UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

May 28, 2004

Mike Paulucci
Treatment Plants Chemist
City of Yuba City
302 Burns Drive
Yuba City, California 95991

Re: 2004 Pretreatment Evaluation

Dear Mr. Paulucci:

Enclosed is the April 30, 2004 report for our pretreatment evaluation of Yuba City. We ask that the City provide short written responses to each of the findings in Sections 2.0 to 8.0 of this inspection report by **July 30, 2003.** We expect to follow this inspection report with an Administrative Order that establishes a 12-month schedule for upgrading the pretreatment program, starting with the budget cycle on July 1.

The new NPDES permit incorporates a number of permit limits for pollutants that were unregulated in the past. There are now many pollutants of concern for which the City must develop and implement a source control program. One noteworthy finding of this inspection is that for most of the new pollutants of concern, the effluent levels for Yuba City exceed those for sewer districts representative of the industrialized Central Valley. Yuba City=s levels are partly explained by the ground water supply (*arsenic, barium*), water delivery system (*copper*), and the fact that the other districts perform advanced treatment, either nutrient removal or tertiary filtration, and thus have higher removal rates (*chromium, manganese, iron, silver*). Nevertheless, for a number of metals, non-domestic contributions appear to be the primary or at least a significant source in the Yuba City effluent (*aluminum, arsenic, copper, iron, manganese, mercury, molybdenum, selenium, and zinc*).

Otherwise, the most significant findings involve the unrepresentative self-monitoring by the industrial users over their reporting periods, the under-developed industrial user inventory, the incorrectly permitted significant industrial users, the lack of an updated sewer use ordinance as approved in 1995, and outdated local limits. Some of these issues were advanced in the EPA inspection reports and follow-up Administrative Orders to three significant industrial users in Yuba City. It is expected that their efforts to meet the requirements of their Administrative Orders will partly address the issues in this report.

Much of the City=s past efforts to regulate non-domestic contributions to the sewers will not have to be reconsidered or redone. In particular, the work done by the City to identify pollutant sources can be built upon, and the annual reports are informative. But the City will have to provide resources to do a number of required functions to address the deficiencies found in this inspection. Local limits will have to be redetermined. The ordinance will have to be

updated and adopted. Permits will have to be reissued to most significant industrial users. Self-monitoring requirements will have to be re-evaluated. Fact sheets will have to be prepared. All of these requirements are outlined in the enclosed inspection report.

Thank you for your cooperation during and after this inspection. Please do not hesitate to call (415) 972-3504 or e-mail arthur.greg@epa.gov.

Sincerely,

Original signed by:
Greg V. Arthur

Greg V. Arthur
Clean Water Act Compliance Office

cc: Melissa Hall, RWQCB

U.S. ENVIRONMENTAL PROTECTION AGENCY

REGION 9

CLEAN WATER ACT COMPLIANCE OFFICE

PRETREATMENT PERFORMANCE EVALUATION INSPECTION REPORT

NPDES Permittee:	City of Yuba City 302 Burns Drive, Yuba City, California 95991 Wastewater Treatment Plant (NPDES CA0079260) WDRs Orders R5-2003-0085
Dates of Inspection:	August 5, August 20-21, August 27, 2003
Data Review:	Influent and Effluent Conventional: 2003 – 2004 Influent and Effluent Toxics: 2000 – 2004 Sludge toxics: 2000 – 2004

Inspection Participants:

US EPA:	Greg V. Arthur, CWA Compliance Office, (415) 972-3504 Meg Masquelier, CWA Compliance Office, (415) 972-3536
RWQCB:	No Representative
Yuba City:	Mike Paulucci, Chemist, (530) 822-7695 Al Butterfield, Chief Plant Operator
Industrial Users:	Sunsweet Growers, Jerry Ramsey, Engr Mgr, (530) 751-5278 Greenleaf Unit 2, Diane Tullos, Compliance Mgr, (530) 821-2074 Custom Chrome, Gene Hutchinson, Owner, (530) 673-2360

Report Prepared By:	Greg V. Arthur, Environmental Engineer April 30, 2004

Section 1

Introduction and Background

1.0 Scope and Purpose

In April 2004, EPA completed a performance evaluation of the regulatory control of non-domestic wastewaters discharged into the City of Yuba City wastewater treatment plant ("WWTP"). This performance evaluation was one of a series of reviews of small publicly-owned treatment works that accept non-domestic contributions, many of which are not large enough to be mandated to operate EPA-approved pretreatment programs. Yuba City is large enough and has operated an EPA-approved pretreatment program since 1982.

The scope of this performance evaluation comprised:

- Sampling inspection of the Yuba City wastewater treatment plant on August 27, 2003;
- Review of the 2003-2004 Yuba City self-monitoring reports;
- Review of the 2000-2004 influent and effluent sampling records for toxic pollutants;
- Inspections of three significant industrial users including the sampling of two of them;
- Review of the 2000-2003 sampling records for the significant industrial users inspected;
- Interviews with City representatives on August 5, August 20-21, and August 27, 2003;
- Review of the industrial responses to their inspection reports and enforcement actions.

The purpose of this evaluation was to determine if non-domestic discharges into the Yuba City sewer system are properly controlled. The evaluation findings were measured against two fundamental performance objectives. The first is the prevention of sewage treatment works pass-through, interference and sludge contamination as shown by compliance with the Federal sludge limits, the discharge permit limits, and any expected future Clean Water Act requirements. The second is the consistent compliance by the industrial users with their own Clean Water Act requirements, in particular with the Federal best-available-technology standards that apply to certain industrial categories, and any national prohibitions and local limits for pollutants associated with treatment works non-compliance.

This report covers the performance of the pretreatment program as it currently exists in Yuba City. Some pertinent findings from the industrial user inspections are also incorporated. The significant industrial users received individual reports and enforcement actions. Arthur collected samples on August 20, 21, and 27, 2003 for delivery to the EPA Richmond Lab.

1.1 Yuba City Wastewater Treatment Plant

The Yuba City WWTP is a pure-oxygen activated sludge plant that discharges either by diffuser to the Feather River in the winter wet-season or to 120 acres of percolation ponds

Section 1 – Introduction and Background

located alongside the river in the summer dry-season. The wastewater treatment plant provides high-rate treatment of higher-than-typical-strength wastewaters. It has a dry-weather design capacity of 7.0 million gallons per day ("mgd") and a wet-weather design capacity of 11.0 mgd. The average and calculated peak flows were 6.60 and 8.05 mgd in 2003. See Figure 1.

- Primary and Secondary Treatment - The headworks, which provide grinding and aerated grit removal, is followed by primary sedimentation. Ammonia and phosphates are added, usually in the summer, in order to precondition the high-strength and nutrient-poor contributions from Sunsweet Growers. Primary effluent is then aerobically biodegraded in three treatment trains each with four compressed-gas pure-oxygen aeration cells followed by three secondary clarifiers. Activated sludge returns without re-aeration in order to strip carbon dioxide, and does so at rates to support a mean cell residence time of around 3 days. Real-time metering for dissolved oxygen, solids, and redox potential are used to better ensure the treatment plant can respond to the contributions from Sunsweet.

- Advanced Treatment - There is no capability to provide nitrification or denitrification. There is also no tertiary polishing of secondary effluent and, as a result, no capability to reuse treated wastewater off-site.

- Solids Handling - Waste secondary activated sludge and primary sludge are digested in two anaerobic digestors each with detention times of 25 days and operated in series. Digested sludge dosed with anionic polymer is dewatered through belt pressing, with the cake further dewatered in on-site sludge drying beds for off-site disposal as landfill cover. Grit is hauled off-site to a landfill. The waste activated sludge is first thickened in two polymer-aided dissolved air flotation units. Belt press filtrate returns to the lateral leading into the headworks. Dissolved air flotation subnatant returns to the aeration cells.

- WWTP Sampling - The influent sampling point, located upstream of the headworks is designated as IWD-YC1 for the purposes of this report. All return flows except the belt press filtrate rejoin treatment downstream of influent sampling. The effluent compliance sample point, sited immediately after final dechlorination, is designated as IWD-YC2. The accumulation of filter cake for hauling off-site is designated as the sludge sampling point, IWD-YC3. The receiving water sampling point downstream of the Yuba City outfall is designated in the permit as R-1.

- Water Supply - For most of its sewered users, Yuba City provides surface water drawn from the Feather River and treated through its water treatment plant. Some sewered customers located outside of the city limits receive untreated ground water from the former Hillcrest Water Company system. According to the City's Urban Water Management Plan, an estimated 1,000 of the 9,020 water users receive the more mineralized ground water. For the purposes of this report, a ratio of 1:9 ground to surface water was used in estimating the flow-weighted average concentrations for the water supply.

- Receiving Water Hardness - The USGS maintains a station on the Feather River at Nicolaus, approximately 13 miles downstream from the Yuba City outfall. This station and six others in Sacramento River basin were extensively sampled under a full range of conditions for conventional, toxic, and pesticide-related pollutants, as part of the 1995-1998 National Water Quality Assessment Program. The calculated 99th% minimum hardness and the minimum sample result for the Feather River station was 22.6 mg/l and 22 mg/l as CaCO3. The lowest minimum sample result recorded for all seven stations both upstream and downstream of the Feather River station was 16 mg/l. For the purposes of this report, a hardness of 22.6 mg/l is used in the calculations of the permit limits for metals to be in effect in 2007. By then, Yuba City will have a better data set of hardness values for the Feather River near the outfall, as required by the NPDES permit.

1.2 Sewer Service Area

The Yuba City sewer service area comprises the incorporated area of the city that receives city supplied surface water as well as the unincorporated county lands southwest of the city limits that receive ground water. The WWTP also serves as a regional disposal point for septage collected from septic tanks in unsewered areas within both the city limits and in the outlying county land. According to the City's Urban Water Management Plant, the service area has a population in 2004 estimated to be 60,000, and 950 commercial and four industrial users, who together contribute 35-40% of the sewered wastewater. The inventory of industrial users includes at least seven considered to be significant industrial users who together discharged an average of 930,000 gallons per day into the sewers in 2003 (14% of total flows).

1.3 Discharge Requirements

Yuba City is authorized by the June 6, 2003 RWQCB Waste Discharge Requirements, Order R5-2003-0085, ("WDRs"), and a concurrent Cease and Desist Order, Order No. R5-2003-0086, ("CDO"), to discharge treated sewage from the Yuba City WWTP either to the Feather River or to percolation ponds sited along the river or from the percolation ponds to the Feather River. The WDRs also function as National Pollutant Discharge Elimination System ("NPDES") permit CA0079260. The WDRs contain narrative prohibitions, effluent limits that implement the California Toxics Rule, receiving water limitations, monitoring requirements, pretreatment provisions, and sludge disposal requirements. In essence, the WDRs and CDO together require Yuba City to comply with effluent limits for conventional pollutants, disinfection, and pH upon issuance of the permit and for pesticides, metals, surfactants, toxic organics, ammonia, and nitrates by November 2007.

The effluent limitations for a discharge to the Feather River are for conventional pollutants, total coliform, ammonia based on temperature and pH, nitrites and nitrates, surfactants, residual chlorine, pH, acute biotoxicity, and various pesticides, metals, and toxic organics. The effluent limits that take effect on November 1, 2007 are for additional metals based on

the hardness in the river, and for additional toxic organics. The CDO required the completion of the corrective steps necessary to meet the WDRs for organochlorine pesticides, thiobencarb, aluminum, ammonia, arsenic, chloroform, diazinon, cis-1,2-dichloroethene, ethion, iron, manganese, MTBE, surfactants, molybdenum, and nitrates also by November 1, 2007.

The limitations for a discharge to percolation ponds are limited to narrative prohibitions against public contact, objectionable odors, anoxic conditions, the proliferation of mosquitoes, inadequate freeboard, degraded ground waters, and exceeding numerical limitations for pH. The receiving water limitations include narrative provisions against causing a visible film, discoloration, objectionable growths, nuisance conditions, the bioaccumulation of toxics, bad tasting fish, increased temperatures over 5°F, increased turbidity, increased specific conductivity, high or low pH's, and any adverse effect on the beneficial uses of the receiving waters.

1.4 Legal Authorities

Yuba City obtained approval of its pretreatment program in 1982. Yuba City operates under the authority of Public Works Title 6, Wastewater Collection and Treatment Chapter 5 of its municipal code as adopted in 1976. Yuba City began the process of revising its ordinance to be in accord-ance with the requirements of 40 CFR 403 in the late 1980's and submitted a draft ordinance for review in 1990. EPA and the RWQCB provided numerous and extensive reviews of the ordinance culminating in an approval letter from the RWQCB issued on November 29, 1995. Yuba City has not readopted the revised ordinance. As a result, the local limits and the regulatory provisions in effect are those in the 1976 ordinance. The WDRs since 1990 have imposed pretreatment provisions that require implementation of the regulatory controls necessary to enact all of 40 CFR 403. The current WDRs issued in June 2003, require Yuba City to resubmit pretreatment program for approval. Requirements to obtain and implement an approved pretreatment program would include the following:

- The implementation of the general and specific national prohibitions in 40 CFR 403.5 for industrial users against the introduction of incompatible wastewaters;
- The requirement in 40 CFR 403.5 to develop locally-determined limits necessary to protect the treatment works from potential adverse impacts, such as operational interference, worker health and safety risks, the pass-through of pollutants to the receiving waters, and sludge contamination;
- The performance of the program functions set forth in 40 CFR 403.8, such as identifying industrial users, issuing permits, inspecting and sampling industrial users, providing adequate funding, and enforcing against violators;
- The implementation of an industrial users self-monitoring program under 40 CFR 403.12;
- The implementation of Federal categorical standards under 40 CFR 403.6; and
- The enacting of the local legal authorities necessary to operate an approved pretreatment program under 40 CFR 403.8.

Section 1 – Introduction and Background

This evaluation did not involve a review of the 1976 ordinance because the proposed 1990 revised ordinance has not been adopted. As a result, the administrative record since the late 1980's stands as the determination that Yuba City does not have the legal authority to implement all aspects of an approved pretreatment program.

Section 2

Wastewater Treatment Plant Performance

The Yuba City WWTP must meet permit effluent limits for conventional pollutants, nutrients, pesticides, metals, toxic organics, pH, surfactants, and biotoxicity. 40 CFR 403.5(a,b,c) and 403.6.

Non-domestic wastewaters may not result in unpermitted releases, hazardous or explosive conditions with the sewers, or operational interferences in the collection system. 40 CFR 403.5(b).

2.0 Summary

The WWTP has the capacity and capability to handle the domestic wastewaters in the Yuba City service area as well as the high-strength wastes generated by Sunsweet. However, without a change in the influent loadings, removal rates, or disinfection methods, the WWTP is expected to experience the pass-through of a number of metals, chlorination byproducts, toxic organics, and pesticides once their NPDES permit limits take full effect in 2007. Moreover, without nitrification and denitrification, the WWTP is also expected to experience the pass-through of ammonia and the toxicity associated with ammonia. Finally, the nutrient-poor nature of Sunsweet's contributions caused operational interferences related to WWTP responses, however, better metering has lessened those risks.

See Tables 1 - 3 for wastewater and sludge summaries, Table 4 for statistical probabilities of violation, Table 5 for a comparison of Yuba City with representative Central Valley sewer districts, Table 6 for the EPA sampling results, and Table 8 for the definitions of 'pass-through' and 'interference'.

Requirements

- The domestic, non-domestic, and water supply sources of aluminum, arsenic, copper, iron, manganese, molybdenum, and zinc must be identified and quantified.

Recommendations

- The wastewater treatment plant influent should be monitored for aluminum, arsenic, copper, iron, manganese, mercury, molybdenum, selenium, and zinc.
- The receiving waters should be monitored for hardness, pH, and temperature.
- The cause of the instances of low pH in the influent should be determined.

Section 2 – Wastewater Treatment Plant Performance

Recommendations – continued

- Corrosion controls of the water delivery system should be implemented in order to reduce the leaching of copper, thereby reducing the copper discharged from the treatment plant.
- Sunsweet and septage deliveries should be monitored for the farm-related contaminants such as arsenic and selenium.
- Sunsweet and the power plants should be monitored for the corrosion-related contaminants associated with circulating water systems such as iron, molybdenum, and zinc.
- A specific prohibition against abrupt changes in organic loads, such as a restriction in the percentage change in mass loads per day, should be considered for Sunsweet.
- The water service newsletter should be supplemented to also inform rate payers of the wastewater compliance status and the on-going need to fund the capital improvements, pretreatment, and operations to protect and maintain the public wastewater investment.

2.1 Conventional Pollutants

The WWTP produces high-quality secondary-treated wastewaters. As a result, it consistently complies with its permit limits for conventional pollutants. The average and calculated 99th% peaks are less than 11 and 22 mg/l BOD and 9 and 16 mg/l TSS even through Sunsweet's contributions elevate the average influent BOD to 339 mg/l. The WWTP discharged to the percolation basins May 1 through October 31, and to the river otherwise.

There were four instances of the effluent pH below the lower 6.5 limit and one above the upper 8.5 limit. There were also two unrelated instances of low influent pH, (2.62 on 11/14/03 and 4.99 on 11/22/03). The national prohibitions not only prohibit discharges that cause structural damage to the sewerage works but also specifically prohibit discharges below 5.0 s.u. because pHs below that level are known to cause concrete degradation.

2.2 Ammonia Toxicity

The permit sets sliding-scale effluent limits for ammonia which are most stringent when pH and temperature are high. During the winter wet-season when the WWTP discharges to the Feather River, the monthly-average and sample-maximum ammonia limits bottom out at 3.56 and 19.7 mg/l based on and assumed maximums for pH and temperature of 7.2 s.u and 70ºF. Sampling required by the permit would result in actual values for maximum pH and temperature in the Feather River and better establish the ammonia limits. Against these preliminary sliding-scale ammonia limits, the WWTP inconsistently complies when it discharges to the river, with the average and calculated 99th% peak ammonia concentrations

of 12.9 and 36.9 mg/l. As a result, there is a >20% chance of violating the lowest expected maximum limit and 99%+ chance of violating the lowest expected monthly-average limit.

2.3 Nitrates Plus Nitrites

The WWTP complies with the permit limits for nitrite plus nitrate of 10 mg/l primarily because it does not nitrify by design. The WWTP would be expected to comply with the permit limits upon the 2007 compliance deadline only upon completion of upgrades for both full nitrification and denitrification.

2.4 Salts

The permit does not limit salts but requires monitoring for total dissolved solids, hardness, and electrical conductivity. The monitoring results for salts are all well below what could adversely impact reuse, or in the case of sulfate, impart an acute toxicity.

2.5 Toxic Metals

Without decreased loadings, corrosion controls, or increased removals, the WWTP would be expected to exceed the permit limits for aluminum, arsenic, copper, iron, lead, manganese, molybdenum, and zinc. See Table 2 for a summary of toxics in the influent, effluent, and water supply, Table 4 for statistical probabilities of exceeding limits, and Table 5 for comparisons with representative of Central Valley sewer districts with industrial contributions. (The sewer districts selected for comparison were Deer Creek, El Dorado Hills, Grass Valley, Nevada City, Placer County No.1, Red Bluff, and Stockton.)

For most metals, the effluent concentration averages for Yuba City exceed the averages for sewer districts representative of the industrialized Central Valley. Elevated levels for Yuba City are partly explained by the water supply (*arsenic, barium*), water delivery (*copper*), and the fact that the other districts perform advanced treatment of some sort, either nutrient removal or tertiary filtration, and thus have higher removal rates (*chromium, manganese, iron, silver*). Nevertheless, for a number of metals, unidentified non-domestic contributions appear to be the primary or at least a significant cause of the elevated levels in the Yuba City effluent *(aluminum, iron, manganese, mercury, molybdenum, selenium, zinc*).

Aluminum - Influent concentrations are significantly higher than can be explained by the water supply or known non-domestic sources. In fact, the influent levels are so high, up to 6,225 µg/l, that the sources are likely limited to utilities' use of alum for water, wastewater, or sludge conditioning or water conditioning at industries that discharge the generated sludges or backwashes. A sample of 3,600 µg/l from Greenleaf Unit 2 partly bears this out. Since the 85%+ removal rate is typical for secondary wastewater treatment, not only the influent but also effluent concentrations far exceed the averages for representative Central

Section 2 – Wastewater Treatment Plant Performance

Valley sewer districts. The effluent average and calculated 99th% peaks are 256 and 571 µg/l resulting in a >80% chance of a sample violating the 120 µg/l maximum limit.

Arsenic - Influent concentrations are higher than can be explained by known sources. The ground water used in part of the city accounts for nearly half of the elevated influent levels. However, for the remainder, arsenic in fruit pesticides makes it possible that fruit washing at Sunsweet and farm-related run-off or septage are likely sources that account for the increases from 2.5 µg/l in the water supply to 6.1 µg/l in the influent. Both the average influent and effluent concentrations are >400% higher for Yuba City than for representative Central Valley sewer districts. The effluent average and calculated 99% peaks are 7.8 and 33.5 µg/l which result in a >40% chance of samples violating the 10 µg/l monthly limit.

Barium - The permit does not set effluent limits for barium. Average effluent concentrations are >400% higher than representative Central Valley sewer districts, and ground water may account for nearly half of the elevated levels. Potential non-domestic sources might include the removal of barium sulfate deposits from circulating cooling water circuits.

Cadmium - The industrial discharge from Custom Chrome is the likely source of the small concentrations of cadmium found in the influent and effluent. No cadmium was detected in the water supply and the WWTP levels are consistent with those for representative Central Valley sewer districts. The effluent average and calculated 99% peaks are 0.17 and 0.31 µg/l which result in far less than a 1% chance of a sample exceeding the calculated 0.85 µg/l maximum limit.

Chromium - The industrial discharge from Custom Chrome is the likely source of the small concentrations of chromium found in the influent and effluent. No chromium was detected in the water supply and the WWTP levels are consistent with those for representative Central Valley sewer districts. The effluent average and calculated 99% peaks are 0.94 and 1.14 µg/l which result in far less than a 1% chance of a sample exceeding the calculated 106 µg/l maximum limit.

Copper – Corrosion of household plumbing appears to be the principal source. Surveys conducted by Yuba City found 10% of the households with copper concentrations at their taps over 199 µg/l if served by surface water and 459 µg/l if served by ground water. These concentrations are high enough to account for the significant increases from 1.3 µg/l in the surface water supply to 50.1 µg/l in the WWTP influent. The removal rate of 80%+ is in the typical range for secondary wastewater treatment. As a result, the effluent average and calculated 99th% peaks are 8.5 and 18.7 µg/l which result in a >90% chance of a sample violating the 2.65 µg/l maximum limit. This means Yuba City is likely to nearly always exceed permit limits without preconditioning the water supply to inhibit corrosion.

Section 2 – Wastewater Treatment Plant Performance

The principal corrosion control methods in use by other water suppliers include the following:

- carbonate passivation of copper pipes through the increase of both pH and alkalinity,
- silicate passivation of copper pipes through the application of sodium silicates and sodium carbonate, and
- precipitation of scale within the pipes through the supersaturation of calcium.

(EPA publication EPA-811-B-92-002, September 1992, "Lead and Copper Rule Guidance Manual, Vol. II: Corrosion Control Treatment).

Iron - Lone samples of 15,000 and 9,800 µg/l from Sunsweet and Greenleaf Unit 2, respectively, could easily account for the significant increase between the flow-weighted average of 25.3 µg/l for the water supply and the average WWTP influent of 960 µg/l. The removal rate of 80%+ is typical for secondary wastewater treatment. The effluent concentrations exceed the averages for repre-sentative Central Valley sewer districts. The effluent average and calculated 99th% peaks are 164 and 309 µg/l which result in a slight >1% chance of a sample violating the 300 µg/l maximum limit.

Lead - There is not enough data to make conclusions regarding future compliance with the 0.83 µg/l maximum or 0.38 µg/l monthly-average limits. All water supply samples were below detection, but the 1 µg/l detection limit is over the limits.

Manganese - Effluent concentrations are far higher than typical for representative Central Valley sewer districts because treatment plant removals are essentially 0% in Yuba City but between 60% and 97% at the representative Central Valley sewer districts. The effluent average and calculated 99th% peaks are 53 and 156 µg/l which result in a >50% chance of a sample violating the 50 µg/l maximum limit. Influent concentrations are typical for representative sewer districts, although there are no sources identified at this time that could account for the increase between the flow-weighted average for the water supply of 11.5 µg/l and the WWTP influent of 49.8 µg/l.

Mercury – There is a negligible chance of even a single sample violating the 0.05 µg/l monthly-average limit, even though both influent and effluent concentrations exceed the averages for representative Central Valley sewer districts. The removal rate of 95%+ is typical for secondary wastewater treatment. Effluent average and calculated 99th% peaks are 0.017 and 0.048 µg/l.

Molybdenum - Molybdate is a corrosion inhibitor in widespread use in circulating cooling water circuits, which account for a significant fraction of the non-domestic contributions into the Yuba City sewers. As a result, circulated cooling at Sunsweet and the power plants are likely sources of the significant increase in the average concentration from less than 1.0 µg/l in the water supply to 10.3 µg/l in the influent. Both influent and effluent concentrations exceed the averages for the representative Central Valley sewer district with molybdenum

samples. The effluent average and calculated 99th% peaks for Yuba City are 11.0 and 31.6 µg/l which result in a >50% chance of a sample violating the 10 µg/l maximum limit.

Nickel - The industrial discharge from Custom Chrome is the likely source of the small concentrations of nickel found in the influent and effluent. No nickel was detected in the water supply and the WWTP levels are consistent with representative Central Valley sewer districts. The effluent average and calculated 99th% peak concentrations are 1.78 and 3.96 µg/l, which result in less than a 1% chance of a sample violating the 23.6 µg/l maximum limits.

Selenium - The permit does not set effluent limits. Selenium has farm-related uses in veterinary medicine, fungicides, and insecticides. As a result, fruit washing at Sunsweet and farm related run-off or septage are likely sources of the increase in the average concentration from less than 1.0 µg/l in the water supply to 7.1 µg/l in the influent. Both influent and effluent concentrations far exceed the averages for the representative Central Valley sewer district. The effluent average and calculated 99th% peaks for Yuba City are 7.1 and 44.7 µg/l.

Silver - There is not enough data to make conclusions regarding future compliance with the 0.31 µg/l maximum limits, even though the single effluent sample exceeded the limit. All water supply samples were below detection, but the 1 µg/l detection limit is over the limit.

Zinc - Zinc phosphates are corrosion inhibitors in widespread use in circulating cooling water circuits, which account for a significant fraction of the non-domestic contributions into the Yuba City sewers. As a result, the circulated cooling at Sunsweet and the power plants are likely sources of the huge increase in the average concentration from less than 1.0 µg/l in the water supply to 157 µg/l in the influent. The influent and effluent concentrations are within the ranges at the representative Central Valley sewer districts. The effluent average and calculated 99th% peaks for Yuba City are 51.8 and 86.7 µg/l which result in a >80% chance of a sample violating the 34.0 µg/l maximum limit.

2.6 Toxic Organics and Pesticides

A number of other toxic pollutants were detected but most of them did not or will not exceed the permit limits. Those detected but not exceeding permit limits include MTBE (*methyl-tert-butyl ether*). The principle exceptions were the permit limits for two chlorination byproducts (*dichloro-bromomethane, dibromochromomethane*), a pesticide (*diazinon*), and two chlorinated solvents (*chloroform, tetrachloroethylene*). However, no definitive conclusions regarding any of these pollutants can be made at this time because there are only three samples for each and the permit limits are not much higher than the detection limits.

Section 2 – Wastewater Treatment Plant Performance

2.7 Federal Sludge Limits

The WWTP sludges consistently comply with the Federal sludge limits for disposal as landfill cover. The WWTP sludges also would likely consistently comply with the Federal clean sludge limits suitable for any reuse in Table 3 of 40 CFR 503.13 although the more stringent limits do not apply as long as the Yuba City disposes of sludge as landfill cover.

2.8 WWTP Interference

Sunsweet poses two operational risks to the Yuba City treatment works. First, sharp drops in loadings have in the past resulted in operational interferences at the WWTP related to the treatability of the nutrient-deficient discharges from Sunsweet and the responsive dosing of nutrients by Yuba City. Second, the high-strength organic discharges could cause sulfide degradation of concrete sewers if they become anoxic.

Yuba City has instituted permit requirements to Sunsweet to keep the pH above 8.5 and to provide 48-hour prior notification for impending shutdowns of more than 24 hours. Yuba City also has real-time probes with automatic alarms for dissolved oxygen, solids, and redox potential at various locations in the WWTP. Nevertheless, within the permit requirements, the variabilities in the organics, suspended solids, and hydraulic loadings from Sunsweet still have the potential to be large enough to adversely effect the operation of the WWTP because the mitigating actions rely solely on operators and procedures. It would be better for the City if Sunsweet installed some form of built-in load equalization that does not rely on operating procedures. See the February 20, 2004 EPA report of the inspection of Sunsweet and Sunsweet's May 26, 2004 response for a larger discussion.

Section 3

Local Limits

Pretreatment programs are required to develop local limits to prevent pass-through, interference, sludge contamination or other adverse effects upon the treatment works. 40 CFR 403.5(c).

3.0 Summary

Yuba City has an ordinance to prohibit discharges that exceed local limits or could harm the treatment works. However, the technical basis of the local limits is questionable since they are not based on the current conditions or permit. Furthermore, Yuba City did not adopt an updated sewer ordinance reviewed by EPA and approved by the RWQCB to reflect changes in the Federal pretreatment rule promulgated after 1982. Sampling has indicated that without a change in the influent loadings, or removal rates, the WWTP would be expected to experience the pass-through of a number of metals, toxic organics, and pesticides once the permit limits take full effect in 2007. See Table 7 for a definition of 'local limits'. Also see Item 1.4 of this report for more detail regarding Yuba City's legal authority.

Requirements

- Yuba City must determine the maximum allowable headworks loadings for aluminum, arsenic, copper, iron, manganese, molybdenum, and zinc, and enact new local limits, prohibitions or control strategies.
- The sewer use ordinance must be updated to reflect the changes in the Federal rules.

Recommendations

- The WWTP influent and effluent should be sampled to determine whether diazinon, chloroform, tetrachloroethylene are pollutants of concern present at levels above their detection limits.

3.1 Sewer Use Ordinance

This pretreatment program evaluation did not include a new review of the sewer use ordinance. However, the ordinance has not be updated to reflect the changes in the Federal pretreatment rules in the ways outlined in the reviews by EPA of the ordinance and culminating in the approval letter issued by the RWQCB on November 29, 1985.

Section 3 – Local Limits

3.2 National Prohibitions

The national prohibitions apply to every non-domestic discharge into the sewers nationwide to prevent harm to the treatment works. They consist of the general prohibitions in 40 CFR 403.5(a) against harm and the specific prohibitions in 40 CFR 403.5(b). In practice, local limits, covering a range of pollutants, and developed in accordance with 40 CFR 403.5(c), replace most of the effective span of the national prohibitions.

3.3 Pollutants of Concern

The pollutants of concern are those related to non-domestic sources with a statistical chance of over 1% to cause a violation of the WDRs or the Federal sludge limits. The pollutants with a statistical chance over 1% are aluminum, ammonia, arsenic, chloroform, copper, diazinon, dibromochloro-methane, dichlorobromomethane, iron, lead, manganese, molybdenum, tetrachloroethylene, and zinc. Of these, dibromochloromethane and dichromobromomethane would not be pollutants of concern because they are chlorination by-product unrelated to influent quality. Ammonia and nitrates also would not be pollutants of concern because their effluent concentrations are a function of the treatment plant operations. It cannot be determined without further monitoring of both the influent and effluent whether diazinon, chloroform, and tetrachloroethylene are pollutants of concern.

A number of other pollutants with a statistical chance below 1% to cause a violation, nevertheless, should be pollutants of concern because of discernible sources. Cadmium, chromium, and nickel are entrained in solution and rinse tanks at metal finishers (*Custom Chrome*). Selenium is associated with farm-related uses (*Sunsweet, septage*). Lead and barium are scoured from boilers (*Sunsweet, power plant*). Mercury has non-domestic commercial sources (*dentists*). MTBE at aquifer clean-up sites are pollutants of site-specific concern. And oil & grease is a concern in every sewer district.

3.4 Maximum Allowable Headworks Loadings

Every sewer district must determine the maximum loading of pollutants it can accept and still comply with the permit requirements and Federal sludge limits. The maximum allowable headworks loadings (“MAHLs”) form the technical basis for determining local limits. All this requires influent, effluent, and sludge monitoring under the range of conditions expected during the year, in order to determine the WWTP removal efficiencies. EPA has a free spread sheet program called Prelim to assist in the calculations. WEF also has a fate and transport model available for purchase on its web-site.

Section 3 – Local Limits

3.5 Allocation Method

The MAHLs for each of the pollutants of concern must be allocated between uncontrollable and controllable sources. The uncontrollable sources comprise domestic sewage, and infiltration and inflow. The controllable sources are those that could be regulated under permits or best-management practices. This will require background monitoring of domestic sewage, and infiltration and inflow, in order to determine the pollutant loadings that cannot be allocated to the controllable sources. The remaining loadings can then be allocated in any fashion to the individual industrial and commercial sources. For example, Yuba City could set different local limits by individual industrial discharge, or by flow-weighted average, or uniformily across the entire service area for some pollutants but differentially set for others. The allocation method does not matter as long as the total allocation out to the domestic and non-domestic users does not exceed the calculated MAHLs.

It is possible that the main sources of certain pollutants are domestic in nature and largely uncontrollable by ordinance through permitting or best-management practices. For example, significant loadings of copper likely come from the delivery pipes and pesticides may come primarily from infiltration and inflow off of nearby fields, or household use. In these cases, Yuba City would have to redetermine the MAHLs after the sources are mitigated through some other means.

3.6 Industrial User Compliance with Local Limits

The Federal regulations do not define how to determine regulatory success. Moreover, any conclusion regarding industrial user compliance with the local limits would be premature since they are not technically-based to protect the Yuba City treatment works from adverse impacts, and the sources of the pollutants of concern are not yet identified. Once the local limits are sound and implemented through industrial user permits, however, the following performance measures determine regulatory success in achieving industrial user compliance.

- Treatment Plant Performance - EPA Region 9 bases its primary determinations on the purpose of local limits and the national prohibitions to prevent pass-through, interference, sludge con-tamination, or potential worker safety risks. As a result, the best measure of a program's effectiveness is consistent compliance with the NPDES permit and sludge limits. By this measure, Yuba City would not be successful if the pass-through of aluminum, arsenic, chloro-form, copper, diazinon, iron, lead, manganese, molybdenum, tetrechloroethylene, and zinc continues to persist.

- Cost Effective On-Site Treatment - Conventional pollutants can be treated at the sources and the sewage treatment plant. In general, primary treatment for solids and organics, pH adjustment, and gravity oil-water separation, are cost effective at the sources, while secondary treatment for dissolved organics, nitrification and denitrification are much more cost effective at the sewage treatment plant. On the other hand, toxics must be entirely controlled by the sources since sewage treatment plants are not designed to for

Section 3 – Local Limits

toxics. By this measure, Yuba City would not be successful in ensuring all non-domestic dischargers of acidic and alkaline wastewaters provide final pH adjustment.

- Significant Non-Compliance - Significant non-compliance will be based on industrial user compliance rates once the local limits are re-developed and implemented into the permits.

Section 4

Industrial User Compliance with Federal Standards

Pretreatment programs are required to be administered to ensure industrial user compliance with Federal categorical pretreatment standards. 40 CFR 403.8(b).

4.0 Summary

Best-available-technology ("BAT") treatment or its equivalent was not applied and in place at the identified Federally-regulated industrial process within the Yuba City service area.

Requirements

- Compliance sampling points, monitoring requirements, and on-demand rinsing practices must be established and implemented in order to determine whether treatment is necessary at Custom Chrome.

Recommendations

- The operational and disposal procedures to ensure compliance with Federal categorical pretreatment standards through the achievement of zero-discharge should be determined.

4.1 Treatment In-Place

EPA Region 9 uses two performance measures that together reflect the purpose of the various Federal categorical pretreatment standards to bring about the nationwide use of model BAT treat-ment. The first measure is BAT treatment across the industrial inventory. The Federal standards for each Federally-regulated industrial category were based on the statistical performance of model BAT treatment as it is separately defined for each category. For job-shop electroplating, BAT treatment is metals precipitation, settling and solids removal, and if necessary, cyanide destruction and chromium reduction.

The lone industrial user identified during this evaluation by EPA as a Federally-regulated user, was not found to comply with its Federal standards either through BAT treatment or through facility configurations and practices to keep from discharging to the sewers.

Custom Chrome - This metal finishing job-shop is required to comply with either the expanded list of pollutants in the Federal job-shop electroplating for dischargers over 10,000 gpd, or the abbreviated list of standards for dischargers under 10,000 gpd. Compliance cannot be determined at this time with either set of standards because the rinses discharge continuously irrespective metal finishing work and the spent solutions

are not specifically monitored. This constitutes "dilution as a substitute for treatment" since the Federally-regulated wastewaters discharge without treatment for metals or cyanide. None of the previous samples are usable for the determination of compliance.

- Power Plants - No Federal categorical standards apply (*Calpine Greenleaf Unit 2, Calpine Feather River Energy Center, Calpine Yuba City Energy Center, and Yuba City Cogeneration*).

4.2 Comparison with Model IU Performance

The second measure, derived from statistical comparisons with the performance of model categorical industrial users, only applies to larger industrial user inventories.

Section 5

Industrial User Inventory

Pretreatment programs are required to develop a complete inventory of industrial users, as part of ensuring industrial user compliance. 40 CFR 403.8(b,f1iii,f2i).

5.0 Summary

Yuba City has identified for regulation its significant industrial users ("SIUs"). However it has misclassified the SIUs qualifying as either categorical industrial users. Yuba City does not have a current inventory of non-significant industrial users nor of any zero-discharge categorical industrial users who would be subject to Federal standards if they discharged. Yuba City does have an unverified business list. See Table 7 for a list of identified SIUs and Table 8 for a definition of SIU.

Requirements

- Yuba City must field verify its industrial user inventory and institute formal documented procedures to continually identify additions, deletions and changes.
- Yuba City must re-identify the SIUs in its inventory as categorical, non-categorical, and zero-discharging categorical.

Recommendations

- Yuba City should maintain its industrial user inventory by non-domestic wastewater discharge point, with each discharge point characterized by Federal point source category, annual average flow rate, type of wastewater, and owner or operator.

5.1 Inventory Completeness

Yuba City has identified SIUs but has not identified, visited, or permitted all of its commercial and industrial users in its sewer service area. As a result, EPA could not produce a completed inventory during this performance evaluation and cannot verify that all SIUs are identified. The following four characteristics would be considered by EPA as good indications of a complete inventory. First, the inventory should include commercial sources, such as dentist, supermarkets, restaurants, and automobile repair shops, none of which would be expected to pose a significant risk to the treatment works. Second, the inventory should include commercial and industrial dischargers of less than 25,000 gpd designated by SIC code. Third, the inventory should include "zero-dischargers" that would be categorical if they discharged. Fourth, the industrial users with multiple non-domestic discharges to the

sewers should be identified and permitted by separate discharge points. All of these modifications to the basic definition in 40 CFR 403.3(t) of an SIU are good indications of the successful identification of the potential threats to its treatment works. EPA found none of these modifications to the basic definitions in effect in Yuba City, however, the inventory would include two non-categorical power plants with discharges averaging less than 25,000 gpd once they are reclassified.

5.2 Inventory Classifications

The Yuba City must re-determine which industries qualify as SIUs and re-classify the five of SIUs identified by Yuba City that were found to be misclassified.

- Custom Chrome - Job-shop electroplaters subject to the Federal standards in 40 CFR 413 qualify for regulation under either a full set of regulated pollutants or an abbreviated set depending on the discharge flow rate. If every day of discharge to the sewers is under 10,000 gpd, then the abbreviated set of standards apply for cadmium, lead, cyanide, and toxic organics. If any one day exceeds 10,000 gpd, then the full set of standards apply for cadmium, lead, cyanide, and toxic organics, as well as chromium copper, nickel, silver, and zinc. Yuba City classified Custom Chrome as a job-shop electroplater discharging more than 10,000 gpd. Custom Chrome has show that its average discharges are less than 10,000 gpd. It is not clear that there is not any one day exceeding 10,000 gpd. EPA expects Custom Chrome to qualify as a job-shop electroplater that always discharges less than 10,000 gpd once it documents its daily discharges and reduces flow by instituting on-demand rinsing in response to an EPA Order.

- Calpine Greenleaf Unit 2 - This industry qualifies as an SIU because the highly mineralized nature of its wastewater discharges poses the risks of sewer line disintegration and the pass-through of toxics. Furthermore, its discharges average more than 25,000 gpd. It was misclassified as a steam electric power generating station subject to the Federal standards in 40 CFR 423. It does not qualify because it does not generate any power through steam-driven turbines. The steam electric rule would cover combined-cycle cogeneration plants that use steam-driven turbines to generate power from exhaust heat.

- Calpine Feather River Energy Center - This industry qualifies as an SIU and was misclassified as a steam electric power generating station for the same reasons stated above for Calpine Greenleaf Unit 2.

- Calpine Yuba City Energy Center - This industry qualifies as an SIU and was misclassified as a steam electric power generating station for the same reasons stated above for Calpine Greenleaf Unit 2, except its discharges do not average more than 25,000 gpd.

Section 5 – Industrial User Inventory

- Yuba City Cogeneration - This industry qualifies as an SIU and was misclassified as a steam electric power generating station for the same reasons stated above for Calpine Greenleaf Unit 2, except its discharges do not average more than 25,000 gpd.

- Sunsweet and Franklin Circle K - These are properly classified as non-categorical SIUs.

- Metal-Bearing Discharges - These might include glass polishers, metal finishers, metals formers, radiator shops, water purification facilities, and agricultural-chemical sources. See the discussion in item 2.5 of this report for sources of aluminum, arsenic, copper, iron, manganese, molybdenum, and zinc. Possibles: Chipco Mfg., Transitional Systems Mfg., Cal Classic Custom Trim.

- Other Possibles - These would include any other large dischargers, categoricals, or toxic loaders. Possibles: Paperboard Packaging Corp.

5.3 Zero-Discharging Categorical Industrial Users

Yuba City should institute the good practice of identifying and permitting industrial users that would qualify as categoricals if they discharged their Federally-regulated process-related wastewaters to the sewers. In essence these are the industrial users that comply with their Federal standards by maintaining the steps necessary to prevent the discharge of process-related wastewaters to the sewers. Including zero-discharging CIUs in the inventory ensures the local regulatory control over industrial users who would violate their Clean Water Act requirements and could endanger the operations of the treatment works if they discharged to the sewers.

Section 6

Industrial User Permits

Pretreatment programs are required to issue permits with standards and limits, sampling locations, self-monitoring requirements, and a 5-year or less expiration, as part of ensuring industrial user compliance. 40 CFR 403.8(b,f1iii,f2i).

6.0 Summary

Yuba City has a good permit program and has successfully issued valid permits to all of its identified SIUs. The permits all have standards and limits, self-monitoring requirements, and a 2-year expira-tion, but they do not specify sampling locations nor define what constitutes representative sampling. Permits will have to be re-issued once the local limits are re-determined, the SIU inventory is re-determined, and the Federal standards are re-applied. See item 7.0 for this report for a discussion on representative sampling.

Requirements

- Each permit issued to an SIU must explicitly state all applicable Federal standards, national prohibitions, and local limits, as well as the self-monitoring and reporting requirements, and sampling locations.

Recommendations

- Permits should be issued with the applicable Federal standards and national prohibitions, and then reissued to include the local limits once they are re-determined.
- Each permit issued to an SIU should list all standards, limits, self-monitoring and analytical requirements on one page, and the sampling location(s) on a site map.
- The information in the permit applications as well as any other information gathered to issue the permits, such as statistical analyses of sample representativeness, should be field verified and documented in fact sheets prepared for each SIU.

6.1 Permit Accuracy and Fact Sheets

Yuba City will have to reissue permits with the applicable Federal standards and national prohibit-tions to all of its SIUs, and then reissue them again with local limits once they are re-determined. Fact sheets should be prepared to document the information and decisions behind the permit provisions, such as Federal category, sample point, pollutants of concern, representative sampling, and self-certifications in lieu of self-monitoring.

Section 6 – Industrial User Permits

- Sunsweet - A permit must be reissued to apply the national prohibitions and the local limits, once they are re-determined. The permit should require self-monitoring for all of the local limits as well as any other toxics that identified by Sunsweet under the EPA Order, with a provision to re-open the self-monitoring requirements depending on the results. The national prohibitions should be restated to explicitly prohibit the identified discharges and conditions from Sunsweet that have or could have adversely effected the sewers or the WWTP. See items 2.0 and 2.8 of this report. Sampling protocols set in the permit should reflect the variabilities from plant operations and treatment associated with the defined sample point not only over the sampling day but also over the reporting period.

- Power Plants - The permits for the power plants must be reissued to apply the national prohibitions, to remove the Federal standards for steam electric power stations, and add the local limits, once they are re-determined. The permits should require self-monitoring for all of the local limits, with a provision to re-open the self-monitoring requirements depending on the results. The national prohibitions should be restated to explicitly prohibit the discharges and conditions that could adversely affect the sewers or the WWTP. Sampling protocols set in the permit should reflect the variabilities from plant operations and treatment associated with the defined sample points not only over the sampling day but also over the reporting period. In particular, the permit should address the entire schedule of batch, slug, blowdown, or continuous discharges through the sample point.

- Zero-Discharging CIUs - Zero-discharge permits should be issued to any industries found to comply with Federal categorical pretreatment standards by not discharging Federally-regulated process-related wastewaters. A zero-discharge permit should explicitly prohibit the discharge of the Federally-regulated wastewaters and require the industry to certify every six months to not discharging in lieu of self-monitoring. A zero-discharge permit would strengthen enforcement efforts against the illegal dumping to the sewer because the establishment of violation depends only on whether a discharge occurred and not on surveillance sampling and the difficult arguments surround the representativeness of sampling.

6.2 Permit Clarity

All of the permits issued to the SIUs should clearly communicate the applicable Federal standards, national prohibitions, local limits, sample type, sampling frequency, self-certifications in lieu of self-monitoring, analytical test methods and the associated detection limits, and, if necessary, the flow and production rates behind the Federal standards. All of this information can be presented in table form on a single page of the permit with one line per pollutant. The compliance sampling locations also could be clearly delineated on a site map annotated with a description of the location. Each permit should clearly state the effective duration and the procedures for re-applying.

Section 7

Monitoring, Self-Monitoring and Inspections

Pretreatment programs, as part of ensuring industrial user compliance [40 CFR 403.8(b)], are required to:

- Cause industrial users to self-monitoring at least twice per year unless the program samples for them [40 CFR 403.8(f1iii), 403.12(e1,g10)];
- Inspect industrial users at least once per year;
- Sample industrial users at least once per year if they self-monitor or twice per year if they are not required to self-monitor [40 CFR 403.8(f2v), 403.12(i2,e1,g10)];
- Ensure that all sampling and self-monitoring is representative of the reporting period [40 CFR 403.12(g3)].

7.0 Summary

For the most part, Yuba City successfully obtains self-monitoring as well as performs the inspections and city sampling necessary to determine compliance independent of the information submitted by the SIUs. However, the self-monitoring is not representative over the reporting periods and the sample records do not cover all of the pollutants of concern.

Requirements

- The self-monitoring records for each SIU must be complete in the number and type of

- Yuba City must sample each SIU, including Franklin Circle K, at least once per year.

Recommendations

- Inspection reports should include an analysis that the sampling is representative of both the sampling day and reporting period.

- Inspection reports should document the findings that establish the sewer discharge permit conditions and prompt any necessary revisions or enforcement actions.

- All self-certifications in lieu of self-monitoring should be explicitly stated in the permit.

Section 7 – Monitoring, Self-Monitoring and Inspections

7.1 City Inspections and Sampling

Yuba City performs routine inspections of each SIU once per year and samples them at least once per year since its permits require self-monitoring. Sunsweet is sampled each weekday and the power plants are sampled once per week. The one exception is the contaminated groundwater clean-up site, Franklin Circle K, which is not sampled by the City.

7.2 Self-Monitoring

Frequency and Coverage - The permits require daily self-monitoring for Sunsweet and quarterly self-monitoring for the others. However, the self-monitoring and city monitoring do not cover all of the pollutants of concern (aluminum, arsenic, chloroform, copper, diazinon, iron, lead, manganese, molybdenum, tetrachloroethylene, and zinc), nor the potential pollutants of concern (barium, cadmium, chromium, mercury, nickel, oil & grease, selenium, and MTBE).

Sampling Representativeness - Representative sampling points have been established and known even though they are not specified in the permits. However, the self-monitoring frequencies do not ensure representative sampling over the reporting period because the significant slug, batch and variable discharges, such as spent solutions, blowdowns and regenerants, are not specifically required by the permits to be self-monitored. Both of these findings regarding the representative-ness of sampling were illustrated at each of the SIUs inspected during this inspection.

7.3 Self-Certifications

Self-certifications in lieu of any required self-monitoring for Federal standards or local limits should be explicitly stated in the permits. In particular, the Custom Chrome permit should explicitly state which toxic organic pollutants do not have to be self-monitored if Custom Chrome self-certifies to following a previously submitted and approved toxic organics management plan, as allowed under the Federal job-shop electroplating standards in 40 CFR 413.

Section 8

Enforcement and Compliance Assistance

Pretreatment programs, as part of ensuring industrial user compliance are required to enforce their permits following an enforcement response plan, and to publish annual significant non-compliance lists [40 CFR 403.8(b,f1ii,f2vii,f5)].

8.0 Summary

The Federal regulations do not define how to determine a program's success in enforcing permit limits. However, an evaluation of enforcement and the City's enforcement response plan is premature since the SIU permits need to be revised to include updated local limits, result in representative sampling records, and apply the proper Federal standards.

Requirements

- Approved pretreatment programs are required to develop and follow an enforcement response plan that specifies the actions, and their time frames, that the City will take in response to each type of industrial user permit.

Recommendations

- None.

Figure 1

Yuba City Water Pollution Control Facility
Schematic of the Wastewater Treatment

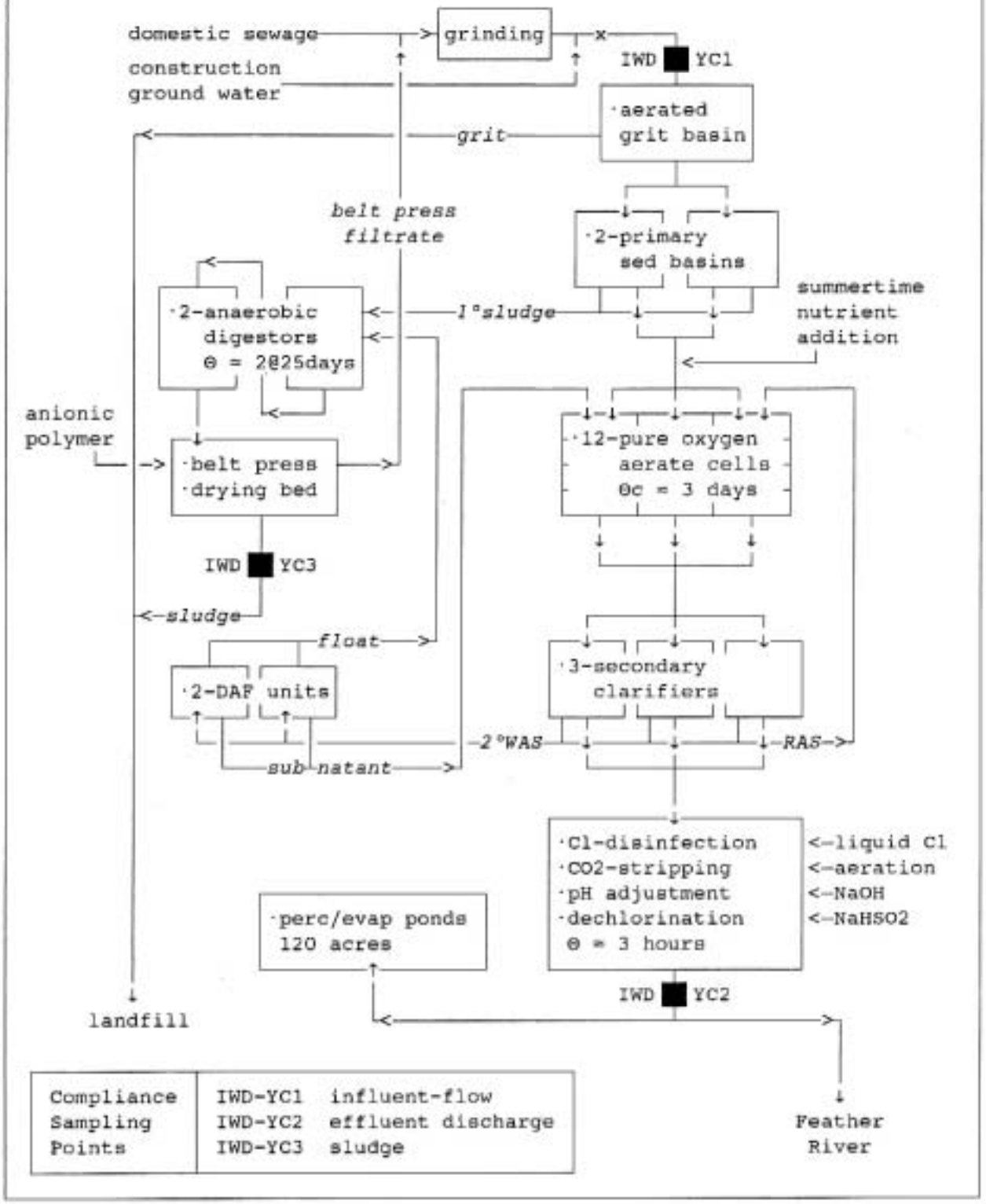

Table 1

Yuba City WWTP Wastewater Quality
Conventionals Pollutants, Nutrients, Other Non-Toxics
Jan-2003 to Jan-2004

Pollutants (mg/l)	influent mean	5th%	99th%	effluent mean	99th%	sample viol rate d-max	avgs	count
flow (mgd)	6.60	5.57	8.05	5.98	-	nr	nr	365
BOD	339.	182.	560.	10.5	21.6	0/101	0/12	101
TSS	190.	103.	312.	8.7	15.4	0/261	0/12	261
*ammonia-N	28.8	12.3	52.1	12.9	36.9	8/34 b/	3/3	34
*nitrates-N	0.28		0.51	0.77	2.00	0/11	nr	11
*phosphates-P	4.73		14.6	3.03	5.02	nr	nr	5
MBAS-surfactants			-	0.25	0.45	0/3	nr	3
TDS			465.	370.	457.	nr	nr	11
alkalinity			-	145.	164.	nr	nr	3
*hardness			92.	119.	78.	nr	nr	7
*hardness @ R-1				15.2	8.78	nr	nr	5
hardness @ FR c/				34.9	22.6	nr	nr	27
*sulfates			15.	22.	44.	nr	nr	4
*chlorides			66.	82.	116.	nr	nr	4
sodium			61.		76.	nr	nr	1
EC (µmhos/cm2)			600.	728.	827.	nr	nr	10
Stat Measures	Median	95%th	99th%		Max	maxs	avgs	count
acute toxicity	pass	pass	pass		pass	0/12	nr	12
pH-min (s.u.)	<6.5 at least 4 times				5.8	≥4	-	cont
pH-max (s.u.)	>8.5 at least once				9.0	≥1	-	cont

* effluent results for salts/nutrients include data from 2000-2002 DMRs
b/ minimum ammonia based on maximum pH of discharges to the river of 7.2 and average temperature during the wet-season of 70°F.
c/ USGS Feather River station at Nicolaus from the 1996-1998 National Water Quality Assessment Program - Sacramento River Basin Study (single sample minimum hardness in entire basin was 18.0 mg/l)
nr no required permit limits
cont continuous pH meter reading

Table 2

Yuba City WWTP Wastewater Quality
Inorganic Toxic Pollutants, Toxic Organics, and Pesticides - Compliance Deadlines Nov 2007
Jan-2000 to Jan-2004

Pollutants (µg/l)	surface a/ mean	99th%	grnd mean	est avgs	influent mean	99th%	effluent b/ mean	99th%	remo vals	sampl viol rate d-max	avgs	count
aluminum	11.6	38.3		11.6	1965	6225	256.	571.	87%	4/4 c/	4/4	10 d/
arsenic	<1.0	<1.0	15.8	2.5	6.1	34.0	7.8	33.5	70%	-	0/4	14
barium	13.7	18.2	292.	41.5	98.6	257.	19.5	24.1	80%	-	-	6
beryllium	<1.0	<1.0		<1.0	0.3	1.5	0.4	1.7	70%	-	-	10
cadmium	<1.0	<1.0		<1.0	0.5	1.7	0.2	0.3	68%	0/3 c/	0/3	10
chromium	<1.0	1.1		<1.0	1.2	3.1	0.9	1.1	-	0/1 c/	0/1	11
copper	1.1	2.2		1.1	50.1	90.2	8.5	18.7	83%	4/4 c/	4/4	14 d/
iron	23.6	63.1	40.8	25.3	960.	1476	164.	309.	83%	0/4	-	10 d/
lead	<1.0	<1.0	4.7	1.4		2.7		0.75	-	1/1 c/	1/1	1 d/
manganese	4.8	13.4	71.5	11.5	49.8	130.	53.0	135.4	70%	3/4	-	5 d/
mercury	0.008	0.030		0.008	0.50	1.37	0.017	0.048	96%	0/4	-	10
molybdenum	<1.0	<1.0		<1.0	10.3	30.8	11.0	31.6	70%	0/3	-	13 d/
nickel	<1.0	1.0		<1.0	3.7	10.3	1.8	4.0	51%	0/1 c/	0/1	7
selenium	<1.0	<1.0		<1.0	7.2	45.1	7.1	44.7	70%	-	-	11
silver	<1.0	<1.0		<1.0		0.90		0.32	-	0/1 c/	nr	1
zinc	<1.0	1.9		<1.0	157.	329.	51.8	86.7	67%	4/4 c/	4/4	14 d/
chloroform					9.7	18.5	3.7	18.5	-	1/3	-	3 d/
diazinon							0.12	0.57		1/3	1/3	3 d/
dibromochlorometh							0.21	1.02		0/3	1/3	3 d/
dichlorobromomeeth							1.62	6.22		1/3	1/3	3 d/
MTBE							0.32	1.24		0/3	-	7
tetrachloroethyle							0.64	1.00		0/3	0/3	3 d/
other tox organx							<0.02	<0.02		0/4	0/4	4

a/ Surface water supply data from USGS Feather River station at Nicolaus - 13 miles downstream.
Ground water supply data from Yuba City water quality report for Hillcrest water users.
Estimated water supply flow-weighted averages based on estimated mix of 1:9 ground to surface water.
b/ Effluent results for toxics include data from 2000-2002 DMRs.
c/ Metals limits based on a calculated 22.6 mg/l minimum hardness at Feather River station at Nicolaus.
d/ See Table 4 for computed statistical probabilities of exceeding limits - otherwise viols no expected.

Table 3

Yuba City WWTP Sludge Quality
Jan-2000 to Jan-2004

Pollutants (mg/kg)	Federal Standards ceiling	reuse	landfill	sample results mean a/b/ 99th%	sample viol d-max	count
arsenic	75	41	73	14.0	nr	1
cadmium	85	39	-	<10.9	nr	2
chromium	-	-	600	28.5	nr	2
copper	4300	1500	-	237.7	nr	2
lead	840	300	-	31.0	nr	1
mercury	57	17	-	1.4	nr	2
molybdenum	75	-	-	<77.0	nr	1
nickel	420	420	420	<59.6	nr	2
selenium	100	100	-	<15.0	nr	1
silver	-	-	-	8.5	nr	2
zinc	7500	2800	-	507.9	nr	2
total toxic metals				829.0		

a/ self-monitoring in 2000-2002 not reported in mg/kg dry-weight nor with moisture content
b/ detection limits in 2003 for arsenic and selenium over standards
nr no requirements because sludge is not land applied or monofilled

Table 4

Yuba City WWTP Wastewater Quality
Computed Statisitcal Probabilties of Exceeding Limits
Jan 2004

daily-max limits (µg/l)	mean	std dev	probability		percent
aluminum	μ = 256.2	σ = 135.1	α(120)	= 0.8433	84%
ammonia (mg/l)	μ = 12.87	σ = 10.32	α(19.7)	= 0.2231	22%
chloroform	μ = 3.670	σ = 6.355	α(1.1)	= 0.6569	66%
*copper	μ = 8.486	σ = 4.395	α(2.65)	= 0.9078	91%
diazinon	μ = 0.120	σ = 0.191	α(0.08)	= 0.5829	58%
*dibromochloromethane	μ = 0.210	σ = 0.347	α(1.1)	= 0.0051	<1%
*dichromobromomethane	μ = 1.620	σ = 1.976	α(1.5)	= 0.5242	52%
iron	μ = 163.8	σ = 62.37	α(300)	= 0.0145	1%
*lead	μ = na	σ = na	α(0.375)	> 0.5000	>50%
manganese	μ = 53.01	σ = 35.36	α(50)	= 0.5339	53%
molybdenum	μ = 11.05	σ = 8.816	α(10)	= 0.5474	55%
pH-lower limit (su.)	μ = na	σ = na	α(6.5)	= 0.0110	1%
pH-upper limit (su.)	μ = na	σ = na	α(8.5)	= 0.0027	<1%
*zinc	μ = 51.77	σ = 14.97	α(34.0)	= 0.8683	87%

month-avg limits (µg/l)	mean	std dev	probability		percent
aluminum	μ = 205.0	σ = 58.02	α(78)	= 0.9857	99%
ammonia (mg/l)	μ = 13.07	σ = 3.912	α(3.56)	= 0.9925	99%
arsenic	μ = 8.870	σ = 9.002	α(10)	= 0.4540	45%
*copper	μ = 7.900	σ = 2.252	α(1.38)	= 0.9980	>99%
diazinon	μ = 0.120	σ = 0.191	α(0.04)	= 0.6623	66%
*dibromochloromethane	μ = 0.210	σ = 0.347	α(0.41)	= 0.2816	28%
*dichromobromomethane	μ = 1.620	σ = 1.976	α(0.56)	= 0.7041	70%
*lead	μ = na	σ = na	α(0.829)	< 0.5000	<50%
*tetrachloroethylene	μ = 0.640	σ = 0.155	α(0.8)	= 0.1510	15%
*zinc	μ = 40.50	σ = 3.786	α(22.3)	= 0.9999	>99%

* expected permit limits to be in effect in Nov 2007
minimum hardness of 22.6 mg/l CaCO3 used in metals limits calculations

Table 5

Comparison of Wastewater Quality
Average Concentrations of Toxics Jan-00 to Jan-2004

Influent (µg/l)	Yuba City	Deer Creek	ElDor Hills	Grass Vally	Nevad City	Placr Co#1	Red Bluff	Stock -ton	norm a/
aluminum	**1965**					820.			+0.7
arsenic	**6.1**	<1.0	1.4	<1.0	1.1	<1.0	1.33	4.4	+2.0
barium	98.6								
beryllium	0.3							<0.5	
cadmium	**0.5**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.4	
chromium	1.2	<5.0	5.5	<1.0	<5.0	<5.0	7.6	**8.0**	-1.4
copper	50.1	83.0	**110.**	45.5	20.0	22.5	26.0	39.0	+0.0
iron	960.	430.	**1600**	510.	1500	1425			-0.2
lead	2.7	<5.0	<5.0	<5.0	5.8	10.4	<5.0	**10.9**	-0.6
manganese	49.8	24.0	**200.**	98.0	46.0	87.0			-0.5
mercury	**0.50**	0.26	0.43	0.26	0.21	<0.2	<0.2	0.30	+1.7
molybdenum	**10.3**							4.6	+0.7
nickel	3.7	3.3	5.5	4.6	3.1	5.1	5.0	**9.1**	-0.6
selenium	**7.2**	1.1	1.4	<1.0	<1.0	<1.0	<1.0	<0.5	+2.4
silver	0.90	1.1	2.5	**3.7**	1.0	1.3	2.86	1.8	-1.0
zinc	157.	120.	160.	**225.**	91.0	110.	77.5	138.	+0.5

Effluent (µg/l)	Yuba City	Deer Creek	ElDora Hills	Grass Valley	Nevada City	Placer Co#1	Red Bluff	Stock -ton	norm a/
aluminum	**256.**	39.0	36.4	26.8	47.1	101.			+2.0
arsenic	**7.75**	0.4	0.50	1.29	1.5	0.43	1.44	3.6	+2.3
barium	**19.5**	4.05	2.02	4.04	9.2	4.82			+1.9
beryllium	**0.44**	0.022	<0.003	<0.1	<0.1	<0.02	<1.0	<0.5	+2.1
cadmium	0.17	<1.0	0.071	0.05	<1.0	0.05	**0.39**	<0.1	+0.2
chromium	0.94	0.34	0.48	0.30	0.30	0.25	1.13	**1.6**	+0.6
copper	8.49	**20.4**	13.7	4.03	2.4	2.00	7.62	5.6	+0.1
iron	**164.**	31.4	8.40	87.1	44.0	79.2			+1.7
lead	**0.75**	0.50	0.061	0.41	0.33	0.73	0.45	<1.0	+0.9
manganese	**53.0**	1.58	2.57	35.9	10.8	34.7			+1.4
mercury	**0.017**	<2.0	0.002	0.005	0.013	0.004	<0.2	<0.2	+1.4
molybdenum	**10.5**							5.1	+0.7
nickel	1.78	**24.0**	3.28	4.15	1.8	2.62	1.55	7.1	-0.5
selenium	**7.10**	<1.0	0.28	0.45	0.3	0.15	0.57	<0.5	+2.5
silver	**0.76**	<1.0	0.006	<0.08	<1.0	0.07	0.34	<0.4	+1.7
zinc	51.8	36.5	22.9	**60.7**	34.5	27.3	53.0	14.8	+0.9

Flow (mgd)	6.60	2.94	1.94	1.75	0.42	1.95	1.35	32.4	

bold highest sampling averages highlighted in bold

a/ calculated norm for Yuba City versus 8-city averages

$$\text{norm} = \frac{(x - \mu)}{\sigma}$$

x = Yuba City average
μ = 8-city averages
σ = 8-city std deviation

Table 6

Sampling Results
City of Yuba City Wastewater Treatment Plant

Sample Number	YC001	YC002	YC003	YC009	YC004
Date	08/27/03	08/27/03	08/27/03	08/27/03	08/27/03
Type	24-hr	24-hr	24-hr	grab	grab
Location	WWTP	WWTP	WWTP	Field	WWTP
Point	Influent	Influent	Effluent	Blank	Sludge
Units	mg/l	mg/l	mg/l	mg/l	mg/kg *
aluminum	1.40	1.40	0.240	<0.010	13000
arsenic	0.0026	0.0028	0.0026	<0.0005	14
cadmium	<0.0010	<0.0010	<0.0010	<0.0010	<7.7
chromium	0.0041	0.0034	0.0012	<0.0010	38
copper	0.028	0.024	0.0056	<0.0020	320
cyanide-total	<0.010	0.020	<0.010	<0.010	
iron	0.76	0.73	0.18	<0.10	8200
lead	0.0026	0.0028	0.0008	<0.0010	31
manganese	0.024	0.023	0.068	<0.0010	940
mercury	0.00032	0.00041	0.00004	<0.00003	2.0
molybdenum	0.010	0.010	0.018	<0.0005	<77
nickel	0.0039	0.0036	0.0039	<0.0010	<77
selenium	0.0007	0.0007	0.0006	<0.0010	<15
silver	0.0009	0.0009	0.0003	<0.0005	12
zinc	0.095	0.094	0.046	<0.005	700
ammonia-N	10	10	5.30	<0.30	
boron	0.170	0.170	0.180	<0.100	
chloride	66	65	99	<1.0	
hardness	92	92	110	<2.3	
nitrate-N	0.51	0.28	1.6	<0.10	
total phosphate-P	3.5 o/	3.5 o/	1.4 o/	<1.0 o/	
sodium	61	61	76	<0.5	
sulfate	14	15	21	<0.5	
TDS	470	460	360	<20	
EC (umohs/cm)	610	590	630	3	
moisture (%)					87%

All samples collected, kept in custody, and delivered to the laboratory by Greg V. Arthur. Samples analyzed by EPA's Richmond Laboratory. Documentation including chain of custody and quality control results are attached.

* dry-weight o/ ortho-phosphate as P

Table 6 (continued)

Sampling Results
City of Yuba City Wastewater Treatment Plant

Sample Number	YC005	YC006	YC008	YC007	
Date	08/20/03	08/20/03	08/20/03	08/21/03	
Type	grab	grab	24-hr	grab	
Location	CustChrm	CustChrm	Greenleaf	Field	
Point	Tank-3	Tank-26	Unit2	Blank	
Units	mg/l	mg/l	mg/l	mg/l	
aluminum	0.032	0.130	3.60	<0.010	
arsenic	0.0003	0.0006	0.0087	<0.0005	
cadmium	<0.0010	0.033	0.0016	<0.0010	
chromium	0.032	0.019	0.047	<0.0010	
copper	0.057	0.063	0.300	<0.0020	
cyanide-total	<0.010	<0.010		<0.010	
iron	0.72	1.70	9.80	<0.100	
lead	0.0006	0.021	0.0044	<0.0010	
manganese	0.001	0.009	0.190	0.0018	
mercury	<0.00003	<0.00003	0.00006	<0.00002	
molybdenum	0.0003	0.0004	2.00	<0.0005	
nickel	2.70	0.080	0.064	<0.0010	
selenium	<0.0010	<0.0010	0.0070	<0.0010	
silver	<0.0005	<0.0005	<0.0005	<0.0005	
zinc	0.023	0.140	0.870	<0.0050	
ammonia-N	<0.30	<0.30	<0.30	<0.30	
boron	0.240	<0.100	0.098	<0.100	
chloride	4.0	5.7		<1.0	
hardness	46	46		<2.3	
nitrate-N	<0.10	0.06		<0.10	
ortho phosphate-P	<1.0 o/	<1.0 o/		<1.0 o/	
sodium	6.9	9.9	1700	<0.500	
sulfate	19	7.9		<0.50	
TDS	93	85		<20	
EC (umohs/cm)	150	140		3	

All samples collected, kept in custody, and delivered to the laboratory by Greg V. Arthur. Samples analyzed by EPA's Richmond Laboratory. Documentation including chain of custody and quality control results are attached.

() invalid result o/ ortho-phosphate as P

Table 7

City of Yuba City Service Area 2004 Inventory
(based solely on EPA observations)

SIGNIFICANT INDUSTRIAL USERS ("SIUs")	FLOW in gpd	PRETREATMENT-IN-PLACE	FEDERAL CATEGORY	BAT
Sunsweet Growers	764485	SCRN PH	non-cat	n/a
Custom Chrome & Bumper	15000	-	413	BAT-
Calpine-Greenleaf #2	47600	PH	non-cat	n/a
Calpine-Feather River EC	50000	PH	non-cat	n/a
Calpine-Yuba City EC	20000	PH	non-cat	n/a
Calpine-Yuba City Cogen	5000	PH	non-cat	n/a
Franklin Circle K	25000	CARBON	non-cat	n/a

Federal Category and Best Available Technology

413	Job-shop Electroplating >10,000 gpd
non-cat	Non-Categorical SIU
BAT	Best-Available-Technology treatment (equivalent to the model treatment used in setting the Federal standards)
BAT+	Exceeds BAT treatment
BAT-	Falls short of BAT treatment
n/a	No applicable Fed standards that are that are based on model treatment

Treatment-In-Place

CARBON	Activated Carbon
PH	pH Adjustment
SCRN	Screening

Table 8

Pretreatment Program Definitions

Pass-Through: A non-domestic discharge which exits the treatment works in quantities or concentrations which, alone or in conjunction with other non-domestic discharges, *is a cause of violation* of any requirement of the NPDES permit, 40 CFR 403.3(n).

Interference: A non-domestic discharge, including excessive or slug loads of conventional pollutants, which inhibits or disrupts the treatment with other non-domestic discharges, inhibits or disrupts the treatment works, its treatment processes or operations, or its sludge processes, use or disposal, *thereby causing a violation* of any requirement of the NPDES permit or any Federal, state or local sludge regulation, 40 CFR 403.3(i).

Local Limits: Specific limits developed and enacted by the local authority, designed to prevent pass-through, interference, sludge contamination, and potential threats to worker health and safety, and to ensure renewed and continued compliance with the NPDES permit or sludge use or disposal practices, 40 CFR 403.5(c).

Significant Industrial User: A non-domestic source that either (1) is subject to Federal categorical pretreatment standards, or (2) discharges an average of more than 25,000 gpd of process wastewater, or (3) makes up more than 5% of the flow or organic capacity of the treatment plant, or (4) is determined by the local authority or State to have a reasonable potential to adversely effect the treatment works, 40 CFR 403.3(t).