



**North Carolina Pretreatment Consortium, Inc.**

Ms. Connie Brower  
NC DENR, DWQ, Planning Section  
State Standards Coordinator  
1617 Mail Service Center  
Raleigh, NC 27699-1617

September 7, 2010

**ELECTRONIC MAIL SUBMITTAL**

Re: NC-PC economic impact assessment of changing the NC Surface Water Quality Standards  
in Title 15A NCAC 2B .0200

Dear Ms. Brower:

Please find enclosed an economic assessment of the proposed 2008-2010 North Carolina Triennial Review dissolved metals water quality standards performed by the North Carolina Pretreatment Consortium (NC-PC). The NC-PC is a non-profit organization representing over 140 Pretreatment Professionals from 88 pretreatment programs throughout the State of North Carolina. The NC-PC appreciates the opportunity to provide its estimated fiscal impact on NC Pretreatment Program elements and for NPDES permittee metals sampling.

The NC-PC's assessment focuses on costs that would be borne by Wastewater Treatment Plants (WWTP) or NPDES Permit dischargers to freshwater with the adoption of the proposed dissolved metals water quality standards (WQS). The NC-PC conducted a survey of its membership that included the participation of 18 pretreatment programs that represent 21 wastewater treatment facilities and a total permitted flow of 334 million gallons per day. The survey and assessment focused solely on the following areas of economic impact:

1. Evaluation and Calculation of proposed metals water quality standards
2. Sewer Use Ordinance Modification
3. Evaluation and Survey of Industrial Users (IU) for Significant Industrial User (SIU) Classification/Status
4. Required IU Permitting and SIU Permit Modifications
5. Sampling Requirements for NPDES Permittees

**Methodology**

This assessment includes focus areas for each of the economic impact areas listed above. Each section includes survey questions and participant responses. Information obtained from the

survey response was used to estimate and calculate average costs for wastewater treatment plants (WWTP) with Pretreatment Programs and for NPDES permittee sampling. The NC-PC created an Excel spreadsheet (Economic Impact Assessment for NPDES Permittee and Wastewater Treatment Plants with Pretreatment Programs Discharging to Freshwater) that accompanies this narrative and includes fiscal impact analysis and calculation. The NC-PC economic impact assessment is based on average and weighted average costs from Pretreatment Program responses, survey of professional/commercial services, or based on an average cost of material and supplies.

Review of DWQ website information indicates there are approximately 749 NC NPDES Permittees discharging to freshwater and approximately 120 WWTP with Pretreatment Programs that discharge to freshwater.

### **Evaluation and Calculation of Proposed Metals Water Quality Standards**

This focus area reviews costs associated with the evaluation and calculation of the proposed dissolved metals WQS. As a result of the Triennial Review process and DWQ's proposal to modify water quality standards from Total Recoverable Metals to Dissolved Metals and lowering some metals, it has become a necessity for WWTP's to evaluate the proposed WQS changes in order to identify potential impacts to the WWTP's NPDES Permit and industrial user permits.

After a request was made by the NC-PC to DWQ Staff for more information on how WWTP's can evaluate impacts, a meeting was held on May 27, 2010 where information was shared by NPDES Permitting Unit and the PERCS Unit on a DWQ Dissolved Metals Estimated Permit Limit Calculator and how to use calculated limits in Head Works Analyses to evaluate impacts.

The NC-PC asked the following questions of its membership regarding time commitments for the Evaluation and Calculation of Proposed Metals Water Quality Standards.

1. If you have conducted an assessment of your WWTP with the proposed WQS how much time was used to:
  - a. Read and understand proposed Dissolved Metals and Translator Calculations?  
Response Avg.: 18.38 hours
  - b. Calculate estimated Total Metals or NPDES Permit Limits?  
Response Avg.: 6.68 hours
  - c. Conduct HWA using new metals limits?  
Response Avg.: 7.33 hours
2. What is the estimated time it would take you to develop a staff report for your Manager, Council Members, Commissioners, etc. on the proposed metal WQS?  
Response Avg.: 18.18 hours

## **Sewer Use Ordinance Modifications**

As a result of the proposed metals WQS, WWTP with Pretreatment Programs will be required to modify their current Sewer Use Ordinance (SUO) in order to update Local Limits. Updating the SUO will require commitments from Pretreatment Staff, Publicly Owned Treatment Works (POTW) Management, and legal review.

The NC-PC asked the following questions of its membership regarding the WWTP/POTW commitments associated with SUO modifications.

1. What is the estimated time it would take you to develop new local limits within your sewer use ordinance due to proposed metal Water Quality Standards (WQS)?  
Response Avg.: 39.6 hours
  
2. What is the estimated time it would take to modify your sewer use ordinance to incorporate new local limits?
  - a. Your time  
Response Avg.: 24.76 hours
  
  - b. Manager/Director time  
Response Avg.: 9.60 hours
  
  - c. Attorney time  
Response Avg.: 6.45 hours

The NC-PC estimates that all POTWs that have a Pretreatment Program will require a modification of their Local Limits and therefore modification of the SUO due to the proposed metals WQS new and/or modified permits will be issued. The NC-PC estimates that DWQ staff will spend an average of one half hour reviewing SUO modifications for approval resulting in a state cost of \$1,908.00. State government hourly salaries are based on the recently proposed .0900 NC Local Pretreatment Program rule modifications and fiscal analysis hourly salary of \$31.80.

## **Evaluation and Survey of Industrial Users (IU) for Significant Industrial User (SIU) Classification/Status**

A significant impact that is anticipated with the lowering of the metals water quality standards is the lowering of the WWTPs maximum allowable headworks loading (MAHL). The current 15A NCAC 2H .0903 (b)(34) rule definition requires the classification of an IU of the sewer system as a SIU who discharges 5% or more of the MAHL. Lowering of the MAHL will require the reassessment of IU to determine whether SIU status now applies. 15A NCAC 2H .0905 requires that Pretreatment Programs survey all IUs to identify SIUs. The NC-PC survey indicated that an average of 187 Industrial Waste Survey (IWS) will be required as a result of the proposed metals WQS.

The NC-PC asked the following questions of its membership regarding the POTW commitments associated with the evaluation of IU for SIU status.

1. Surveying users due to new WQS
  - a. What is the estimated number of industrial users that you would send an IWS?  
Response Avg.: 187 IWS
  - b. How much time would be required to conduct an initial review of IWS in order to identify any new SIUs  
Response Avg.: 70 hours
2. If you have conducted an assessment of your WWTP with the proposed WQS how much time was required to evaluate current SIU Permits with affected metals limits?  
Response Avg.: 16.42 hours

### **Required IU Permitting and SIU Permit Modifications**

As a result of lower WWTP MAHLs it is anticipated that there will be an increase in the number of current IU who will be classified SIU requiring permitting. It is also anticipated that there will be some existing SIU permits that will require modification in order to prevent over allocation of available headworks loading. The NC-PC survey indicates that there will be commitments required by Pretreatment Program staff in reviewing, issuing, and modifying SIU permits. The survey indicated that an average of 2 new SIU permits will be issued and 4 modified permits will be issued for each WWTP with a Pretreatment Program as a result of the proposed metals WQS.

The NC-PC asked the following questions of its membership regarding the POTW commitments associated with required permit modifications and permitting of SIUs:

1. IU or SIU permit (modified or created) due to proposed metals WQS
  - a. How many IU do you expect to become SIU with the metals WQS?  
Response Avg.: 1.6 new SIUs
  - b. How many SIU permits do you expect to have to modify with the metals WQS?  
Response Avg.: 3.74 modified SIU permits
  - c. What is the estimated time for modifying an existing IU or SIU permit?  
Response Avg.: 6.18 hours modifying permits
  - d. What is the estimated time for creating a new IU or SIU permit?  
Response Avg.: 11.68 hours creating new permits
  - e. What do you charge for issuing a new SIU or IU permit?  
Response Avg.: \$236.47 issuing new permits
  - f. If different from new permit charges, what is your permit modification charge?  
Response Avg.: \$38.00 for permit modification

The NC-PC estimates approximately 720 new and/or modified permits will be issued. The NC-PC estimates that DWQ staff will spend an average of one half hour reviewing new and modified permits resulting in an estimated state cost of \$11,448.00.

## Sampling Requirements for NPDES Permittees

Total metals WQS are proposed to be changed to dissolved metals standards. Some of the proposed metals will be hardness dependent and calculated from receiving stream hardness and treatment plant effluent hardness in order to determine NPDES permit limits or waste load allocations. The survey indicates that 86% of wastewater treatment plants will begin monitoring for hardness in the WWTP effluent. Total hardness analyses cost an average of \$35 per analysis. The NC-PC estimates that wastewater treatment plants with Pretreatment Programs on average will monitor for total hardness on a monthly basis.

Significant lowering of one metal standard which results in a NPDES Permittee total metal waste load allocation at or below the metals practical quantitation level (PQL) will require the Permittee to take extreme caution in collecting effluent metals sampling. A review of 749 NPDES permits; that do not discharge to salt waters, indicates that 35% or 262 facilities will be less than the current cadmium PQL of 2 micrograms per liter (ug/L) and 26% or 198 facilities will be less than the current lead PQL of 5 ug/L. 262 of the NPDES dischargers who will have a lead and/or cadmium permit limit or waste load allocation less than the current PQL, these permittees will likely conduct clean sampling for trace metals in order to minimize contamination and false positive results. These Permittees will be required to monitor cadmium and lead at lower detection levels, at commercial costs averaging \$25 for sample digestion and \$15 per metal. (example: Cd = \$40, Cd + Pb = \$55) The survey indicates that approximately 88% of pretreatment programs will utilize commercial labs for metals analysis using Inductively Coupled Plasma Mass Spectrometry (ICP/MS). Clean sampling and analysis at trace levels will require equipment blanks to ensure that there is no equipment contamination.

EPA Method 1669 – Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels provides guidance on collecting samples to minimize contamination of the sample during collection, transport, and analysis. EPA Method 1669 specifies collection using grab sampling techniques and does not provide guidance on collecting samples using composite collection methods. NC DWQ has indicated that NPDES effluent monitoring shall continue to be conducted using composite sample collection techniques. If NPDES Permittees are required to collect samples using composite collection methods, two methods would typically be applied to minimize sample contamination. Both methods are based on specific procedures and will require the development of written procedures and training of sampling staff.

1. Trace Metals Cleaning Procedures - Thorough and detailed cleaning of equipment will be necessary prior to each composite sample collection. Tubing and composite sample containers will require specialized cleaning using optima-grade acids, metals free wash/rinse waters, and adequate facilities for drying and storage of equipment. Periodic equipment blanks and regular testing of rinse waters will be required to identify contamination of equipment prior to use.
2. Replacement of Sampling Equipment – New sample tubing, tubing attachments, and composite collection containers will be required with each metals sampling event. Equipment blanks will be required to identify contamination of equipment prior to use.

The survey indicates that 57% of WWTP have staff available for sampling, 33% indicate they will utilize sampling method #1 and 66% will utilize sampling method #2. An average of 16 hours was indicated for development of sampling procedures and 6 hours for training sampling staff. The survey indicates that 37% will use contracted services for clean sampling at an average cost of \$100 per clean sample event. The survey indicates that 85% of WWTP will utilize a dedicated sampler for metals sampling. The NC-PC anticipates that new samplers will be purchased for clean metals sampling at a average cost of \$2700 per non-refrigerated composite sampler.

Estimated costs were compiled for both methods:

**Sampling Method #1**

**Total Cost: \$178.00**

**Estimated cost for equipment cleaning \$120.00**

Itemized cost per cleaning event: 2.5 hours @ \$19.41 (include removal of equipment, preparation of cleaning solutions/acids, cleaning, rinsing, and drying of equipment)

Estimated cost per sample event for cleaning acid and equipment blank analysis \$71.00

Itemized cost per cleaning event: Acid based on 200 mls (1:1) used at \$290.00 per 500 mls Optima grade Nitric Acid., Equipment blank analysis @ \$42 for 2-parameters

**Estimated cost for sample collection \$58.00**

Itemized cost per sampling event: 1.0 hour sampling staff at \$19.41 (includes installation of tubing and sampler setup) 1 hour for second sampling staff for clean hands dirty hands sample method at \$58, (sample collection)

**Sampling Method #2**

**Total Cost: \$180.00**

**Estimated cost for new equipment per sample event \$122.00**

Itemized cost for equipment: 1 section of peristaltic pump tubing at \$8.50, 1-20 foot section of sample collection tubing at \$70, composite container disposable liner at \$1, Equipment blank analysis at \$42 for 2-parameters.

**Estimated cost for sample collection \$58.00**

Itemized cost per sampling event: 1 hour for one sampling staff at \$19.41 (includes installation of tubing and sampler setup) 1 hour for second sampling staff for clean hands dirty hands sample method at \$58, (sample collection)

The NC-PC asked the following questions of its membership regarding sampling requirements for NPDES Permittees:

1. How often do you monitor your WWTP effluent for metals?

a. NPDES permit required monitoring?

Response: See spreadsheet question 6a for individual WWTP requirements

b. LTMP/STMP monitoring?

Response: 74% Quarterly, 26% Monthly

2. Do you plan on increasing any effluent metals sampling/monitoring as a result of the proposed metals WQS (ie: LTMP/STMP)?  
Response Avg.: 5% indicated they will increase monitoring
  - a. If so, how often would you monitor your effluent for metals?  
Response Avg.: Quarterly to Monthly
3. Do you plan on reducing any effluent metals sampling/monitoring (if possible) as a result of the proposed metals WQS (ie: LTMP/STMP)?  
Response Avg.: 5% indicate they will reduce monitoring
  - a. If so, how often would you sample/monitor effluent if reduced?  
Response Avg.: Monthly to Quarterly
4. How often do you plan to sample and analyze for hardness in your WWTP effluent as a result of the proposed hardness dependent metals WQS?  
Response Avg.: 59% Monthly, 23% Weekly, 6% Quarterly, 6% Bi-monthly, 6% Daily
5. What is the estimated time it would take you to develop training materials for clean sampling SOPs?  
Response Avg.: 16 hours
6. What is the estimated time it would take you to train WWTP staff on clean sampling SOPs?  
Response Avg.: 6 hours
7. Does your WWTP have staff available to conduct clean hands/dirty hand sampling?  
Response Avg.: 57% will have staff available for clean sampling
8. Would you likely contract clean sampling to a contract sampling company?  
Response Avg.: 33% will contract clean sampling
9. Hardness Sampling
  - a. Will you contract the hardness analysis or conduct in-house?  
Response Avg.: 62% will contract analysis
  - b. Did you previously conduct hardness sampling more often than the PPA on a yearly basis since the triennial review proposal?  
Response Avg.: 38% will conduct analysis in-house
10. If required to collect composite effluent samples for metals analysis would you:
  - a. Conduct in-house cleaning of tubing and composite containers?  
Response Avg.: 35% will conduct in-house equipment cleaning
  - b. Replace tubing and use container or container liner with each sample event?  
Response Avg.: 65% will replace equipment

11. If you have to sample for trace metals using clean sampling techniques, would you use a dedicated composite sampler specific to metals sampling only?  
Response Avg.: 85% will use a dedicated composite sampler
12. Would you contract with a lab to run low level metals analysis or would you purchase analytical equipment to run metals samples in-house?  
Response Avg.: 92% of WWTP indicate they would contract low level metals analysis, 8% will conduct in-house analysis
13. Do you currently have your metals run using an ICP/MS?  
Response Avg.: 38% of WWTP currently have their metals analyzed by ICP/MS

## Conclusion

The NC-PC estimates that there will be an average initial WWTP/NPDES permittee cost of **\$12,376** and an overall initial statewide cost of **\$2,666,093** for the initial adoption of the proposed 2008-2010 Triennial Review Metals Water Quality Standards. The NC-PC estimates that WWTP/NPDES permittees will incur an average reoccurring annual cost of **\$8,119**.

The NC-PC submits this information strictly as an estimate for economic impacts associated with the proposed changes to the metals WQS for NC Pretreatment Programs and NC NPDES sampling costs. Individual economic impacts are expected to vary widely based on WWTP/NPDES permittee site specific conditions and situations. The NC-PC assessment is not intended and shall not supersede individual POTW or NPDES Permittee fiscal impact assessments.

The NC-PC assessment is based on the proposed (9/7/2010) dissolved metals standards detailed on the North Carolina Division of Water Quality (DWQ) website along with current policies, practices, and implementation of WQS known to the NC-PC membership. Modification of proposed standards, calculation of standards, or DWQ policy would require a re-evaluation of economic impacts. This assessment in no way covers all anticipated economic impacts that may be associated with significant reductions in POTW maximum allowable headworks loading (MAHL) and the economic impacts that may occur with industrial users having to meet lower permit limits, additional pretreatment requirements, and in some cases no allocation available for a metal parameter.

Please feel free to contact me at (919) 319-4564 if there are any questions.

Respectfully Submitted,



Donald Smith  
2010 NC-PC Chairman

Cc: 2010 NC-PC Executive Committee  
2010 NC-PC Triennial Review Economic Assessment Sub-committee