



California  
Department of  
Health Services  
**SANDRA SHEWRY**  
Director

State of California—Health and Human Services Agency  
**Department of Health Services**



**ARNOLD SCHWARZENEGGER**  
Governor

December 16, 2009

Mr. Peter Kavounas, P.E.  
Assistant General Manager - Water  
City of Glendale Water and Power  
141 North Glendale Avenue  
Level 4, Administration Section  
Glendale, CA 91206-4496

Dear Mr. Kavounas:

**SYSTEM NO. 1910043 – AUTHORIZATION TO OPERATE RCF DEMONSTRATION FACILITY FOR CHROME 6 REMOVAL**

In conjunction with the City of Glendale's efforts to demonstrate chrome 6 removal by reduction, coagulation and filtration (RCF), we have received documents submitted on the City's behalf including:

1. Experimental Design for Hexavalent Chromium Removal Using Reduction with Ferrous Sulfate, Coagulation and Filtration (RCF) Process June 2008 by Malcolm Pirnie, Inc.
2. Phase III Demonstration-Scale Reduction with Ferrous Sulfate, Coagulation, Filtration (RCF) Treatment Technology Evaluation, QUALITY ASSURANCE PROJECT PLAN Draft Submitted to the USEPA Region 9 on June 16, 2008
3. 100 % Design Drawings and Revised P&ID prepared by Layne Christenson Company and AECOM in May 2009
4. PROJECT TECHNICAL REPORT TO SUPPLEMENT THE GLENDALE OPERABLE UNIT 97-005 DOCUMENTATION FOR OPERATION OF THE WBA CHROMIUM REMOVAL DEMONSTRATION FACILITY AND THE RCF CHROMIUM REMOVAL DEMONSTRATION FACILITY Prepared by City of Glendale Water and Power Revision Submitted to California Department of Public Health on May 28, 2009



Do your part to help California save energy. To learn more about saving energy, visit the following web site:  
[www.consumerenergycenter.org/flex/index.html](http://www.consumerenergycenter.org/flex/index.html)

Southern California Drinking Water Field Operations Branch, Los Angeles Region  
1449 West Temple St., Room 202, Los Angeles, CA 90026  
Telephone: (213)580-5723 Fax: (213)580-5711  
Internet Address: [www.dhs.ca.gov/ps/ddwem/](http://www.dhs.ca.gov/ps/ddwem/)

Mr. Peter Kavounas, P.E.  
Page 2  
December 16, 2009

5. SUPPLEMENTAL INFORMATION ON THE RCF CHROMIUM REMOVAL DEMONSTRATION FACILITY Prepared by City of Glendale Water and Power Submitted to California Department of Public Health on July 29, 2009
6. Preliminary Draft Operation and Maintenance Manual Reduction-Coagulation-Filtration Chromium (VI) Removal Demonstration Facility, submitted by AECOM, August 2009

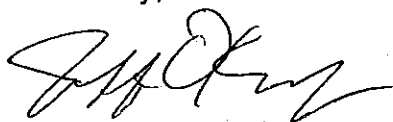
In summary, ferrous sulfate is dosed between 1.5 to 2.5 mg/L and the chrome 6 is reduced to chrome 3 as it oxidizes ferrous iron to ferric iron. Excess ferrous iron is also oxidized by dissolved oxygen in the water. The chrome 3 either precipitates, forms a co-precipitate with the ferric iron, or adsorbs onto the ferric floc. The ferric iron/Cr 3 particles form larger floc during coagulation (which may be preceded by optional aeration), and will be removed with dual media filtration.

We understand that the demonstration facility will treat up to 100 gallons per minute of water from the Glendale North OU wells, that all treatment chemicals will be NSF-60 certified and that the effluent from the demonstration facility will be piped to the Glendale Water Treatment Plant for removal of volatile organic chemicals.

The City of Glendale may operate the RCF demonstration facility for a period ending December 31, 2010 subject to the attached list of provisions.

If you have any questions, please contact Mr. Alan Sorsher at (213) 580-5777.

Sincerely,



Jeff O'Keefe, P.E.  
District Engineer  
Metropolitan District

Enclosure (1)

Cc: Mr. Daniel L. Hutton  
Manager, Facility Operations  
CDM Engineers & Constructors  
9220 Cleveland Ave.  
Suite 100  
Rancho Cucamonga, CA 91730

Mr. Peter Kavounas, P.E.

Page 3

December 16, 2009

Mr. David Stensby  
Remedial Project Manager  
Glendale North and South Operable Units  
San Fernando Valley Superfund Site  
US EPA, Region IX  
75 Hawthorne Street  
San Francisco, CA 94105

Carolyn Monteith  
Lockheed Martin EESH  
2950 N. Hollywood Way, Suite 125  
Burbank, CA 91505

Nicole Blute  
Malcolm Pirnie, Inc.  
888 West 6th Street  
3rd Floor  
Los Angeles, CA 90017

Mr. Charles Cron  
GWTP c/o CDM  
800 Flower St  
Glendale, CA 91201

## OPERATING CONDITIONS FOR RCF DEMONSTRATION FACILITY

Operation of the RCF Facility by the City of Glendale adjacent to the GWTP site is approved subject to the following conditions:

1. The designated chief treatment operator for the GWTP/RCF/GS-3 Wellhead Treatment shall obtain a Grade T4 certificate by January 1, 2012 and the Shift Operator shall hold a T3 certificate.
2. The City shall only use additives that have been tested and certified as meeting the specification of American National Standard Institute/National Sanitation Foundation (ANSI/NSF) Standard 60. This requirement shall be met under testing conducted by a product certification organization accredited by the ANSI for this purpose.  
  
Treatment chemicals shall be used within the dosage limits in the individual NSF certifications, if any.
3. The City shall operate the RCF Demonstration Facility with the goal of reducing the total chromium concentration in the effluent to below 5 µg/L (5 parts per billion). In addition, the City should evaluate the technical feasibility and costs of treatment to 1 µg/L and below, if possible.
4. The effluent from the RCF Facility shall be tested weekly for total coliforms and HPC. If coliforms are present or the HPC is over 500 colonies/ml, the RCF effluent shall not be sent to the GWTP until the problem is investigated and corrected.
5. The RCF facility shall not be operated at a flowrate exceeding 100 gallons per minute (gpm) of raw water at any time unless written permission to operate at a greater rate is obtained from the Department.
6. Decanted water from the backwash settling tank may be recycled to head of the plant at a rate no more than 10% of the raw water rate.
7. The City shall monitor the RCF Facility in accordance with the schedule proposed in the draft O&M Plan (See table below). Dual media filter effluents shall also be sampled and analyzed for total iron.

OPERATING CONDITIONS FOR RCF DEMONSTRATION FACILITY

Total suspended solids (TSS) in the filter influent shall be analyzed weekly. The length of filter runs shall be recorded along with the associated TSS readings.

Sample Point	Laboratory Analysis			Field Analysis					
	Cr(VI)	Total Cr	TSS	Cr(VI)	Total Fe	Fe <sup>2+</sup>	Turbidity	pH/Temp <sup>1</sup>	DO
SP-001	1/W	1/W	—	1/W	1/M	1/M	1/M	Continuous	Continuous
SP-100	—	—	—	—	1/W	1/W	—	—	—
SP-101	—	—	—	—	1/M	1/M	—	1/W	—
SP-102	—	—	—	—	1/M	1/M	—	1/W	—
SP-103	1/W	—	—	—	1/W	1/W	—	1/W	1/W
SP-201	—	—	—	—	—	—	—	1/W	1/W
SP-202	—	—	—	—	—	—	—	1/W	1/W
SP-301	1/W	1/W	—	1/W	1/W	1/W	Continuous	1/M	1/M
SP-302	1/W	1/W	—	1/W	1/W	1/W	Continuous	1/M	1/M
SP-303	1/W	1/W	—	1/W	1/W	1/W	Continuous	1/W	1/W
SP-401	1/W	1/W	—	1/W	1/W	1/W	1/W	1/M	1/M
SP-501	—	—	1/M	—	—	—	—	—	—
SP-502	1/W	1/W	—	1/M	1/M	1/M	1/W	1/M	1/M

Notes:

1/M = Once per month

1/W = Once per week

<sup>1</sup> pH and temperature will be monitored at the same frequency because the pH meter selected for the RCF study has temperature compensation function to ensure more accurate measurement.

8. The concentration of Chrome 6 in treated water shall be reported down to 0.10 µg/L as specified in the Demonstration Scale Project Quality Assurance Project Plan. A lower reporting limit may be approved by the Department if supporting information is provided.
9. The City shall comply with any additional conditions which the Department deems necessary based on any newly identified constituents.

## OPERATING CONDITIONS FOR RCF DEMONSTRATION FACILITY

10. If necessary, the Department may modify the monitoring provisions specified herein based on additional information. The City may request a modification of any monitoring provision based upon substantiating data at any time. Any change in the monitoring and reporting requirements shall be approved by the Department in writing.
11. The City shall inspect and maintain the RCF Facility daily and as needed to maintain efficient operation.
12. A monthly report of the operation of the RCF Facility shall be included with the monthly report on other Glendale OU operations which is submitted to the local office of the Department. This operational report shall be submitted by the 20th day of the following month unless otherwise specified. This report is required regardless if the treatment plant is furnishing water to the distribution system or not. As a minimum, the report shall include:
  - a. A summary table of analytical results of all samples related to the RCF treatment received by the City the prior calendar month.
  - b. A description of the monthly operation, maintenance work, resin changeouts, and problems, both scheduled interruptions and any unscheduled interruption.
  - c. The daily flowrate in gpm of water processed by the RCF Facility and the monthly and cumulative volumes processed.
13. Copies of reports, inspections and all records shall be kept for at least five (5) years. Water quality records shall be kept for 10 years.
14. The City shall submit an annual report for the RCF Demonstration Facility, which shall include compliance with these operating provisions, the treatment plant's status, condition, and performance and any problems or difficulties. The report shall include the City's findings, experiences, and opinions regarding optimal chemical dosages, filtration rates, backwash rates and frequency, and operational costs. This report shall be due by April 30<sup>th</sup> of the following year.
15. Within 90 days after the anniversary of the RCF Demonstration Facility startup, the City shall submit for approval, an updated O&M plan to reflect any operational and maintenance changes deemed necessary during the first year of operation.