

**2013 Flood Recovery Monitoring Program
Water Quality Report – Ambient Surface Water
(July 22, 2013)**

Synopsis:

In response to the recent flood events, Environment and Sustainable Resource Development (ESRD) has developed enhanced water quality monitoring programs for both ambient (raw) surface water quality and treated drinking water quality. This summary only describes the ambient (raw) water quality monitoring and results.

Treated drinking water is subject to normal operations and standards. ESRD/Health Canada continues to work with the respective water treatment plant operators to monitor drinking water quality. Public health advisories are posted on Alberta Health Services website:

<http://www.albertahealthservices.ca/8648.asp>.

Due to the flooding in Southern Alberta, it is recommended that Albertans use caution if recreating on the rivers because:

- flows remain high on the Bow and South Saskatchewan rivers for this time of the year and banks are highly unstable on all flood-impacted rivers;
- reduced clarity of the water makes identification of hazards difficult.

Sampling of untreated river, stream and reservoir water found levels for monitored variables show improving water quality for the week of July 8 compared to samples collected the week of July 2. All Protection of Aquatic Life guideline exceedances observed are long-term exposure guidelines, the observed levels will not cause, for example, acute fish mortality.

Raw water from rivers, streams, lakes and reservoirs should never be used for drinking water without proper treatment. It is recommended that untreated water from flood-impacted rivers, streams and reservoirs not be used for watering of gardens.

ESRD is sharing all collected data results with Alberta Agriculture and Rural Development, Alberta Health, Alberta Health Services and Health Canada.

Details of the Enhanced Ambient Water Quality Monitoring Program

Post-flood water quality monitoring conducted from July 2 to 12, focused on the following water bodies:

- Bow River (4 sites);
- Elbow River (1 site)
- Highwood River (3 sites);
- Little Bow River (3 sites);
- Mosquito Creek (2 sites);

- Oldman River (2 sites)
- Sheep River (3 sites);
- South Saskatchewan River (1 site); and
- Twin Valley Reservoir.

Preliminary Results from Untreated River, Stream and Reservoir Water Quality Monitoring (up to July 12, 2013)

Ammonia in the Highwood River at a site that is downstream of the Town of High River showed a level slightly above the Protection of Aquatic Life guideline on July 2. The levels on June 26 and July 10 were below the guideline. Similarly, Mosquito Creek, at a site a little upstream of Twin Valley Reservoir, had a high ammonia level on July 3, but the two other dates were well below the guideline. All other routine water quality data were within Alberta Surface Water Quality and Canadian Council Ministers of Environment (CCME) guidelines (for aquatic life, contact recreation, livestock watering and irrigation). Levels of total nitrogen, total phosphorus, total suspended solids and turbidity are on downward trends at all sites. Though, levels of turbidity (and total suspended solids) remain high for this time of year, particularly at the Bow, Oldman and South Saskatchewan river sites.

Bacterial counts were highest in the Oldman River at Lethbridge, for sites sampled the week of July 8; the only site to exceed the guideline for recreational use based on a single sample. Many sites, including all Bow River sites, the South Saskatchewan River above Medicine Hat, and a second Oldman River site show a downward trend in bacteria. Even with the downward trend, the Bow River at Ronalane bridge site, both Mosquito Creek sites and the South Saskatchewan River site in addition to the Oldman River sites continued to have levels of fecal coliform bacteria and *E. coli* that exceeded Canadian Council Ministers of Environment guidelines for irrigation water use for fresh vegetables. Also exceeding the irrigation water use guidelines during the week of July 8 were sites on the Highwood River near Highway 547 and the Sheep River near Highway 2. All other sites sampled had fecal bacteria levels that meet all use guidelines.

Preliminary review of fecal bacteria data from samples collected the week of July 15, show that all sites except those on Mosquito Creek and the Elbow River met all guidelines. The Oldman River was not sampled that week.

Bacteroides source tracking results show contributions of human sewage to the fecal bacteria load in the three Bow River sites downstream of Calgary, the South Saskatchewan River site and the Sheep River near Black Diamond. Cattle have been detected as a source contributing to fecal bacteria loads at all sites on the Highwood River, Sheep River and Mosquito Creek. There have been no detections of the presence of *Cryptosporidium* that are potentially infectious to humans in any samples collected. The presence of *Cryptosporidium* from cattle

origin though has been found at the two Mosquito Creek sites. Again, these are non-infectious to humans.

Samples collected the week of July 8 had fewer detections of pesticides at all sites based on a scan for 69 different pesticides compared to the previous week. All sites except the most upstream site sampled on the Highwood River above the Town of High River had detections for 2,4-D; none were above CCME guidelines. Two Little Bow River sites were the only sites with detections for herbicides other than 2,4-D the week of July 8. Those detections were for Fluroxypyr, MCPA and MCPP at levels approximately half of what were measured the previous week. The MCPA values, however, remained at or above the CCME irrigation guideline value at the Little Bow River sites. Based on historical data, tributaries generally have higher levels of detection than the larger rivers.

Metals were measured at reduced concentrations at most sites when data collected the week of July 8 to 12 is compared to data collected the preceding week. There were continued exceedances of Protection of Aquatic Life chronic guideline values for aluminum and iron at most sites. Though again, at reduced concentrations with the exception of one Sheep River site and the lower-most site on the Bow River. Aluminum and iron are parameters known to be high during high runoff periods associated with high total suspended solids, as presently occurring.

There were many fewer detections of Polycyclic Aromatic Hydrocarbons (PAH) at all sites for samples collected the week of July 8 compared to the previous week, except for the South Saskatchewan River at Medicine Hat site. The South Saskatchewan River site had the highest number of PAH compounds detected, with 15 compounds detected; none above CCME guideline levels.

For Further Details

Spreadsheets with the river, stream and reservoir data collected are available here: <http://environment.alberta.ca/04221.html>.

Additional monitoring is occurring and updated results will be posted in August. Water quality in the irrigation districts is being monitored by Alberta Agriculture and Rural Development.

Health related Information for homeowners impacted by the flood is available here: <http://www.albertahealthservices.ca/8644.asp> .