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Colorado Department of Public Health and Environment

September 9, 2011

Barbara Biggs, Governmental Affairs Officer
Metro Wastewater Reclamation District
6450 York Street
Denver, CO 80229-7499

Re: PEL No. 200322, Revised PELs for Metro Wastewater Reclamation District's proposed Northern Treatment Plant at a design flow of 28.8 MGD, and newly proposed Pumpback Operation to the Fulton Pool

Dear Ms. Biggs:

The Water Quality Control Division (Division) of the Colorado Department of Public Health and Environment has reviewed the revised Preliminary Effluent Limits (PELs) in *Determination of Preliminary Effluent Limits for a Metro District Northern Treatment Plant to be Located on Upper South Platte Segment 15, Near Weld County Road 2* (Report 290) for the Metro Wastewater Reclamation District (MWRD) proposed Northern Treatment Plant (NTP). Report 290 was revised for the MWRD on July 13, 2011 by the original authors William Lewis and James McCutchan. The Division has also reviewed the *Preliminary Effluent Limits for Pumpback Discharge of the Metro District Northern Treatment Plant Effluent to the Fulton Pool,* (Upper) *South Platte River Segment 15* (Report 309). Report 309 was written for the MWRD on July 27, 2011, also by William Lewis and James McCutchan.

In connection with these two reports the Assessment Based Permits Unit of the Division also reviewed the August 27, 2009 *South Plate River Basin Category 4B Demonstration Plan* for ammonia and nitrate on Segments COSPUS15 and COSPMS01a. This plan was written by the MWRD and accepted by the Colorado Water Quality Control Commission (WQCC). The Division also requested and reviewed the supplemental ammonia, nitrate, and dissolved oxygen computer modeling for most of the current dischargers to these segments of the South Platte River prepared for Report 290, Report 309, and the 4B Demonstration Plan.

These PELs do not take into the account the potential treatment requirements based on instream nutrient standards that may be adopted by the WQCC in the future. This is because the exact level of the standards, and when they might be adopted in the segment specific standards of COSPUS15 and COSPMS01a are not known. The MWRD has indicated to the Division they are aware of these new potential standards and treatment requirements. The MWRD is proposing potential nutrient treatment requirements for their upstream Robert W. Hite WWTF. The MWRD has indicated to the Division they know future nutrient requirements may require higher levels of treatment and are preparing for this by participating in Division workgroups, and WQCC hearings on these nutrient standards. The MRWD is also investigating State of the Art nutrient removal and reclamation processes.

The proposed NTP wastewater treatment facility (WWTF) will be a surface water discharge to the South Platte River north of Brighton, Colorado in Weld County on the east side of the river just north of where 168th Avenue (County Road 2) crosses the South Platte River. This WWTF will service the northern edge of the Denver metropolitan area. The originally proposed design capacity of the NTP was 24 MGD. However, Report 209 has now been revised with a newly proposed hydraulic design capacity of 28.8 million gallons per day (MGD). The NTP is still proposing to discharge into the South Platte River which is identified as stream segment COSPUS15, and will require an individual discharge permit.

Because of perceived threats to the City of Thornton's water rights in the South Platte River, the MWRD has now requested the Division to also review a potential effluent pumpback scenario from the NTP. The MWRD is proposing treating and then pumping back upstream 10.8 MGD of the WWTF flow. The proposed effluent pumpback would be from the new NTP 12.6 miles back upstream to the Fulton Ditch headgate pond. This pumpback scenario would result in two discharge points from the NTP 12.6 miles apart. The downstream discharge adjacent to the new NTP site would have 18 MGD and the upstream discharge would have 10.8 MGD. The MWRD proposal of the pumpback is only in response to the City of Thornton's concern about water rights. The Division's understanding is that the MWRD believes there are ways to protect all existing water rights without the need for the pumpback operation. The pumpback operation was also not included in the 4B Demonstration Plan accepted by the WQCC.

These PELs take into account the most recently available data, latest stream standards, and comprehensive computer modeling for COSPUS15 and COSPMS01a. Segment COSPUS15 of the South Platte River is currently undergoing a phased TMDL approach that utilizes protective discharge limitations and physical instream re-aeration structures to correct and prevent dissolved oxygen (DO) problems in the stream. These PELs take into account the DO TMDL. This segment has also recently become heavily appropriated for public drinking water uses. These PELs take into account the protection of these uses. This segment of the South Platte River is also currently on the WQCC Regulation 93 303(d) List of impaired waters of the state for exceeding the *E. coli* standard. These PELs also take into account protection of the *E. coli* levels of this segment. These effluent limits were developed, as also detailed in Reports 290 and 309, for use as one of the submittals in your application for Site Approval for the NTP.

Because of the potential requirement to pumpback effluent from the new NTP site to the Fulton Ditch pool, two proposed sets of effluent limits were developed for the WWTF. In order to make sure the WWTF will be able to meet the limitations for both discharge scenarios, the most stringent of either proposed effluent limits will be required in this PEL analysis. The PELs in Tables 1 & 2 below were

established at a design capacity of 28.8 MGD and are based on currently promulgated water quality standards for COSPUS15 and COSPMS01a. The technology based PELs in Table 1 are based on effluent limits for pollutants of concern as established in the *Regulations for Effluent Limitations* (Regulation No. 62), or at lower levels necessary to protect downstream water quality standards.

Table 1
Proposed Northern Treatment Plant
Preliminary Effluent Limits for Discharge to the South Platte River

PARAMETER	***Technology Based Effluent Limit***
CBOD, mg/l	25 (7-day average), 17 (30-day average)
CBOD, % removal	85 (30-day average)
TSS, mechanical plant, mg/l	45 (7-day average), 30 (30-day average)
TSS, mechanical plant, % removal	85 (30-day average)
Oil and Grease, mg/l	10 (maximum)
pH, s.u.	6.5-9.0 (minimum- maximum)
PARAMETER	***WQBEL from Report 290 or 309***
E. coli, (#/100 ml)	252 (7-day Geomean), 126 (30-day Geomean)
Total Residual Chlorine, (mg/l)	0.019 (daily maximum), 0.011 (30-day average)
Temperature °C	Monitor (MWAT, DM)
Phosphorus, Total (mg/l)	Monitor (30-day average)
Sulfide (µg/l)	2 (30-day average)
Dissolved Oxygen (mg/l)	5.0 (7-day average minimum), 3.0 (daily minimum)
Chloride, (mg/l)	637 (30-day average)
Sulfate (mg/l)	485 (30-day average)
Arsenic, PD (µg/l)	1,155 (daily maximum)
Arsenic, TR (µg/l)	10 (30-day average)
Boron, (mg/l)	0.75 (30-day average)
Cadmium, PD (µg/l)	18.7 (daily maximum), 1.76 (30-day average)
Chromium, Tri, TR (µg/l)	173 (daily maximum)*
Chromium, Hex, PD (µg/l)	55.5 (daily maximum), 49.0 (30-day average)
Copper, PD (µg/l)	226 (daily maximum), 176 (30-day average)
Cyanide, Free (µg/l)	5 (daily maximum)
Iron, TR (µg/l)	1,000 (30-day average)
Lead, PD (µg/l)	555 (daily maximum), 28.4 (30-day average)
Manganese, PD (µg/l)	13,169 (daily maximum)
Manganese, Dis (µg/l)	1,001 (30-day average)
Mercury, Total (µg/l)	0.045 (30-day average)
Nickel, PD (µg/l)	3,319 (daily maximum), 472 (30-day average)
Selenium, PD (µg/l)	58.2 (daily maximum), 12.9 (30-day average)
Silver, PD, (µg/l)	30.2 (daily maximum), 6.33 (30-day average)
Zinc, PD (µg/l)	937 (daily maximum)*

* – No need for chronic limit, daily maximum limit will also protect chronic standards

Nitrogen Species Parameters

The nitrogenous parameters PELs were developed in supplemental computer modeling for Reports 290 and 309. This modeling was based on the Brighton WWTF not discharging, and this is the planned future effluent discharge scenario for COSPUS15 and COSPMS01a. The MWRD sent the Division a letter on August 1, 2011 with a table that lists all the proposed effluent limits from Report 290 and Report 309, for both the single discharge point and the pumpback operation.

It is very necessary to include the ammonia levels in PELs for the NTP. This is important because of current exceedances of the ammonia standards in segments COSPUS15 and CPSPMS01a. Further modeling for recalibration of removal rates, flow balances, and inclusion of the Town of Platteville WWTF in ammonia allocations will be needed in the future. Since nitrate in the discharge could potentially impact downstream domestic water sources it is also necessary to require nitrate limitations in the PELs. The ammonia levels have been adjusted where needed to correct downstream nitrate and DO problems. It is not necessary to utilize a Total Inorganic Nitrogen (TIN) limit at this time because the nitrogen modeling accounts for the fate of nitrogen in COSPUS15 and COSPMS01a. These ammonia, nitrate, and nitrite effluent limitatons are shown below in Table 2.

Table 2
Proposed Northern Treatment Plant
Preliminary Effluent Limits for Discharge to the South Platte River

Month	***WQBEL (mg/l)***		
	Total Ammonia	***Nitrate***	***Nitrite***
January	6.25 (daily Max.), 4.56 (30-day Avg.)	10 (daily Max.)	1.89 (Daily Max.)
February	6.00 (daily Max.), 4.59 (30-day Avg.)	10 (daily Max.)	1.89 (Daily Max.)
March	8.18 (daily Max.), 4.37 (30-day Avg.)	10 (daily Max.)	1.89 (Daily Max.)
April	9.12 (daily Max.), 4.33 (30-day Avg.)	10 (daily Max.)	1.89 (Daily Max.)
May	11.10 (daily Max.), 3.83 (30-day Avg.)	10 (daily Max.)	1.89 (Daily Max.)
June	12.45 (daily Max.), 2.94 (30-day Avg.)	10 (daily Max.)	1.89 (Daily Max.)
July	2.62 (daily Max.), 2.25 (30-day Avg.)	10 (daily Max.)	1.89 (Daily Max.)
August	2.29 (daily Max.), 1.93 (30-day Avg.)	10 (daily Max.)	1.89 (Daily Max.)
September	7.65 (daily Max.), 4.00 (30-day Avg.)	10 (daily Max.)	1.89 (Daily Max.)
October	9.19 (daily Max.), 3.33 (30-day Avg.)	10 (daily Max.)	1.89 (Daily Max.)
November	7.74 (daily Max.), 3.79 (30-day Avg.)	10 (daily Max.)	1.89 (Daily Max.)
December	7.88 (daily Max.), 4.85 (30-day Avg.)	10 (daily Max.)	1.89 (Daily Max.)

Since the flow from the NTP pumpback is currently not in the river, or potentially not ever, it would be inappropriate to use this flow in calculating the assimilative capacity downstream from the proposed pumpback discharge point. This use of artificial dilution is especially inappropriate where some assimilative capacity might be gained by doing this. Because the flows in the South Platte River are so managed, it is probably more realistic to reset the flows to historic low flow conditions in the COSPUS15/COSPMS01a computer model below the pumpback discharge point, and this may also be true above the pumpback discharge point. The effluent limits in Table 1 would not be affected by changing the flows since they are set to the stream standards. However, the nitrogenous levels in Table 2 could need adjustment when the model is rerun in 2012. These adjustments might require more stringent effluent limits and the MWRD should be aware of this. Because of the stringent treatment requirements, and therefore design requirements, in the months of July and August it is not necessary to change the PELs in Table 2 at this time.

If you have any questions regarding these PELs, please contact me at (303) 692-3608.

Sincerely,

Eric T. Oppelt, P.E.
Workgroup Leader
Assessment Based Permits Unit
Water Quality Control Division

PEL Approved By:

Andrew Neuhart
Assessment Based Permits Unit Manager
Water Quality Control Division

cc: Paul Kim, WQCD – Engineering Section
PEL 200322 file