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

August 10, 2006

In Reply Refer To: WTR-7

Frank Aguilar
Industrial Plating Company
803 American Street
San Carlos, California 94070

**Re: April 3, 2006 Clean Water Act Inspection**

Dear Mr. Aguilar:

Enclosed is the August 10, 2006 report for our April 3 inspection of Industrial Plating. Please submit a short response to the findings in Sections 2 through 5 of this report, to EPA, the South Bayside System Authority, and the Regional Water Quality Control Board, by **September 30, 2006**.

The main findings are summarized below:

1 Industrial Plating qualifies as a job-shop metal finisher subject to the Federal job-shop electroplating standards. SBSA correctly classified and permitted Industrial Plating.

2 Treatment is both equivalent in design to the models used in setting the Federal standards and operated to perform better than predicted. However, because of inconsistent operations, there have been variations in the discharge quality that are not be expected from such a well-designed system. Fortunately, there have been no recent violations, primarily because of the limited application of Federal standards, and the fact that the site-specific local limits are annual averages based on past peak events.

3 A drainage line leading to batch treatment should be extended into the shop in order to eliminate the need for long hoses, thereby minimizing treatment bypass potential.

I certainly appreciate your helpfulness extended to me during this inspection. I remain available to SBSA 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,

*Original signed by:*
*Greg V. Arthur*
Greg V. Arthur
CWA Compliance Office

Enclosure

cc: Norman Domingo, SBSA
Michael Chee, RWQCB-Oakland

**U.S. ENVIRONMENTAL PROTECTION AGENCY**

**REGION 9**

**CLEAN WATER ACT COMPLIANCE OFFICE**

# NPDES COMPLIANCE EVALUATION INSPECTION REPORT

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|---|---|
| Industrial User: | Industrial Plating Company<br>803 American Street, San Carlos, California 94070<br>40 CFR 413 Subparts A, B, D, E, F and G – Job-Shop Electroplating |
| Treatment Works: | South Bayside System Authority<br>Regional Water Treatment Plant<br>(NPDES Permit CA0038369) |
| Date of Inspection: | April 3, 2006 |

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Inspection Participants:

| | |
|---|---|
| US EPA: | Greg V. Arthur, Region 9, CWA Compliance Office, (415) 972-3504 |
| RWQCB-Oakland: | None |
| SBSA: | Michael Li, Water Quality Specialist, (650) 594-8411 ex139 |
| Industrial Plating: | Henry Aguilar, Owner, (650) 593-1046<br>Frank Aguilar, Owner, (650) 593-1046<br>Tim Lundell, Chemical Data Mgmt Systems, (925) 551-7300 |

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| Report Prepared By: | Greg V. Arthur, Environmental Engineer<br>August 10, 2006 |

## 1.0 Scope and Purpose

On April 3, 2006, EPA, and the South Bayside System Authority ("SBSA") conducted a compliance evaluation inspection of Industrial Plating in San Carlos, 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.

Industrial Plating is a significant industrial user ("SIU") within the SBSA 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 April 3.

## 1.1 Process Description

Industrial Plating is a full-service metal finishing job-shop. The aluminum anodizing line involves alkaline cleaning, nitric-acid desmut, alkaline caustic etch, sulfuric-acid Type II anodizing, sulfuric-acid Type III hard anodizing, sealing, dyeing and chromium conversion coating. The steel/stainless/zinc plating line involves alkaline cleaning and electrocleaning, hydrochloric-acid derust, cyanide-alkaline electrocleaning, cyanide-copper strike and plating, cyanide-zinc plating, cyanide-silver plating, cyanide-cadmiun plating, cyanide-brass plating, dichromate passivation, chromium plating, and dichromate sealing. The nickel line involves bright nickel strike and plating, electroless nickel plating, sulfamate nickel plating, and nickel strip. The aluminum/zinc/magnesium die cast finishing line involves acid copper plating, zincate coating, and an unused black nickel plating step. The gold plating line involves cyanide gold plating and rhodium plating. The copper line involves nitric-acid preparation and stripping, zincate coating, and dichromate sealing. Other miscellaneous services include black oxide coating, zinc phosphating, manganese phosphating, caustic-zinc plating, bright tin plating, and glass bead wet and dry abrasion.

Industrial Plating does not own parts that undergo metal finishing on-site. No changes in configuration have been made to the metal finishing lines since start-up in 1978. Industrial Plating discharges its non-domestic wastewaters to the San Carlos domestic sewers through a single sewer connection designated in this report by permit number as IWD-050701. Domestic sewage discharges through separate connections downstream of the industrial wastewater connection.

## 1.2 Facility SIC Code

Industrial Plating is assigned the SIC code for electroplating (SIC 3471).

## 1.3 Facility Wastewater Sources

The metal finishing lines generate spents, rinses, scrap plate-out, and residuals. ***See*** Appendix 1. For the purposes of this report, the tank designations are by metal finishing line:

A - aluminum anodizing line
B - steel/stainless/zinc plating line
C – nickel/electroless nickel plating line
D - aluminum/zinc/mag die cast finishing line
E - gold plating line
F - copper parts coating line
G - miscellaneous processing steps

Spent Solutions – The imparted contamination from the processing of parts and the progressive drop in solution strength results in the generation of spent solutions. Industrial Plating batch treats most spents on-site, hauls off-site for disposal cyanide-plating spents plus a few others, and regenerates everything else through additions. Industrial Plating stated that no spents are discharged directly to the sewers or through the flow-through treatment unit. The list of spent solutions follows below.

| On-Site Batch Treatment | Hauled Off-site to Haz | Regenerated By Additions |
|---|---|---|
| A - alkaline clean<br>A - nitric-acid descale<br>A - alkaline caustic etch<br>A - sulfuric-acid anodize<br>A - nickel acetate seal<br>B - alkaline clean<br>B - alkaline electroclean<br>B - HCl-acid derust<br>B - deoxidation<br>B - dichromate seal<br>C - acid activation<br>C - electroless nickel plate<br>C - nickel strip<br>F - HF/nitric-acid prep<br>G - black oxide<br>G - zinc phosphate<br>G - manganese phosphate<br>G - alk-zinc barrel plate<br>G - bright tin plate<br>G - black nickel plate | B - cyanide electroclean<br>B - cyanide-copper plate<br>B - cyanide-copper strike<br>B - cyanide-brass plate<br>D - acid-copper plate<br>F - nitric-acid bright dip<br>F - zincate coat<br>G - cyanide strip | A - sulfuric-acid desmut<br>A - aluminum dye<br>A - alodine<br>B - cyanide-cad plate ✓<br>B - cyanide-zinc plate ✓<br>B - cyanide-silver plate ✓<br>B - dichromate passivate<br>B - chrome plate<br>C - bright nickel plate<br>C - nickel strike<br>C - sulfamate-nickel plate ✓<br>E - cyanide-gold plate<br>E - rhodium plate<br>G - dichromate conversion<br><br><br><br><br><br><br>✓ w/ in-tank solids removal |
| Discharge to IWD-050701 | Philip Services Corp – NV | No Release |

Rinses – Industrial Plating generally employs on-demand hose spray rinses or low-overflows to the floor drain pans. These floor drain pans, located under the shop floor grating, all drain to the flow-through industrial rinse water treatment unit. A few of the rinses over the floor drain pains are preceded by first-stage drag-out rinses or first-stage spray rinses over the solution tanks. In particular, the cyanide-bearing plating steps employ first-stage static drag-

out rinses and second-stage on-demand spray rinses over the floor pans. Spent drag-out rinses return to their respective solution tanks as make-up. The list of rinses follow below.

| Over Floor Drain Pans | Overtank Spray Rinsing | Drag-Out Rinses |
|---|---|---|
| A - alk clean 1°overflow<br>A - acid descale 1°overflow<br>A - caustic etch 1°overflow<br>A - desmut 1°overflow<br>A - anodize typeII 2° spray<br>A - Ni acetate seal 1°spray<br>A - anodize typeIII 1°spray<br>A - dye 1°spray<br>A - alodine 2°spray<br>B - alk clean 1°spray<br>B - electroclean 2°spray<br>B - acid derust 1°spray<br>B - CN electroclean 1°spray<br>B - deox 1°spray<br>B - CN Cu plate 2°spray<br>B - CN Cu strike 2°spray<br>B - CN Cd plate 2°spray<br>B - CN Zn plate 2°spray<br>B - CN Ag plate 2°spray<br>B - CN Ag plate 2°spray<br>B - CN brass plate 2°spray<br>B - dichromate seal 2°spray<br>B - Cr passivate 2°spray<br>B - DI hot water seal ovrflw<br>B - Cr plate 2°spray<br>C - bright-Ni plate 2°spray<br>C - e-less Ni 1°overflow<br>F - nitric bright dip 1°spray<br>F - zincate 1°spray | A - alodine 1°spray<br>B - dichromate seal 1°spray | A - anodize typeII 1°static<br>A - black dye 1°static<br>B - electroclean 1°static<br>B - CN Cu plate 1°static<br>B - CN Cu strike 1°static<br>B - CN Cd plate 1°static<br>B - CN Zn plate 1°static<br>B - CN Ag plate 1°static<br>B - CN Ag plate 1°static<br>B - CN brass plate 1°static<br>B - Cr-passivate 1°static<br>B - Cr plate 1°static<br>C - bright-Ni plate 1°static<br>C - sulfamate Ni 1°static<br>D - acid Cu plate 1°static<br>G – dichromate coat 1°static |
| Discharged to IWD-050701 | No Release | No Release |

Residuals – Industrial Plating extends the useful life of the sulfamate nickel plating solution through the circulation of the tank contents through a canister filter and nickel plate-out. The useful life of the cyanide-bearing solutions are extended through the removal of tank sludges.

| Tank Sludges to Haz | Spent Filters to Haz | To Recycler |
|---|---|---|
| B - cyanide-cad plate<br>B - cyanide-zinc plate<br>B - cyanide-silver plate | C - sulfamate nickel plate | C - nickel plate-out |
| Philip Services Corp – NV | Philip Services Corp – NV | unknown |

## 1.4 Facility Process Wastewater Composition

The process wastewaters listed in section 1.3 above would be expected to contain cadmium, copper, chromium, lead, nickel, silver, zinc, amenable 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

Industrial Plating provides on-site batch treatment for numerous spent solutions and flow-through wastewater industrial treatment for rinses. Only treated process-related wastewaters discharge to the sewers through a single connection designated in this report after the SBSA permit number as IWD-050701. The 2004-2005 sampling data indicates that Industrial Plating discharges an average of ~2,100 gallons per day ("gpd") to the sewers. ***See*** Appendix 1.

Delivery – Spent solutions are delivered to two dedicated batch treatment tanks either by portable pump and hose or by carting barrels. The rinses are delivered to the flow-through treatment unit by dedicated pipes through three main lines. Collected storm water from the treatment area is delivered through an outdoor sump to the flow-through treatment unit.

Batch Treatment – The batch treatment consists of two dedicated reaction tanks and a filter press in which the batch treated contents loop-through twice before continuing on to the flow-through treatment unit. The first batch treatment tank handles nickel-bearing spents and involves metals hydroxide precipitation, coagulation, and flocculation. The second batch treatment tank handles the other non-cyanide bearing spents and involves metals hydroxide precipitation, coagulation, and flocculation. The treated contents of both batch treatment tanks are pumped through a filter press with the filtrate returned to the batch treatment tanks for a second pass through treatment. For spents to escape the batch treatment system, Industrial Plating has to physically move the filter press filtrate hose into the inlet sump of the flow-through rinse water treatment unit.

Flow-Through Treatment – The flow-through treatment consists of three inlet equalization tanks segregated to handle cyanide-bearing, chromium-bearing, and general rinses. The inlet equalization tanks for cyanide- and chromium-bearing rinses are outfitted to provide cyanide destruction through alkaline chlorination in one tank and chromium reduction in the other. The pretreated contents from these tanks, as well as filter press filtrate and captured storm water, also enter the inlet equalization tank for the general rinses. Combined wastewaters proceed through hydroxide and sulfide metals precipitation, flocculation, plate settling, and a final effluent equalization tank, prior to discharging through IWD-050701 to the sewers.

Residuals Handling – Clarifier sludge proceeds to a sludge holding tank for dewatering through the filter press. The filtrate returns to the inlet equalization tank for general rinses. Filter press cake is hauled off-site for disposal as hazardous to Philip Services Corporation in Nevada.

Operational Controls – Industrial Plating employs a number of operational controls that improve the performance of the batch and flow-through treatment units. First, the reaction tanks in the flow-through treatment unit are operated with built-in chemical reaction end-point telemetry (both ORP and pH meters) in order to ensure completion of cyanide destruction, chromium reduction, and metals precipitation steps. Second, the metals precipitation step in the flow-through treatment unit involves the formation of not only insoluble metals hydroxides but also metals sulfides, which are more insoluble across a wider range of pHs. Third, batch treatment is operated to loop the contents through the formation of flocculated insoluble metals precipitates and filter press removal of solids until an operator manually diverts the filter press filtrate to the flow-through treatment unit for further treatment. Finally, the flow-through treatment unit impounds incoming wastewaters in large inlet equalization tanks segregated by wastewater type. Each of these operational controls reduces the operational variability inherent in the treatment, as well as imparted into treatment from the sources, thereby improving the system performance.

On the other hand, the delivery by pump and hose of spent solutions for batch treatment poses a potential to bypass treatment (through the misdirection of hose outlets to an undesignated drain) that would not exist with hard piping.

Sewer Discharge – The sample sump connection to the sewer is designated as the permitted compliance sampling point, IWD-050701.

## 1.6 POTW Legal Authorities

South Bayside System Authority – SBSA is a Joint Powers Authority comprised of the Cities of San Carlos, Belmont, Redwood City, and the West Bay Sanitary District, as member agencies. SBSA operates an EPA-approved pretreatment program as required by the State of California in the San Francisco RWQCB's Waste Discharge Requirements, No. R2-2003-0073, reissued to SBSA in 2003 and serving as NPDES Permit No. CA0038369. As part of this, SBSA and the member agencies have established sewer use ordinances that applies to all industrial users in its sewer system. Under this authority, SBSA issued an industrial user permit to Industrial Plating, No. 05-0701 covering the sewer discharge from IWD-050701.

## 1.7 Photo Documentation

No photos were taken during this inspection.

## 1.8 Sampling Record

All compliance samples are collected by SBSA from a monitoring box in front of 803 American Street, designated after the permit number as IWD-050701. ***See*** Appendix 3 for a summary of the 2004-2006 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 sewered 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 less than 10,000 gallons per day apply to all process wastewater discharges from Industrial Plating through IWD-050701. The SBSA permit correctly applied the Federal standards and local limits. The application of Federal standards, national prohibitions, and local limits was determined through visual inspection. ***See*** Appendix 2.

***Requirements***

- The permit must prohibit the bypassing of any treatment necessary to comply with either Federal standards or local limits.

***Recommendations***

- None.

## 2.1 Classification by Federal Point Source Category

Industrial Plating qualifies as a job-shop metal finisher subject to the Federal job-shop electroplating standards for existing sources in 40 CFR 413 (<10,000 gallons per day). SBSA correctly classified Industrial 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 – Industrial 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*). There have been no configuration changes at Industrial Plating since start-up in 1978.

## 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 SBSA local limits apply to non-domestic discharges in the San Carlos service area.

Numerical Limits - The SBSA local limits for a number of toxic pollutants are annual mass averages to be compared to the average of the calculated daily-mass loadings for the previous 12 months. The SBSA permit for Industrial Plating advances annual mass average limits for arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, zinc, phenols, and amenable cyanide. The SBSA permit also advances numerical concentration limits for petroleum oil & grease, and numerical measurement limits for pH, and temperature.

## 2.3 Federal Categorical Pretreatment Standards
**Existing Source Job-Shop Electroplating <10,000 gpd - 40 CFR 413**

| 40 CFR 413 <10kgpd | Cd | Cr | Cu | Pb | Ni | Ag | Zn | CNa | TTO | TM |
|---|---|---|---|---|---|---|---|---|---|---|
| daily-maximum (mg/l) | 1.2 | - | - | 0.6 | - | - | - | 5.0 | 4.57 | - |
| four-day average (mg/l) | 0.7 | - | - | 0.4 | - | - | - | 2.7 | - | - |
| stat conversion to mo-avgs | 0.5 | - | - | 0.3 | - | - | - | 1.5 | - | - |

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), 413.24(b)(f), 413.44(b)(f), 413.54(b)(f), 413.64(b)(f) and 413.74(b)(f) for dischargers of less than 10,000 gallons per day apply to all of the process wastewater discharges at Industrial Plating to the sewers through IWD-050701.

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. The best-available-technology standards were set where printed circuit board manufacturers and other 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-050701 do not need to be adjusted to account for dilution or for dual Federal categories because all wastewaters through this compliance sampling point qualify as Federally-regulated under 40 CFR 413.

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 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 SBSA permit advances a provision prohibiting dilution as a substitute for treatment. The permit does not include a provision against the bypassing treatment necessary to comply.

## 2.5 Point(s) of Compliance

The permit designates the SBSA monitoring box outside of the facility and just downstream from the final sampling sump as the compliance point (designated in this report as IWD-050701).

Local Limits - Local limits and the national prohibitions apply end-of-pipe to all non-domestic flows from Industrial Plating. The sample point designated in this report as IWD-050701 is a suitable end-of-pipe sample point representative of the day-to-day non-domestic wastewater discharges.

Federal Standards - Federal categorical pretreatment standards apply end-of-process-after-treatment to all Federally-regulated discharges to the sewers. The sample point IWD-040701 is also a suitable end-of-process-after-treatment sample point representative of the day-to-day discharge of Federally-regulated wastewaters.

## 2.6 Compliance Sampling

The national prohibitions are instantaneous-maximums and are comparable to samples of any length including single grab samples. However, the local limits are mass loadings comparable to average loadings calculated from a year's worth of representative sampling of any length. 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***

Industrial Plating employs wastewater treatment equivalent to the models used in originally setting the Federal standards. The treatment in-place is operated in a number of ways that can result in performance better than expected of small job-shop metal finishers. However, because the operations are not consistent, there have been variations in the discharge quality that would not be expected from such a well-designed facility. Nevertheless, there were no violations of the Federal standards, not because of consistent operations, but primarily because of the limited application of the Federal standards to small job-shop metal finishers. One other configurational shortcoming of note is the use of portable pumps and hoses for the delivery of spent solutions. This provides the opportunity to bypass treatment. All sampling results are useable for determining compliance. ***See*** Appendix 3.

***Requirements***

- None.

***Recommendations***

- The flow-through chemical treatment steps should be more closely attended to ensure the recommended reaction end-points are consistently reached.

- A hard plumbed line leading to the batch treatment units should be extended into the shop in order to eliminate the need for long hoses.

## 3.1 Sampling Results

The 2004-2006 sample records for Industrial Plating collected by SBSA from the monitoring box outside of the facility quarterly sampling, with four samples collected in two of the quarters in 2004. All metals samples were 24-hour composites. All cyanide samples were grabs. All sample results are usable for determining compliance with the Federal standards because they account for all rinses and spents discharged. Industrial Plating is exempted from total toxic organics sampling because it operates under an approved toxic organics management plan, as set forth in 40 CFR 433. ***See*** item 5.0 of this report.

## 3.2 Best-Available-Technology Treatment

The treatment in-place is equivalent in design and performance to the best-available-treatment (BAT) technology models used in originally setting the Federal standards. The BAT treatment incorporates an number of features that improve its performance by managing the variabilities inherent in wastewater generation, treatment, and discharge. BAT treatment at Industrial Plating is particularly improved by: (1) the segregated treatment of high-strength spent solutions, (2) both hydroxide and sulfide metals precipitation, and (3) reaction end-point metering for pH and ORP. The sampling results indicate that Industrial Plating, as currently designed and operated, consistently complies with its Federal standards for cadmium, lead, and amenable cyanide. All samples easily met all Federal standards, with average and calculated 99th% peak concentrations of 0.023 and 0.081 mg/l cadmium, 0.022 and 0.052 mg/l lead, and 0.666 and 3.785 mg/l amenable cyanide.

However, consistent compliance with the Federal standards is more a function of their limited application to small job-shop metal finishers like Industrial Plating than treatment equivalency to BAT. The Federal standards cover just cadmium, lead, amenable cyanide, and total toxic organics but do not extend to the range of other pollutants generated by job-shop metal finishers and treated by the BAT treatment. Against the expected performance of BAT, the treatment at Industrial Plating is not as consistent and effective. In particular, nickel and zinc concentrations from BAT treatment should both average less than 1.00 mg/l and respectively peak at 3.98 and 2.61mg/l. The sampling results were not statistically as good, with average and calculated 99th% peak concentrations of 2.538 and 10.057 mg/l nickel, and 0.996 and 3.711 mg/l zinc. The sampling results for the other metals were as expected from BAT, with average and calculated peak concentrations of 0.157 and 0.653 mg/l chromium, 0.182 and 0.544 mg/l copper, and 0.008 and 0.024 mg/l silver.

One factor may be the inconsistent control of the reaction end-points. All three chemical reaction tanks were outfitted with reaction end-point metering, continuous pH meters and ORP meters for cyanide destruction and chromium reduction. The set points for each of these measurements were posted. However, during this inspection, the reaction steps were not operating within their prescribed set-point ranges. In particular, the pH in the metals precipitation tank is posted to be 8.0 s.u. but registered 6.8 s.u. Low pHs would hinder the formation of hydroxide precipitates, and in fact, the pHs should fall within 8.5-9.5 s.u. in order to effectively precipitate both nickel and zinc hydroxides. Two other inconsistent controls were also observed although neither would be expected to directly affect nickel or zinc treatment. The ORP in the chromium reduction tank is posted to be 200-300 mv, but registered 138 mv, and the pH in the cyanide destruction tank is posted to be 8.5-9.5 s.u. but registered 13.2 s.u. Incomplete cyanide destruction could result in compromised precipitation of zinc because passed-through cyanide binds with zinc.

## 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.

Industrial Plating does not meet the first condition since all process-related wastewaters undergo on-site BAT treatment.

### 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 the possibility of bypassing treatment at Industrial Plating. Spent solutions are delivered from the tanks to the batch treatment tanks by portable pump and long extension of hosing. The hose outlets can be directed to any location on-site including disposal points that bypass the treatment. It would be better to have a hard-plumbed line or set of lines, with stand-pipe inlets in the metal finishing area, leading to the batch treatment tanks. This would not preclude the use of portable pumps to deliver the spents to batch treatment but it would eliminate the need for long hose lengths. Maintaining only short hose lengths prevents the delivery of spent solution to improper disposal points bypassing the treatment necessary to comply.

## 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***

Industrial Plating has the treatment capacity and capability to consistently comply with the local limits. Nevertheless, in the recent past there was a violation of the annual average mass-loading local limit for nickel, most likely the result of operator error. Further local limits violations are unlikely because of the treatment in-place and since the local limits are based on the historic peak month concentrations and historical annual average flow rate. The corrective actions to improve the performance of BAT treatment would further lessen the chance of a local limit violation. ***See*** Appendix 3. Also ***see*** Sections 3.0 and 5.0 of this report.

***Requirements***

- None.

***Recommendations***

- The SBSA permit should apply the local limits for oil and grease and surfactants.
- Industrial Plating should install continuous final pH metering.

## 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 SBSA wastewater treatment plant through consistent compliance with their sludge and discharge limits.

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

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 wastewater strengths significantly less than domestic sewage.

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

Metals and Cyanide – There were no violations of the site-specific mass loading local limits for cadmium, chromium, copper, lead, nickel, silver, zinc, and cyanide. Better performance of the treatment in-place through more attentive operations should more than offset any additional mass loadings expected from production increases. **See** section 3.2 of this report.

Organics – There were no sample results for surfactants, methylene chloride, chloroform, perchloroethylene, benzene, carbon tetrachloride, carbon disulfide, toxic organics, or petroleum oil and grease because the SBSA permit did not apply site-specific or unadjusted local limits for these pollutants to the discharge from Industrial Plating. Concentrations much over the detection limits of the toxic organics would not be expected to be generated by Industrial Plating. These locally-regulated pollutants are effectively addressed through the continued certification authorized in 40 CFR 413 of a solvent management plan in lieu of the required self-monitoring for toxic organics. Industrial Plating can generate surfactants and oil and grease.

## 4.4 Flammability

Flammability would not be expected because the discharges to the sewer are expected to entrain only negligible amounts of volatile organics.

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

Sewer collection system interferences related to the formation of hydrogen sulfide and the resulting acidic disintegration of the sewers are not expected because the wastewaters discharged to the sewers are not high-strength in biodegradable organics, and adjusted through the treatment to not be acidic in nature. However, continuous final pH metering should be installed because the neutralized discharges are initially composed of treated acidic and alkaline process wastewaters.

## 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 Industrial Plating does not involve self-monitoring but rather consists of only monitoring conducted by SBSA. All of the SBSA monitoring is representative of the overall discharge of treated wastewater from Industrial Plating over the sampling day as well as over the six-month reporting period.

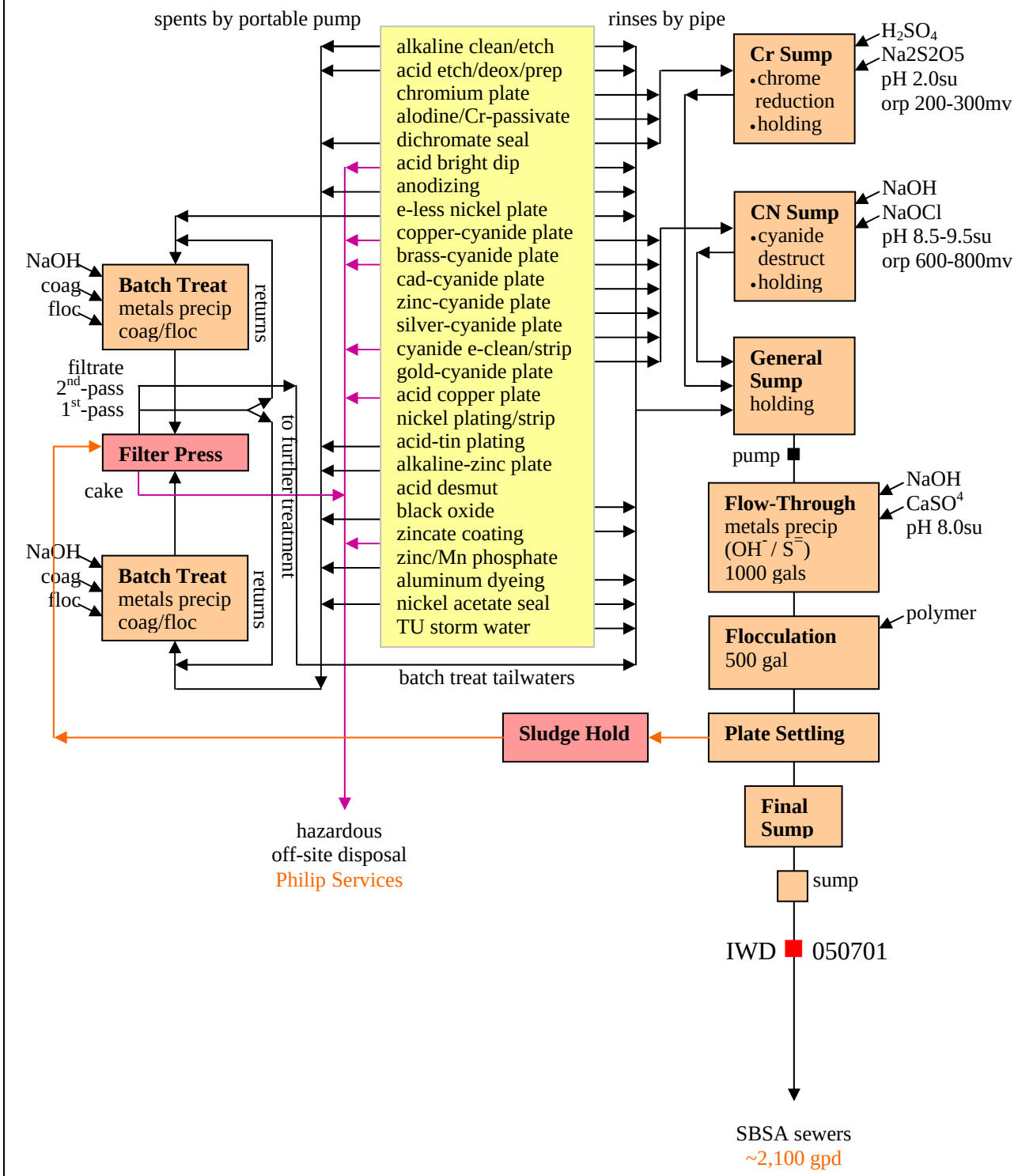
***Requirements***

- None.

***Recommendations***

- None.

**Appendix 1**
Industrial Plating
Schematic of the Wastewater Collection and Treatment



**Appendix 2**
Sewer Discharge Standards and Limits
Industrial Plating @ IWD-050701

| pollutants of concern (mg/l) | Fed categorical standards (d-max) | (4d-avg) | local limits / nat'l prohibitions ⑤concentration-mg/l (instant) | (site-specific) | ⑥load-lbs/d (12mo-av) | monitoring frequency IWD-050701 |
|---|---|---|---|---|---|---|
| arsenic | - | - | 0.1 | - | 0.00009 | ③ |
| cadmium | 1.2 | 0.7 | 0.04 | 0.277 | 0.00496 | quarterly |
| chromium | - | - | 0.2 | 1.86 | 0.03329 | quarterly |
| copper | - | - | 0.2 | 1.059 | 0.01896 | quarterly |
| lead | 0.6 | 0.4 | 0.2 | 1.08 | 0.01933 | quarterly |
| mercury | - | - | 0.002 | - | 0.00004 | ③ |
| nickel | - | - | 0.06 | 13.008 | 0.23284 | quarterly |
| silver | - | - | 0.1 | 0.192 | 0.00344 | quarterly |
| zinc | - | - | 1.0 | 5.076 | 0.09086 | quarterly |
| phenolics | - | - | 2.3 | - | 0.04117 | ③ |
| amenable cyanide | 5.0 | 2.7 | 0.06 | - | 0.08950 | quarterly |
| PAHs surfactants | - | - | 0.2 | - | 0.00358 | ③ |
| methylene chloride | - | - | 0.07 | - | 0.00125 | ④ |
| chloroform | - | - | 0.03 | - | 0.00053 | ④ |
| perchloroethylene | - | - | 0.03 | - | 0.00053 | ④ |
| benzene | - | - | 0.002 | - | 0.00004 | ④ |
| carbon tetrachloride | - | - | 0.001 | - | 0.00002 | ④ |
| carbon disulfide | - | - | 0.008 | - | 0.00014 | ④ |
| toxic organics | 4.57 | - | - | - | - | ④ |
| oil and grease – petro | - | - | 100 | - | - | ③ |
| flow (gpd) | - | - | - | - | - | quarterly |
| pH (s.u.) | - | - | 6.0-9.5 ① | - | - | quarterly |
| explosivity | - | - | ① ② | - | - | ③ |
| temperature (°F) | - | - | 150°F | - | - | ③ |

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 As part of periodic priority pollutant scans in order to identify changes in discharge quality
④ Twice per year solvent management plan self-certifications in lieu of self-monitoring
⑤ Site-specific concentration limits based on historical peak month concentrations
⑥ Loading limits based on historical average flow rates and highest local limit concentration

**Appendix 3**
Industrial Plating @ IWD-050701
January 2004 – January 2006

| pollutants ② (µg/l) | effluent sampling results | | | violation rate ① | | | sample count | loading (lbs/yr) |
|---|---|---|---|---|---|---|---|---|
| | mean | 99th% | max | sample | 4-day③ | 12-mo④ | | |
| cadmium | 23 | 81 | 88 | 0/15 | 0/3¾ | 0/5 | 15 | 0.102 |
| chromium | 157 | 653 | 850 | 0/15 | - | 0/5 | 15 | 0.686 |
| copper | 182 | 544 | 350 | 0/15 | - | 0/5 | 15 | 0.793 |
| lead | 22 | 52 | 40 | 0/15 | 0/3¾ | 0/5 | 15 | 0.096 |
| nickel | 2538 | 10057 | 10000 | 0/15 | - | 0/5 | 15 | 11.095 |
| silver | 8 | 26 | 32 | 0/15 | - | 0/5 | 15 | 0.037 |
| zinc | 996 | 3711 | 3520 | 0/15 | - | 0/5 | 15 | 4.355 |
| amenable cyanide | 666 | 3785 | 3940 | 0/8 | 0/2 | 0/4 | 8 | 2.910 |
| total metals | 3827 | 13102 | 13210 | 0/15 | - | - | 15 | 16.733 |
| flow (gpd) | 2100 | 3862 | 3990 | 0/15 | - | - | 15 | - |
| pH (s.u.) | 8.1 ⑤ | -<br>- | 7.4 min<br>9.5 max | 0/15 | - | | 15 | - |

① There were no violations during this period.
② No sample results for the following pollutants of concern:
arsenic, mercury, phenolics, surfactants, TTOs, oil & grease, explosivity, temperature
③ Four day-averages calculated by the rolling averaging of four consecutive samples
④ Twelve-month average calculated by the rolling average of all samples from previous 12 months
⑤ pH median