



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

June 22, 2007

In Reply Refer To: WTR-7

Don Prestage, Owner
Escondido Plating
860 Metcalf Street
Escondido, California 92025

Re: May 2, 2007 Clean Water Act Inspection

Dear Mr. Prestage:

Enclosed is the June 22, 2007 report for our May 2, 2007 inspection of Escondido Plating. Please submit a short response to the findings in Sections 2 through 5 of this report, to EPA, the City of Escondido, and the Regional Water Quality Control Board, by **August 30, 2007**.

The main findings are summarized below:

- 1 Escondido Plating continues to qualify as a job-shop metal finisher subject to the Federal standards for electroplating existing sources discharging less than 10,000 gpd.
- 2 Compliance with Federal standards is achieved without treatment in-place because Escondido Plating qualifies for regulation under an abbreviated list of Federal standards and the operations do not generate the regulated pollutants. However, any discharge over 10,000 gallons per day or new installations would subject Escondido Plating to regulation under an expanded list of Federal standards covering the pollutants generated on-site.
- 3 Rinses were not on-demand which may render the sampling only provisionally usable to determine compliance. Sampling is representative of the discharge and for the most part appropriate.

I certainly appreciate your helpfulness extended to me during this inspection. I remain available to you and the City of Escondido to assist in any way. Please call (415) 972-3504 or e-mail at arthur.greg@epa.gov.

Sincerely,

Original signed by:

Greg V. Arthur

Greg V. Arthur
CWA Compliance Office

Enclosure

cc: Jennifer Davis, Escondido
Robert Morris, RWQCB-San Diego



U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION 9
CLEAN WATER ACT COMPLIANCE OFFICE

NPDES COMPLIANCE EVALUATION INSPECTION REPORT

Industrial User: Escondido Plating
860 Metcalf Avenue, Escondido, California 92025
40 CFR 413 Subparts A – Job-Shop Electroplating

Treatment Works: City of Escondido
Hale Avenue Resource Recovery Facility
(NPDES Permit CA0107981)

Date of Inspection: May 2, 2007

Inspection Participants:

US EPA: Greg V. Arthur, Region 9, CWA Compliance Office, (415) 972-3504

RWQCB-San Diego: None

City of Escondido: Jennifer Davis, Industrial Waste Inspector, (760) 839-4257

Escondido Plating: Donald Prestage, Owner, (760) 743-4148

Report Prepared By: Greg V. Arthur, Environmental Engineer
June 22, 2007



1.0 Scope and Purpose

On May 2, 2007, EPA, and the City of Escondido conducted a compliance evaluation inspection of Escondido Plating in Escondido, California. The purpose was to ensure compliance with the Federal regulations covering the discharge of non-domestic wastewaters into the sewers. In particular, it was to ensure:

- Classification in the proper Federal categories;
- Application of the correct standards at the correct sampling points;
- Consistent compliance with the standards; and
- Fulfillment of Federal self-monitoring requirements.

Escondido Plating is a significant industrial user (“SIU”) within the Escondido sewer service area whose compliance was assessed as part of an on-going EPA evaluation of industrial users in EPA Region 9 by sector. The inspection participants are listed on the title page. Arthur conducted the inspection on May 2.

1.1 Process Description

Escondido Plating is a metal finishing job-shop specializing in the custom restoration of bumpers and other automotive parts. The operations involve alkaline cleaning, hydrochloric-acid activation, hydrochloric-acid desmut, caustic derust, sulfuric-acid nickel/chrome stripping, decorative bright nickel plating, chromium plating, cyanide-copper strike, and acid copper plating. The operations also involve straightening, grinding, polishing, and fitting.

Escondido Plating does not own parts that undergo metal finishing on-site. According to the owner, it started up in 1965, with secondary containment curbing installed at that time, and with no added lines after 1983. Escondido Plating discharges non-domestic wastewaters to the Escondido domestic sewers through a single sewer connection designated in this report by permit number as IWD-11004. Domestic sewage discharges through separate connections downstream of the industrial wastewater connection.

1.2 Facility SIC Code

Escondido Plating is assigned the SIC code for electroplating, plating, polishing, anodizing, and coloring of metals (SIC 3471).

1.3 Facility Wastewater Sources

The metal finishing lines generate spents, rinses, and residuals. The tanks are referenced in this report are by the shop designations.

Spent Solutions – The imparted contamination from the processing of parts and the progressive drop in solution strength results in the generation of spent solutions. Escondido Plating



hauls off-site to U.S. Ecology for disposal the tank bottom spents from sulfuric-acid stripping, and the spents from alkaline cleaning, alkaline derust, and hydrochloric-acid desmut. Everything else is regenerated strictly through additions. The list of spents follows below.

On-Site Batch Treatment	Hauled Off-site to Haz	Regenerated By Additions
none	T1 - alkaline cleaning T13 - HCl-acid desmut T16 - alkaline derust T18 - H ₂ SO ₄ -acid strip ✓ ✓ tank bottoms only	T3 - HCl-acid activation T10 - bright-Ni plating ✓ T11 - chromium plating T7 - cyanide-Cu plating T19 - acid-Cu plating ✓ in-tank recirc through cartridge filter
n/a	U.S. Ecology	No Release

Rinses – Escondido Plating generally employs static and spray static drag-out rinses dedicated to specific solution tanks as make-up. There are also two rinses that discharge, one static rinse for hydrochloric-acid desmut, and one continuous low-overflow rinse for alkaline cleaning and nickel plating. The overflow rinse is not on-demand, by conductivity-controls, timer, electric eye, or kick plate, in order to be normally off when no parts are undergoing processing. All rinse waters discharge to the sewers unadjusted for pH and untreated for the removal of metals, and cyanides. However, the rinses discharge through a final three-stage clarifier for the removal of settleable solids. The list of rinses follows below.

Static Rinse	Continuous Low-Overflow	Static Drag-Out Rinses
T14 - 1° static for T13	T4 - 1° overflow for T3 - 2° overflow for T10	T2 - 1° static for T1 T9 - 1° static for T10 T12 - 1° spray static for T11 T8 - 1° static for T7 B20 - barrel 1° static for T19
Discharged to IWD-11004		Returned as Make-Up

Residuals - Hazardous waste manifests for 2006 record the off-hauling of alkaline spents, nickel/chromium stripping spents, and sulfuric-acid spents. Beyond that, since Escondido Plating does not provide on-site wastewater treatment, the operations do not generate tank sludges, spent filters, filter press cake, reverse plate-out solids, or solution residuals.

1.4 Facility Process Wastewater Composition

The process wastewaters listed in section 1.3 above would be expected to contain copper, chromium, lead, nickel, zinc, total cyanide, and acidity, as well as oil & grease, salts, and surfactants, iron, aluminum, free oils, suspended solids, and other pollutants in the surface grime cleaned off of parts.



1.5 Facility Process Wastewater Treatment

Escondido Plating only provides the removal of settleable solids through a three-stage clarifier. Otherwise, Escondido Plating provides no on-site treatment for the removal of metals and complexed cyanide, or for the adjustment of pH. As a result, there are no operational controls to optimize performance. Both rinse tanks drain by pipe to the final clarifier for discharge to the sewers. The final clarifier's last chamber is designated as the permitted compliance sampling point, IWD-11004. *See* the photo below.



*Photo: Final Clarifier
Taken By: Greg V. Arthur
Date: 05/02/07*

1.6 POTW Legal Authorities

The City of Escondido – Escondido operates its own wastewater treatment plant, the Hale Avenue Resource Reclamation Facility, which discharges, along with treated wastewaters from the San Elijo Water Reclamation Facility, through the San Elijo ocean outfall into the Pacific Ocean. Escondido also operates an approved pretreatment program as required by the State of California in the San Diego RWQCB's Waste Discharge Requirements, No. R9-2005-0101, reissued to Escondido in 2005 and serving as NPDES Permit No. CA0107981. Escondido has established a sewer use ordinance that applies to all industrial users within its city limits. Under this authority, Escondido issued industrial user permit No. 11004 covering the sewer discharge from Escondido Plating.

1.7 Photo Documentation

Arthur took two photos on May 2 stored under the file names *escondidoplating-1.jpg* and *escondidoplating-2.jpg*. One photo is depicted in this report. The other was a duplicate.

1.8 Sampling Record

All compliance samples are collected by Escondido Plating and the City of Escondido from the final compartment of the clarifier outside the facility at IWD-11004. *See* Appendix 2 for a summary of the 2005-2006 sampling.



2.0 Sewer Discharge Standards and Limits

Federal categorical pretreatment standards (where they exist), national prohibitions, and the local limits (where they exist) must be applied to the sewer discharges from industrial users. (40 CFR 403.5 and 403.6).

Summary

The Federal standards in 40 CFR 413 for existing source job-shop metal finishers discharging under 10,000 gallons per day apply to all process wastewater discharges from Escondido Plating through IWD-11004. The owner believes that secondary containment was installed when the shop was built in 1965 and that improvements since then have not involved the removal and reinstallation of the tank lines or the installation of any new lines. As a result, Escondido Plating would not qualify as a new source. The Escondido permit correctly applies local limits. The application of Federal standards, national prohibitions, and local limits was determined through visual inspection. *See* Appendix 1.

Requirements

- None.

Recommendations

- None.

2.1 Classification by Federal Point Source Category

Escondido Plating qualifies as a job-shop metal finisher subject to the Federal job-shop electroplating standards for existing sources in 40 CFR 413. Escondido correctly classified Escondido Plating. Federal standards are self-implementing which means they apply to regulated waste streams whether or not they are implemented in a local permit. The Federal rules in 40 CFR 403.6 define domestic sewage and non-contact wastewaters to be dilution waters.

New or Existing Sources - Escondido Plating continues to be subject solely to the Federal standards for existing sources. Under the definitions in 40 CFR 403.3(k), a process constructed at an existing source job-shop metal finisher after August 31, 1982 is a new source (1) if it entirely replaces a process which caused a discharge from an existing source or (2) if it is substantially independent of the existing sources on-site. This means new source standards apply to the original installation of the metal finishing lines, rebuilt or moved lines, or existing lines converted to do new operations. This also means that the new source standards generally do not apply to the piecemeal replacement of tanks for maintenance in otherwise intact metal finishing lines, nor do they apply to treatment upgrades without altering production. The preamble to the final 1988 Federal rule states that the new source standards apply when “an existing source undertakes major construction that legitimately provides it with the opportunity to install the best and most efficient production



process and wastewater treatment technologies” (*Fed Register, Vol.53, No.200, October 17, 1988, p.40601*).

According to the owner, there have been no significant configuration changes at Escondido Plating after the August 31, 1982 promulgation date for the metal finishing rule. If any changes involved either the installation of any new lines or the physical relocation and re-installation of entire existing lines, for whatever reason, then those changes would qualify as construction that "legitimately provides it with the opportunity to install the best and most efficient production process and wastewater treatment technologies". In those cases the entire facility would qualify as a new source.

2.2 Local Limits and National Prohibitions

Local limits and the national prohibitions are meant to express the limitations on non-domestic discharges necessary to protect the sewers, treatment plants and their receiving waters from adverse impacts. In particular, they prohibit discharges that can cause the pass-through of pollutants into the receiving waters or into reuse, the operational interference of the sewage treatment works, the contamination of the sewage sludge, sewer worker health and safety risks, fire or explosive risks, and corrosive damage to the sewers. The national prohibitions apply nationwide to all non-domestic sewer discharges. The Escondido local limits apply to non-domestic discharges within the Escondido city limits.

2.3 Federal Categorical Pretreatment Standards Existing Source Job-Shop Electroplating - 40 CFR 413

40 CFR 413 >10kgpd	Cd	Cr	Cu	Pb	Ni	Ag	Zn	CNt	CNa	TTO	TM
daily-maximum (mg/l)	1.2	7.0	4.5	0.6	4.1	-	4.2	1.9	5.0	2.13*	10.5
four-day average (mg/l)	0.7	4.0	2.7	0.4	2.6	-	2.6	1.0	2.7	-	6.8
stat conversion to mo-avgs	0.5	2.5	1.8	0.3	1.8	-	1.8	0.55	1.5	-	5.0
bold - standards that apply if the discharge is <10,000 gpd / * TTO 4.57 mg/l											

Applicability - The Federal job-shop electroplating standards apply to job-shop metal finishers that do not own more than 50% of the parts processed and were in operation in their present configuration before the August 31, 1982 proposal date of the Federal metal finishing rule. This means the job-shop electroplating standards in 40 CFR 413.14(b)(f) for dischargers under 10,000 gallons per day apply to process wastewater discharges from Escondido Plating to the sewers through IWD-11004.

Basis of the Standards – The job-shop electroplating standards were based on a model pretreatment unit that comprises metals precipitation, settling, sludge removal, source control of toxic organics, and if necessary, cyanide destruction and chromium reduction. For dischargers of less than 10,000 gallons per day, the model pretreatment unit was applied only to process wastewaters bearing cadmium, lead, amenable cyanide, or total toxic organics, which means where the processes do not involve these pollutants, the standards are based on source control. The best-available-technology standards were set where printed circuit board



shops and job-shop metal finishers with model treatment operated at a long-term average and variability that achieved a compliance rate of 99% (1 in 100 chance of violation).

Adjustments – The Federal categorical pretreatment standards at IWD-11004 do not need to be adjusted to account for dual Federal categories or for dilution. Also, the statistical equivalent monthly-average standards for 40 CFR 413 are not necessary since they are used to calculate monthly-average standards for dual Federal categories using the combined wastestream formula in 40 CFR 403.6(e).

Compliance Deadline - Existing source job-shop metal finishers were required to comply with all Federal job-shop electroplating standards by the final compliance deadline of July 31, 1986.

2.4 Point(s) of Compliance

The permit designates the last chamber of the final clarifier just outside the building as the compliance point (designated in this report as IWD-11004).

Federal Standards - Federal categorical pretreatment standards apply end-of-process-after-treatment to all Federally-regulated discharges to the sewers. The sample point IWD-11004 is also a suitable end-of-process-after-treatment sample point representative of the day-to-day discharge of Federally-regulated wastewaters.

Local Limits - Local limits and the national prohibitions apply end-of-pipe to all non-domestic flows. The sample point designated as IWD-11004 is a suitable end-of-pipe sample point representative of the day-to-day non-domestic wastewater discharges.

2.5 Compliance Sampling

The national prohibitions are instantaneous-maximums and are comparable to samples of any length including single grab samples. Federal categorical pretreatment standards are daily-maximums comparable to 24-hour composite samples. The 24-hour composite samples can be replaced with single grabs or manually-composited grabs that are representative of the sampling day's discharge.



3.0 Compliance with Federal Standards

Industrial users must comply with the Federal categorical pretreatment standards that apply to their process wastewater discharges. 40 CFR 403.6(b).

Categorical industrial users must comply with the prohibition against dilution of the Federally-regulated waste streams as a substitute for treatment. 40 CFR 403.6(d).

Industrial users must comply with the provision restricting the bypass of treatment necessary to comply with any pretreatment standard or requirement. 40 CFR 403.17(d).

Summary

Escondido Plating does not employ wastewater treatment equivalent to the models used in originally setting the Federal standards. However, model treatment should not be necessary to meet the Federal standards since the operations do not involve cadmium-, free cyanide-, or lead-bearing waste streams. As a result, the sample record shows consistent compliance with the abbreviated set of Federal standards that apply to Escondido Plating. Future compliance would be expected as long as it (1) does not become a new source and (2) does not discharge more than 10,000 gpd to the sewer. There is one shortcoming. The continuous running of the Tank 4 rinse without parts processing causes the sampling results to be provisionally useable for determining compliance. *See* Appendix 2.

Requirements

- The discharge must *always* be less than 10,000 gpd in order to qualify Escondido Plating for the less stringent and more narrowly applied Federal standards for small existing source job-shop metal finishers.

Recommendations

- The running rinses should be operated on-demand when there are parts undergoing processing or the rinses should be retrofitted to be conductivity-controlled.

3.1 Sampling Results

The 2005-2006 sample records for Escondido Plating collected by final clarifier consist of monthly self-monitoring and semi-annual sampling by the City of Escondido. All metals samples were 24-hour composites. All cyanide samples were manually-composited grabs. All sample results are provisionally usable for determining compliance with the Federal standards because they account for all wastewaters discharged. However, they are only provisionally usable because they may be diluted by rinses observed to be running continuously without parts undergoing processing. *See* item 5.0 of this report.



3.2 Best-Available-Technology Treatment

The treatment in-place is not equivalent in design and performance to the best-available-treatment ("BAT") technology models used in originally setting the Federal standards. However, model treatment should not be necessary to meet the Federal standards since the operations do not involve cadmium-, free cyanide-, or lead-bearing waste streams, and as long as Escondido Plating (1) does not become a new source and (2) does not discharge more than 10,000 gpd to the sewer. As a result, the sampling results provisionally indicate that Escondido Plating, as currently designed and operated, consistently complies with its Federal standards. *See* Appendix 2.

The results, however, may be biased in favor of compliance because the overflowing rinses run without parts undergoing processing. Excessive rinsing produces samples that are diluted by excess make-up water, a practice which can be prohibited by the Federal rule against dilution as a substitute for treatment. Composite sampling for all Federally-regulated pollutants from IWD-11004 would be fully usable to determine compliance with the Federal BAT standards if the overflow rinse is retrofitted to operate on-demand. *See* sections 3.3 and 5.0 below.

If the facility becomes a new source through the installation of a new metal finishing line, for example, the more stringent and comprehensive Federal standards for new source metal finishers in 40 CFR 433 would then apply. Likewise, if discharges ever exceed 10,000 gpd, the more comprehensive Federal standards for larger job-shop metal finishers in 40 CFR 413 would then apply. The 10,000 gpd cut-off is not a maximum average but rather an absolute maximum value to qualify for the exemption from the comprehensive standards. In both cases, the more comprehensive standards cover pollutants generated by the operations on-site, in particular, chromium, copper, nickel, zinc, and total cyanide. When these more comprehensive standards apply, BAT treatment or its equivalent is nearly always necessary to consistently comply with Federal standards. BAT treatment would necessarily incorporate chromium reduction, metals precipitation, settling, and reaction end-point metering.

3.3 Dilution as a Substitute for Treatment

The Federal standards in 40 CFR 403.6(d) prohibit "dilution as a substitute for treatment" in order to prevent compromising BAT model treatment with dilute waste streams. In particular, this prohibition applies when sample results for a diluted waste stream are below the Federal standards and the apparent compliance is used to justify discharge without treatment. There are two conditions that need to be established in order to make a determination of non-compliance with this prohibition. First, some or all of the Federally-regulated wastewaters must discharge without undergoing BAT model treatment or its equivalent. Second, there must be some form of excess water usage within a Federally-regulated process.

Escondido Plating may not meet the first condition since all running rinses would not be expected to entrain significant concentrations of any of the Federally-regulated pollutants and thus would not require BAT model treatment for metals and cyanide. Escondido Plating



meets the second condition when any of these rinses are among those that do not in fact operate on-demand.

3.4 Bypass Provision

The Federal standards in 40 CFR 403.17 prohibit the bypassing of any on-site treatment necessary to comply with standards unless the bypass was unavoidable to prevent the loss of life, injury, or property damage, and there were no feasible alternatives. This provision explicitly prohibits bypasses that are the result of a short-sighted lack of back-up equipment for normal downtimes or preventive maintenance. It also explicitly prohibits bypasses that could be prevented through wastewater retention or the procurement of auxiliary equipment. It specifically allows bypasses that do not result in violations of the standards as long as there is prior notice and approval from the sewerage agency or State.

There is no possibility of unauthorized bypassing at Escondido Plating since there is no treatment on-site to bypass.



4.0 Compliance with Local Limits and National Prohibitions

All non-domestic wastewater discharges to the sewers must comply with local limits and the national prohibitions. 40 CFR 403.5(a,b,d).

Industrial users must comply with the provision restricting the bypass of treatment necessary to comply with any pretreatment standard or requirement. 40 CFR 403.17(d).

Summary

The processes at Escondido Plating would be expected to generate wastewaters containing acids, caustics, nickel, copper, zinc, chromium, and oils from the plating lines. Escondido Plating does not provide any treatment. There has been a lone violation of the local limit for copper over the past two years. However, violations of the more stringent June 2006 nickel local limits would be expected if the nickel concentrations revert to the pre-June 2006 levels. In addition, retrofitting to on-demand rinsing would result in proportionally higher pollutant concentrations with potential values over the local limits for nickel and chromium. *See* Appendix 2. Also *see* Sections 3.0 and 5.0 of this report.

Requirements

- None.

Recommendations

- None.

4.1 National Objectives

The general pretreatment regulations were promulgated in order to fulfill the national objectives to prevent the introduction of pollutants that:

- (1) cause operational interference with sewage treatment or sludge disposal,
- (2) pass-through sewage treatment into the receiving waters or sludge,
- (3) are in any way incompatible with the sewerage works, or
- (4) do not improve the opportunities to recycle municipal wastewaters and sludge.

This inspection did not include an evaluation of whether achievement of the national objectives in 40 CFR 403.2 have been demonstrated by the Escondido wastewater treatment plant through consistent compliance with their sludge and discharge limits.



5.0 Compliance with Federal Monitoring Requirements

Significant industrial users must self-monitor for all regulated parameters at least twice per year unless the sewerage agency monitors in place of self-monitoring. 40 CFR 403.12(e) & 403.12(g).

Each sample must be representative of the sampling day's operations. Sampling must be representative of the conditions occurring during the reporting period. 40 CFR 403.12(g) and 403.12(h).

Summary

The sample record for Escondido Plating involves monthly self-monitoring for certain toxics and semi-annual monitoring conducted by Escondido of an expanded list of pollutants. All of the monitoring results are representative of the overall discharge of untreated wastewater over the sampling day and over the six-month reporting periods. Monitoring appropriately encompasses the pollutants of concern comprising the Federally-regulated pollutants (*cadmium, lead, amenable cyanide, total toxic organics*) and the other pollutants generated in significant amounts (*chromium, zinc, copper, nickel, and pH*). Escondido Plating appropriately conducts daily self-monitoring for flow. A recommended monitoring schedule with slight modifications to the Escondido permit is included as part of Appendix 2.

Requirements

- Sampling for cyanide must be for amenable instead of total cyanide.

Recommendations

- Non-detect results for total toxic organics should be reported as less than the detection limit and not less than the permitted local limits.
- Sampling for pollutant that are not of concern could be curtailed (*boron, fluoride, manganese, silver, total cyanide*).



Appendix 1					
Sewer Discharge Standards and Limits					
Escondido Plating @ IWD-11004					
pollutants of concern (mg/l)	Fed categorical stds		local limits		monitoring frequency IWD-11004
	40 CFR 413 (d-max)	<10 kgpd (mo-av)	nat'l prohib (instant) < May06 > Jun06		
boron	-	-	-	1.526	④
cadmium	1.2	0.7	0.11	0.107	⑤
total chromium	-	-	21.38	0.960	monthly
flouride	-	-	-	1.310	④
copper	-	-	0.98	0.98	monthly
lead	0.6	0.4	0.32	0.58	⑤
manganese	-	-	-	0.023	④
nickel	-	-	67.67	6.03	monthly
silver	-	-	-	0.214	④
zinc	-	-	4.28	4.28	monthly
total cyanide	-	-	0.08	0.207	④
amenable cyanide	5.0	2.7	-	-	⑤
total toxic organics	4.57	-	2.13	2.13	⑤
oil & grease-total	-	-	③	③	⑤
dissolved sulfides	-	-	0.10	0.10	④
flow (gpd)	-	-	5390	7000	daily
pH min and max (s.u.)	-	-	5.0-10.5	6.0-10.0	monthly
explosivity	-	-	① ②	① ②	④
temperature (°F)	-	-	104°F	104°F	④

① National-prohibitions – Closed-cup flash point <140°F and pH <5.0 su.
 ② Narrative prohibition against the introduction of flammable or explosive substances
 ③ Narrative prohibitions against free (floating) oils and causing interference or pass-through
 ④ As part of periodic priority pollutant scans
 ⑤ As part of the semi-annual sampling by the City of Escondido

red – proposed increase **black** – unchanged **green** – proposed decrease



Appendix 2

Escondido Plating Sampling Results @ IWD-11004
January 2005 – December 2006

pollutant (µg/l)	self-monitoring			Escondido-monitoring			violation rates ① ②			sample count
	mean	99th%	max	mean	99th%	max	d-max	4-day	local	
boron	-	-	-	0.37	0.92	0.58	-	-	0/4	4
cadmium	-	-	-	<0.02	<0.02	<0.02	0/6	0/1½	0/6	6
total chromium	0.29	1.76	3.09	0.21	0.93	0.67	-	-	0/28	28
fluoride	-	-	-	0.73	0.85	0.77	-	-	0/4	4
copper	0.35	0.99	1.42	0.24	0.51	0.39	-	-	1/31	31
lead	-	-	-	0.01	0.02	0.01	0/4	0/1	0/4	4
manganese	-	-	-	0.01	0.03	0.02	-	-	0/3	3
nickel	4.22	12.31	17.70	2.35	6.02	3.54	-	-	0/28	28
silver	-	-	-	<0.02	<0.02	<0.02	-	-	0/4	4
zinc	0.70	1.69	1.40	0.56	0.85	0.69	-	-	0/28	28
total cyanide	-	-	-	<0.05	<0.05	<0.05	-	-	0/4	4
amenable cyanide	-	-	-	-	-	-	0/4 ④	0/1 ④	-	0
total toxic organics	-	-	-	0.04	-	0.04	0/4	-	0/4	4
oil & grease-total	-	-	-	-	-	-	-	-	-	0
dissolved sulfides	-	-	-	-	-	-	-	-	-	0
flow (gpd)	3611	5018	5617	-	-	-	-	-	0/30	30
explosivity	-	-	-	-	-	-	-	-	-	0
temperature (°F)	-	-	-	-	-	-	-	-	-	0
pH min (s.u.)	6.63 ③	-	5.43	-	-	-	-	-	0/29	29
pH max (s.u.)	-	-	7.66	-	-	-	-	-	-	-

- ① Daily-maximums and four-day averages comparable to Federal categorical standards
- ② Four-day average standards based on rolling averages of four consecutive sampling results.
- ③ pH median
- ④ There were no amenable cyanide samples, but the samples for total cyanide did not exceed limits