



Pacific Gas and Electric Company  
Diablo Canyon Power Plant  
P.O. Box 56  
Avila Beach, CA 93424

Electronic Submission  
CIWQS Web Application

California Regional Water Quality Control Board  
Central Coast Region  
Attn: Monitoring and Reporting Review Section  
895 Aerovista, Suite #101  
San Luis Obispo, CA 93401-7906

In accordance with Order 90-09, NPDES No. CA0003751, the 2013 Annual Report on Discharge Monitoring at Diablo Canyon Power Plant is provided. This letter and accompanying annual data summary tables and plots are attached to the CIWQS application submittal.

**Facility Name:** Diablo Canyon Power Plant

**Address:** P.O. Box 56  
Avila Beach, CA 93424

**Contact Person:** Bryan K. Cunningham  
**Job Title:** Supervisor, Environmental Operations  
**Phone Number:** (805) 545-4439

**WDR/NPDES Order Number:** Order No. 90-09, NPDES No. CA0003751

Type of Report: (check one)

**QUARTERLY**

# ANNUAL

**Quarter:** (check one):

1<sup>st</sup>2<sup>nd</sup>3<sup>rd</sup>4<sup>th</sup>

Year:

2013 (Annual Reports for **DCPP** are Jan-Dec)

**Violation(s)** (Place an X by the appropriate choice):

☒ **No** (there are no violations to report)☐ Yes

**Note:** Reference "Review of Compliance Record and Corrective Actions" Section

TE25  
NRK

*If Yes is marked (complete a-g):*

**a) Parameter(s) in Violation:**

**b) Section(s) of WDR/NPDES  
Violated:**

**c) Reported Value(s)**

**d) WDR/NPDES  
Limit/Condition:**

**e) Dates of Violation(s)**  
(reference page of report/data  
sheet):

**f) Explanation of Cause(s):**  
(attach additional information as  
needed)

(If "YES", see overview section of attached report)

**g) Corrective Action(s):**  
(attach additional information as  
needed)

(If "YES", see overview section of attached report)

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. The results of the influent and effluent monitoring presented are the observed results of the measurements and analyses required by the monitoring program, and is neither an assertion of the adequacy of any instrument reading or analytical result, nor an endorsement of the appropriateness of any analytical or measurement procedure. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

If you have any questions or concerns, or require additional information, please contact Bryan Cunningham at (805) 545-4439.

Sincerely,



---

Name: Kenneth W. Cortese

Title: *Manager, Chemistry and Environmental Operations – Diablo Canyon Power Plant*

2014509/jlk/bkc



PG&E Letter DCL-2014-509  
CRWQCB Central Coast Region  
February 28, 2014  
Page 4

cc:

Hardcopy Print-Out of CIWQS Application Submittal:

Thomas Hipschman  
Senior Resident Inspector  
U.S. Nuclear Regulatory Commission  
Diablo Canyon Power Plant 104/5

Regional Administrator  
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U.S. Nuclear Regulatory Commission  
Document Control Desk  
Washington, D.C. 20555-0001



## CIWQS Web Application Submittal Print Out and Attached Supporting Documents

**eSMR PDF Report**  
**Summary: Annual SMR ( MONNPDES ) report for 2013**

Summary: Annual SMR ( MONNPDES ) report for 2013 submitted by Kenneth Cortese (No Title) on 02/28/2014.

**Facility Name:** PG&E DIABLO CANYON POWER PLANT

**Order Number:** R3-1990-0009

**Waterboard Office:** Region 3 - Central Coast

**Case Worker:** Anthony Bonilla, Peter Von Langen

**Report Effective Dates:** 01/01/2013 - 12/31/2013

**No Discharge Periods**

Name	Description	Dates	Comments
Diablo M-001			
Diablo M-001D			
Diablo M-001F			
Diablo M-001G			
Diablo M-001H			
Diablo M-001I		01/01/2013 - 12/31/2013	
Diablo M-001J			
Diablo M-001K		01/01/2013 - 12/31/2013	
Diablo M-001L			
Diablo M-001M			
Diablo M-001N			
Diablo M-001P			
Diablo M-002			
Diablo M-003			
Diablo M-004			
Diablo M-005			
Diablo M-008			
Diablo M-009			
Diablo M-013			
Diablo M-015			
Diablo M-016		01/01/2013 - 12/31/2013	
Diablo M-017		01/01/2013 - 12/31/2013	
Diablo M-INF			

**Self-Determined Violations**

No Violations Entered

**Attachments**



File Name	File Description	Date Uploaded	File Size
Attachment 1 - 2013 DCPD Annual Report Overview Section.pdf		02/28/2014	116384 bytes
Attachment 2 - 2013 DCPD Annual Rpt Appendix-1 NPDES Discharge Points.pdf		02/28/2014	51524 bytes
Attachment 3 - 2013 DCPD Annual Rpt Appendix-2 Tabular Summaries of Monitoring.pdf		02/28/2014	140601 bytes
Attachment 4 - 2013 DCPD Annual Rpt Appendix-3 Graphical Summaries of Monitoring.pdf		02/28/2014	492054 bytes
Attachment 5 - 2013 DCPD Annual Rpt Appendix-4 Summary of RWMP Monitoring.pdf		02/28/2014	70147 bytes

#### Cover Letter (Uploaded File)

Title	Date Uploaded	File Size
PGE DCL2014509 2013 NPDES Annual Discharge Monitoring Report.pdf	02/28/2014	717901 bytes

#### Data Summary

##### Analytical Results

No Analytical Data Measurements Available / Reported

##### Calculated Values

No Calculated Data Measurements Available / Reported

#### Certificate

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

I certify that I am Kenneth Cortese and am authorized to submit this report on behalf of PG&E DIABLO CANYON POWER PLANT. I understand that I am submitting the following report(s):

- Annual SMR ( MONNPDES ) report for 2013 (due 02/28/2014)

I understand that data submitted in this report(s) can be used by authorized agencies for water quality management related analyses and enforcement actions, if required.

I am also aware that my user ID, password, and answer to a challenge question constitute my electronic signature and any information I



**Indicate I am electronically certifying contains my signature. I understand that my electronic signature is the legal equivalent of my handwritten signature. I certify that I have not violated any term in my Electronic Signature Agreement and that I am otherwise without any reason to believe that the confidentiality of my password and challenge question answers have been compromised now or at any time prior to this submission. I understand that this attestation of fact pertains to the implementation, oversight, and enforcement of a federal environmental program and must be true to the best of my knowledge.**

**Name:** Kenneth Cortese

**Title:** No Title

**ANNUAL SUMMARY REPORT ON  
DISCHARGE MONITORING  
AT THE  
DIABLO CANYON POWER PLANT  
(NPDES NO. CA0003751)**

**2013**

**2013 Annual Summary Report on Discharge Monitoring  
at the  
Diablo Canyon Power Plant**

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2013 Annual Summary Report on Discharge Monitoring  
at the  
Diablo Canyon Power Plant

## OVERVIEW

This annual summary report follows the format used in quarterly monitoring reports. Analytical results below the respective analytical detection limit (ND or non-detect) are plotted as a "zero" value in accordance with ELAP guidance. Results between the analytical detection limit and reporting (quantitation) limits are plotted at the value and shown as 'DNQ' in the tabular summaries as is done for CIWQS reports. Less-than results are typically reported to express an average of values that include non-detects and at least one positive result. These less-than results are plotted conservatively at the value. During 2013, discharges occurred from all discharge paths except 001I, 001K, 016, and 017.

California Ocean Plan Table B substances that were not analyzed for have not been added to the discharge stream. The substances listed in Table B in the California Ocean Plan were each analyzed for and reported in the permit renewal application and application updates for Diablo Canyon Power Plant (DCPP) submitted in October 1994, January 2001, and April 2011. There have been no changes in activities conducted at the plant that would have significantly affected the results previously reported in the above referenced documents.

## SUMMARY OF MONITORING PROGRAM

### A. Monitoring of Plant Influent and Effluent

#### 1. Monitoring Data

- a. Appendix 1 provides a list of discharge path names for ease of reference. Appendix 2 contains monitoring data in tabular form. Appendix 3 contains monitoring data in graphical form.
- b. Annual oil and grease analyses were performed in October on Stormwater/Yard Drain Discharges 005, 008, 009, 013, and 015. Results are listed below. No discharges that resulted in adequate sample quantities occurred from pathway 016, and no discharge occurred from pathway 017 during 2013.

005	non-detect - ND(1.4 mg/l)
008	non-detect - ND(1.4 mg/l)
009	non-detect - ND(1.4 mg/l)
013	7.5 mg/l
015	non-detect - ND(1.4 mg/l)

- c. In October, Discharge 001D (Liquid Radioactive Waste Treatment System) annual grab samples for lithium, boron, and hydrazine were collected and analyzed. The results were DNQ(0.048) mg/l, 277 mg/l, and ND(3) mg/l, respectively.

#### 2. Facility Operating and Maintenance Manual

Pacific Gas and Electric Company (PG&E) maintains a multiple volume Plant Manual at DCPD that contains procedures used for operation and maintenance activities at the plant, including those activities that relate to wastewater handling, treatment, sampling, analysis and discharge.

Plant procedures are prepared and reviewed by DCPD Staff and approved by Plant Management. The facility conducts biennial internal audits that review NPDES procedures contained in the plant manual. Ongoing reviews of plant procedures are conducted to assure that the manual remains valid, current, and complete for the facility.

### 3. Laboratories Used to Monitor Compliance

The following laboratories were used during 2013 for monitoring compliance. The laboratories are certified by appropriate agencies for the tests/analyses performed. As part of the on-going annual certification process, these laboratories take part in annual performance evaluation testing.

- a. PG&E Chemistry Laboratory, DCP, Avila Beach, California (EPA Lab # CA01036)
- b. Aquatic Bioassay Consulting Laboratories, Ventura, California (EPA Lab # CA01907)
- c. ALS Environmental (formerly Columbia Analytical Services), Kelso, Washington (EPA Lab # WA00035)
- d. TestAmerica, Inc., Earth City, Missouri (EPA Lab # MO00054)
- e. Abalone Coast Analytical, San Luis Obispo, California (EPA Lab # CA02661)
- f. Oilfield Environmental and Compliance, Santa Maria, California (EPA Lab # CA02438)
- g. E. S. Babcock & Sons, Inc., Environmental Laboratories, Riverside, California (EPA Lab # CA00102)
- h. BSK Associates, Fresno, California (EPA Lab # CA00079)

### 4. Review of Compliance Record and Corrective Actions

#### a. Circulating Water Chlorination/Bromination Monitoring

The 2013 quarterly NPDES reports discuss chlorination cycles when discharge monitoring was interrupted. These events are listed below, with brief descriptions of the cause and respective corrective action. When these monitoring interruptions occurred, engineering evaluations were performed (as approved by the CCRWQCB January 13, 1994; PG&E Letter No. DCL-94-002). Detailed descriptions of these evaluations are included in the respective quarterly reports. The evaluations concluded that discharge chlorine limits were not exceeded during these events.

Date	Chlorination Cycle Monitoring Interruptions	Cause	Corrective Action
05/02/13 to 05/09/13	Unit 2 43 Readings	Sample tubing fouled with biological growth.	Sample tubing cleaned.
12/10/13 to 12/11/13	Unit 2 4 Readings	Sample tubing union blocked with bio-fouling debris.	Sample tubing cleaned.
12/19/13	Unit 1 2 Readings	Sample piping flow to monitor blocked by debris.	Upstream sample piping back-flushed.
12/30/13	Unit 1 & 2 2 Readings	Sample piping maintenance inadvertently performed during chemical injection cycles.	Engineering evaluation only completed.

#### b. Closed Cooling Water Releases

During 2013, maintenance activities that required draining of closed cooling water systems were performed, and are summarized below. PG&E received concurrence from the CCRWQCB in response to letters dated July 19, 1995 (PG&E Letter DCL-95-156), May 23, 1996 (PG&E Letter DCL-96-522), and May 19, 1997 (PG&E Letter DCL-97-533) regarding the use of glutaraldehyde and isothiazolin to control microbiological growth and corrosion in DCP's freshwater closed cooling water systems. Any drainage from these systems is discharged at a flow-rate such that the chronic toxicity level is below the "No Observable Effect Concentration" (NOEC) at NPDES Discharge 001.



The volumes of cooling water drained in 2013 from the component cooling water (CCW), service cooling water (SCW), and intake cooling water (ICW) systems are presented below. The glutaraldehyde (Glut) and isothiazoline (Iso) concentrations presented in the table are system concentrations, not concentrations at the point of discharge to receiving water.

Date	System	Volume (gallons)	Glut (mg/l)	Iso (mg/l)	Total Suspended Solids (mg/l)	Oil & Grease (mg/l)	Reason & Comments
01/09/2013	Unit 2 ICW	33,050	< 50	5.3	< 2.0	< 1.4	Routine Maintenance
02/20/2013	Unit 2 CCW	11,000	195	0.0	n/a	n/a	Routine Maintenance
03/02/2013	Unit 2 SCW	33,220	< 50	0.4	24.7	< 1.4	Routine Maintenance
03/06/2013	Unit 1 SCW	33,360	< 50	6.2	< 2.0	< 1.4	Routine Maintenance
04/17/13	Unit 1 ICW	12	< 50	3.0	n/a	n/a	Routine Maintenance
04/17/13	Unit 2 CCW	12	97	0.0	n/a	n/a	Routine Maintenance
05/23/13	Unit 2 CCW	3,100	151	0.0	< 2.0	< 1.4	Routine Maintenance
06/11/13	Unit 2 SCW	33,310	< 50	8.0	< 2.0	< 1.4	Routine Maintenance
07/08/13	Unit 1 ICW	12	0.0	7.6	n/a	n/a	Routine Maintenance
07/08/13	Unit 2 ICW	10	0.0	6.5	n/a	n/a	Routine Maintenance
07/21/13	Unit 2 ICW	10	0.0	6.2	n/a	n/a	Routine Maintenance
08/20/13	Unit 1 SCW	33,110	0.0	8.3	< 2.0	< 1.4	Routine Maintenance
11/04/13	Unit 2 ICW	3,309	0.0	8.6	n/a	n/a	Routine Maintenance
11/05/13	Unit 1 ICW	3,326	0.0	8.4	n/a	n/a	Routine Maintenance

c. Sample Analysis Issues

- During the second quarter of 2013, an issue was identified that affected the accuracy of analysis for metals in the monthly samples from Discharge 001, and quarterly samples from the Intake. The identified issue impacts carried over into the third quarter. Compensatory actions included employing an ELAP-Certified vendor laboratory to analyze or re-analyze Intake and Discharge 001 samples for comparison of the results. The root cause of the issue was identified during method optimization that was performed with the assistance of a specialist from the instrument manufacturer. Methods and respective procedures were corrected to prevent recurrence. Vendor lab results were averaged with the Diablo Canyon laboratory analysis results for reporting during the period affected. The pertinent vendor laboratory reports were included as attachments in the appropriate quarterly reports. The analysis final values were all below the permit limits for the respective 6-month median results at Discharge 001, which are the most conservative.

d. Exceedances

- On March 22, 2013, a 10-minute injection system test (test) of sodium hypochlorite (chlorine) and sodium bromide (bromine) was run on Unit 2 during a time period in which routinely scheduled seawater conduit chemical treatments do not occur. The system test was run during unit start-up activities at the end of the 2R17 refueling outage, and immediately following return to service of circulating water pump 2-2. The activity was intended to verify acceptable residual oxidant (chlorine) concentrations at the Unit 2 discharge for conduits 2-1 and 2-2 combined outflow prior to resuming routine treatment cycles. The test injection was in addition to the routinely scheduled 6x20-minutes per unit/conduit daily treatment regime (Reference Section C.). Following a test injection, the subsequent routine treatment for the affected unit is typically skipped to ensure no more than 2-hours of conduit chemical injection is completed during a calendar day.

Following the test injection, the next routine chemical injection for Unit 2 was not skipped; which resulted in 2-hours and 10-minutes of conduit treatment for Unit 2 during the calendar day. This subsequently caused 2-hours and 10-minutes of detectable residual oxidant (chlorine) at the



Unit 2 outfall for the same calendar day. This exceeded the 2-hours per/day per/unit permit limit for 001 discharge residual chlorine. Exceedance of the detectable total residual chlorine (TRC) time-limit was discovered on March 23, 2013, and the Central Coast Regional Water Quality Control Board was subsequently notified via telephone message the same day. Exceedance of plant outfall residual chlorine concentration limits did not occur as a result of the event.

Immediate actions taken included verification the chemical injection systems was functioning normally, and exceedance of the 2-hour detectable chlorine limit for Unit 2 was not caused by system malfunction. System operability and functionality was confirmed satisfactory, and the incident cause determined to be an inadvertent system operator error. An enhanced operator guide was placed on the local control panel for the intake sodium hypochlorite and sodium bromide injection system to reduce the potential for recurrence of a similar unit conduit treatment error. Additional procedural guidance for system operations was also developed and implemented.

2. On November 29, 2013, a value of 99-ppb for Total Residual Chlorine (TRC) was discovered on the Unit 1 outfall monitor for the 00:00 (midnight) chemical treatment cycle. The value resulted in an exceedance of the 89-ppb calculated Ocean Plan limit for TRC discharge during a 20-minute cooling water conduit chlorination treatment. The event was not an exceedance of the NPDES permit limit for TRC of 200-ppb. Regional Water Quality Control Board staff (von Langen) was notified via voice-mail message on the same day, within the 24-hour reporting requirement.

An event investigation indicated cause of the high Unit 1 residual chlorine was occlusion of an intake chemical treatment system pump skid injection line. Train-B of the intake injection system is used alternately to deliver bulk chlorine and bromine chemicals to the 1-2 (Unit 1) and 2-2 (Unit 2) cooling water conduits. The occlusion, identified in the 2-2 conduit injection line, resulted in accumulation of concentrated chemical in the shared upstream piping of pump skid Train-B, and subsequent inadequate freshwater flush of the piping following the 2-2 conduit chemical treatment conducted at 21:00 on 11/28/13. The accumulated chemical was then injected into the 1-2 conduit at the start of the midnight chemical treatment for Unit 1, resulting in an initial significant concentration of residual oxidant in the seawater conduit, and subsequent TRC spike at the Unit 1 outfall. System Train-B injections were shut down until the 2-2 line was evaluated and cleared. Corrective actions included replacement of an in-line check valve found to be partially degraded, and cleaning of the chemical line terminal injection port found occluded with chemical precipitate.

e. Overflow Release

1. On August 8, 2013, it was discovered that the septic tank for plant site Building-123 was overflowing, and effluent had migrated across the adjacent roadway and down the embankment leading to the Plant Intake Cove. The flow of water was stopped when a running toilet found inside the building was subsequently shut-off. An estimate of 50-60 gallons of water may have reached the embankment leading to the Cove. The volume of water which may have migrated through the rip-rap armor placed on the embankment could not be estimated. It is likely however that all the water was completely absorbed by the dry soils and fill immediately adjacent the roadway and under the rip-rap.

Regional Water Quality Control Board staff were notified the morning the spill was discovered. Overall, less than 1,000 gallons of water may have overflowed the septic tank before the running fixture was shut-off, most being absorbed into the soils and fill directly beneath and adjacent the building. The effluent released was primarily clean fresh water, as the septic tank had been emptied two days prior to the event, and the building has limited and infrequent use. The toilet was evaluated and parts replaced, and signs have been installed in the building's bathrooms to prompt users to check all water use fixtures after actuating to help reduce the potential for inadvertent run-ons to the septic tank. No NPDES limits were exceeded due to this event.



f. Bypasses

1. On September 28, 2013, it was discovered that operation of the Unit 2 turbine building sump pump 2-2 was causing leak-off from the pump shaft casing to splash over into the clean side of the sump, releasing some wastewater overboard prior to normal routing through the oily water separator (OWS) system. This was an inadvertent partial bypass for pathway 001F. Based on operator rounds and system monitoring, it is estimated that the splash over had occurred during sump pump operations for up to two days.

The sump system pumps routinely operate for approximately 20-minutes 3-times each operating shift, and the wastewater volume introduced into the clean-to-overboard compartment of the sump was estimated at approximately 1-gpm. Therefore, the maximum volume released overboard via the partial pathway bypass was estimated at 250-gallons. Following discovery of the issue, chemistry samples were taken, and pump 2-2 was shut-down pending troubleshooting and repair. Sample analysis determined the effluent TSS was 38.8 mg/l and O&G was negative. Regional Water Quality Control Board staff were notified of the event the same day it was discovered. Corrective actions included repair of a degraded pump discharge check valve that was contributing to a higher than normal leak-off rate from the pump shaft casing, and adjustment of the shaft casing pipe so that leak-off ports would not be directed toward the concrete partition which separates the clean side compartment of the sump from the dirty compartment. No NPDES limits were exceeded for pathway 001F due to this event.

B. Monitoring of Receiving Water

1. Ecological Studies at Diablo Canyon

Marine ecological monitoring was continued during 2013 under the Receiving Water Monitoring Program (RWMP) as requested in a letter from the Central Coast Regional Water Quality Control Board (CCRWQCB) dated December 9, 1998, and as detailed in a letter from PG&E dated January 8, 1999 (DCL-99-503). This program includes tasks from the Ecological Monitoring Program (EMP) with additional stations and increased sampling frequencies. This program replaces the EMP and the Thermal Effects Monitoring Program (TEMP). Several one-year-only tasks outlined in the above letters were completed in 1999 and were not requested to be performed in 2013. Results of 2012 RWMP data were submitted to the CCRWQCB on April 27, 2013. A table in Appendix 4 summarizes requirements and completed monitoring tasks for 2013.

2. In Situ Bioassay

Results of the Mussel Watch Program are reported to the CCRWQCB directly by the California Department of Fish and Game (CDF&G) in the agency's periodic report for this program.

C. Sodium Bromide Treatment Program

DCPP continued an integrated sodium bromide and "foul release coating" strategy to control macrofouling in the Circulating Water System (CWS). Both circulating water conduits of each Unit can be chemically treated simultaneously. The treatment program consists of six 20-minute injections (at 4-hour intervals) of a blend of generic sodium bromide and sodium hypochlorite into the plant seawater intake conduits. Each injection attempts to achieve a target concentration of 200 parts per billion (ppb) Total Residual Oxidant (TRO) at the inlet waterbox of the main steam condensers. Discharge TRO, measured at the plant outfall, remained below NPDES limitations with except of a single equipment related incident that occurred in November (Reference Section A.4.d. exceedances Item 2). Typically, discharge TRO values were between 20 ppb and 50 ppb. In conjunction with the chemical treatment, untreated portions of the cooling water system were previously painted with a non-toxic "foul release coating" to reduce or prevent attachment of fouling organisms.

Both conduits of Unit 1 were treated with simultaneous injections of sodium bromide and sodium hypochlorite six times a day throughout the first three quarters of 2013 with brief interruptions in January, February, March, April, June, and September for maintenance activities. The simultaneous treatment continued during the fourth quarter of 2013 with an interruption at the end of October for a scheduled seawater tunnel cleaning curtailment, and one additional brief interruption in December for scheduled maintenance activities. In addition, injections to the 1-2 conduit were secured in late November and early December due to operational concerns with the intake chemical system equipment (Reference Section A.4.d. exceedences Item 2).

Both conduits of Unit 2 were treated with simultaneous injections of sodium bromide and sodium hypochlorite six times a day through most of January with one brief interruption for maintenance activities. On January 22, 2013 sodium bromide was terminated in preparation for the 2R17 refueling outage, and at the end of January the remaining Unit 2 sodium hypochlorite injections were terminated. Simultaneous injections of sodium hypochlorite and sodium bromide were restored as each Unit 2 circulating water pump was restored to service near the end of 2R17 (after mid-March). There were brief interruptions in treatment near the end of March, June, July, September, and October for maintenance activities. In addition, injections to the 2-2 conduit were secured late November and early December due to operational concerns with the intake chemical system equipment (Reference Section A.4.d. exceedences Item 2).

#### D. Errata

Two reporting errors have been identified in the electronic 4<sup>th</sup> quarter 2013 discharge self-monitoring report (eSMR) that was submitted via CIWQS. The units for analysis results of Ammonia, Total (as N) at locations M-001 and M-INF (only) were incorrectly reported as µg/L. The correct units for both these results are mg/L.



# Annual Discharge Monitoring Report

## APPENDIX 1

### DIABLO CANYON POWER PLANT

NPDES DISCHARGE POINTS	
DISCHARGE NUMBER	DESCRIPTION
001	Once-Through Cooling Water
001 A	Firewater Systems
001 B	Auxiliary Salt Water Cooling System
001 C	Discharge Deleted
001 D	Liquid Radioactive Waste Treatment System
001 E	Service Cooling Water System
001 F	Turbine Building Sump
001 G	Make-Up Water System Waste Effluent
001 H	Condensate Demineralizer Regenerant
001 I	Seawater Evaporator Blowdown
001 J	Condensate Pumps Discharge Header Overboard
001 K	Condenser Tube Sheet Leak Detection Dump Tank Overboard
001 L	Steam Generator Blowdown
001 M	Wastewater Holding and Treatment System
001 N	Sanitary Wastewater Treatment System
001 P	Seawater Reverse Osmosis System Blowdown
002	Intake Structure Building Floor Drains
003	Intake Screen Wash
004	Bio Lab and Storm Water Runoff
005, 008, 009, 013, 014, 015	Yard Storm Drains
006, 007, 010, 011, 012	Storm Water Runoff
016	Bio Lab Seawater Supply Pump Valve Drain
017	Seawater Reverse Osmosis System Blowdown Drain

# **Annual Discharge Monitoring Report**

## **APPENDIX 2**

### **TABULAR SUMMARIES OF INFLUENT AND EFFLUENT MONITORING**

**2013 Annual Summary Report on Discharge Monitoring  
at the  
Diablo Canyon Power Plant**

**DISCHARGE 001**

Month	TEMPERATURE (DEG F)						DELTA T		FLOW (MGD)		
	INFLUENT			EFFLUENT							
	high	low	avg	high	low	avg	high	avg	high	low	avg
JAN	55.7	51.8	53.5	73.9	70.1	71.8	18.4	18.3	2486	2486	2486
FEB	53.4	50.6	51.9	71.8	67.0	70.1	18.6	18.1	2486	1239	1347
MAR	54.0	50.1	51.4	72.4	61.4	68.2	18.6	16.8	2486	1239	1745
APR	54.9	48.8	51.0	75.1	67.0	69.3	18.4	18.3	2486	2486	2486
MAY	56.3	49.1	51.6	74.6	67.5	69.9	18.5	18.3	2486	2486	2486
JUN	56.2	49.2	52.0	75.1	61.1	69.5	18.9	17.4	2486	1896	2438
JUL	56.3	51.7	53.9	74.7	62.5	70.5	18.7	16.6	2486	1882	2440
AUG	55.8	53.1	54.2	74.7	71.7	72.8	19.0	18.6	2486	2486	2486
SEP	56.4	51.9	54.1	76.0	70.9	73.0	19.6	18.9	2486	2486	2486
OCT	57.8	53.3	56.3	77.0	72.5	75.5	19.5	19.2	2486	1874	2394
NOV	57.9	54.2	56.2	76.5	72.8	74.8	18.8	18.6	2486	1891	2446
DEC	58.4	53.6	55.4	77.2	72.3	74.3	19.3	18.8	2486	2486	2486
limit:	-	-	-	-	-	-	22	-	2760	-	-

The Influent and Effluent "high" and "low" temperature values correspond to the highest and lowest daily average value for that month. The Influent high and low temperature does not necessarily correspond to the same day as the Effluent high and low temperature for that month. The "avg" temperature for Influent and Effluent is the average for the entire month. The Monthly Delta T "high" is the highest Delta T for a day of the month based on daily average Influent and Effluent temperature values. The "avg" temperature is calculated from Influent and Effluent monthly avg values.

**DISCHARGE 001**

Month	TOTAL RESIDUAL CHLORINE (daily max. ug/l)			TOTAL CHLORINE USED (lbs/day)		
	high	low	avg	high	low	avg
JAN	66	42	49	518	288	464
FEB	87	32	56	230	132	187
MAR	79	19	45	475	163	320
APR	50	<10	28	547	432	516
MAY	57	<10	35	648	418	569
JUN	41	14	28	576	197	464
JUL	43	<10	14	634	475	608
AUG	45	<10	22	720	634	689
SEP	45	16	29	763	634	707
OCT	29	<10	15	662	250	581
NOV	99	<10	24	706	504	645
DEC	50	<10	22	576	448	549

Note: The residual chlorine limits in Permit CA0003751, Order 90-09, is an instantaneous max of 200 ug/l, and includes a time-based limit (per the Ocean Plan) which depends on the length of the respective chlorination cycle.



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**DISCHARGE 001**

**METALS (monthly avg. ug/l)**

Month	CHROMIUM		COPPER		NICKEL		*ZINC	
	Influent	Effluent	Influent	Effluent	Influent	Effluent	Influent	Effluent
JAN	DNQ(7)	DNQ(7)	DNQ(6)	DNQ(6)	DNQ(9)	DNQ(9)	DNQ(7)	ND(5)
FEB	11	10	ND(5)	ND(5)	DNQ(9)	DNQ(8)	ND(5)	ND(5)
MAR	17	14	DNQ(7)	DNQ(6)	DNQ(8)	DNQ(8)	ND(5)	ND(5)
APR	<10	<10	<10	<10	<10	4	<10	<10
MAY	<10	<10	<10	<10	<10	<10	<10	<10
JUN	ND(5)	ND(5)	ND(5)	ND(5)	<10	DNQ(5)	4.9	36
JUL	ND(5)	ND(5)	DNQ(6)	DNQ(5)	10	DNQ(5)	ND(5)	DNQ(5)
AUG	DNQ(5)	ND(5)	DNQ(4)	DNQ(5)	<10	DNQ(5)	DNQ(5)	DNQ(5)
SEP	ND(5)	DNQ(5)	ND(5)	ND(5)	DNQ(5)	DNQ(5)	DNQ(5)	ND(5)
OCT	ND(5)	ND(5)	DNQ(9)	DNQ(9)	ND(5)	ND(5)	ND(5)	ND(5)
NOV	ND(5)	ND(5)	DNQ(6)	DNQ(5)	ND(5)	ND(5)	ND(5)	ND(5)
DEC	ND(5)	ND(5)	DNQ(7)	DNQ(7)	ND(5)	ND(5)	ND(5)	ND(5)

6-month median limit: 10 - 10 - 30 - 70

Note: Influent results presented only for comparison to effluent. Influent Cr, Cu, Ni, are analyzed monthly, but are only required to be reported quarterly by permit. Influent zinc is analyzed monthly and reported quarterly, but only required annually by permit.

**DISCHARGE 001  
VARIOUS ANNUAL ANALYSES  
(ug/l)**

Parameter	Influent	Effluent	6-Mo. Med.
			Effluent Limit
Arsenic	1.29	1.31	30
Cadmium	0.033	0.032	10
Cyanide	ND(3)	ND(3)	30
Lead	DNQ(0.010)	ND(0.009)	10
Mercury	DNQ(0.00027)	DNQ(0.00023)	0.2
Silver	ND(0.004)	ND(0.004)	2.9
Titanium	ND(0.4)	ND(0.4)	none
*Phenolic Compounds (non-chlorinated)	ND(3.031)	ND(3.031)	150
**Phenolic Compounds (chlorinated)	ND(0.567)	ND(0.567)	10
***PCB's	ND(0.0658)	ND(0.0658)	none

\* Results for analysis of 8 target compounds. The sum of the 8 detection limits is 3.031.

\*\* Results for analysis of 6 target compounds. The sum of the 6 detection limits is 0.567.

\*\*\* Detection limits shown are the sum of individual detection limits for 7 target compounds.

**DISCHARGE 001  
AMMONIA (as N) (ug/l)**

Month	Influent	Effluent
JAN	DNQ(77)	DNQ(62)
FEB		
MAR		
APR	DNQ(91)	DNQ(95)
MAY		
JUN		
JUL	260	240
AUG		
SEP		
OCT	250	320
NOV		
DEC		

6-month median limit: 3,060

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**MONTHLY pH (averages)**

Discharge:	001		002	003	004	001P
Month	Influent	Effluent				
JAN	7.8	7.9	7.9	7.7	7.7	7.7
FEB	7.9	7.8	8.1	7.9	8.4	7.6
MAR	7.7	7.7	7.8	7.8	7.7	7.5
APR	8.1	8.1	7.8	8.0	8.2	7.8
MAY	7.7	7.7	7.9	7.9	7.9	7.6
JUN	7.8	7.8	7.7	8.0	7.6	7.5
JUL	8.0	7.8	7.9	7.8	7.7	7.8
AUG	7.8	7.8	7.8	7.8	7.8	7.6
SEP	7.9	7.9	7.9	7.8	7.9	7.6
OCT	7.8	7.8	7.9	7.9	7.8	7.6
NOV	8.0	7.9	8.1	8.0	8.1	7.7
DEC	8.0	8.0	8.1	8.1	8.1	7.7

**DISCHARGE 001F**

Month	GREASE & OIL (mg/l)		SUSPENDED SOLIDS (mg/l)	
	high	avg	high	avg
JAN	ND(1.4)	ND(1.4)	DNQ(2)	DNQ(2)
FEB	ND(1.4)	ND(1.4)	DNQ(2)	DNQ(2)
MAR	ND(1.4)	ND(1.4)	DNQ(2)	DNQ(2)
APR	ND(1.4)	ND(1.4)	DNQ(2)	DNQ(2)
MAY	ND(1.4)	ND(1.4)	DNQ(2)	DNQ(2)
JUN	ND(1.4)	ND(1.4)	<5	<5
JUL	ND(1.4)	ND(1.4)	DNQ(2)	DNQ(2)
AUG	ND(1.4)	ND(1.4)	DNQ(3)	DNQ(3)
SEP	<5.0	<5.0	10	10
OCT	DNQ(2.1)	DNQ(2.1)	<5	<5
NOV	ND(1.4)	ND(1.4)	ND(2)	ND(2)
DEC	ND(1.4)	ND(1.4)	5	5
limit:	20	15	100	30

Note: "high" limits based upon Daily Maximum limits. "avg" limits based upon Monthly Average limits.

**DISCHARGE 001N  
(Monthly Summary of Weekly Data)**

Month	GREASE & OIL (mg/l)			SUSPENDED SOLIDS (mg/l)			SETTLEABLE SOLIDS (ml/l)		
	high	low	avg	high	low	avg	high	low	avg
JAN	5.0	ND(1.4)	<5.0	15	5	9	ND(0.1)	ND(0.1)	ND(0.1)
FEB	5.9	DNQ(1.8)	<5.0	24	11	17	ND(0.1)	ND(0.1)	ND(0.1)
MAR	<5.0	ND(1.4)	<5.0	16	9	13	ND(0.1)	ND(0.1)	ND(0.1)
APR	<5.0	ND(1.4)	<5.0	15	ND(3)	8	ND(0.1)	ND(0.1)	ND(0.1)
MAY	DNQ(4.2)	ND(1.4)	DNQ(2.5)	17	4	10	ND(0.1)	ND(0.1)	ND(0.1)
JUN	DNQ(3.0)	ND(1.4)	DNQ(1.5)	22	5	14	ND(0.1)	ND(0.1)	ND(0.1)
JUL	DNQ(1.5)	ND(1.4)	DNQ(1.4)	10	6	8	ND(0.1)	ND(0.1)	ND(0.1)
AUG	ND(1.4)	ND(1.4)	ND(1.4)	21	6	12	ND(0.1)	ND(0.1)	ND(0.1)
SEP	DNQ(1.5)	ND(1.4)	DNQ(1.4)	26	6	16	ND(0.1)	ND(0.1)	ND(0.1)
OCT	DNQ(1.4)	ND(1.4)	DNQ(1.4)	18	4	9	DNQ(0.1)	DNQ(0.1)	DNQ(0.1)
NOV	18.7	ND(1.4)	<5.0	16	6	11	DNQ(0.1)	DNQ(0.1)	DNQ(0.1)
DEC	DNQ(1.5)	ND(0.72)	DNQ(0.72)	4	ND(3)	3	DNQ(0.1)	DNQ(0.1)	DNQ(0.1)
limit:	20	-	15	-	-	60	3.0	-	1.0

Note: "high" limits based upon Daily Maximum limits. "avg" limits based upon Monthly Average limits.



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**DISCHARGE 001D, H, L, F, METALS (avg. ug/l)**

Month	001D				001 H				001L				001F			
	Ag	Cd	Cr	Cu	Ag	Cd	Cr	Cu	Ag	Cd	Cr	Cu	Ag	Cd	Cr	Cu
JAN	ND(5)	ND(5)	ND(5)	12	ND(5)	ND(5)	46	44	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	DNQ(9)	DNQ(9)
FEB																
MAR																
APR	ND(5)	ND(5)	ND(5)	DNQ(6)	ND(5)	ND(5)	15	36	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	DNQ(5)	12
MAY																
JUN																
JUL	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	46	28	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	12
AUG																
SEP																
OCT	ND(5)	ND(5)	ND(5)	DNQ(6)	ND(5)	ND(5)	16	26	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	13
NOV																
DEC																

limit: none

Note: 001D, 001H and 001L analyses performed on quarterly composites.  
001F analyses performed quarterly on a composite of weekly samples.

**DISCHARGE 001D, H, L, F, METALS (avg. ug/l)**

Month	001D				001 H				001L				001F			
	Hg	Ni	Pb	Zn	Hg	Ni	Pb	Zn	Hg	Ni	Pb	Zn	Hg	Ni	Pb	Zn
JAN	DNQ(0.079)	DNQ(7)	ND(5)	170	DNQ(0.13)	28	DNQ(5)	17	DNQ(0.11)	ND(5)	ND(5)	ND(5)	DNQ(0.12)	12	ND(5)	31
FEB																
MAR																
APR	ND(0.050)	ND(5)	ND(5)	90	ND(0.050)	12	DNQ(5)	DNQ(6)	ND(0.050)	ND(5)	ND(5)	ND(5)	ND(0.050)	11	ND(5)	29
MAY																
JUN																
JUL	DNQ(0.094)	ND(5)	ND(5)	33	ND(0.050)	21	<10	<10	ND(0.050)	ND(5)	ND(5)	ND(5)	ND(0.050)	ND(5)	ND(5)	29
AUG																
SEP																
OCT	ND(0.050)	ND(5)	ND(5)	75	ND(0.050)	18	12	DNQ(7)	ND(0.050)	ND(5)	ND(5)	ND(5)	ND(0.050)	DNQ(7)	13	15
NOV																
DEC																

limit: none

Note: 001D, 001H and 001L analyses performed on quarterly composites.  
001F analyses performed quarterly on a composite of weekly samples.

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**MONTHLY TOTAL SUSPENDED SOLIDS**  
Averages (mg/l)

Month	001D*	001G	001H	001I	001J	001K	001L	001M	001P	002	003
JAN	<5	ND(2)	ND(2)				ND(2)		ND(2)	DNQ(3)	DNQ(3)
FEB	<5	DNQ(3)	DNQ(3)		ND(2)		ND(2)		DNQ(2)	7	5
MAR	<5	DNQ(2)	DNQ(2)		ND(2)		ND(2)		7	DNQ(3)	6
APR	<5	ND(2)	ND(2)				ND(2)		18	DNQ(2)	5
MAY	<5	ND(2)	ND(2)				ND(2)		DNQ(2)	DNQ(3)	<5
JUN	<5	ND(2)	ND(2)				ND(2)	DNQ(3)	<5	DNQ(2)	DNQ(3)
JUL	<5	ND(2)	ND(2)				ND(2)		DNQ(3)	DNQ(4)	ND(2)
AUG	<5	ND(2)	ND(2)				ND(2)		<5	ND(2)	DNQ(2)
SEP	<5	ND(2)	ND(2)				ND(2)		<5	DNQ(2)	6
OCT	<5	ND(2)	ND(2)				ND(2)		DNQ(2)	DNQ(2)	17
NOV	<5	ND(2)	DNQ(2)				ND(2)		<5	<5	DNQ(3)
DEC	<5	ND(2)	ND(2)				ND(2)	ND(2)	ND(2)	8	<5
Limit:	30	30	30	30	30	30	30	30	30	30	-

\* Discharges from 001D are batched. Monthly averages are flow weighted.

Note: No discharges occurred from 001I and 001K during 2013.

Blank spots for other discharge points indicate that no discharge occurred during that particular month.

**GREASE & OIL**  
Averages by Month (mg/l)

Month	001D*	001G	001H	001I	001J	001K	001L	001M	001P	002	003	004
JAN	<5.0	ND(1.4)	ND(1.4)				ND(1.4)		ND(1.4)	ND(1.4)	ND(1.4)	ND(1.4)
FEB	DNQ(2.9)				ND(1.4)		ND(1.4)					
MAR	DNQ(3.9)											
APR	5.9	ND(1.4)	ND(1.4)				ND(1.4)		ND(1.4)	ND(1.4)	ND(1.4)	ND(1.4)
MAY	<5.0							ND(1.4)				
JUN	DNQ(1.7)							ND(1.4)				
JUL	<5.0	ND(1.4)	ND(1.4)				ND(1.4)		ND(1.4)	ND(1.4)	ND(1.4)	ND(1.4)
AUG	<5.0											
SEP	DNQ(4.2)											
OCT	<5.0	ND(1.4)	ND(1.4)				ND(1.4)		ND(1.4)	ND(1.4)	ND(1.4)	ND(1.4)
NOV	DNQ(4.7)											
DEC	ND(1.4)							ND(1.4)				
Limit:	15	15	15	15	15	15	15	15	15	15	15	15

\* Discharges from 001D are batched. Averages are flow weighted and calculated and reported monthly, though only required quarterly.

Note: No discharges occurred from 001I and 001K during 2013.



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**QUARTERLY ACUTE AND CHRONIC TOXICITY TESTING  
(toxicity units, tu<sub>a</sub> and tu<sub>c</sub>)**

Month	ACUTE		*CHRONIC
	Test Result	6-Month Median	Test Result
JAN	0.00	0.00	1.00
FEB			
MAR			
APR	0.00	0.00	1.00
MAY			
JUN			
JUL	0.00	0.00	1.00
AUG			
SEP			
OCT			
NOV			
DEC	0.00	0.00	1.00
6-month median limit:			5.1

\* This parameter is monitored for the State Ocean Plan instead of the NPDES Permit. A value of 1.0 indicates no chronic toxicity.

**DISCHARGE 001N  
ANNUAL ANALYSES**

Sludge Parameter	Result	Limit
Percent Moisture	99%	None
Total Kjeldahl Nitrogen	37000 mg/kg	None
Ammonia (N)	6000 mg/kg	None
Nitrate (N)	ND(180)	None
Total Phosphorous	25000 mg/kg	None
pH	7.3	None
Oil and Grease	ND(0.10) %	None
Boron	1500 mg/kg	None
Cadmium	1.0 mg/kg	10 X STLC*
Copper	350 mg/kg	10 X STLC
Chromium	10 mg/kg	10 X STLC
Lead	8.9 mg/kg	10 X STLC
Nickel	11 mg/kg	10 X STLC
Mercury	1.0 mg/kg	10 X STLC
Zinc	760 mg/kg	10 X STLC
Volume	75.41 tons	None

Note: Annual samples were collected in October.

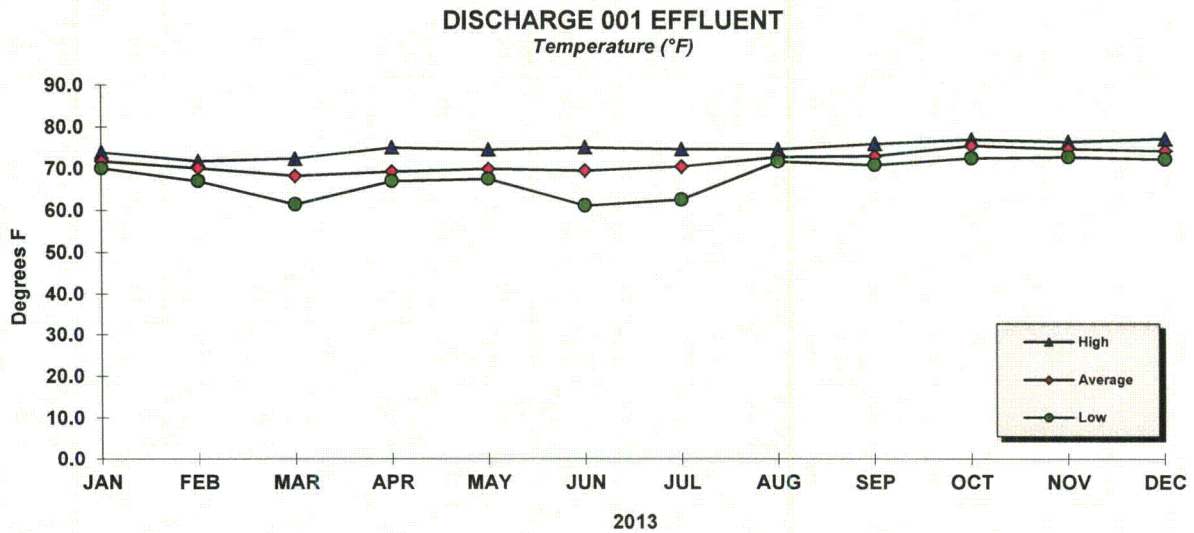
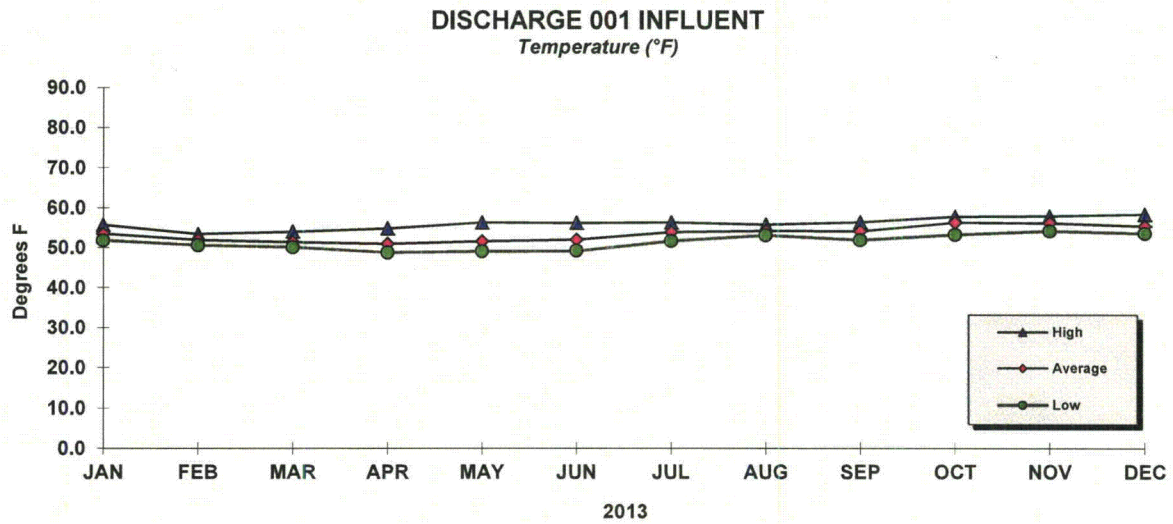
\* STLC = Soluble Threshold Limit Concentration

## **Annual Discharge Monitoring Report**

### **APPENDIX 3**

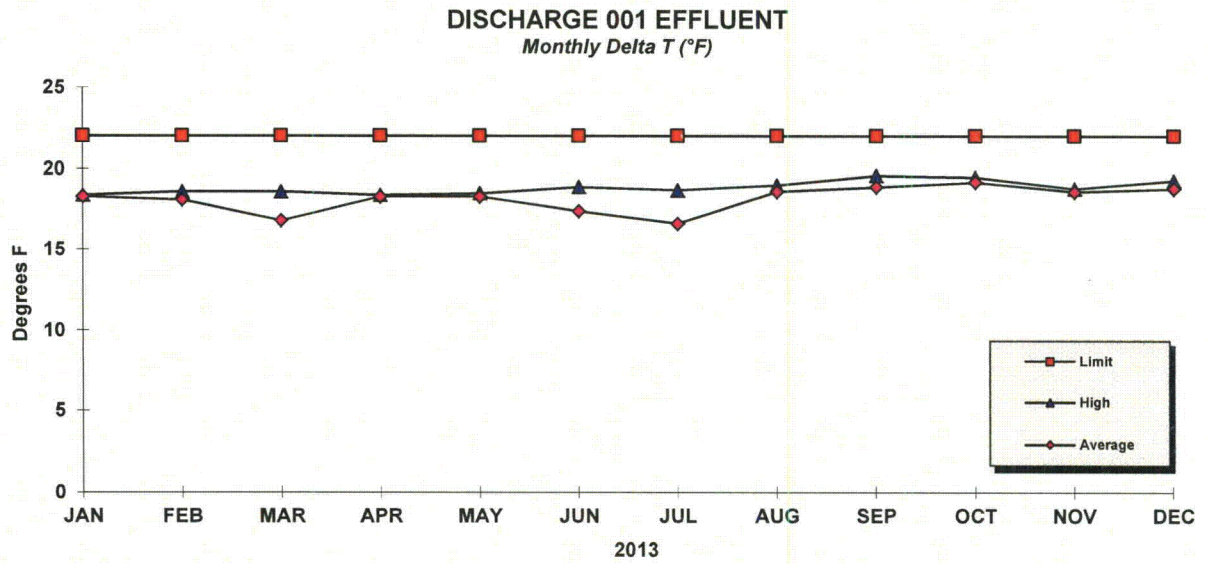
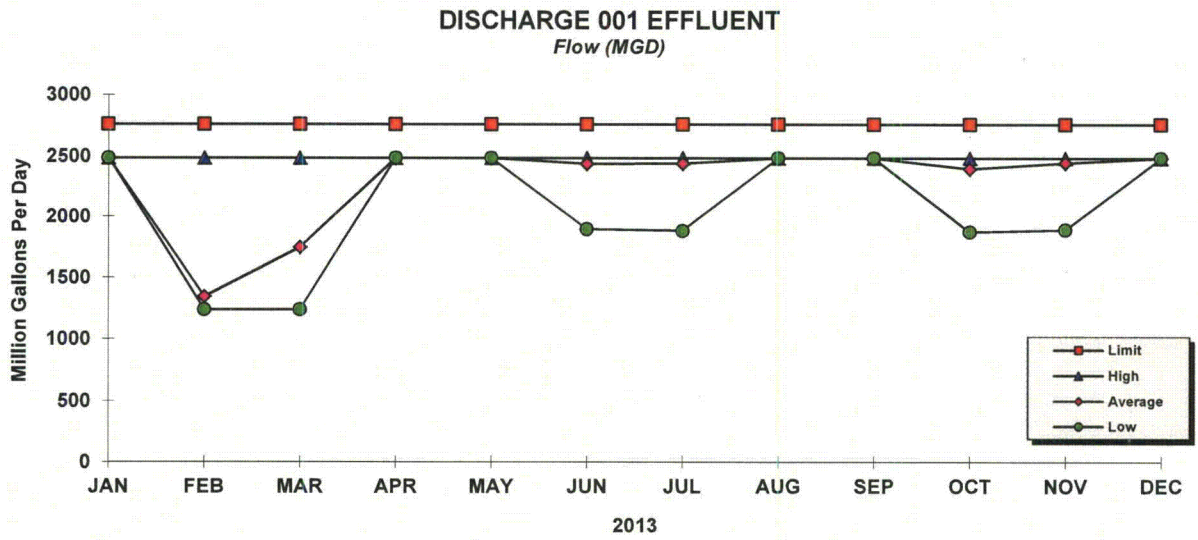
#### **GRAPHICAL SUMMARIES OF INFLUENT AND EFFLUENT MONITORING**

**2013 Annual Summary Report on Discharge Monitoring  
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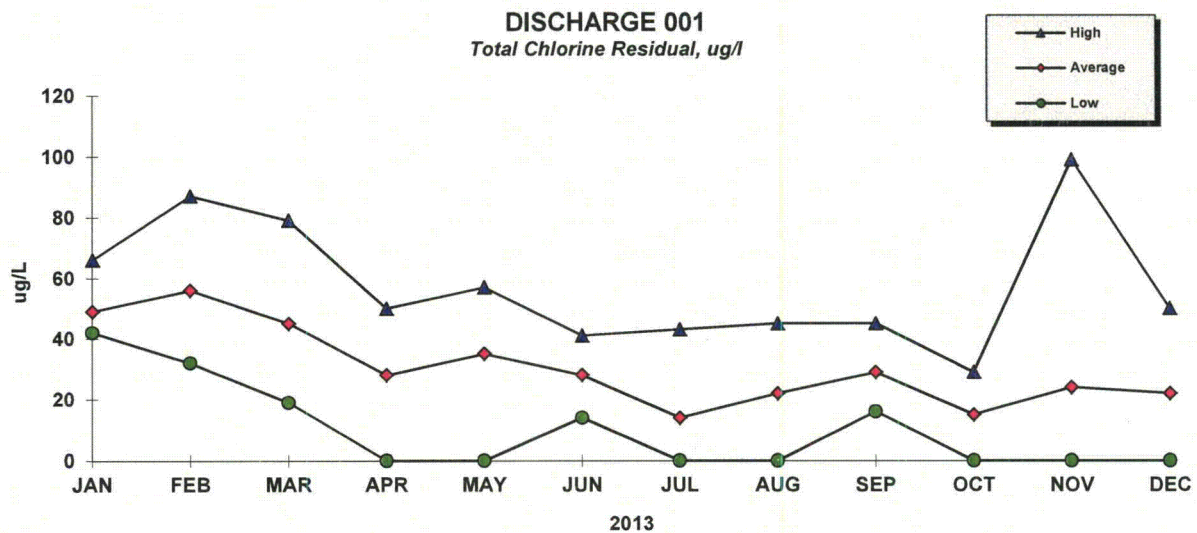




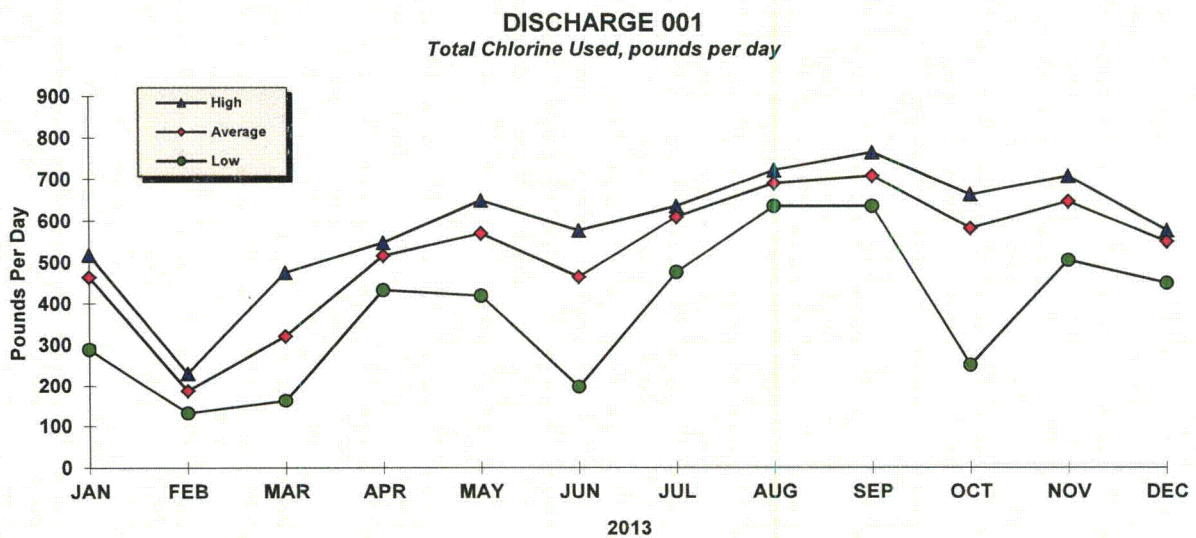
**2013 Annual Summary Report on Discharge Monitoring  
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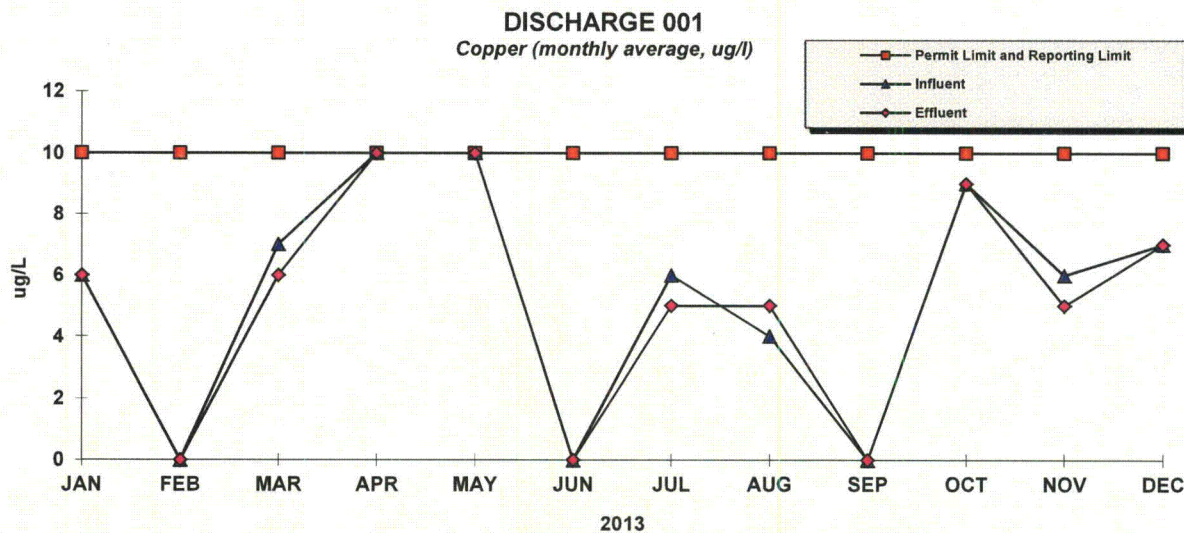
# **2013 Annual Summary Report on Discharge Monitoring at the Diablo Canyon Power Plant**



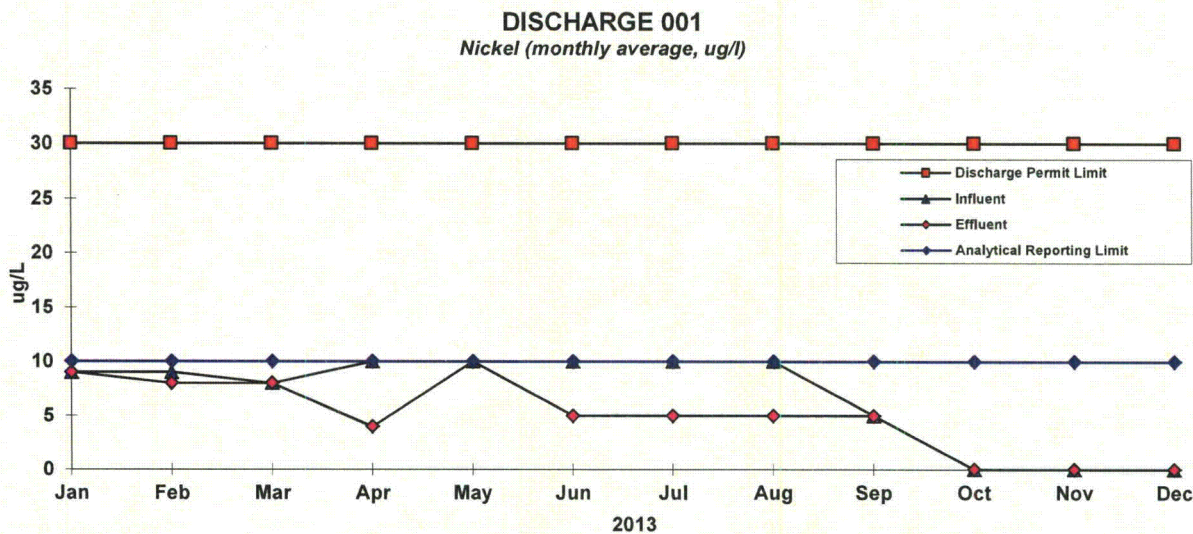
Note: Values plotted at zero were below the reporting limit.



# **2013 Annual Summary Report on Discharge Monitoring at the Diablo Canyon Power Plant**



Note: The analyte was not detected at or above the detection limit for values plotted at zero.  
The 6-month median limit (the most conservative limit) is plotted on this chart (this is also the analytical reporting limit).  
The daily maximum limit for Copper is 50 ug/l.

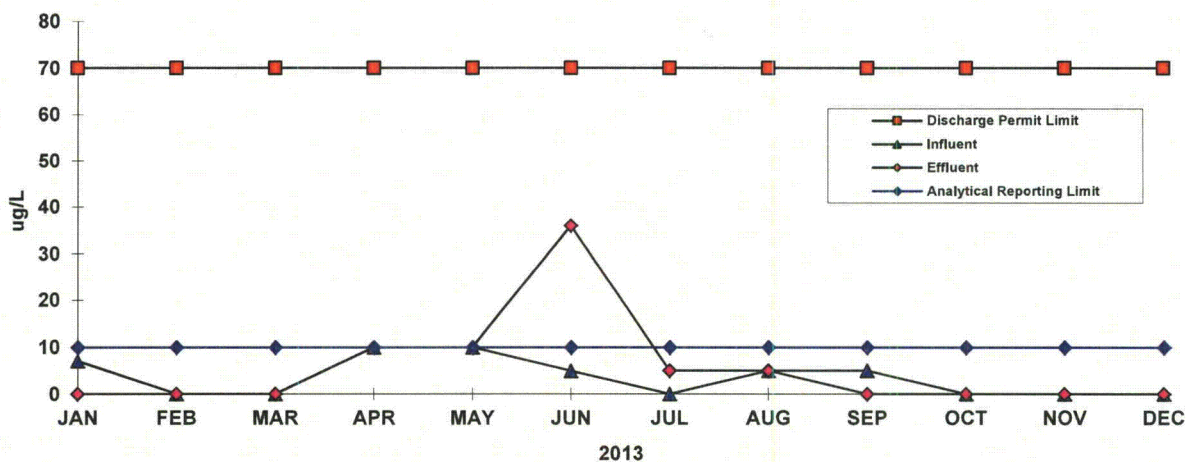


Note: The analyte was not detected at or above the detection limit for values plotted at zero.  
The 6-month median limit (the most conservative limit) is plotted on this chart.  
The daily maximum limit for Nickel is 100 ug/l.



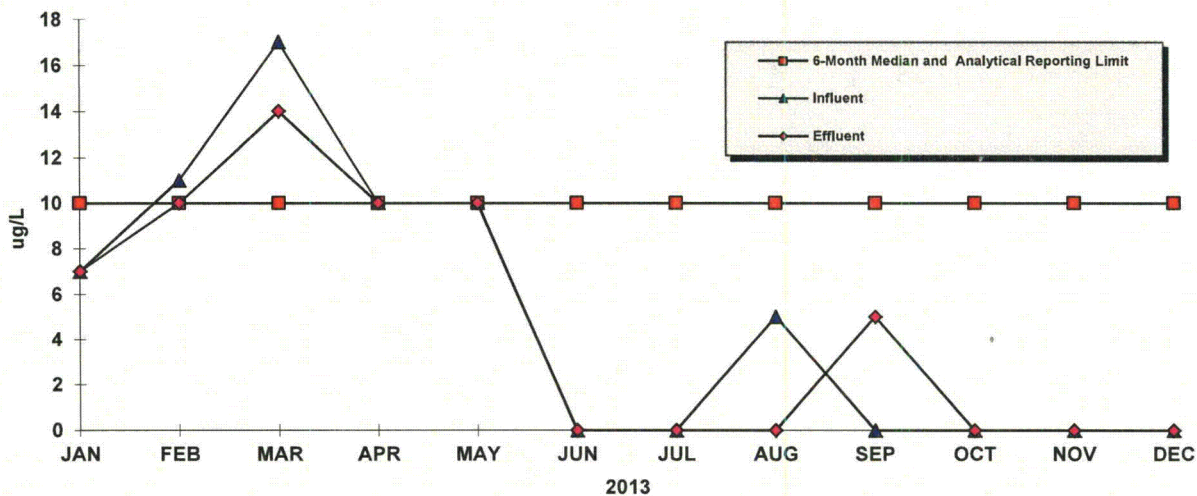
# **2013 Annual Summary Report on Discharge Monitoring at the Diablo Canyon Power Plant**

**DISCHARGE 001**  
*Zinc (monthly average, ug/l)*



Note: The analyte was not detected at or above the detection limit for values plotted at zero.

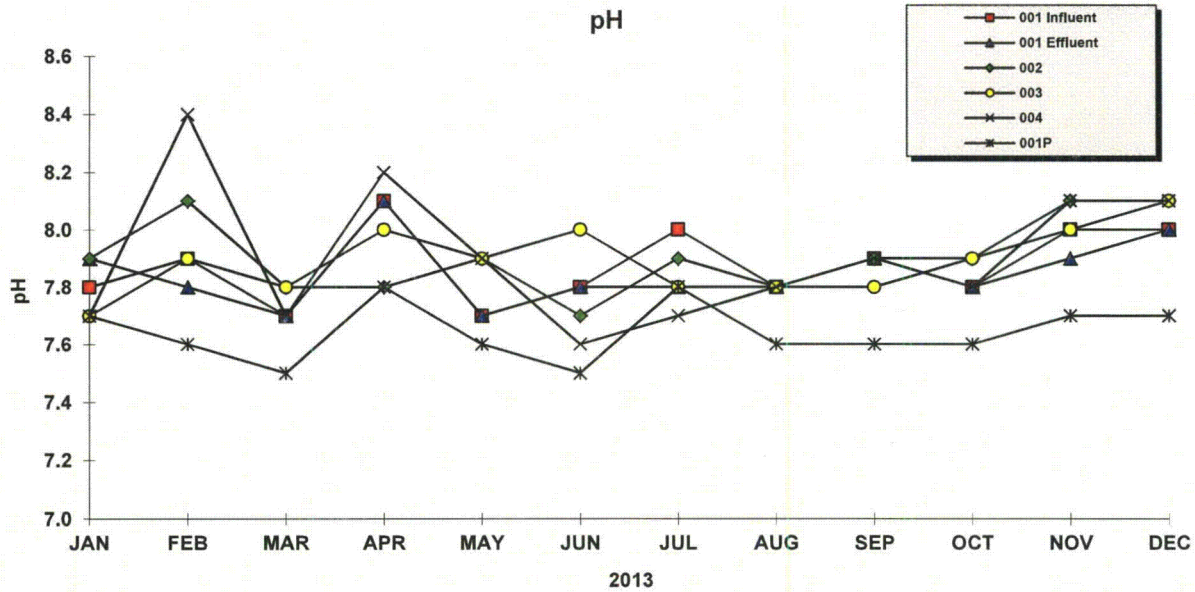
**DISCHARGE 001**  
*Chromium (monthly average, ug/l)*



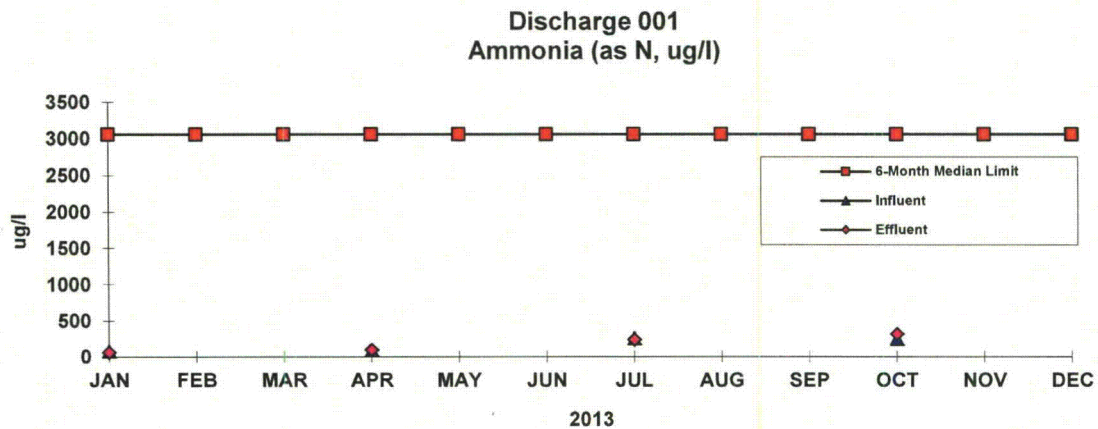
Note: The analyte was not detected at or above the detection limit for values plotted at zero.

The 6-month median limit and the analytical reporting limit are the same (10 ug/l) and are plotted on this chart. The daily maximum limit for chromium is 40 ug/l. February and March chromium results were affected by an analytical method issue described in Summary of Monitoring Program section A.4.c.1. These results did not cause exceedances of the 6-month median limit or the daily maximum limit.

# **2013 Annual Summary Report on Discharge Monitoring at the Diablo Canyon Power Plant**

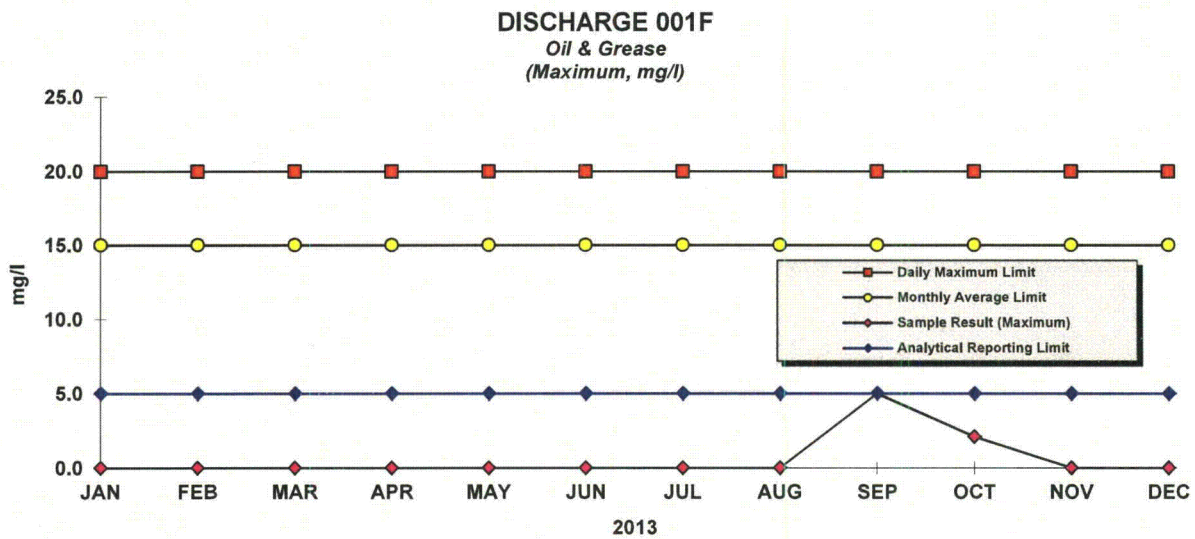


Note: Several data points on this chart overlap.

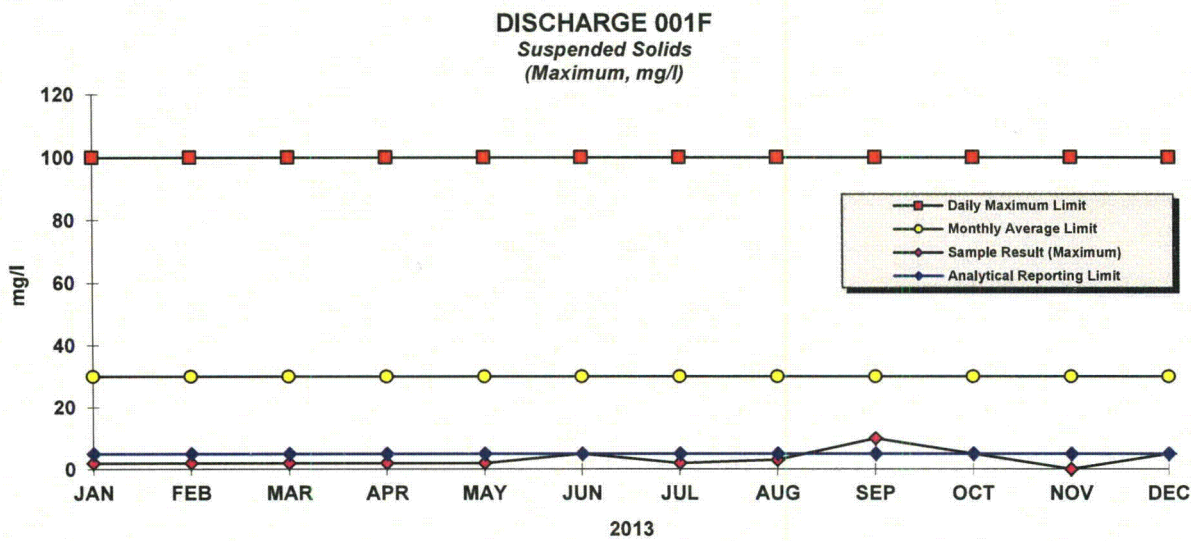


Note: The analyte was not detected at or above the detection limit for values plotted at zero.  
Influent and Effluent values overlap at three points on this plot.

# **2013 Annual Summary Report on Discharge Monitoring at the Diablo Canyon Power Plant**



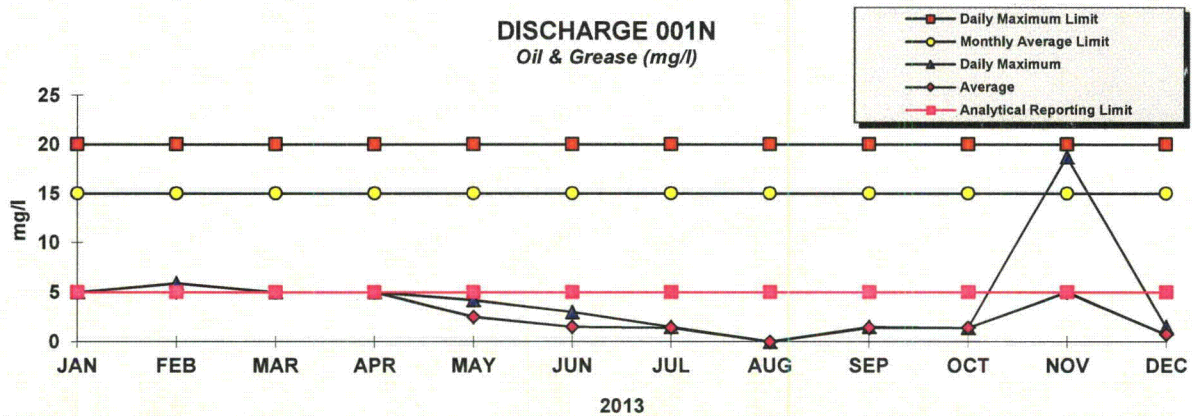
Note: Values plotted at zero were below the detection limit.



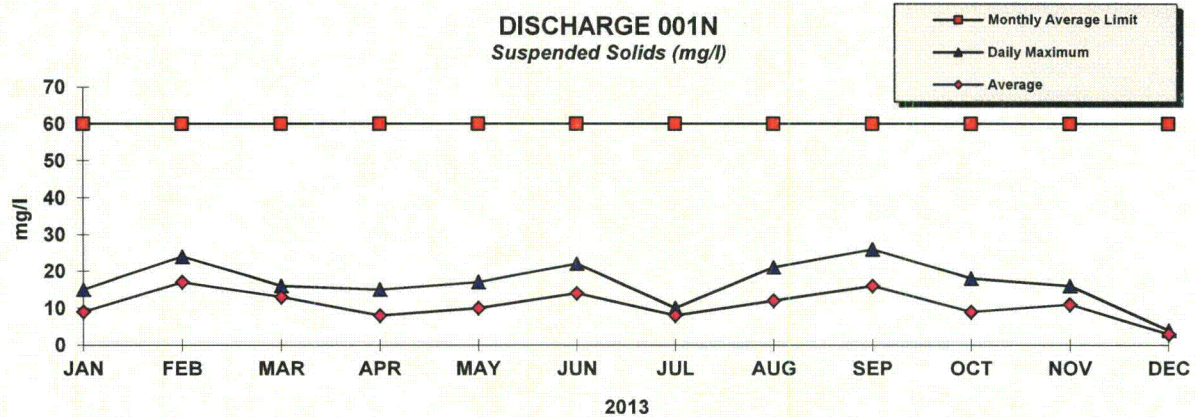
Note: Maximum values are plotted.



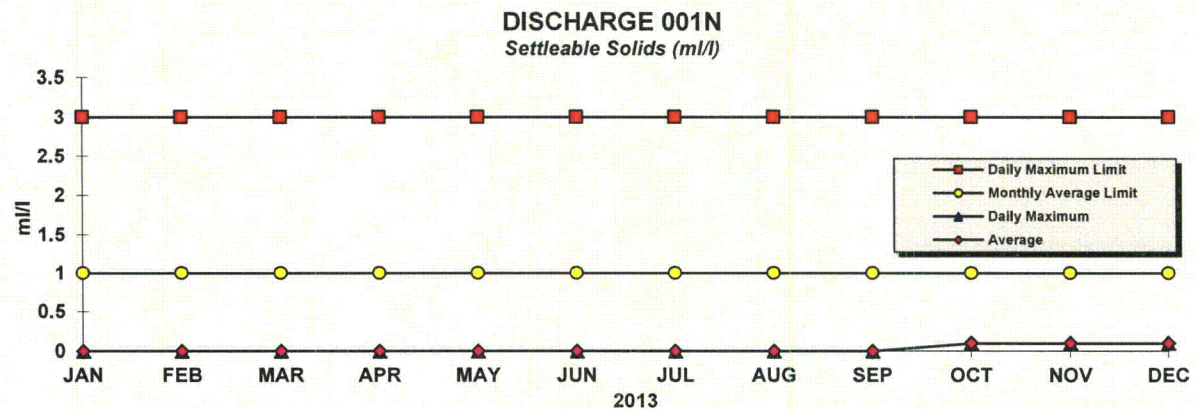
# **2013 Annual Summary Report on Discharge Monitoring at the Diablo Canyon Power Plant**



Note: Daily maximum and monthly average values overlap at eight points on this plot.

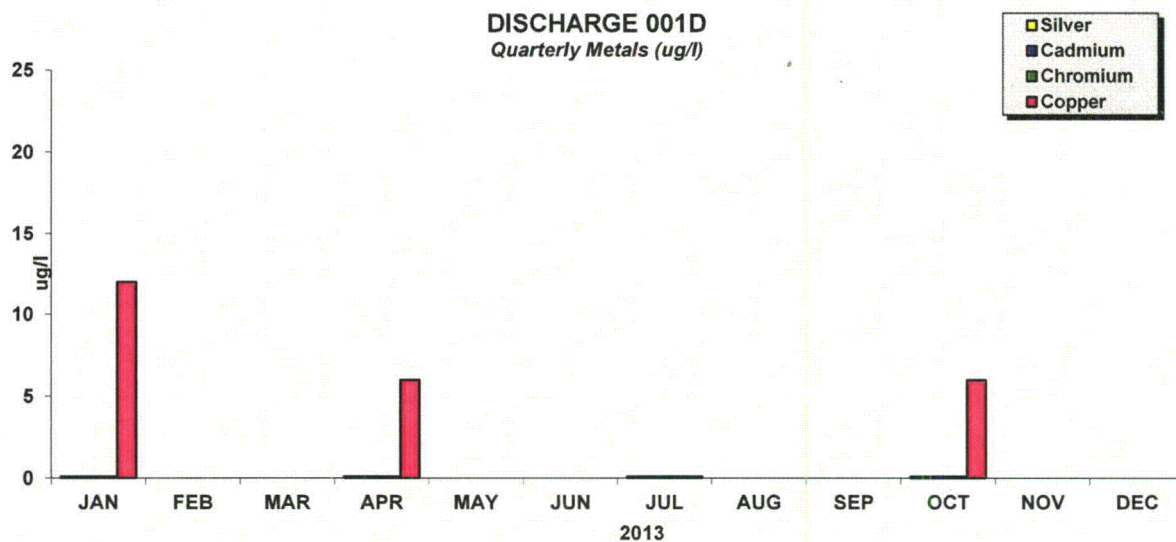


Note: There is no limit for daily maximum values. The average values are below the monthly average limit.

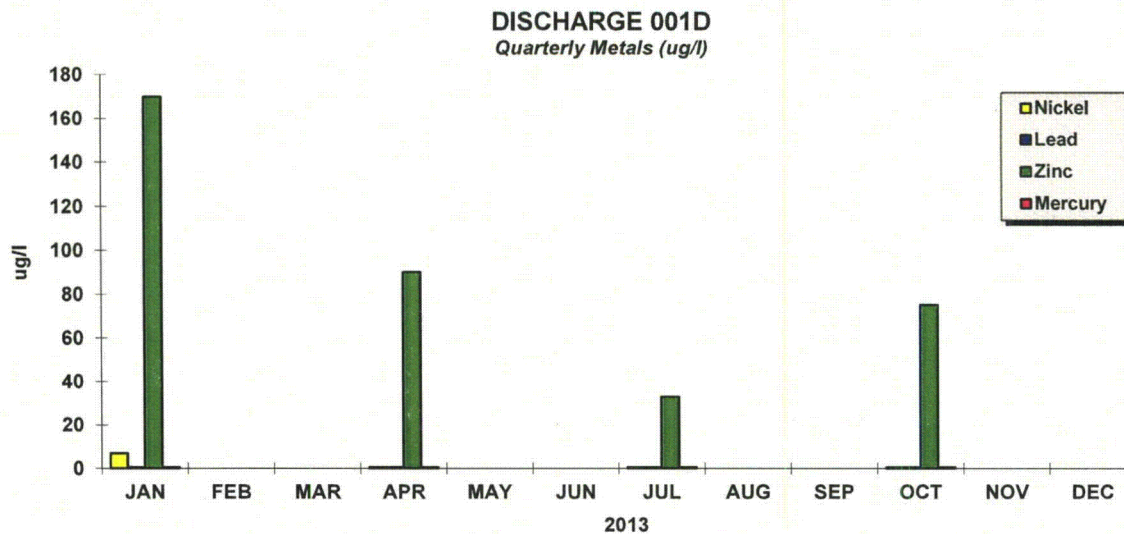


Note: Values plotted at zero were below the detection limit.  
High, average, and low values overlap at twelve points on this plot.

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at the  
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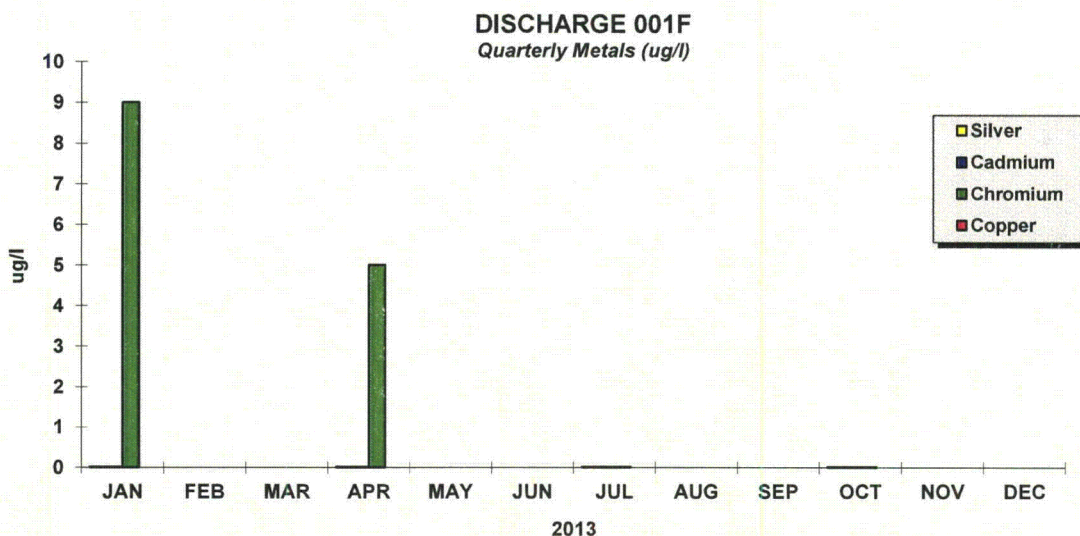
Note: The analyte was not detected at or above the detection limit for values plotted at zero.



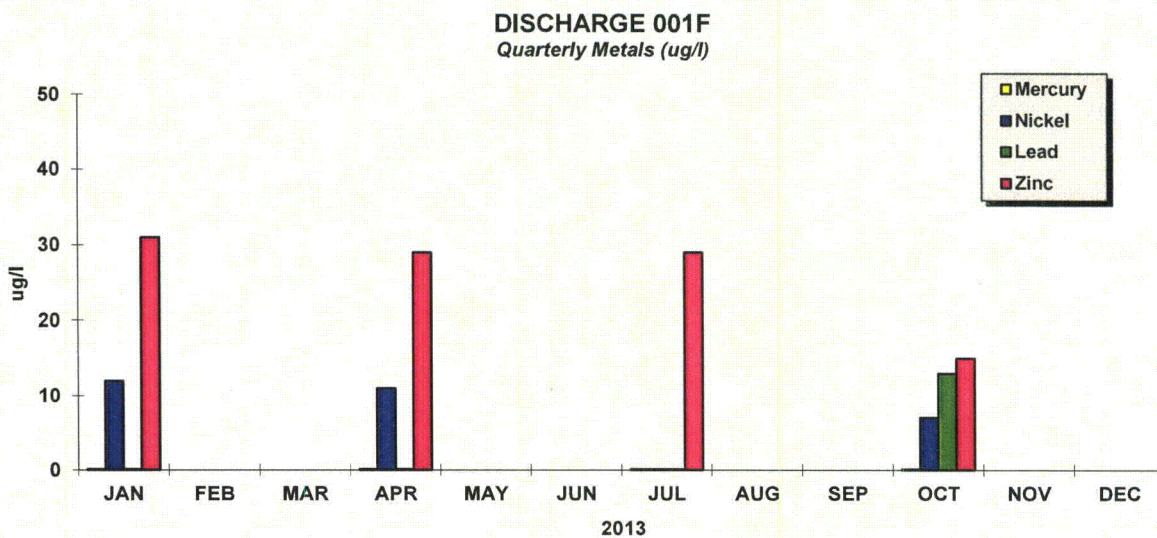
Note: The analyte was not detected at or above the detection limit for values plotted at zero.



# **2013 Annual Summary Report on Discharge Monitoring at the Diablo Canyon Power Plant**



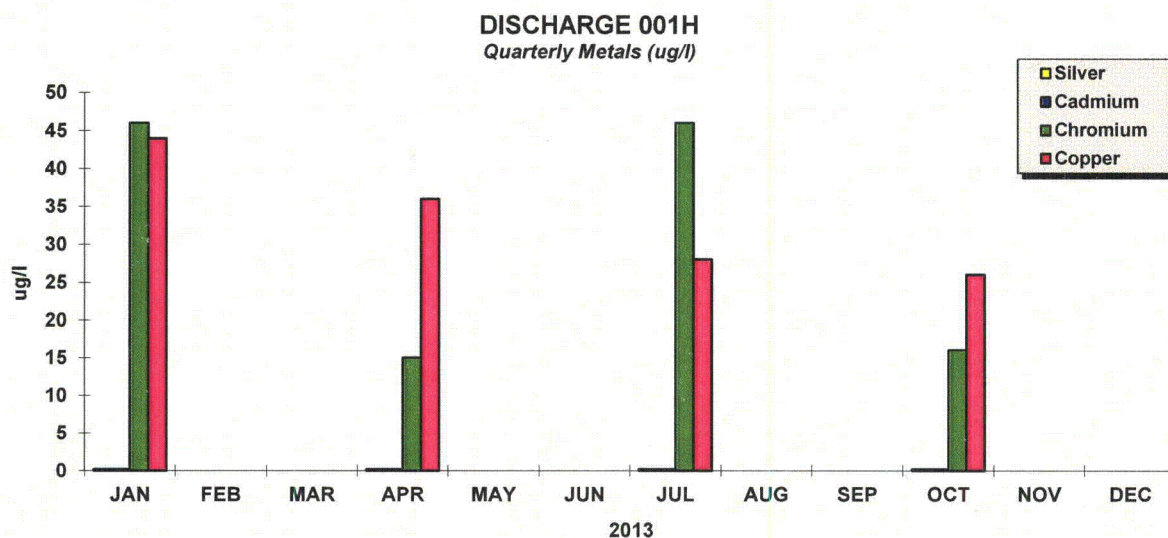
Note: The analyte was not detected at or above the detection limit for values plotted at zero.



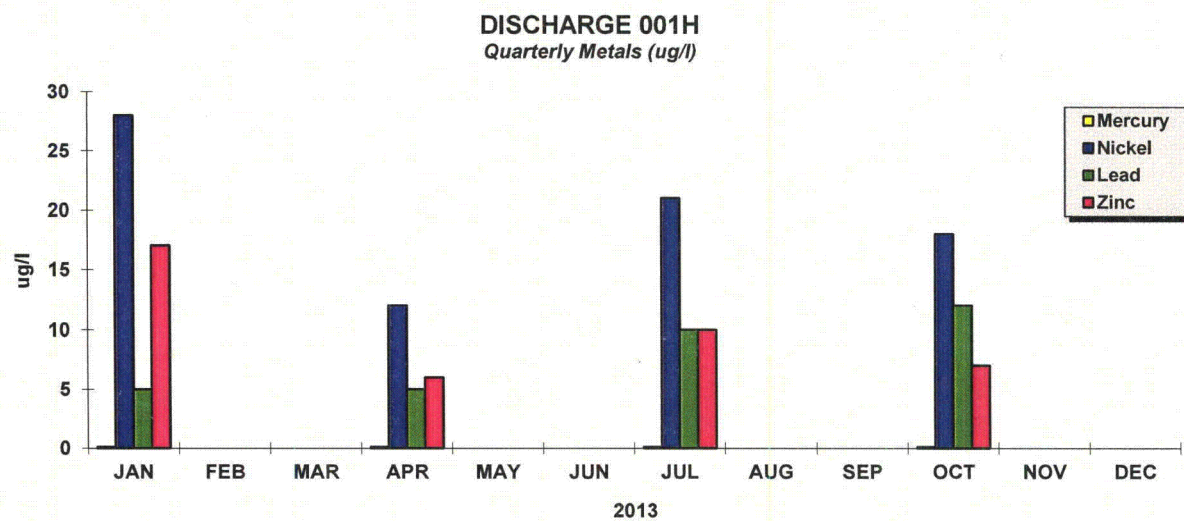
Note: The analyte was not detected at or above the detection limit for values plotted at zero.



# **2013 Annual Summary Report on Discharge Monitoring at the Diablo Canyon Power Plant**

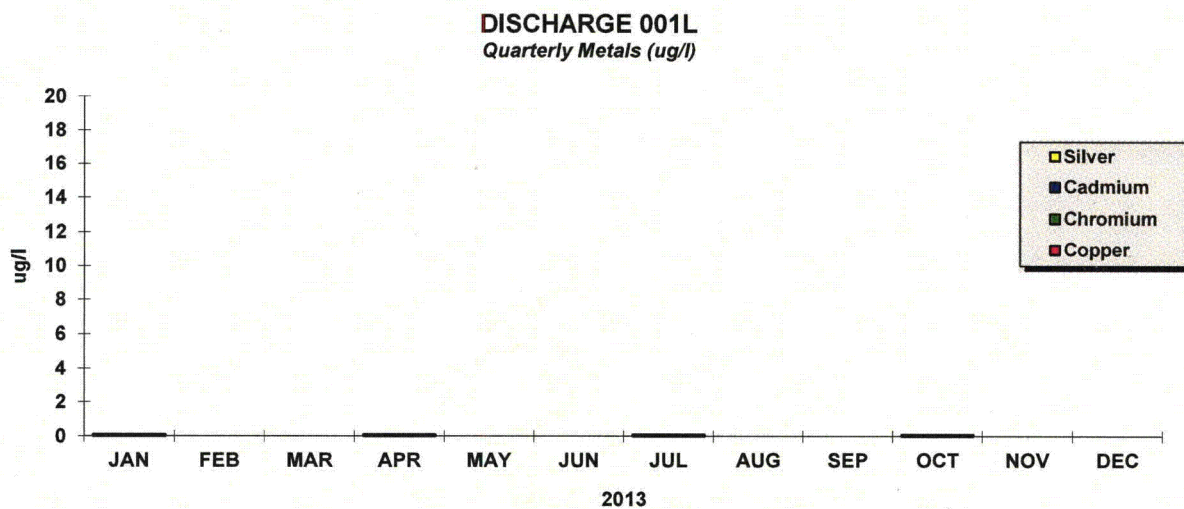


Note: The analyte was not detected at or above the detection limit for values plotted at zero.

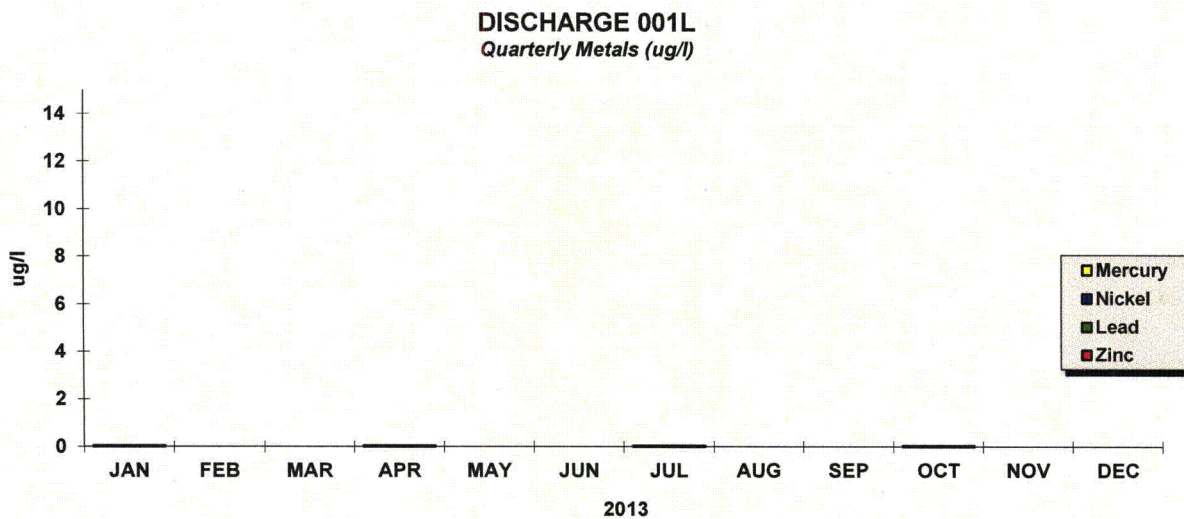


Note: The analyte was not detected at or above the detection limit for values plotted at zero.

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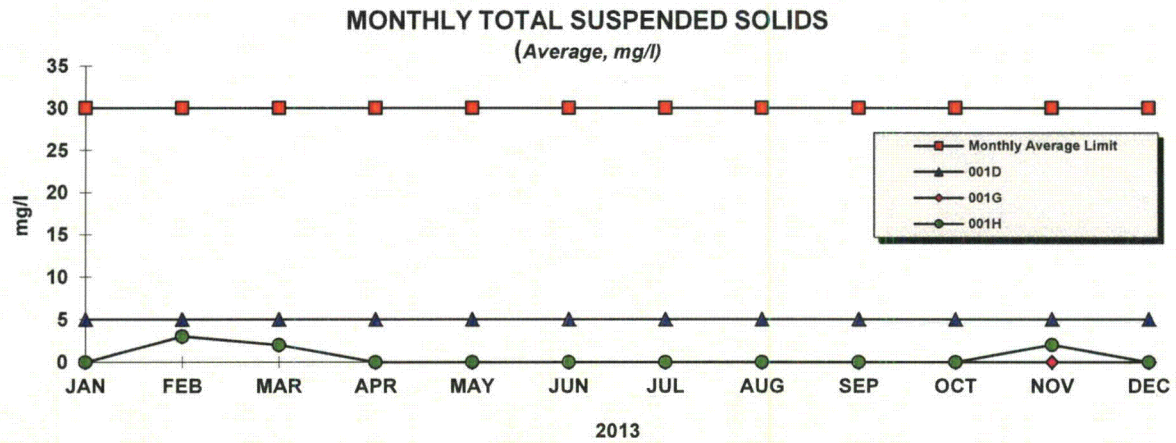
Note: The analyte was not detected at or above the detection limit for values plotted at zero.



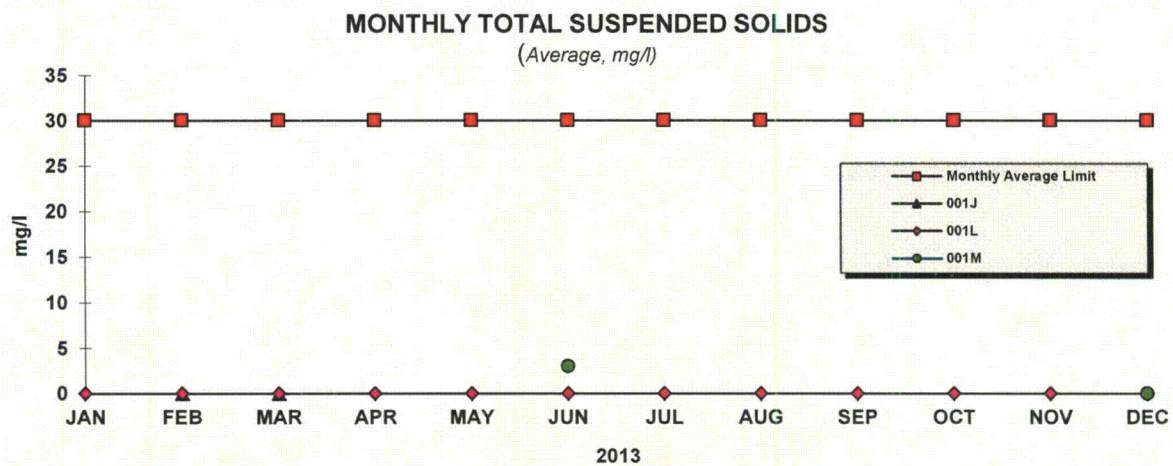
Note: The analyte was not detected at or above the detection limit for values plotted at zero.



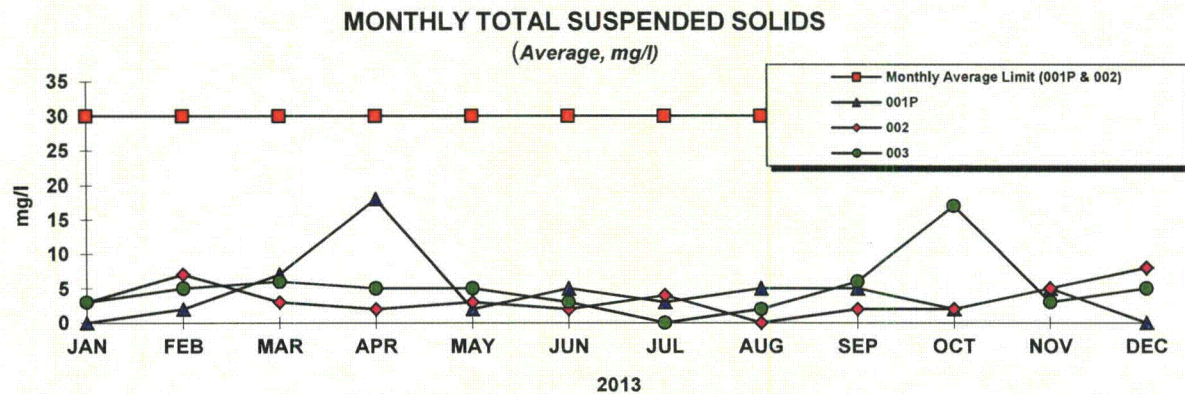
# **2013 Annual Summary Report on Discharge Monitoring at the Diablo Canyon Power Plant**



Note: Points on chart may overlap. Values plotted at zero were below the detection limit.



Note: Points on chart may overlap. Values plotted at zero were below the detection limit.

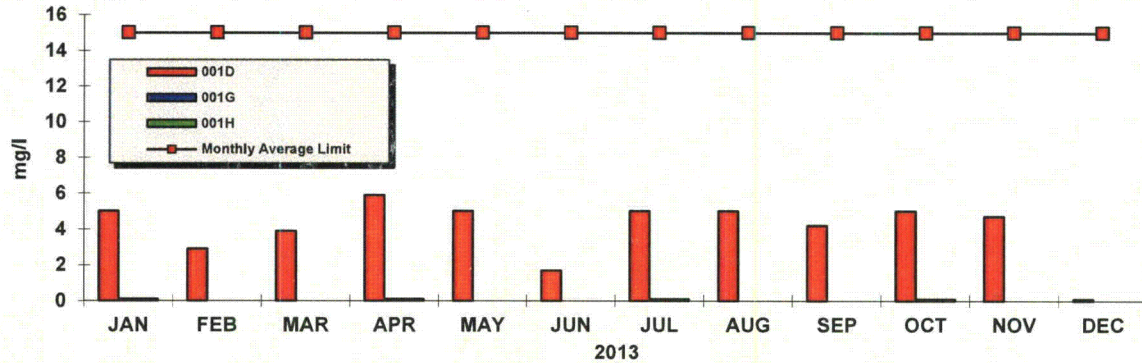


Note: Points on chart may overlap. Values plotted at zero were below the detection limit.



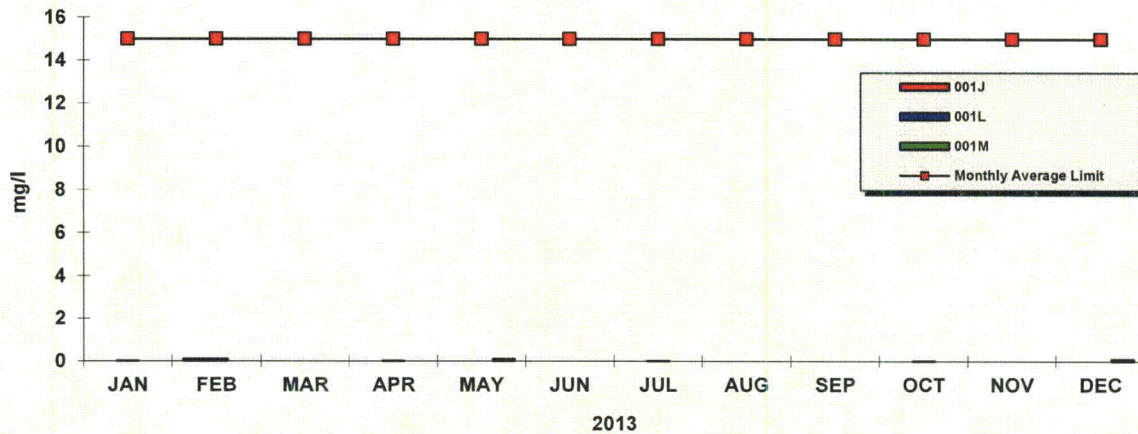
# **2013 Annual Summary Report on Discharge Monitoring at the Diablo Canyon Power Plant**

## **QUARTERLY OIL & GREASE (Average, mg/l)**



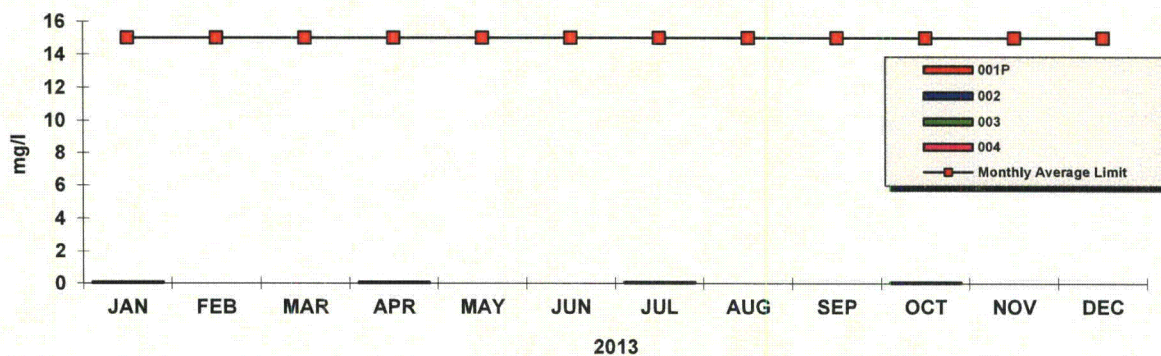
Note: Values plotted at zero were below the detection limit. Less than values are plotted at the value.

## **QUARTERLY OIL & GREASE (Average, mg/l)**



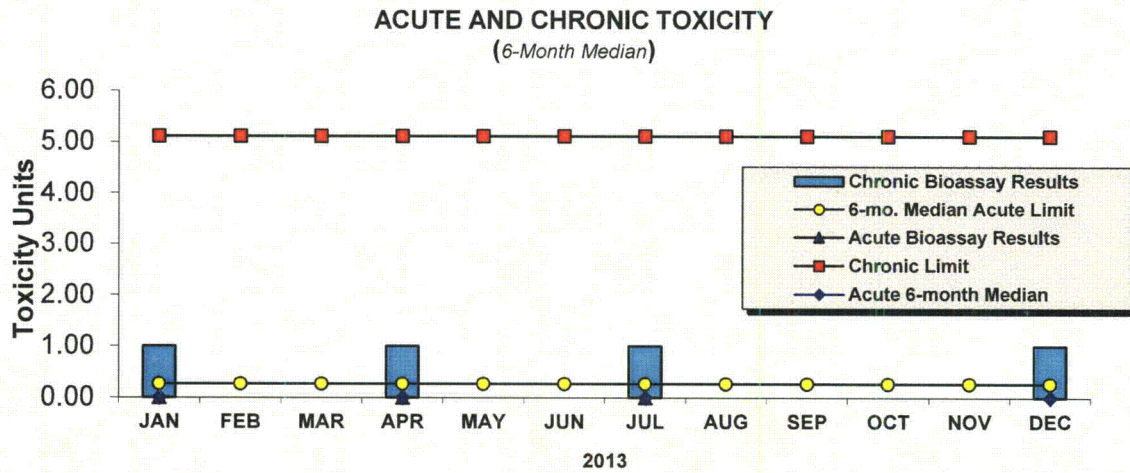
Note: Values plotted at zero were below the detection limit.

## **QUARTERLY OIL & GREASE (Average, mg/l)**



Note: Values plotted at zero were below the detection limit.

**2013 Annual Summary Report on Discharge Monitoring  
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## Annual Discharge Monitoring Report

### APPENDIX 4

#### SUMMARY OF RWMP MONITORING FOR 2013

Study	RWMP Stations/ Surveys per Year	1st Survey Completion Stations/ Dates	2nd Survey Completion Stations/ Dates	3rd Survey Completion Stations/ Dates	4th Survey Completion Stations/ Dates
Horizontal Band Transects	14 / 4x	Mar 08	Jun 13	Sep 18	Dec 16
Vertical Band Transects	5 / 4x	Feb 08	May 29	Aug 21	Dec 06
Benthic Stations	8 / 4x	Mar 19	May 10	Aug 28	Nov 25
Fish Observation Transects	12 / 4x	Mar 29	Jun 25	Sep 11	Dec 09
Bull Kelp Census	* / 1x	n/a	n/a	n/a	Oct 17
Temperature Monitoring	24 / **	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec

\* Diablo Cove census.

\*\* Temperature measured throughout the year at 20 minute intervals (14 intertidal and 10 subtidal stations).