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

April 22, 2009

In Reply Refer To: WTR-7

Jessie Murillo, President
Beo-Mag Plating
3313 West Harvard Street
Santa Ana, California 92704

Re: September 11, 2008 Clean Water Act Inspection

Dear Mr. Murillo:

Enclosed is the April 22, 2009 report for our September 11, 2008 inspection of Beo-Mag Plating. Please submit a short response to the findings in Sections 2 through 5 of this report, to EPA, the Orange County Sanitation Districts, and the Regional Water Quality Control Board, by **June 28, 2009**. The main findings are summarized below:

1 Beo-Mag Plating qualifies as a new source job-shop metal finisher regulated under the Federal regulations in 40 CFR 433 for metal finishing. Alternate amenable cyanide standards should be applied to a separate compliance sampling point for cyanide.

2 On-site treatment is substantially equivalent to the models used in setting the Federal standards for the removal of metals but not for the destruction of cyanide. As a result, Beo-Mag has not achieved consistent compliance with the Federal standards for cyanide. Improvement should involve added cyanide destruction capability, increased surge capacities, and better treatment unit process monitoring.

3 The quarterly self-monitoring is representative over the sampling day and the six-month reporting period. Because of violations some pollutants should be sampled more often, while others at or near their detection limits could be sampled less.

I appreciate your helpfulness extended to me during this inspection. I remain available to the Orange County Sanitation Districts, and to you to assist in any way. Please do not hesitate to call me at (415) 972-3504 or e-mail at arthur.greg@epa.gov.

Sincerely,

Greg V. Arthur
CWA Compliance Office

Enclosure

cc: Roya Sohanaki, OCSD
David Hung, RWQCB-Los Angeles

U.S. ENVIRONMENTAL PROTECTION AGENCY

REGION 9

CLEAN WATER ACT COMPLIANCE OFFICE

NPDES COMPLIANCE EVALUATION INSPECTION REPORT

Industrial User:	Beo-Mag Plating 3313 West Harvard Street, Santa Ana, California 92704 New Source Metal Finishing (40 CFR 433)
Treatment Works:	Orange County Sanitation Districts Fountain Valley Wastewater Treatment Plant No.1 and Huntington Beach Wastewater Treatment Plant No.2 NPDES Permit CA0110604 - California WDRs R8-2004-0062
Pretreatment Program:	Orange County Sanitation Districts
Date of Inspection:	September 11, 2008

Inspection Participants:

US EPA:	Greg V. Arthur, Region 9, CWA Compliance Office, (415) 972-3504 Howard Kahan, Region 9, Los Angeles Office, (213) 244-1819
RWQCB-Los Angeles:	None
Orange County SD:	Mary Sue Thompson, Source Control Inspector, (714) 593-7438 Roya Sohanaki, Engineer, (714) 593-7437
Beo-Mag Plating:	Jessie Murillo, President, (714) 434-9698 Juan Valdivia, Wastewater Treatment Operator, (714) 434-9698

Report Prepared By: Greg V. Arthur, Environmental Engineer
April 22, 2009

1.0 Scope and Purpose

On September 11, 2008, EPA and the Orange County Sanitation Districts (OCSD) conducted a compliance evaluation inspection of Beo-Mag Plating in Santa Ana, 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.

Beo-Mag Plating is a significant industrial user ("SIU") within sewer service areas administered by the OCSD 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 September 11, 2008.

1.1 Process Description

Beo-Mag Plating is a job-shop decorative metal finisher for motorcycle and automotive parts. The operations on-site involve metal finishing on steel, aluminum, and magnesium parts. The operations by processing room (room designations A and B added for the purposes of this report) follow below.

Nickel/Chromium Room "A" - alkaline electrocleaning, alkaline cleaning, HCl-acid activation, Watts bright nickel plating, dull nickel plating, chromium plating, electroless nickel plating, alkaline chromium strip, nitric-acid nickel/copper strip.

Cyanide Room "B" – cyanide-gold plating, electroless nickel plating, cyanide-copper strike, Watts bright nickel plating, acid-copper plating, alkaline degreasing, alkaline electrocleaning, anti-tarnishing, zincate coating, aluminum deoxidation, alkaline aluminum etching.

Beo-Mag Plating does not own the parts it finishes. Operations began in 1985. Beo-Mag Plating discharges non-domestic wastewaters to the OCSD domestic sewers through a single sewer connection designated in this report by permit number as IWD-511370. Domestic sewage discharges through separate connections downstream of the industrial wastewater connection. ***See*** Table 1.1 on the next page for a tank inventory. The tank numbering is strictly by the EPA inspector for this report but in some cases it incorporates the tank number labels observed on-site.

1.2 Facility SIC Code

Beo-Mag Plating is assigned the SIC code for plating, polishing, anodizing, and coloring (SIC 3471) and metals coating (SIC 3479).

Table 1.1
Beo-Mag Tank Inventory (*rinses in italics*)

gals	Nickel-Chrome Room A		gals	Cyanide Room B	
?	A1	alkaline electrocleaning	?	B19 ✓	cyanide-gold plating
?	A2	*1°static for A1*	?	B20 ✓	*1°drag-out for B19*
?	A3	alkaline cleaning	?	B21 ✓	*2°overflow for B22/B19?*
?	A4	bright nickel plating	?	B22	electroless nickel plating
?	A5	*1°drag-out for A4*	?	B23	*1°drag-out for B22*
?	A6	*2°overflow for A4-A14*	?	B24 ✓	cyanide-copper strike
?	A7	HCl-acid activation	?	B25 ✓	*1°drag-out for B24*
?	A8	bright nickel plating	?	B26 ✓	*2°spray for B24*
?	A9	*1°drag-out for A8*	?	B27	bright nickel plating
?	A10	dull nickel plating	?	B28	*1°drag-out for B27*
?	A11	chromium plating	?	B29	acid-copper plating
?	A12	*1°drag-out for A11*	?	B30	*1°drag-out for B29*
?	A13	*2°spray for A11*	?	B32	acid-copper plating
?	A14	electroless nickel plating	?	B33	*1°drag-out for B32*
?	A15	alkaline Cr strip	?	B34	alkaline degreasing
?	A16	nitric-acid Ni-Cu strip	?	B35	*1°drag-out for B34*
?	A17	*1°spray for A15-A16*	?	B36	nickel strip
?	A18	*1°drag-out for A4*	?	B37	alkaline electrocleaning
?	A19	*3°hot-DI static for A11*	?	B40	*1°spray for B36-B37*
?	A20	*4°spray for A11*	?	B41	*2°overflow for B36-B37*
			?	B42	anti tarnish
			?	B45	zincate coating
			?	B46	*1°spray for B42-B45*
			?	B47	aluminum deoxidation
			?	B48	*1°spray for B47*
			?	B49	alkaline aluminum etch
✓ *cyanide-bearing*			?	B50	acid passivation
✓ *possible cyanide-bearing*			?	B51	*1°overflow for B49-B50*

1.3 Facility Wastewater Sources

The plating, stripping, washing, and polishing lines generate spents, rinses, and residuals. There is a single non-domestic connection to the sewers that receives contributions from the industrial wastewater treatment unit as its only source. The November 29, 2007 OCSD permit identifies the sewer sampling point as the sample box in the pretreatment system area. This compliance sample point is designated as IWD-511370 for the purposes of this report.

Spent Solutions – The imparted contamination from the processing of parts and the progressive drop in solution strength results in the generation of spent solutions. The generation rate depends on plating bath usage, effectiveness of bath contamination control, and the amount of drag-out lost into the rinses or to the floor. Beo-Mag Plating delivers the spents from the

caustic and acidic preparatory steps to on-site batch treatment by portable pump and hose. Spent strippants are delivered by portable pump and hose to drums for off-site disposal. Plating spents are regenerated solely by additions with the bright nickel solutions continuously circulated through cartridge filters. The only losses from these "adds-only" solution tanks therefore would be through the drag-out of solutions into the rinses. Otherwise, these solution tanks without outlets foul through contamination or fail through use. The list of baths follows below.

Table 1.3.1 - Beo-Mag Plating - Solution Baths

Spents to Batch Treatment	Regenerated by Additions	Spents Off-Hauled as Haz
A1 - alkaline electroclean	A4 - bright nickel plating ①	A15 - alkaline Cr strip
A3 - alkaline cleaning	A8 - bright nickel plating ①	A16 - HNO_3-acid Ni-Cr strip
A7 - HCl-acid activation	A10 - dull nickel plating	B36 – nickel strip
B24 - cyanide-copper plate	A11 - chromium plating	
B34 - alkaline degreasing	A14 - e-less nickel plating	
B37 - alkaline electroclean	B19 - cyanide-gold plating	
B42 - anti-tarnish	B22 - e-less nickel plating	
B47 - aluminum deox	B27 - bright nickel plating ①	
B49 - alkaline Al etch	B29 - acid-copper plating	
B50 - acid passivation	B32 - acid-copper plating	
	B45 - zincate coating	

① circulation through filter cartridges

Rinses – Beo-Mag Plating primarily employs (1) first-stage drag-out static rinses reclaimed for solution make-up, and (2) on-demand overflow and static rinses following the first-stage drag-outs. The list of rinses follows below.

Table 1.3.2 Beo-Mag Plating - Rinses

Discharged to Treatment	Static Reclaim to Solution Make-up
A6 - 2°overflow for bright/e-less nickel	A2 - 1°drag-out for alk electroclean
A13 - 2°spray for chrome plating	A5 - 1°drag-out for bright nickel plating
A17 - 1°spray for alk/acid strip ①	A9 - 1°drag-out for bright nickel plating
A18 - 1°drag-out for bright nickel ①	A12 - 1°drag-out for chrome plating
A19 - 3°hot-DI for chrome plating	B20 - 1°drag-out for cyanide-gold plating
A20 - 4°spray for chrome plating	B23 - 1°drag-out for B21
B21 - 2°overflow for e-less nickel plate	B25 - 1°drag-out for cyanide-copper plate
B26 - 2°spray for cyanide-copper plate	B28 - 1°drag-out for bright nickel plating
B40 - 1°spray for alk strip/electroclean	B30 - 1°drag-out for acid-copper plating
B41 - 2°overflow for alk strip/e-clean	B33 - 1°drag-out for acid-copper plating
B46 - 1°spray for anti-tarnish/zincate	B35 - 1°drag-out for alk degreasing
B48 - 1°spray for deoxidation	
B51 - 1°overflow for alk-etch/passivate	

① pumped to batch treatment

Residuals - The wastewater treatment unit generates floc drawn from the pre-settling and clarifier steps. These sludges, along with batch treated spent solutions, spray rinses, and static rinses, are screened through a filter press with the filter cake disposed off-site as hazardous. The only other residuals are spent in-tank cartridge filters for bright nickel, and spent strippants.

1.4 Facility Process Wastewater Handling

Discharge - Treated process wastewaters discharge to the sewers through a single connection located in the industrial wastewater area within the facility designated in this report after the OCSD permit number as IWD-511370. The permit lists the average discharge flow as less than 5,000 gallons per day. Measured flow rates average 2,525 gpd. ***See*** Figure 1.4 on the next page and the photos in Section 1.7 of this report on page 7.

Composition - The process-related wastewaters listed in section 1.3 above would be expected to contain copper, chromium, lead, nickel, zinc, cyanide, and acidity, as well as oil & grease, salts, surfactants, paint grime, and other pollutants in the surface grime cleaned off of parts, and the minerals entrained in the water supply.

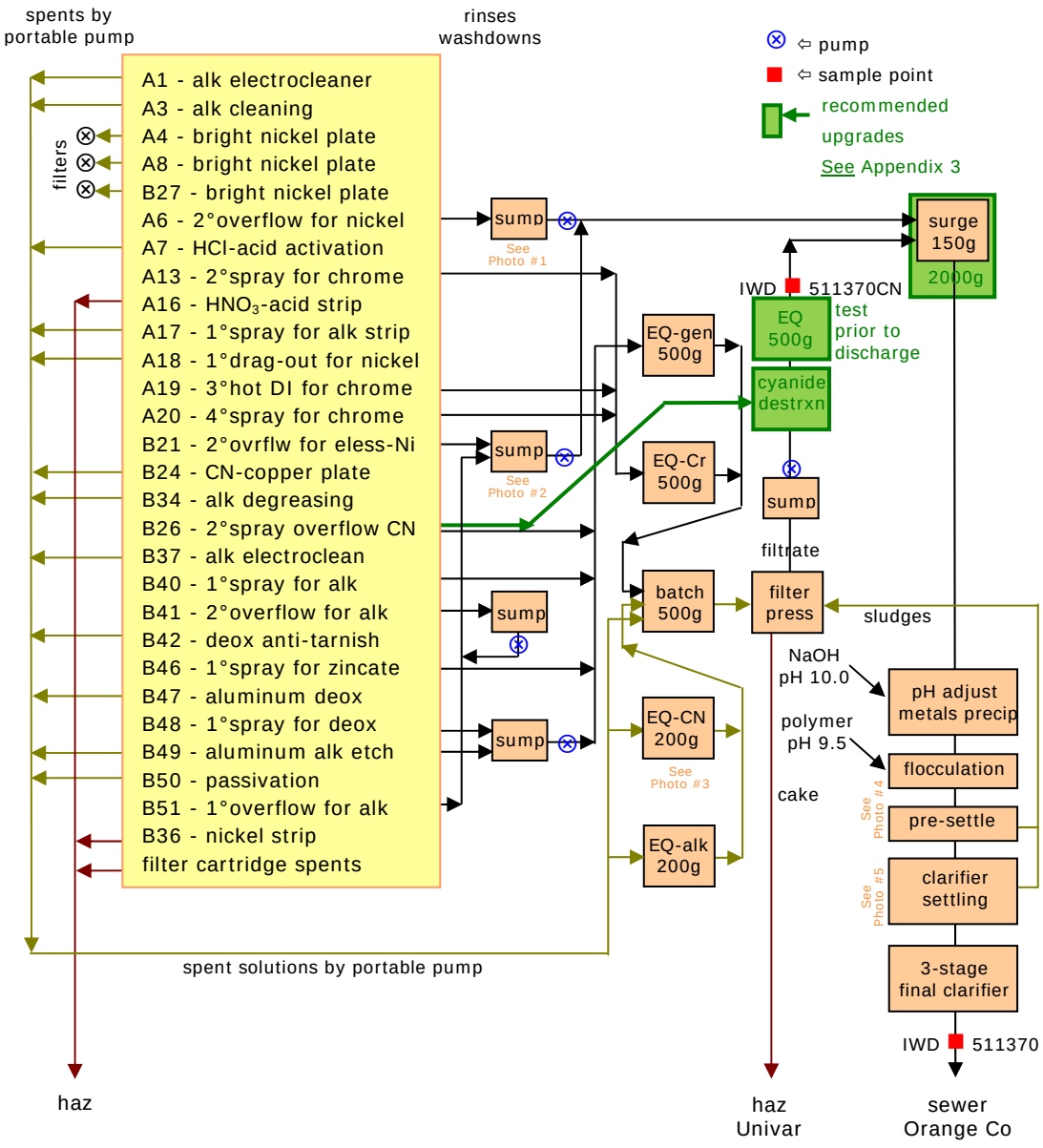
Delivery - The spray and overflowing rinse tanks discharge by gravity or siphon through hard-piping to sumps which are outfitted with pumps for the delivery of wastewaters through hard piping to the various inlets into the industrial wastewater treatment plant. The delivery of spents and captured rinses is by portable pump and hosing to the various inlets into the industrial wastewater treatment unit. Everything arrives by pump into the industrial wastewater treatment unit. Separate equalization tanks receive the chromium-bearing rinses, alkaline zincate spents, cyanide-bearing spents, and general spents and rinses.

Treatment – Beo-Mag Plating provides both batch treatment of high-strength spents and rinses, and continuous treatment of three low-strength rinses (Tanks A6, B21, B51) and filter press filtrate for discharge through a final three-stage clarifier to the sewers. This treatment provides segregated batch treatment (chromium reduction, cyanide destruction, metals precipitation, press filtration), continuous metals precipitation, flocculation, settling, and filter pressing of sludges. The chemical reaction steps are controlled through metering for pH and ORP. Beo-Mag Plating also provides filtration of the bright nickel plating baths through in-tank circulation through cartridges.

1.5 POTW Legal Authorities

Orange County Sanitation Districts - OCSD administers the pretreatment program in county sanitation districts serviced by the Fountain Valley wastewater treatment plant. The Fountain Valley wastewater treatment plant operates under the requirements of the State of California, Santa Ana RWQCB's Waste Discharge Requirements, No. R8-2004-0062, issued to OCSD in 2004. The WDRs, which also function as NPDES permit No. CA0110604, require the implementation of an approved pretreatment program throughout the sewer service area.

Figure 1.4
Beo-Mag Plating - Configuration and Layout



Under this authority, OCSD issued permit No.51-1-370 authorizing the discharge of non-domestic wastewater the sewers.

1.6 Sampling Record

Beo-Mag Plating self-monitors metals quarterly, and cyanide and toxic organics semi-annually as required by the OCSD permit. OCSD also collects its own samples quarterly.

1.7 Photo Documentation

Six of the seven photographs taken during this inspection are depicted below and saved as *beomag-1.jpg through -7.jpg*.

Photo #1: Delivery sump for A6 overflow rinse
Taken By: Greg V. Arthur
Date: 09/11/08

Photo #2: Delivery sump for B21 B41 B51 overflows
Taken By: Greg V. Arthur
Date: 09/11/08

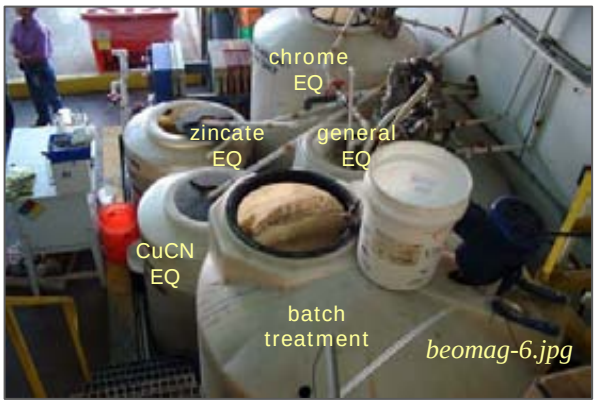


Photo #3: Batch treatment and holding tanks
Taken By: Greg V. Arthur
Date: 09/11/08

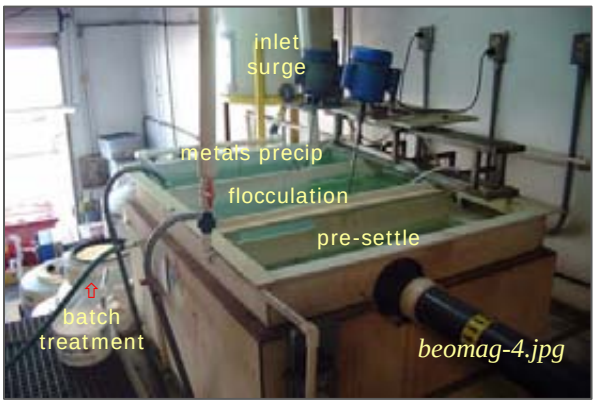


Photo #4: Industrial wastewater treatment unit
Taken By: Greg V. Arthur
Date: 09/11/08

Photo #5: IWTP Clarifier
Taken By: Greg V. Arthur
Date: 09/11/08

Photo #6: Clarifier sludge tap
Taken By: Greg V. Arthur
Date: 09/11/08

2.0 Sewer Discharge Standards and Limits

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

Summary

The Federal standards in 40 CFR 433 for new source metal finishers apply to all process wastewater discharges from Beo-Mag Plating through IWD-511370. For the most part, the OCSD permit correctly advances the application of the Federal standards and local limits. The application of Federal standards, national prohibitions, and local limits was determined through visual inspection. ***See*** Appendix 1 on page 17 of this report for the permit limits.

Requirements

- None.

Recommendations

- The OCSD permit should specifically identify the cyanide compliance sampling point, and adjust the Federal standards to account for dilution from non-cyanide-bearing flows.
- The alternate Federal standards for amenable cyanide should replace the Federal standards for total cyanide in the OCSD permit.
- The OCSD permit should refer to an approved toxic organics management plan in order to exempt or partially exempt Beo-Mag from self-monitoring for toxic organics.

2.1 Classification by Federal Point Source Category

Beo-Mag Plating qualifies as a metal finisher subject to the Federal metal finishing standards for new sources in 40 CFR 433.

New or Existing Sources – Beo-Mag Plating is subject to Federal standards for new sources. Under the definitions in 40 CFR 403.3(k), a process 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 that after the 1982 deadline, the new source standards apply to the original installation of metal finishing lines, rebuilt or moved lines, or existing lines converted to do new operations. 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*). Beo-Mag Plating qualifies as a new source because operations began after 1983.

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 OCSD local limits apply to non-domestic discharges in its service area.

2.3 Federal Categorical Pretreatment Standards
New Source Metal Finishing - 40 CFR 433.17

40 CFR 433.17	Cd	Cr	Cu	Pb	Ni	Ag	Zn	CNt	Can	TTO
daily-maximum (mg/l)	0.11	2.77	3.38	0.69	3.98	0.43	2.61	1.20	0.86	2.13
month-average (mg/l)	0.07	1.71	2.07	0.43	2.38	0.24	1.48	0.65	0.32	-

Applicability - Under 40 CFR 433.10(a), the metal finishing standards apply to the process wastewaters from Beo-Mag Plating because the operations involve electroplating, electroless plating, chemical coating, and etching. The metal finishing standards "... apply to plants that perform ..." the core operations of electroplating, electroless plating, etching, chemical coating, anodizing, or printed circuit board manufacturing and they extend to other on-site operations associated with metal finishing and specifically listed in 40 CFR 433.10(a), such as cleaning. If any of the core operations are performed, the new source metal finishing standards apply to discharges from the core and associated operations. As a result, the metal finishing standards apply to all process wastewater discharges through IWD-511370.

Basis of the Standards - The new source metal finishing standards were based on a model pretreatment unit that comprises metals precipitation, settling, sludge removal, source control of toxic organics, no discharge of cadmium-bearing wastewaters, and if necessary, cyanide destruction and chromium reduction. The best-available-technology standards were set where 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 – First, under 40 CFR 433.12(c), the cyanide standards as applied to metal finishing wastewater discharges must be adjusted to account for dilution from non-cyanide bearing waste streams. The OCSD permit established a separate upstream compliance sampling point for cyanide after batch treatment and the filter press, referred to as IWD-511370CN for the purposes of this inspection. The OCSD permit, however, does not adjust the standards to account for dilution from non-cyanide bearing wastewaters. EPA estimates that ~20% of the total flows through IWD-511370CN are cyanide-bearing, based on numbers of contributing cyanide-bearing spents (1 of 9), spray rinses (0 of 7), and over-flow rinses (1 of 3). As a result, dilution results in adjusted standards that are ~20% of those listed in 40 CFR 433.17. ***See*** Table 1.1 for the list of cyanide-bearing sources and Figure 1.4 for the location of the cyanide compliance sampling point.

Second, under 40 CFR 403.6(d,e), the Federal categorical pretreatment standards do not have to be adjusted to account for dilution from non-contact cooling waters, cooling tower bleed, and boiler blowdown, since none of these flows are present in the discharge.

Third, the Federal standards in 40 CFR 433.12 allow facilities with an approved toxic organics management plan to certify instead of sample. The OCSD permit requires self-monitoring for EPA 624 volatile organics but not for all of the toxic organics listed in 40 CFR 433.11(e). The permit does not refer to an approved toxic organics management plan that exempts self-monitoring for all toxic organics.

Compliance Deadline - New sources were required to comply on the first day of discharge.

2.4 Federal Prohibitions

The Federal standards in 40 CFR 403.6(d) and 403.17(d) prohibit dilution as a substitute for treatment, and the bypassing of any on-site treatment necessary to comply with standards, respectively. The OCSD permit prohibits bypassing (Permit Part 2.II.A.2), and references a provision against dilution as a substitute for treatment (Permit Part 3.I.B).

2.5 Point(s) of Compliance

The permit identifies the sample box within the pretreatment area as the location of the secured sampling point, designated in this report as IWD-511370. The permit does not specifically identify the location of the cyanide compliance sampling point, IWD-511370CN.

Federal Standards - Federal categorical pretreatment standards for metals and toxic organics apply end-of-process-after-treatment to all Federally-regulated discharges to the sewers. The sample point IWD-511370 is a suitable end-of-process-after-treatment sample point representative of the day-to-day discharge of Federally-regulated wastewaters from Beo-Mag Plating for all parameters.

Local Limits - Local limits and the national prohibitions apply end-of-pipe to non-domestic flows. The sample point designated as IWD-511370 is a suitable end-of-pipe sample point representative of the day-to-day non-domestic wastewater discharges from Beo-Mag Plating.

2.6 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. The OCSD permit establishes these sampling protocols by specifying the type of sampling required by parameter (Permit Attachment A). ***See*** Section 5.0 of this report on page 16 and Appendix 1 on page 17.

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).

Beo-Mag Plating employs best-available-technology ("BAT") model treatment but only for metals and thus has not achieved consistent compliance for all Federally-regulated pollutants. In particular, the treatment in-place is not effective in achieving compliance with the Federal standards for cyanide, with the sample record revealing a greater historic chance of violating the cyanide standard than not. The sample record also reveals an historic chance of violating the standards for metals to be sligthly greater than would be expected from model treatment. The lessened performance appears to be related to the configuration of the treatment in-place. The collection of wastewaters for delivery to the treatment unit is well-segregated by treat-ability and strength, however, the delivery of spent involves the extensive use of portable pumps and flexible hosing. ***See*** Appendices 2 and 3 on pages 18 and 19 for a sampling record summary and a summary of permit violations.

Requirements

- The treatment in-place must be re-configured to provide cyanide destruction for all cyanide-bearing wastewaters.

Recommendations

- An alkaline destruction unit for cyanide should be installed to handle all cyanide-bearing rinses (Tank B26) and all batch treated cyanide-bearing spents (filter press filtrate), with the Federal cyanide sampling point established immediately downstream.
- Influent surge capacity into treatment should be increased to handle average daily flows.
- Batch treated filtrate and cyanide-bearing flows should be tested prior to release.
- Hard-piping and permanent standpipe stations should be established for the delivery of spents to treatment in order to eliminate the use of long flexible hosing.

3.1 Sampling Results

The 2005-2009 sample record for Beo-Mag Plating collected from the secured sampling points consists of self-monitoring quarterly for metals and semi-annually for cyanide and toxic organics, as well as sampling collected by OCSD quarterly for metals and cyanide. All

metals samples were 24-hour composites. The cyanide and toxic organics samples were grabs. ***See*** Appendix 2 on page 18 of this report for a summary of the compliance sampling.

3.2 Best-Available-Technology Treatment

Beo-Mag Plating employs best-available-technology ("BAT") model treatment or its equivalent for the removal of metals but does not effectively treat its cyanide-bearing waste streams. As a result, over the past four fiscal years beginning in July 2005, the samples for the discharges often far exceeded the Federal cyanide standards, and resulted in calculated average and 99th% peak concentrations of 0.795 and 3.448 mg/l total cyanide. The samples also at times slightly exceeded the Federal standards for copper and nickel, resulting in calculated average and 99th% peak concentrations of 0.852 and 2.552 mg/l copper, and 1.229 and 3.193 mg/l nickel. Samples for the other pollutants met the Federal standards with average and calculated 99th% peak concentrations of 0.001 and 0.005 mg/l cadmium, 0.010 and 0.028 mg/l chromium, 0.004 and 0.026 mg/l lead, 0.011 and 0.052 mg/l silver, 0.247 and 0.849 mg/l zinc, and <0.010 mg/l and <0.010 total toxic organics.

These sampling results indicate that the statistical probability of violating the Federal standards in the future for cyanide could be as high 75% per sampling event or sampling month. The probability could be less depending on the dilution from non-cyanide bearing flows through the sample point. But even if all flows through IWD-511370CN were cyanide bearing at the time of sampling and there was no dilution, the probability remains essentially at 50%. The sample results also indicate that the statistical probability of violating the Federal standards for metals could be as high as 15%. Violation rates like these that are significantly higher than the 1% used in setting the Federal standards point to deficiencies in either the design or the operation of the model treatment.

While BeoMag Plating does possess treatment for metals equivalent in design to the model treatment and there are aspects of control which would be expected to improve performance, there are notable deficiencies in the design and operation observed during this inspection. In particular, (1) the cyanide-copper plating rinse (Tank B26) is directed to the general holding sump instead of the cyanide holding sump, and (2) it is not evident that the batch treatment step itself provides BAT treatment or its equivalent. ***See*** Figure 1.4 on page 6 of this report. The improvements (+) and deficiencies (**-**) are listed below.

- **No cyanide treatment for cyanide-bearing rinses**.
+ Segregated sewer delivery and treatment for low-strength rinses and high-strength spents.
+ Batch treatment of spents by treatability and multiple influent holding tanks.
+ Pumped control from tanks and sumps to treatment.
+ Good reaction end-point process unit controls through the use of ORP and pH metering.
+ Good settling capacity.
- Surge capacity into continuous treatment is undersized to handle pump surging from both the batch treatment unit and the delivery sumps.
- Clarifier sludges are not automatically drawn through hard piping to the filter press.
- Spent solutions are delivered by portable pump and hosing to treatment.
- No testing after batch treatment for compliance prior to release and delivery.

The sampling results reflect and are the likely result of no cyanide treatment for rinses and the inconsistent performance of the existing treatment for metal. The inconsistent performance could also be related to inadequate capacity, or unidentified incompatible waste streams that are either untreatable themselves or interfere with treatment, or unidentified bypassing of untreated or partially treated wastewaters. In this inspection, EPA is able to identify the existence but cannot specify with certainty the causes of inconsistent performance.

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. This prohibition applies when sample results for a diluted waste stream are below the Federal standards and the apparent compliance is used to justify untreated discharge. Two conditions need to be established in order to make a determination of non-compliance. First, some or all of the Federally-regulated wastewaters must discharge without undergoing BAT model treatment or its equivalent. Second, there must be excess water usage within the regulated process.

There is no evidence of dilution as a substitute for treatment since Beo-Mag Plating does not conclusively meet both conditions of non-compliance. For metals, the first condition is not met since all Federal regulated waters discharge through BAT model treatment. For cyanide, the first condition is met since some cyanide-bearing waters discharge without treatment for cyanide. However, for both metals and cyanide, it is not clear whether the second condition is met or not since no obvious on-demand controls were found, but nevertheless the running rinses were also not observed discharging irrespective to parts processing.

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 were no observed methods of bypassing at Beo-Mag Plating. In particular, the delivery of all waste streams was observed to lead to treatment and discharge through the permitted sample point. However, the delivery of spents involves portable pumps and long flexible hosing which makes an inadvertent bypassing of treatment possible.

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).

The sample record indicates that Beo-Mag Plating has almost always complied with its local limits for metals, cyanide, and organics. There were no sample results reported for pH, and oil and grease, although the presence of treatment to remove metals would be expected to also result in consistent compliance. The lone sample to exceed a local limit occurred in 2006 for copper. The statistical chance of another is far less than 1%. In general, the Federal standards are more stringent than the local limits. Improving performance in order to establish consistent compliance with the Federal standards would be expected to further ensure consistent compliance with the local limits. ***See*** Appendix 3 on page 18 of this report.

Requirements

- None.

Recommendations

- See the recommendations in Section 3.0 on page 11 of this report.

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 OCSD wastewater treatment plants through consistent compliance with their sludge and discharge limits.

4.2 Local Limits for Oxygen Demanding Pollutants and The National Prohibition Against Interference

High-Strength Organics - The process-related wastewaters discharged to the sewers are not expected to be high enough in organics strength to pose a risk of interference, with the organics strength significantly less than domestic sewage.

Metals and Cyanide – There was a single violation of the local limit for copper, but no violations of any other local limit. The single violation did not result in or contribute to any interference in the operations of the OCSD sewer system and wastewater treatment plants.

4.3 Local Limits for Toxic Metals, Cyanide, and Other Pollutants and The National Prohibition Against Pass-Through

Metals and Cyanide – There was a single violation of the local limit for copper, but no violations of any other local limits. The single violation did not result in or contribute to any pass-through of pollutants from the OCSD wastewater treatment plants into the Pacific ocean or into the treatment plant sludge in violation of its NPDES permit.

Toxic Organics – There were no violations of the local limits for toxic organics.

Oil and Grease – There were no sample results reported for oil and grease. The low levels of oil and grease expected and the presence of both metals treatment and the final clarifier steps would be expected to result in consistent compliance with oil and grease limits.

4.4 Local Limits for pH and Sulfides, and The National Prohibitions Against Safety Hazards and Corrosive Structural Damage

Corrosion - Sewer collection system interferences related to the formation of hydrogen sulfide and the resulting acidic disintegration of the sewers are possible but not expected. The wastewaters discharged to the sewers are not high-strength in biodegradable organics nor acidic in nature. However, the wastewaters feeding into the final clarifier comprise both acidic and alkaline waste streams and can vary in pH. As a result, compliance with the pH limits depends on the successful treatment. For this reason, it remains appropriate to require the continuous self-monitoring and reporting of pH.

Flammability - Flammability would not be expected because sampling shows that the discharges to the sewer entrain negligible amounts of volatile organics.

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).

Permit Requirements – Beo-Mag Plating has successfully fulfilled the self-monitoring requirements set forth in the OCSD permit. Over the past four fiscal years, the sample record shows that Beo-Mag Plating (1) submitted bimonthly sample results for all permit listed parameters, (2) collected all samples from the designated compliance sampling point, (3) correctly obtained 24-hour composites for metals and grabs for the other pollutants, and (4) followed appropriate chain-of-custody procedures.

Representativeness - The sample record also appears representative of the discharge to the sewers over the sampling day and the six-month reporting period. Some pollutants present at concentrations well below the Federal standards and local limits do not need to be sampled as frequently as currently required by the permit. However, the self-monitoring for pH should be continuous given the variable and nature of the wastewaters entering the final clarifier.

Requirements

- ***See*** Appendix 1 on page 17 for the self-monitoring and city monitoring requirements for IWD-511370 that would be considered to be representative of the discharge.

Recommendations

- Self-certification statements should include copies of the hazardous waste manifests documenting the off-hauling of spents, spent static rinses, and residuals.

Appendix 1
Sewer Discharge Standards and Limits for Beo-Mag Plating @ IWD-511370

FEDERAL CATEGORICAL STANDARDS AND OCSD LOCAL LIMITS						
pollutants of concern (mg/l)	Fed stds d-max	Fed stds mo-avg	loc limits instant	loc limits d-max ④	monitoring frequency ⑤ discharger	district
flow (gpd)	-	-	-	-	1/day	-
arsenic	-	-	2.00	0.083	-	③
cadmium	0.11	0.07	1.00	0.005	**1/six-mos**	1/year
chromium	2.77	1.71	2.00	0.083	**1/six-mos**	1/year
copper	3.38	2.07	3.00	0.125	quarterly	quarterly
lead	0.69	0.43	2.00	0.029	**1/six-mos**	1/year
mercury	-	-	0.030	0.001	-	③
nickel	3.98	2.38	10.00	0.166	quarterly	quarterly
silver	0.43	0.24	5.00	0.018	**1/six-mos**	1/year
zinc	2.61	1.48	10.00	0.109	quarterly	quarterly
cyanide – total	0.214 ①	0.116 ①	5.00	0.050	-	1/year
cyanide - amenable	0.153 ①	0.057 ①	1.00	0.042	**monthly** ①	quarterly
total toxic organics	2.13	-	0.58	-	1/six-mos	1/year
oil+grease - mineral	-	-	100	-	-	1/year
pH (s.u.)	-	-	6.0-12.0	-	**continuous**	quarterly
biochem oxy demand	-	-	-	15000	-	③
total sulfides	-	-	5.00	-	-	1/year
dissolved sulfides	-	-	0.50	-	-	1/year
PCBs	-	-	0.010	-	-	③
pesticides	-	-	0.010	-	-	③
explosivity	-	-	②	-	-	③

① For IWD-511370CN as adjusted to account for ~5:1 dilution from non cyanide-bearing flows.
② Narrative prohibition against the introduction of flammable or explosive substances
③ As part of periodic priority pollutant scans in order to identify changes in discharge quality
④ Loading limits in lbs/day, based on baseline minimum flow rate of 5,000 gpd.
⑤ Recommended **reductions in green**. Recommended **increases in red**.

Appendix 2
Wastewater Discharge Quality for Beo-Mag Plating from July 2005 - March 2009

SAMPLE RECORD SUMMARY

pollutants (µg/l)	effluent sampling results				violation rate		sample count
	mean	99th%	min	max	sample	period ③	
cadmium	0.7	5.1	<7	10	0/26	0/21	26
chromium	9.9	27.6	<10	30	0/26	0/21	26
copper	852.2	2551.5	30	3190	**1/27**	**1/21**	27
lead	3.7	26.1	<20	50	0/26	0/21	26
nickel	1228.5	3193.2	20	3770	0/26	**2/20**	26
silver	11.4	52.2	<20	80	0/26	0/21	26
zinc	246.9	849.4	60	940	0/26	0/21	26
total cyanide	794.4	3447.6	<10	3760	**8/14**	**7/13**	14
amenable cyanide	-	-	-	-	②	②	0
total toxic organics	<10	<10	<10	<10	0/7	-	7
oil+grease – min (mg/l)	-	-	-	-	②	-	0
flow (gpd)	2515	5273	500	5800	-	-	①
pH (s.u.)	④	-	-	-	②	-	0

① Continuous flow self-monitoring results reported for the day of sampling
② No sample results for these pollutants of concern - pH, amenable cyanide, oil and grease.
③ Monthly averages calculated by calendar month of both self-monitoring and OCSD sampling
④ pH median

STATISTICAL PROBABILITY OF FUTURE VIOLATIONS

violation probability by parameter	mean (µg/l)	std dev (µg/l)	statistical probability		percent
Fed d-max – copper	µ = 852.2	σ = 729.3	*a(3380)*	= 0.0003	~0%
Fed mo-av – copper	µ = 893.1	σ = 728.1	*a(2070)*	= 0.0530	~5%
local d-max – copper	µ = 852.2	σ = 729.3	*a(3000)*	= 0.0016	~0%
Fed d-max – total cyanide (adjusted)	µ = 794.4	σ = 1138.7	*a(214)*	= 0.6949	~70%
Fed d-max – (unadjusted standards)	µ = 794.4	σ = 1138.7	*a(1200)*	= 0.3608	~40%
Fed mo-av – total cyanide (adjusted)	µ = 794.4	σ = 1138.7	*a(116)*	= 0.7243	~75%
Fed mo-av – (unadjusted standards)	µ = 794.4	σ = 1138.7	*a(650)*	= 0.5504	~50%
local d-max – total cyanide	µ = 794.4	σ = 1138.7	*a(5000)*	= 0.0001	~0%
Fed d-max – nickel	µ = 1228.5	σ = 843.2	*a(3980)*	= 0.0004	~0%
Fed mo-av – nickel	µ = 1304.5	σ = 891.1	*a(2380)*	= 0.1137	~10%

Appendix 3
BeoMag Plating Violations from July 2005 – March 2009

FEDERAL STANDARD VIOLATIONS FOR CYANIDE

sample dates	type	sampler	Fed standards / local limits ①③		violations	days
08/08/06	grab	IU	Fed d-max - CN(total)	0.214 mg/l	3.76 ②	1
Aug 2006	grab	IU	Fed mo-avg - CN(total)	0.116 mg/l	3.76 ②	31
01/23/07	grab	IU	Fed d-max - CN(total)	0.214 mg/l	0.70	1
Jan 2007	grab	IU	Fed mo-avg - CN(total)	0.116 mg/l	0.70 ②	31
Jun 2007	grab	POTW	Fed mo-avg - CN(total)	0.116 mg/l	0.175	30
07/25/07	grab	IU	Fed d-max - CN(total)	0.214 mg/l	1.81 ②	1
Jul 2007	grab	IU	Fed mo-avg - CN(total)	0.116 mg/l	1.81 ②	31
11/19/07	grab	IU	Fed d-max - CN(total)	0.214 mg/l	1.12	1
Nov 2007	grab	IU	Fed mo-avg - CN(total)	0.116 mg/l	1.12 ②	30
01/16/08	grab	POTW	Fed d-max - CN(total)	0.214 mg/l	0.29	1
Jan 2008	grab	POTW	Fed mo-avg - CN(total)	0.116 mg/l	0.29	31
04/14/08	grab	POTW	Fed d-max - CN(total)	0.214 mg/l	0.495	1
Apr 2008	grab	POTW	Fed mo-avg - CN(total)	0.116 mg/l	0.495	30
02/23/09	grab	POTW	Fed d-max - CN(total)	0.214 mg/l	2.48 ②	1
Feb 2009	grab	POTW	Fed mo-avg - CN(total)	0.116 mg/l	2.48 ②	28

FEDERAL STANDARD VIOLATIONS FOR METALS

sample dates	type	sampler	Fed standards / local limits ①③		violations	days
Apr 2006	24-hour	IU	Fed mo-avg - copper	2.07 mg/l	3.19 ②	30
Jul 2007	24-hour	IU	Fed mo-avg - nickel	2.38 mg/l	3.77 ②	31
Oct 2007	24-hour	POTW	Fed mo-avg - nickel	2.38 mg/l	2.79 ②	31

LOCAL LIMIT VIOLATIONS

sample dates	type	sampler	Fed standards / local limits ①③		violations	days
04/19/06	24-hour	IU	Local instant - copper	5.0 mg/l	3.19 ②	1

① Federal cyanide standards based on EPA dilution estimates of ~5:1 at IWD-511370CN.
② These samples remain violations no matter the amount of dilution from non-CN bearing flows.
③ Monthly averages calculated by calendar month of all self-monitoring and OCSD sampling.