



Cache la Poudre River, Colorado

Kodak Colorado Division Water Quality Monitoring

Permitting Authority:

Colorado Department of Public Health and Environment (CDPHE) – Water Quality Control Division

Permit Writer

Andrew Neuhart
Permits Section, Industrial Unit
Water Quality Control Division, CDPHE
4300 Cherry Creek Dr. South
Denver, CO 80246-1530
ph: 303-692-3655
andrew.neuhart@state.co.us

Permittee Environmental Engineer

Eric Petersen
Kodak Colorado Division
9952 Eastman Park Drive
Windsor, CO 80551-1334
ph: 970-686-4014
eric.petersen@kodak.com

Permit Type: Individual NPDES permit

Permit Issued:

CDPS permit number CO-0032158 Issued 09-25-2008, Effective 01-01-2009
(note: permits are not available online)

Pollutants of Concern in the Watershed:

E. coli: Cache la Poudre River, Box Elder Creek to S. Platte River
Selenium: All tributaries to the Cache La Poudre River, including all lakes reservoirs and wetlands, from the North Fork of the Cache La Poudre River to the confluence with the South Platte River

Monitored Parameters:

Physical: Flow (where possible), Temperature, Conductance
Inorganic Nonmetallic: Dissolved Oxygen, pH, Hardness, Alkalinity
Nutrients: Ammonia-N, Nitrate+ Nitrite-N, Kjeldahl-N, Phosphorus (total)
Benthic Macroinvertebrates: Population characteristics
Microbiological: *E. coli*, Fecal Coliforms
Fish Species: Population Characteristics, Fish for flash samples
Metals: Arsenic, Cadmium, Chromium, Copper, Iron (dissolved and total recoverable), Lead, Manganese, Mercury, Nickel, Selenium, Silver, Zinc
Other: Sulfate, DOC, Cyanide

Baseline Monitoring Frequency, Sample Type, and Reduced Monitoring Frequency Policy for Industrial and Domestic Wastewater Treatment Facilities Policy Document

www.cdphe.state.co.us/wq/PermitsUnit/POLICYGUIDANCEFACTSHEETS/PolicyandGuidance/MonitoringReductionPolicy.pdf

Overview

Kodak Colorado Division (KCD), a film and paper manufacturing facility, became a United States Environmental Protection Agency (EPA) Performance Track member in 2004. The Performance Track program recognizes and drives environmental excellence, encouraging facilities with strong environmental records to go above and beyond their legal requirements by pledging to make four measurable environmental achievements to improve the quality of the nation’s air, water, and land. KCD established commitments in the areas of total water use, nonhazardous-waste generation, air emissions, and total non-transportation energy use. Through the program, KCD explored monitoring flexibilities that could be incorporated into its Colorado Discharge Permit System (CDPS) permit that expired in July 2005.

KCD worked with local facilities, the Colorado Department of Public Health and Environment (CDPHE), the North Front Range Water Quality Planning Association (NFRWQPA), and EPA Region 8 to coordinate water quality monitoring along a 45-mile stretch of the Cache la Poudre River. This effort coincided with development of new CDPHE monitoring guidance, *Baseline Monitoring*

Watershed: <i>Cache la Poudre River, Colorado</i>		
Key Water Quality Concerns: <i>E-coli and selenium</i>		
Stakeholder Involvement Techniques:		
<ul style="list-style-type: none"> <i>Working with other local stakeholders through a regional watershed association</i> <i>Formation of a water quality monitoring group</i> <i>Hosting stakeholder workshops and planning meetings</i> 		
Case Study Issues of Interest		
Type of Point Sources	POTW Discharges	✓
	Industrial Process Wastewater Discharges	✓
	Concentrated Animal Feeding Operations	
	Municipal Separate Storm Sewer System Discharges	
	Construction Site Stormwater Discharges	
	Industrial Facility Stormwater Discharges	✓
	Combined Sewer Overflows	
Highlighted Approach(es)	Statewide Watershed Approach	
	Implementation of Water Quality Standards	
	Implementation of Total Maximum Daily Loads or Other Watershed Pollutant Reduction Goals	
	Permit Coordination/Synchronization	
	Integrated Municipal Requirements	
	Point Source – Point Source Water Quality Trading	
	Point Source – Nonpoint Source Water Quality Trading	
	Discharger Association	
Coordinated Watershed Monitoring	✓	

Water Quality Monitoring Group officially includes six signed members committed to monitoring ambient water quality:

- KCD
- City of Fort Collins
- South Fort Collins Sanitation District
- Boxelder Sanitation District
- Town of Windsor Sanitation District
- City of Greeley Sanitation District

The monitoring group aimed to eliminate duplicate sampling sites, reduce repetitive monitoring, and save resources while increasing the value of the water quality data its members collected. The data would help state regulators protect the drinking water supply for both the City of Fort Collins and the City of Greeley, as well as preserve the Cache la Poudre River for its designated uses of water supply, primary contact recreation, cold water aquatic life, and agriculture.

In September 2004, EPA Performance Track organized a meeting with the Cache la Poudre River Water Quality Monitoring Group members and officials from EPA's Office of Water in order to discuss both water-related issues and potential water incentives for Performance Track facilities, such as reduced monitoring frequencies. Office of Water officials emphasized the continuing need for facilities and other stakeholders to partner with EPA and state agencies to collect data. After the meeting, Performance Track staff at EPA Headquarters followed up with members who had expressed interest in implementing water incentives. KCD had expressed interest in exploring flexibility in its major NPDES permit that expired in July 2005. The permit has since been reissued with an effective date of January 1, 2009.

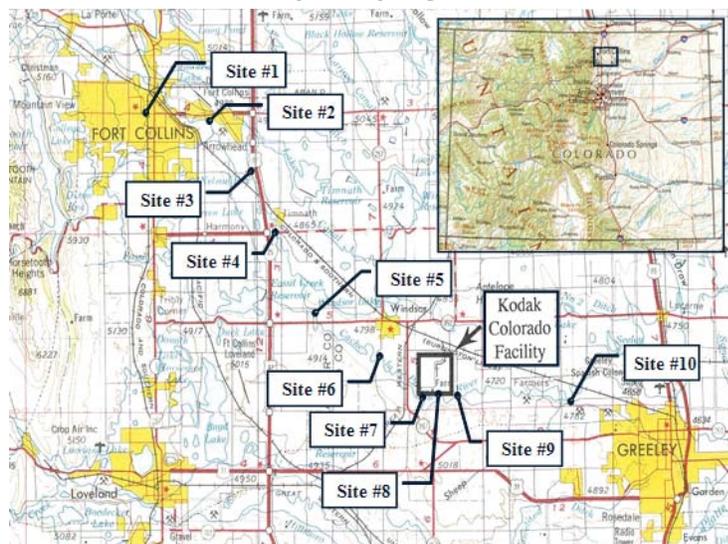
Water Quality Monitoring Plan

The impending permit renewal presented KCD and the Performance Track staff with the opportunity to expand upon and leverage the facility's existing voluntary water quality monitoring. Scientists and public officials were also seeking additional water quality data to assist them in making decisions to further protect the Cache la Poudre River. KCD and the NFRWQPA started hosting workshops and planning meetings to give other stakeholders opportunities to participate in the process of working on a coordinated ambient water quality monitoring plan.

The ambient water quality plan developed by the Cache la Poudre Water Quality Monitoring Group, in cooperation with the CDPHE, covers segments 11, 12 and 13 of the Cache la Poudre River, a 45-mile stretch bounded by North Fort

Collins and the confluence with the South Platt River East of Greeley. Eight times a year, at each of ten river assessment sampling sites, the water quality in the river is monitored and recorded (see Figure 3). This water quality monitoring includes sampling for 46 parameters such as flow, pH, dissolved oxygen, and metals concentrations. In addition to water quality, benthic analyses to observe and evaluate the organisms that reside in the lowest level of the water body are conducted four times a year, and fish tissue studies to observe and evaluate the fish population that resides in a section of the river are conducted annually. These types of evaluations go beyond analysis of the chemical constituents present in the water to observe the aquatic life that resides within, and is supported by, the water column.

Figure 3. Cache la Poudre Water Quality Monitoring Group Sampling Sites



The Cache la Poudre Water Quality Monitoring Agreement, which includes the sampling and monitoring detailed above, was officially signed into effect in October 2007. This agreement provides data collection and analysis methods that meet state quality assurance standards and as reporting requirements for data and testing results. Because of KCD's participation, its required effluent monitoring frequencies for BOD₅, pH, ammonia, cyanide, and silver have been further reduced in the reissued 2009 permit.

Monitoring Frequency Policy

In addition to working with the Cache la Poudre Water Quality Monitoring Group, CDPHE's Water Quality Control Division (WQCD) updated its monitoring policy and developed a guidance document regarding reduced monitoring frequencies in CDPS permits and the role of ambient water quality monitoring. WQCD's previous policy, entitled *Sample Frequency and Sample Type – Domestic Wastewater Facilities*, provided

guidance for consistently applying monitoring requirements to domestic facilities of similar size. This policy did not consider monitoring for industrial facilities, nor did it provide guidance for the review and evaluation of reduced monitoring frequency requests. WQCD's procedure had been to grant reductions in monitoring frequency when requested by the permittee and when the average of the 30-day averages reported by the facility for any given parameter was less than the permit limitation. In that case, monitoring would typically be reduced by one facility classification size, as defined in the policy.

While drafting the KCD permit, WQCD realized a need to update its monitoring policy to expand its procedures to apply to industrial facilities and to adequately document guidance for the review and evaluation of future monitoring frequency reduction requests. WQCD drafted and began implementing the new *Baseline Monitoring Frequency, Sample Type, and Reduced Monitoring Frequency Policy for Industrial and Domestic Wastewater Treatment Facilities* policy, effective April 2007. This policy is considered for all permit renewals for setting baseline monitoring frequencies and establishing procedures for reducing monitoring frequencies based on facility performance and ambient water quality monitoring. According to the new policy, the state might more favorably consider effluent monitoring frequency reductions for a facility that elected to integrate state-approved ambient water quality monitoring into its monitoring program.

Ambient water quality data collected by permitted entities that meet appropriate quality assurance/quality control criteria provide valuable information to support permit development, to assess water bodies for attainment of water quality standards, and to support development of total maximum daily loads (TMDLs). Where a permitted entity elects to perform in-stream ambient water quality monitoring, in recognition of the value of these monitoring efforts, WQCD will generally give the permitted entity favorable consideration for reductions in CDPS permit monitoring requirements. Such determination will be made on a case-by-case basis upon review of an existing or proposed ambient water quality monitoring program, entry of data in a public database (STORET or similar), qualitative and/or special relation to other ambient water quality monitoring programs and monitoring stations (e.g. United States Geological Survey (USGS), WQCD), and the compliance record of the requesting entity.

The *Baseline Monitoring Frequency, Sample Type, and Reduced Monitoring Frequency Policy for Industrial and Domestic Wastewater Treatment Facilities*, details the Requirements for performance-based reductions in monitoring:

- Facility enforcement history will be considered, including any criminal actions, civil judicial actions, and compliance and consent orders.

- Permit compliance is considered when a reduction in monitoring is proposed; a facility must not have had any effluent violations for the parameter being considered, during the last two years.
- A facility must be in compliance with all other permit requirements including monitoring requirements, DMR submittals, compliance schedule interim and final dates, and practical quantitation limitation (PQL) requirements (see CDPHE's *Practical Quantitation Limitation Guidance Document* for more on PQLs).
- New facilities will not be eligible for consideration of reduced monitoring frequencies for one full permit term (5 years); any facility that has undergone a major upgrade that changes the operational functions of the facility will be considered a new facility; and performance levels shall be maintained at the level that was used as the basis for granting monitoring reductions.

Where a group of entities is proposing a joint program and reduction in monitoring cannot be granted to one entity due to compliance concerns or the need to ensure that monitoring is representative, the "credit" for that entity can be granted to another entity in the group, as appropriate.

Program Effectiveness

A lack of usable water quality data, due to duplicated monitoring locations and formatting difficulties (e.g., total vs. total recoverable) for the portion of the Cache la Poudre River that is the subject of this case study, presented a growing need for organizing and publishing the data collected by the various stakeholders. To address this problem, the Cache la Poudre River stakeholders came together, forming an integrated monitoring program that effectively coordinates and combines their data collection efforts and resources. This concerted effort enabled CDPHE to collect data for the desired parameters in the correct format and without redundancies. According to KCD environmental representatives, the coordinated monitoring program allows the facility to play a more active role in its community while allowing it to make a strong case for reduced monitoring and flexibility when applying for permits. Moreover, the data collected allow KCD and other stakeholders to monitor changes in the river's water quality and wildlife.

Prior to development of the monitoring plan for the Cache la Poudre River, each discharger was responsible for collecting its own samples. Now, Colorado State University conducts the data collection for fish and macroinvertebrates, crustaceans such as clams, crayfish, mollusks and snails, and certain aquatic worms and insects, and provides expertise in field sampling to help the Cache la Poudre Water Quality Monitoring Group. The data are shared via the Web at the Colorado Data Sharing Network (CDSN) and EPA's STORET database for water quality data, maintaining a cost-effective,

high quality source of data for use in protecting the ecosystem's health. The CDSN is a project of the Colorado Water Quality Monitoring Council formed to solve many of the issues that have historically been barriers to effective sharing of water quality information in Colorado, such as lack of availability of a centralized data repository and minimal opportunities for stakeholders to meet. The coordinated collection and reporting of effluent and ambient data for the Cache la Poudre River provides all parties with data that are more useful and that lead to a better understanding of the health of the watershed. The water quality data collected through the CDSN are valuable not only for developing effluent limitations during permit issuance, but also for developing state water quality standards for the River (e.g., silver and unionized ammonia). The data also have taken on a new use recently as one of the tools to evaluate whether KCD is meeting the voluntary environmental goals it set for itself as a Performance Track member. These goals include analyzing ambient water quality in the Cache la Poudre River to develop better discharge limits and improve local water quality.

In addition, as discussed above, based upon the work of KCD and the Cache la Poudre Monitoring Group, Colorado's WQCD saw an opportunity concurrent with KCD's permit renewal to develop a new policy document addressing performance-based reductions in effluent monitoring and the value of integrating ambient water quality monitoring into a facility's monitoring program. Developing this kind of policy would allow such approaches to be more easily duplicated throughout the state. The *Baseline Monitoring Frequency, Sample Type, and Reduced Monitoring Frequency Policy for Industrial and Domestic Wastewater Treatment Facilities* policy document provides guidance to WQCD personnel on the review and evaluation of reduced monitoring frequency requests.

By participating in the Cache la Poudre Monitoring Agreement and developing a plan to share that water quality information through the CDSN, KCD has taken a lead role in crafting an efficient and effective approach to ambient and effluent monitoring in the watershed. This approach takes important steps toward defining how those data are collected, retained, and provided to regulators and the public in general and could be duplicated in other watersheds in Colorado and elsewhere.

Lessons Learned & Next Steps

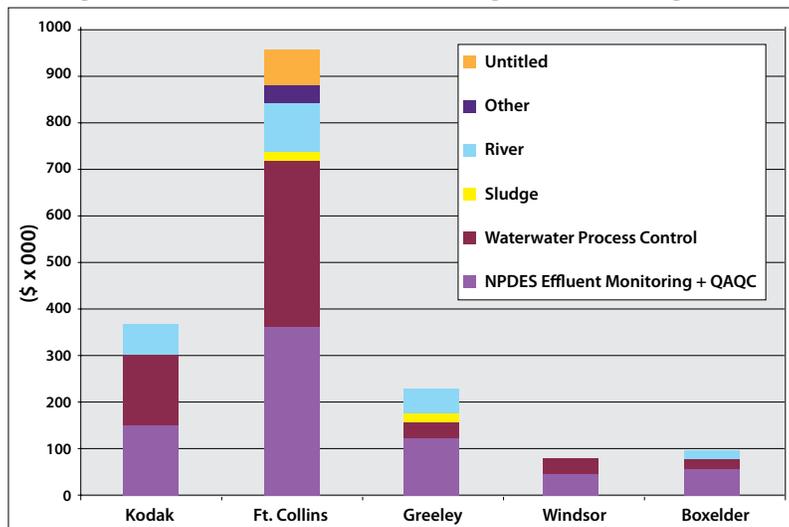
The watershed approach described in this case study serves as a model for other facilities within the watershed, and potentially elsewhere, to obtain reductions in effluent monitoring requirements similar to those in the KCD permit while, at the same time, obtaining data valuable for watershed protection. Monitoring requirements in permits issued to members of the Cache la Poudre Water Quality Monitoring Group are evaluated based on the new

monitoring program. As of fall 2009, the Town of Windsor and two out of three facilities in the City of Fort Collins have renewed permits that include reduced effluent monitoring requirements based on having an approved watershed monitoring program in place. Although WQCD representatives are not aware of any other group that has initiated an in-stream ambient water quality monitoring plan similar to that of the Cache la Poudre Water Quality Monitoring Agreement, other watershed groups would benefit from the flexibility in monitoring requirements and WQCD would benefit from the additional water quality data that such a group could provide by implementing the policy.

Stakeholders have learned that watershed approaches such as this one are good tools for generating process efficiencies and potential cost savings. Eric Petersen, KCD's environmental engineer, indicates that the facility's recent final permit with reduced monitoring frequency requirements saves money. Despite increases in the number of parameters monitored and increases to the actual costs of laboratory monitoring, the reduction in effluent monitoring frequency enables KCD to keep annual monitoring costs constant at approximately \$150,000 for NPDES effluent monitoring and approximately \$40,000 for ambient water quality monitoring.

As shown in Figure 4, costs for the CDPS effluent and ambient water quality monitoring for each participating member of the Cache la Poudre Monitoring Agreement vary based upon the number of monitored parameters, how frequently they are monitored, and the number of locations at which they are responsible for monitoring. Other participating members of the Cache la Poudre Monitoring Agreement have realized similar cost savings due to the decreased monitoring frequencies because their costs have remained constant even with increased monitored parameters and increased costs for doing business.

Figure 4. Cache la Poudre Dischargers Monitoring Costs



Petersen also stated that the investment pays huge dividends in terms of the value of the data. He notes that, "We can use the data to emphasize that our operations do not jeopardize water quality," and further that, "The data serve everybody by showing how local and regional growth are impacting the river." Future rounds of CDPS permits and development of water quality standards ultimately will verify the significance of the data.

Resources

City of Fort Collins. *Cache la Poudre River Water Quality Monitoring Program Web site*. Accessed December 11, 2009. <www.ci.fort-collins.co.us/water/poudre-wqmp.php>

Collins, Jim A. and Sprague, Lori A. U.S. Department of the Interior, U.S. Geological Survey. "The Cache la Poudre River, Colorado, as a Drinking-Water Source." May 2005. <http://pubs.usgs.gov/fs/2005/3037/pdf/FS_2005-3037.pdf>

Colorado Department of Public Health and Environment, Water Quality Control Division. *Baseline Monitoring Frequency, Sample Type, and Reduced Monitoring Frequency Policy for Industrial and Domestic Wastewater Treatment Facilities*. Effective May 1, 2007. <www.cdphe.state.co.us/wq/PermitsUnit/POLICYGUIDANCEFACTSHEETS/PolicyandGuidance/MonitoringReductionPolicy.pdf>

Colorado Department of Public Health and Environment, Water Quality Control Division. *Practical Quantitation Limitation Guidance Document*. July 2008. <www.cdphe.state.co.us/wq/WhatsNew/PQLGuidance.pdf>

Colorado Department of Public Health and Environment, Water Quality Control Division. *Sample Frequency and Sample Type, Domestic Wastewater Facilities, Policy Number WQP-13*. August 21, 1989.

Colorado Department of Public Health and Environment, Water Quality Control Division. *Status of Water Quality in Colorado 2008*. April 2008. <www.cdphe.state.co.us/op/wqcc/Resources/waterstatus_305_b/305bUpdate08.pdf>

Colorado Department of Public Health and Environment, Water Quality Control Commission. *Regulation No. 38 Classifications and Numeric Standards South Platte River Basin, Laramie River Basin, Republican River Basin, Smoky Hill River Basin*. Amended: February 9, 2009, effective: March 30, 2009. <www.cdphe.state.co.us/regulations/wqccregs/100238wqccsouthplattnew.pdf>

Email communication between Jennifer Duckworth, Tetra Tech, Inc. and Andrew Neuhart, Colorado Department of Public Health and Environment, Water Quality Control Division.

Email communication between Jennifer Duckworth, Tetra Tech, Inc. and Eric Peterson, Kodak Colorado Division.

Fiorino, Daniel J. *The EPA's Performance Track Creates Partnerships with the Nation's Top Environmental Performers*. Stormwater: The Journal for Surface Water Quality Professionals, Editorial. May/June 2005. <www.stormh2o.com/may-june-2005/epa-performance-track-environmental.aspx>

U.S. Environmental Protection Agency, National Environmental Performance Track. *Coordinating and Integrating Effluent and Ambient Water Monitoring – Case Study on Kodak Colorado*. March 18, 2008.

U.S. Environmental Protection Agency, National Environmental Performance Track. David Pusey, Kodak Colorado Division, Windsor, CO. Performance Track Teleseminar, Summary and Presentation. *Kodak Colorado: Ambient Water Quality Monitoring*. March 13, 2007.

U.S. Environmental Protection Agency, Surf Your Watershed. *Cache La Poudre Watershed – 10190007 Website*. Accessed December 11, 2009. <http://cfpub.epa.gov/surf/huc.cfm?huc_code=10190007>

Note: All Web references current as of December 11, 2009.