity and other factors. In addition to the drinking water quality and production challenges posed by these conditions, the channel itself (especially the East Branch) is choked with sediment, thereby limiting habitat functions.

In addition to the attached turbidity data, I have extensive photo-documentation of the upslope and instream conditions of this watershed. City Water Department records also demonstrate the extra maintenance required by the increased sediment loading of this creek. I will be happy to provide this additional information to you at your request.

Thank you for your consideration. Please feel free to contact me if you have any questions regarding these matters.

Sincerely,

Chris Berry

CC:read file, TT, RL

Data Submitted By:

Chris Berry
City of Santa Cruz Water Department
715 Graham Hill Rd.
Santa Cruz, CA 95060
(831) 420-5483
cberry@ci.santa-cruz.ca.us

QA/QC:

Data was collected in the context of drinking water source management. Analyses were conducted by staff of the City of Santa Cruz Drinking Water Quality Laboratory – a California Department of Health Services Environmental Laboratory Accreditation Program (ELAP) certified laboratory. Specifically, the laboratory follows sections 1030 and 2130 B. of *Standard Methods for the Examination of Water and Wastewater, 19th Edition* for analysis of turbidity in drinking source water. In addition, according to the City of Santa Cruz Drinking Water Quality Control Laboratory *Quality Assurance and Quality Control Program Document*, nephelometers are calibrated at least every 3 months and checked with secondary reference standards on a daily basis. Laboratory field staff are trained by ELAP audited laboratory analysts.

References:

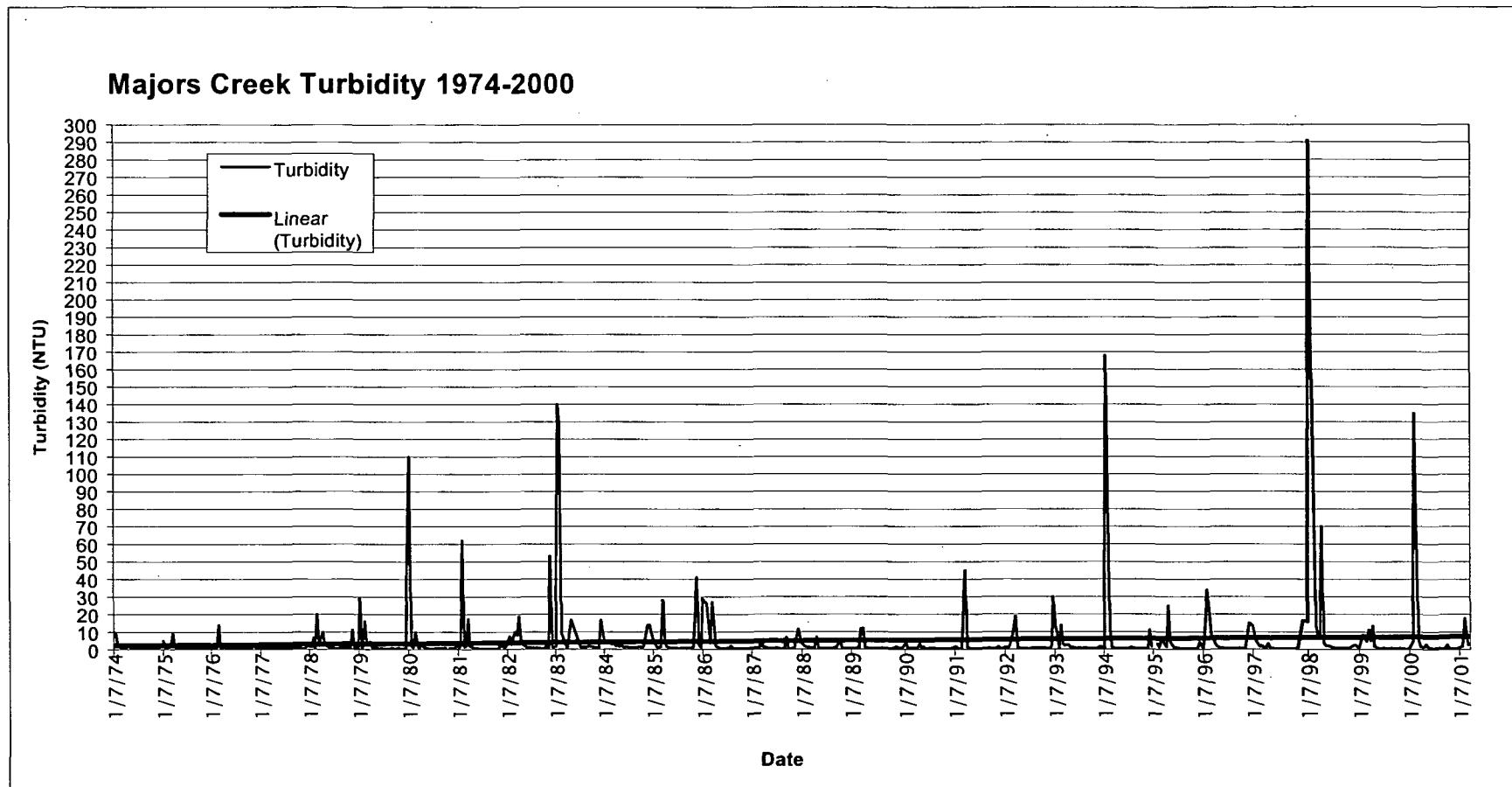
Lee, R., et al. 1999. *Quality Assurance/Quality Control Program Document Procedures Manual*. . City of Santa Cruz Water Department.

Clesceri, L.S., Eaton, A.D., Greenberg, A.E. 1995. *Standard Methods for the Examination of Water and Wastewater, 19th Edition*. American Public Health Association, American Water Works Association, Water Environment Federation. Washington, DC.

Metadata:

Number of samples taken: 613
Period of record: 01/07/74-03/27/01
Sample Location: City of Santa Cruz Majors Creek Diversion (N 36 degrees 59'59", W 122 degrees 07'11")

Data Summary Table:



Data:

RoutelD	Date	Station	Turbidity (NTU)
3	1/7/74	203	10
9	1/21/74	203	9
15	2/4/74	203	3.1
23	3/4/74	203	0.92
28	3/18/74	203	0.25
39	4/29/74	203	1.8
45	5/13/74	203	1.1
53	6/3/74	203	0.79
60	6/17/74	203	0.77
67	7/1/74	203	0.58
74	7/15/74	203	1.2
82	7/29/74	203	1
85	8/5/74	203	0.63
94	8/19/74	203	0.59
108	9/16/74	203	0.58
115	9/30/74	203	0.8
118	10/7/74	203	0.95
124	10/21/74	203	0.33
130	11/4/74	203	0.64
133	11/18/74	203	0.78
138	12/9/74	203	1.2
141	12/23/74	203	
147	1/6/75	203	5
153	1/20/75	203	0.9
168	3/3/75	203	1.4
174	3/17/75	203	9
180	3/31/75	203	3.6
183	4/7/75	203	1
187	4/21/75	203	1.9
193	5/5/75	203	1.2
200	5/19/75	203	1.1
207	6/2/75	203	0.9
214	6/16/75	203	0.7
221	7/7/75	203	0.47
228	7/21/75	203	0.58
235	8/4/75	203	0.56
243	8/18/75	203	0.95
249	9/8/75	203	0.52
256	9/22/75	203	0.81
263	10/6/75	203	0.48
270	10/20/75	203	0.43
276	11/3/75	203	0.58
283	11/17/75	203	1
288	12/1/75	203	0.52
294	12/15/75	203	1.1
297	1/5/76	203	0.72

302	1/19/76	203	0.68
308	2/2/76	203	0.6
313	2/17/76	203	1.2
318	3/1/76	203	14
325	3/15/76	203	0.9
333	3/29/76	203	1.2
339	4/12/76	203	1.4
344	4/26/76	203	0.9
349	5/3/76	203	1.2
361	5/17/76	203	1.2
371	6/7/76	203	1
379	6/21/76	203	1
394	7/19/76	203	0.58
405	8/2/76	203	0.63
419	8/16/76	203	0.56
429	8/30/76	203	0.56
438	9/20/76	203	0.64
449	10/4/76	203	0.52
455	10/18/76	203	0.47
463	11/1/76	203	0.7
471	11/15/76	203	2.8
479	12/6/76	203	0.58
486	12/20/76	203	0.56
495	1/10/77	203	0.91
503	1/24/77	203	0.77
508	2/7/77	203	0.63
514	2/22/77	203	0.82
519	3/7/77	203	0.61
524	3/21/77	203	2.6
529	4/4/77	203	0.73
536	5/2/77	203	0.36
541	5/16/77	203	0.58
546	6/6/77	203	0.65
551	6/20/77	203	0.63
561	7/18/77	203	0.78
569	8/1/77	203	0.45
579	8/15/77	203	0.99
590	8/29/77	203	0.48
604	10/3/77	203	0.73
609	10/17/77	203	0.62
614	11/7/77	203	0.74
618	11/21/77	203	0.65
623	12/5/77	203	0.44
628	12/19/77	203	1.7
649	1/30/78	203	1.5
653	2/6/78	203	6.8
660	2/20/78	203	0.27
666	3/6/78	203	20
672	3/20/78	203	2
679	4/3/78	203	6.3

683	4/17/78	203	10	966	5/5/80	203	0.91
689	5/1/78	203	2.1	975	5/19/80	203	0.95
696	5/15/78	203	2.3	981	6/2/80	203	0.52
704	6/5/78	203	0.87	989	6/16/80	203	0.55
711	6/19/78	203	0.95	996	6/30/80	203	0.54
722	7/17/78	203	0.59	1003	7/14/80	203	0.54
729	7/31/78	203	0.6	1010	7/28/80	203	0.73
731	8/7/78	203	0.56	1019	8/11/80	203	0.72
749	9/18/78	203	1.2	1026	8/25/80	203	0.6
756	10/2/78	203	0.49	1033	9/8/80	203	0.53
762	10/16/78	203	1.4	1039	9/22/80	203	0.95
768	10/30/78	203	0.49	1046	10/6/80	203	0.85
771	11/6/78	203	0.47	1053	10/20/80	203	
777	11/20/78	203	11	1060	11/3/80	203	0.85
783	12/4/78	203	0.66	1066	11/17/80	203	0.49
788	12/18/78	203	1.9	1073	12/1/80	203	0.6
793	1/2/79	203	0.66	1080	12/15/80	203	0.75
799	1/15/79	203	29	1084	12/29/80	203	3.3
804	1/29/79	203	0.18	1090	1/12/81	203	0.6
808	2/5/79	203	1.1	1097	1/26/81	203	2.2
813	2/20/79	203	16	1104	2/9/81	203	62
818	3/5/79	203	3.6	1111	2/23/81	203	1.35
823	3/19/79	203	2.5	1118	3/9/81	203	2
828	4/2/79	203	4.6	1126	3/23/81	203	17.3
833	4/16/79	203	1.2	1133	4/6/81	203	1.9
838	4/30/79	203	1	1138	4/20/81	203	1.4
841	5/8/79	203	1.5	1144	5/4/81	203	1
846	5/21/79	203	0.85	1151	5/18/81	203	0.95
854	6/18/79	203	0.8	1164	6/1/81	203	0.8
859	7/2/79	203	0.62	1176	6/15/81	203	0.39
864	7/16/79	203	0.6	1186	6/29/81	203	0.55
869	7/30/79	203	0.4	1195	7/13/81	203	0.22
874	8/13/79	203	0.33	1206	7/27/81	203	0.45
879	8/27/79	203	0.44	1215	8/10/81	203	0.45
885	9/11/79	203	1	1224	8/24/81	203	0.55
890	9/24/79	203	0.43	1241	9/21/81	203	0.52
895	10/8/79	203	0.53	1250	10/5/81	203	0.45
900	10/22/79	203	1	1260	10/19/81	203	0.24
905	11/5/79	203	0.66	1266	11/2/81	203	0.65
910	11/19/79	203	0.33	1271	11/16/81	203	1.9
915	12/3/79	203	0.57	1278	11/30/81	203	2.3
920	12/17/79	203	0.38	1284	12/14/81	203	1
925	1/14/80	203	110	1291	12/28/81	203	1.6
930	1/28/80	203	2.1	1307	1/25/82	203	7.4
935	2/11/80	203	0.92	1315	2/8/82	203	2.75
938	2/25/80	203	10	1323	2/22/82	203	7
943	3/10/80	203	4.4	1331	3/8/82	203	10
948	3/24/80	203	0.28	1340	3/22/82	203	8
953	4/7/80	203	3.2	1347	4/5/82	203	18.6
960	4/21/80	203	2	1358	4/19/82	203	6

1367	5/3/82	203	2.6	1790	10/29/84	203	1.66
1374	5/17/82	203	2.2	1798	11/26/84	203	13.7
1380	6/1/82	203	1.2	1805	12/10/84	203	14
1387	6/14/82	203	1.15	1811	1/7/85	203	5.3
1392	6/28/82	203	0.95	1816	2/4/85	203	1.24
1402	7/26/82	203	0.76	1825	3/4/85	203	1.31
1408	8/9/82	203	0.9	1831	3/18/85	203	28
1414	8/23/82	203	0.82	1836	4/1/85	203	4.7
1424	9/20/82	203	0.55	1841	4/15/85	203	1.64
1430	10/4/82	203	0.51	1848	4/30/85	203	1.1
1439	10/18/82	203	0.61	1857	5/13/85	203	0.75
1447	11/1/82	203	1.95	1866	5/28/85	203	0.81
1452	11/15/82	203	0.9	1873	6/10/85	203	0.63
1457	11/29/82	203	53	1881	6/24/85	203	0.75
1465	12/13/82	203	1.19	1889	7/8/85	203	0.72
1472	1/10/83	203	1.4	1899	7/22/85	203	0.49
1478	1/24/83	203	140	1909	8/5/85	203	0.74
1485	2/7/83	203	129	1919	8/19/85	203	0.91
1493	2/22/83	203	8.6	1935	9/16/85	203	0.48
1518	4/4/83	203	0.6	1943	9/30/85	203	1.1
1532	5/2/83	203	16.6	1952	10/14/85	203	0.8
1562	7/11/83	203	1.21	1962	10/28/85	203	1.34
1572	7/25/83	203	1.34	1975	11/25/85	203	41
1581	8/8/83	203	1.21	1983	12/9/85	203	2.35
1590	8/22/83	203	1.31	1990	12/23/85	203	1.13
1608	9/19/83	203	1.7	1997	1/6/86	203	29
1616	10/3/83	203	1.52	2005	2/3/86	203	26
1623	10/17/83	203	1.32	2017	3/3/86	203	3.75
1633	11/14/83	203	0.78	2023	3/17/86	203	27
1636	11/28/83	203	0.6	2033	4/14/86	203	1.75
1642	12/12/83	203	16.6	2036	4/28/86	203	1.27
1649	1/9/84	203	4.3	2041	5/12/86	203	0.71
1655	1/23/84	203	3.3	2050	6/9/86	203	0.54
1661	2/6/84	203	4.8	2056	6/23/86	203	0.7
1670	3/5/84	203	2.8	2059	7/7/86	203	0.76
1676	3/19/84	203	4.4	2065	7/21/86	203	0.85
1682	4/2/84	203	1.8	2071	8/4/86	203	2.2
1688	4/16/84	203	2.4	2077	8/18/86	203	0.66
1693	4/30/84	203	1.46	2088	9/29/86	203	0.69
1699	5/14/84	203	2.65	2093	10/13/86	203	0.53
1708	5/29/84	203	1.28	2100	10/27/86	203	0.65
1716	6/11/84	203	1.1	2104	11/10/86	203	0.51
1724	6/25/84	203	1.55	2111	12/8/86	203	0.43
1733	7/9/84	203	1.05	2118	1/5/87	203	0.9
1741	7/23/84	203	1.15	2127	2/2/87	203	0.91
1750	8/6/84	203	0.83	2138	3/2/87	203	0.61
1759	8/20/84	203	1.15	2145	3/16/87	203	5.5
1768	9/17/84	203	1.32	2153	3/30/87	203	1.22
1775	10/1/84	203	1.55	2160	4/13/87	203	1.22
1784	10/15/84	203	0.84	2169	4/27/87	203	0.79

2178	5/11/87	203	0.52	3635	8/14/89	203	0.69
2189	5/25/87	203	0.77	3706	8/28/89	203	0.5
2199	6/8/87	203	0.55	3769	9/11/89	203	0.43
2207	6/22/87	203	0.46	3842	9/25/89	203	0.6
2212	7/6/87	203	1.01	3914	10/9/89	203	0.66
2221	7/20/87	203	0.5	4071	11/6/89	203	1.62
2229	8/3/87	203	0.39	4210	12/4/89	203	0.64
2237	8/17/87	203	0.33	4280	12/18/89	203	0.7
2246	8/31/87	203	0.41	4405	1/16/90	203	3.8
2252	9/14/87	203	6.9	4469	1/29/90	203	0.73
2260	9/28/87	203	0.4	4537	2/12/90	203	1
2274	10/12/87	203	0.31	4596	2/26/90	203	1.05
2283	10/26/87	203	0.41	4664	3/12/90	203	1.17
2291	11/9/87	203	0.3	4736	3/26/90	203	0.83
2306	12/7/87	203	11.5	4808	4/9/90	203	0.75
2317	1/4/88	203	3.4	4879	4/23/90	203	3.2
2373	2/1/88	203	1.4	4949	5/7/90	203	0.69
2384	2/29/88	203	1.34	5023	5/21/90	203	1.78
2392	3/14/88	203	0.71	5089	6/4/90	203	0.69
2401	3/28/88	203	1.01	5165	6/18/90	203	0.38
2410	4/11/88	203	0.68	5234	7/2/90	203	0.86
2418	4/25/88	203	7.1	5308	7/16/90	203	0.68
2423	5/9/88	203	0.87	5379	7/30/90	203	0.76
2430	5/23/88	203	0.47	5454	8/13/90	203	0.73
2436	6/6/88	203	0.54	5531	8/27/90	203	0.5
2444	6/20/88	203	0.61	5601	9/10/90	203	0.62
2456	7/18/88	203	0.44	5670	9/24/90	203	0.43
2465	8/1/88	203	0.56	5739	10/8/90	203	0.43
2475	8/15/88	203	0.38	5807	10/22/90	203	0.38
2485	8/29/88	203	0.51	5872	11/5/90	203	0.44
2488	9/12/88	203	1.19	5995	12/3/90	203	0.4
2499	9/26/88	203	1.2	6059	12/17/90	203	0.78
2511	10/10/88	203	3.3	6182	1/14/91	203	1.75
2520	10/24/88	203	4.1	6241	1/28/91	203	0.3
2526	11/7/88	203	0.4	6310	2/11/91	203	0.49
2542	12/5/88	203	0.72	6376	2/25/91	203	0.39
2548	12/19/88	203	0.48	6440	3/11/91	203	25
2660	1/30/89	203	0.53	6504	3/25/91	203	45
2727	2/13/89	203	0.74	6565	4/8/91	203	1.2
2791	2/27/89	203	0.96	6630	4/22/91	203	0.74
2856	3/13/89	203	11.7	6696	5/6/91	203	0.48
2917	3/27/89	203	12	6818	6/3/91	203	0.59
2983	4/10/89	203	1.32	6884	6/17/91	203	0.5
3051	4/24/89	203	0.88	6950	7/1/91	203	0.47
3124	5/8/89	203	0.69	7018	7/15/91	203	0.5
3195	5/22/89	203	0.5	7084	7/29/91	203	0.47
3267	6/5/89	203	0.55	7150	8/12/91	203	0.7
3341	6/19/89	203	0.72	7216	8/26/91	203	0.52
3483	7/17/89	203	0.54	7276	9/9/91	203	0.76
3556	7/31/89	203	1	7341	9/23/91	203	0.69

7406	10/7/91	203	0.61	10817	9/20/93	203	0.57
7471	10/21/91	203	0.55	10888	10/4/93	203	0.6
7550	11/4/91	203	0.43	10961	10/18/93	203	0.51
7618	11/18/91	203	1.58	11029	11/1/93	203	0.5
7676	12/2/91	203	0.29	11102	11/15/93	203	0.4
7743	12/16/91	203	0.27	11230	12/13/93	203	1.75
7861	1/13/92	203	1.39	11357	1/10/94	203	0.32
7924	1/27/92	203	0.56	11417	1/24/94	203	168
7988	2/10/92	203	2.48	11487	2/7/94	203	88
8050	2/24/92	203	6	11557	2/22/94	203	10.9
8111	3/9/92	203	12.4	11631	3/7/94	203	1.12
8178	3/23/92	203	18.8	11702	3/21/94	203	0.59
8241	4/6/92	203	0.95	11780	4/4/94	203	0.63
8312	4/20/92	203	0.71	11855	4/18/94	203	0.65
8383	5/4/92	203	0.59	11926	5/2/94	203	0.53
8456	5/18/92	203	0.5	11997	5/16/94	203	0.47
8526	6/1/92	203	0.54	12133	6/13/94	203	0.51
8595	6/15/92	203	0.4	12205	6/27/94	203	0.5
8668	6/29/92	203	0.37	12276	7/11/94	203	0.54
8738	7/13/92	203	0.4	12355	7/25/94	203	1.3
8810	7/27/92	203	1.01	12432	8/8/94	203	0.77
8880	8/10/92	203	0.84	12510	8/22/94	203	0.54
8953	8/24/92	203	0.89	12663	9/19/94	203	0.65
9022	9/8/92	203	0.74	12734	10/3/94	203	0.66
9090	9/21/92	203	0.82	12803	10/17/94	203	0.59
9152	10/5/92	203	0.48	12878	10/31/94	203	0.52
9218	10/19/92	203	0.94	12945	11/14/94	203	0.4
9292	11/2/92	203	0.61	13013	11/28/94	203	0.37
9362	11/16/92	203	0.38	13078	12/12/94	203	11
9430	11/30/92	203	0.34	13148	12/27/94	203	1.39
9498	12/14/92	203	1.9	13282	1/23/95	203	
9564	12/28/92	203	30	13353	2/6/95	203	3.18
9630	1/11/93	203	12.6	13425	2/21/95	203	1.3
9690	1/25/93	203	9.3	13494	3/6/95	203	4.79
9754	2/8/93	203	0.13	13563	3/20/95	203	5.38
9818	2/22/93	203	13.8	13636	4/3/95	203	2.93
9879	3/8/93	203	2.9	13708	4/17/95	203	1.46
9942	3/22/93	203	1.94	13776	5/1/95	203	24.9
10003	4/5/93	203	2.6	13843	5/15/95	203	4.17
10066	4/19/93	203	2.8	13974	6/12/95	203	0.94
10131	5/3/93	203	1.06	14047	6/26/95	203	1.09
10195	5/17/93	203	1.28	14116	7/10/95	203	0.83
10262	6/1/93	203	0.94	14188	7/24/95	203	0.68
10327	6/14/93	203	0.59	14260	8/7/95	203	0.61
10392	6/28/93	203	0.59	14331	8/21/95	203	0.71
10462	7/12/93	203	0.73	14468	9/18/95	203	0.7
10532	7/26/93	203	0.54	14539	10/2/95	203	0.48
10601	8/9/93	203	0.58	14605	10/16/95	203	0.5
10672	8/23/93	203	0.89	14672	10/30/95	203	0.48
10747	9/7/93	203	0.63	14735	11/13/95	203	0.33

14795	11/27/95	203	0.45	19030	5/11/98	203	2.04
14863	12/11/95	203	4.15	19181	6/8/98	203	1.86
14980	1/8/96	203	0.61	19257	6/23/98	203	1.3
15036	1/22/96	203	15.9	19316	7/7/98	203	1.01
15099	2/5/96	203	34	19388	7/21/98	203	0.92
15216	3/4/96	203	8.08	19465	8/3/98	203	0.82
15279	3/18/96	203	6.01	19610	8/3/98	203	0.82
15342	4/1/96	203	3.14	19755	8/3/98	203	0.82
15405	4/15/96	203	1.68	19821	8/18/98	203	0.77
15477	4/29/96	203	1.18	19676	8/18/98	203	0.77
15536	5/13/96	203	0.75	19531	8/18/98	203	0.77
15669	6/10/96	203	0.65	19895	9/1/98	203	0.87
15739	6/24/96	203	0.59	19960	9/15/98	203	0.84
15803	7/8/96	203	0.44	20030	9/29/98	203	0.78
15867	7/22/96	203	0.5	20104	10/13/98	203	0.76
15937	8/5/96	203	0.42	20170	10/27/98	203	0.74
16005	8/19/96	203	0.51	20835	12/8/98	203	2.68
16129	9/16/96	203	0.44	20517	12/8/98	203	2.68
16194	9/30/96	203	0.75	20358	12/8/98	203	2.68
16256	10/14/96	203	0.49	20676	12/8/98	203	2.68
16380	11/12/96	203	0.39	20959	1/5/99	203	0.79
16504	12/9/96	203	15	21091	2/2/99	203	8.32
16629	1/6/97	203	13.4	21220	3/2/99	203	4.47
16749	2/3/97	203	4.64	21287	3/16/99	203	11.2
16879	3/3/97	203	1.58	21356	3/30/99	203	4.9
16948	3/17/97	203	2.3	21423	4/13/99	203	13.4
17023	3/31/97	203	0.88	21499	4/27/99	203	1.74
17091	4/14/97	203	0.83	21570	5/11/99	203	1.25
17166	4/28/97	203	3.29	21640	5/25/99	203	0.32
17237	5/12/97	203	0.8	21749	6/8/99	203	0.74
17384	6/9/97	203	0.46	21781	6/22/99	203	0.84
17454	6/23/97	203	0.42	21931	7/19/99	203	0.62
17526	7/7/97	203	0.46	22150	8/3/99	203	0.71
17597	7/21/97	203	0.4	22225	8/17/99	203	0.72
17668	8/4/97	203	0.5	22299	8/31/99	203	0.84
17742	8/18/97	203	0.42	22368	9/14/99	203	0.52
17881	9/15/97	203	0.35	22437	9/28/99	203	0.62
17952	9/29/97	203	0.38	22506	10/12/99	203	0.42
18016	10/13/97	203	0.27	22578	10/26/99	203	0.8
18080	10/27/97	203	0.27	22755	12/7/99	203	0.38
18150	11/10/97	203	1.29	22909	1/4/00	203	0.35
18280	12/8/97	203	16.7	23026	2/1/00	203	4.5
18409	1/5/98	203	15.6	23286	2/14/00	203	135
18473	1/15/98	203	291	23348	3/14/00	203	5.33
18546	2/2/98	203	154	23445	3/28/00	203	1.61
18681	3/2/98	203	12.6	23519	4/11/00	203	1.29
18749	3/16/98	203	6.52	23591	4/25/00	203	1.38
18819	3/30/98	203	6.11	23845	5/9/00	203	2.98
18887	4/13/98	203	70.1	23920	5/23/00	203	1.18
18963	4/27/98	203	3.4	23990	6/6/00	203	0.79

24065	6/20/00	203	0.62
24207	7/18/00	203	0.72
24277	8/1/00	203	0.98
24352	8/15/00	203	0.69
24428	8/29/00	203	0.62
24631	9/12/00	203	0.57
24699	9/26/00	203	0.6
24766	10/10/00	203	2.76
24801	10/24/00	203	0.41
24925	11/7/00	203	0.58
25024	12/5/00	203	0.4
25088	12/19/00	203	0.45
25275	1/30/01	203	1.84
25339	2/13/01	203	17.8
25403	2/27/01	203	10.1
25475	3/13/01	203	2.77
25545	3/27/01	203	3.27

