Water Quality Team Meeting Notes

Corps of Engineers Reservoir Control Center
Portland, Oregon
October 19, 2004

1. Greetings and Introductions.

Facilitator Robin Harkless welcomed everyone to today's meeting, held October 19 at the Corps' Northwestern Division headquarters. She led a round of introductions and a review of today's agenda.

The following is a summary, not a verbatim transcript, of the items discussed and decisions made at today's meeting. Please call Kathy Ceballos at 503/230-5420 with questions or comments about these notes.

2. Housekeeping.

A. Review WQT Membership, Introduce New Members. Harkless noted that some of the WQT membership has changed, including the Oregon and Washington representatives. WQT co-chair Mike Herold noted that he is leaving the WQT because he has been detailed to work on Washington's credible data program; he spent a few minutes describing this program as it applies to the TMDL and other processes. He said he will forward a link to the credible data program website to Harkless for distribution to the WQT membership, in advance of his presentation on this topic at the November WQT meeting.

Are there other upcoming issues that should be on the November WQT agenda? Harkless asked. The use attainability analysis is becoming a bigger issue, one that will eventually impact hydro operations, said John Picininni. Should we talk about the BiOp remand at that meeting? Herold asked. There is no water quality statement in the revised BiOp, Margaret Filardo replied. However, TDG and temperature are addressed by reference to various RPAs, such as 143, said Picininni. Until we have a final draft revised BiOp, after November 30, there really isn't much for this group to talk about, Filardo observed. The group also discussed 401 certification guidance issues, the Willamette basin TMDL, and estuary issues.

3. Year-End Review of 2004 Spill Season.

Jim Adams thanked everyone for coming to today's meeting, and provided a general overview of the year-end review of the 2004 spill season.

A. Portland District. Jim Britton noted that USGS collects TDG information for the Corps at eight sites, at a cost of $215,000 per year. We also did some RPA 132 work this year below Bonneville, setting up an experimental monitoring site at Cascade Island, and at an extra site in the John Day forebay. Temperature data is also being collected at a thermistor string in the John Day forebay. Data from these and other sites is available via hot-link from the TMT homepage, Adams noted.

We also collected data while the new Bonneville corner collector was being tested in 2004, Britton noted; that data may have some impact on our analysis of the gassing characteristics at Bonneville. We also placed an experimental monitor directly in one of the spillways at The Dalles.

Dwight Tanner of USGS then provided a presentation titled "2004 Spill Season Year-End Review: Total Dissolved Gas and Temperature Monitoring – Lower Columbia River." He touched on the following major topic areas:

- monitoring sites
- John Day – old forebay site (photo)
- water temperature at old site in March 25-September 15, 2003, probe depth 18 feet (graph)
- new John Day site (photo)
- water temperature at new site, March 25-September 15, 2004, probe depth 32 feet
- Cascade island site, Bonneville Dam tailrace (photo)
- response to Bonneville spill – Warrendale and Cascade Island sites, April 21-June 6, 2004 (graphs)
- 2004 field check protocols
- 2004 field check results (graph)
- lab calibration protocols
- lab calibration results (graph)
- data completeness for WY'04 – percentage of real-time data passing quality assurance (average: 99%)
- summary: the two new sites provided a better understanding of TDG and temperature; the accuracy of the TDG sensors was +/- 0.4%; 99% of the TDG data were received in real time and passed QA; USGS will publish a report covering the materials in this presentation in November.

Tanner briefly described a USGS effort to identify the source of the fluctuating DO levels at the Camas site; he said the results of that study are pending. Joe Carroll distributed a graph showing the temperature/TDG time history of the two gauges in the John Day forebay, covering the period April 3-August 7. In general, Carroll said the new site appears to be a considerable improvement over the old one, in terms of the representativeness of the data collected.

B. Seattle District. Kent Easthouse led a presentation titled "TDG Monitoring 2004: Chief Joseph, Albeni Falls and Libby Dams." He touched on the following major topics:

- introduction: five seasonal monitoring sites, calibrated every two weeks
- the location of these projects and their monitoring sites (map)
- the equipment used at each site
- overview of TDG data – data completeness (Chief Joseph 95.9% and 99.9%, respectively, at the forebay and tailwater stations; at Albeni Falls, 97.3% and 83.6%, respectively; at Libby, 98.4%) of data recorded and passing QA
- 2004 TDG and temperature results at Chief Joseph – forebay exceeded 110% from June 29-August 10; tailwater TDG exceeded 120% for only one hour in 2004. Forebay temperatures exceeded the CCT standard (16 degrees) from July 15-September 15, and the WDOE standard (17.5 degrees C) from August 1-September 15
- Chief Joseph flow, spill and TDG, April 1-September 15 (graph)
- Chief Joseph forebay temperatures, April 1-September 15 (graph)
- 2004 Albeni Falls TDG and temperature results – highest tailwater TDG level recorded was 113%; large daily cycles in TDG pressures at this site during July and August may indicate that this station may not be representative of actual in-river conditions. The Corps plans to move this site prior to the 2005 spill season
- Albeni Falls flow, spill, TDG and temperature, April 1-September 15 (graphs) – forebay temperatures exceeded the IDEQ standard from late July through late August
- 2004 spill season results for Libby Dam – no spill in 2004; TDG levels were above the 110% Montana standard for a few hours on two occasions due to speed-no-load operations. Temperature was not an issue at Libby.
- calibration results – 2004 (table)
- difference between the secondary standard and the TDG instrument, and the accuracy of the TDG instrument (graph)
- conclusions: missing data were largely limited to the Albeni Falls tailwater site and were due to lightning strikes, DCP malfunctions and vandalism; laboratory calibration data was generally good, as were field calibration data; the location of the Albeni Falls tailwater station should be changed prior to the 2005 monitoring season.

Easthouse also touched on the Corps' planned data collection in support of the upcoming Pend Oreille temperature TMDL by Idaho DEQ.

C. Bureau of Reclamation. John Lemons led this presentation, touching on the following major topics:

- Reclamation maintains five sites: Hungry Horse forebay and tailwater, Grand Coulee forebay and tailwater, the international boundary

- comparison of FMS temperatures to known values (graph)
- comparison of FMS TDG values to known values (graph)
- comparison of the secondary standard to the fixed monitor, Hungry Horse
- Hungry Horse TDG and temperature monitoring results, 2004 (graph)
- comparison of secondary standard to the fixed monitor, international boundary site
- international boundary TDG and temperature monitoring results, 2004
- comparison of secondary standard to fixed monitor, Grand Coulee
- Grand Coulee TDG and temperature monitoring results, 2004
- data completeness (generally satisfactory in 2004)

D. Walla Walla District. Greg Ruppert led this presentation, updating the WQT on the 2004 Walla Walla District water quality data collection effort. He touched on the following topics:

- station locations (map) – eight year-'round and eight seasonal sites
- instrumentation
- data completeness – 99.3% of the 2004 data were received in real time and passed QA review
- QA/QC
- anomolous data
- TDG sensor vs. primary standard – barometric pressure (box plot) – 2004 results very good
- temperature sensor vs. primary standard – water temperature – 2004 results very good (box plot)
- sonde sensors vs. primary standards – ave. difference in barometric pressure (graph)
- in-place barometer vs. secondary standard – barometric pressure (box plot) – results generally very good in 2004
- temperature sensor vs. secondary standard – water temperature (box plot) – results generally very good for 2004
- TDG sensor vs. secondary standard – TDG (box plot)
- summary: 2004 was the first year water quality data was collected by USGS at these 16 sites; data completeness exceeded 99%, and calibration results were also very good.

A lengthy discussion of the Walla Walla District's QA/QC process yielded a decision to re-address this topic at a future WQT meeting.

E. Douglas County PUD. Rick Klinge described Douglas County PUD's 2004 water quality monitoring efforts.

- Wells Dam 2004 forebay and tailwater temperature and TDG data, including data completeness (99%+)
- Wells Dam 12-hour average TDG, April 1-August 31, 2004 (an unchallenging

year; Wells TDG levels never exceeded 115%) (graph)
- Wells Dam delta TDG, April 1-August 31 TDG (graph)
- daily average flows for power, spill and bypass operations, Wells Dam, April 1-September 15, 2004 (flows peaked at 160 Kcfs)
- days of TDG exceedence (110%+), 1998-2004, Wells Dam (69 days at the tailwater station)

F. Chelan County PUD. Waikele Hampton said Rocky Reach and Rock Island have a total of four fixed monitoring sites; monitoring begins on April 1. We spill for fish passage per the HCP, for 95% of the run at both projects. Rocky Reach spill varied between 9% and 25%; at Rock Island, the project spilled 20% of total river flow for fish passage through the summer period. There were no significant TDG problems to report as a result of these operations. We did receive a call from Chris Maynard informing us that we were out of compliance in the Wanapum forebay, but there is a limited amount we can do, given the three-day water particle travel time between Rock Island and Wanapum. At Rocky Reach, we saw an average increase of 1.5-2% increase in TDG levels from forebay to tailrace; at Rock Island, the increase was about 5% through the season. Data completeness ranged from 94-98% in 2004; the missing data was generally caused by computer glitches over the weekend, when no one is in the office.

G. Grant County PUD. Sharon Churchill led this presentation, which touched on the following topics:

- Grant County PUD TDG fixed monitoring station status QA/QC, calibration, equipment used
- Wanapum FMS and fish spill transects (diagram)
- Wanapum FMS checks with transect data (diagram)
- Priest Rapids FMS and fish spill transects (diagram)
- Wanapum Dam forebay FMS (photo)
- Wanapum tailrace FMS (photo)
- Priest Rapids Dam forebay and tailrace FMS (photo)
- Rock Island tailrace FMS (photo)
- sample TDG data from Wanapum Dam
    - Grant County's public interface to water quality data – http://www.gcpud.org/stewardship/waterquality.htm
- 2004 Wanapum Dam flow and spill (graph)
- 2004 Priest Rapids flow and spill (graph)
- WY 2004 Wanapum Dam gas pressure (graph)
- WY 2004 Wanapum Dam gas saturation – many days of exceedence (110% standard) from May through September
- WY 2004 Wanapum Dam temperature, tailrace and forebay (graph)
- WY 2004 Priest Rapids gas pressure (graph)
- WY 2004 Priest Rapids gas saturation (graph) – generally 115%+ from June through August in the tailrace
- WY 2004 Priest Rapids temperature, tailrace and forebay (graph) – some

excursions above the 18 and 20-degree C standards during August
- Wanapum tailrace TDG monitoring, spring 2003 – left, right, center (graph)
- Wanapum tailrace TDG monitoring, summer 2003 – left, right and center (graph)
- Priest Rapids tailrace TDG monitoring, spring 2003 – left, right, center (graph)
- Priest Rapids tailrace TDG monitoring, summer 2003 – left, right and center (graph)
- technical problems – DCP failures, gas membrane problems, timing issues for probe calibration, unexpected base flow elevation due to upstream dam issues and flash runoff events
- all provisional data at this point

I. Additional Issues. Is there anything else that hasn't been discussed today, in terms of data, coordination, methodologies, questions, concerns? Adams asked. Obviously the data correction concept is important to people, and we will discuss that some more. Hamilton asked whether the corrected and verified data can be transferred to DART, because she has seen more problems in the DART data than she has with the Corps' data. Picininni suggested that Hamilton speak with Jim Anderson at the University of Washington about this issue. He said he will raise this issue as well; Hamilton said she will provide Picininni some specific examples of the faulty data she has found. Churchill noted that Grant County is in the process of fixing the 24-48-hour hiatus between data collection and data availability for its projects.

Carroll noted that Walla Walla District now has five additional hourly temperature monitors in place to provide hourly thermal profiles at Dworshak and other projects. We look at that data regularly, Adams replied; it is being reported on our CWMS database. Carroll also provided a brief report on Walla Walla District's Lower Snake water temperature monitoring efforts; he said there have been some vandalism problems, particularly in Idaho.

4. Next WQT Meeting Date.

The next meeting of the Water Quality Team was set for Monday, November 8 from 1-4 at NOAA Fisheries' Portland offices. Meeting summary prepared by Jeff Kuechle.