CARPC Environmental Technical Advisory Committee
January 25, 2010
-- Minutes --

Members Present: P. Hughes for C. Peters, J. Balousek for K. Connors, J. Schellpfeffer, G. Fries for R. Phillips, L. Nelson, P. Woodard, S. Gaffield for R. Montgomery, K. Potter, Doris D. Rusch, and K. Bradbury. Staff: K. Mesbah, M. Rupiper, and M. Kakuska

Michael Rupiper welcomed everyone. The purpose of the meeting was to follow up on the scientific information and discussion from the December TAC meeting as well as provide review, comments, and any revisions to a draft TAC recommendations document to the CARPC in developing an improved stormwater runoff volume control standard.

Montgomery Associates Presentation on the Analysis Approach used to Arrive at a 90% Volume Control Standard Recommended in the Badger Mill Creek-Sugar River Study

Steve Gaffield began with a description of the study area and approach including an assessment of the resource condition, its sensitivity to change, the County stormwater ordinance as the baseline or point of departure for a volume standard, watershed–specific performance standards, implementation, and monitoring. The stream and wetland assessment found high quality wetlands associated with the State Natural Resource Area west of Verona, the presence of reproducing populations of brown trout, and marginal temperature and dissolved oxygen. Biotic sensitivity, represented by stability indices for fish fry and adult trout, were based on stream temperature and dissolved oxygen. Fish fry were more vulnerable than adults, particularly during summer months, and fish in Badger Mill Creek were more vulnerable than those in the Sugar River. Winter conditions were found to be good. In terms of stream stability the Sugar River appeared stable while Badger Mill Creek appeared to be at risk. RECARGA modeling was also used to simulate the effect of different development densities on different soils types in the study area, how well could infiltration be expected to perform, and what the effects were of the one and two percent caps. It was pointed out that RECARGA does not take into account the higher levels of recharge in the early spring and late fall. This needs to be improved in the model.. In practice, it was pointed out, that rarely do developers default to the secondary recharge standard, being able to meet the current infiltration standard instead.

Recommendations from the study included maintaining groundwater recharge, directing runoff away from the State Natural Area, and a proposed infiltration standard of the County minimum requirements plus maintaining 7.6 in/yr. recharge (county average) for areas draining to the Sugar River; and all sites meeting 90 percent infiltration (with two percent cap) for areas draining to Badger Mill Creek. The 90 percent infiltration control provides greater volume control for Badger Mill Creek, which was found to be relatively less stable than the Sugar River. Cumulative impacts using a 2050 build out scenario incorporating the above stormwater controls were found to be small: one and two percent increase in runoff for the Upper Sugar River and Badger Mill Creek, respectively. This is in comparison to the 62 and 11 percent runoff volume increase onsite, respectively, for the proposed Verona development. In other words, the one percent increase in runoff volume for the Sugar River reflects the relatively small increase in projected developed area. The two percent increase in volume for Badger Mill Creek reflect the more stringent volume control standard applied to all new development. This is compared to a 10-15 percent cumulative volume increase for Badger Mill Creek using the County stormwater ordinance.

In summary, the approach uses the County ordinance as a starting point and suggests watershed-based stormwater controls, based on an analysis of resource conditions, vulnerability, monitoring, and periodic review and adaptive management.

It was asked if the habitat suitability indices were re-calculated to reflect the 2050 watershed scenario. Another question was if the study looked at the predicted changes in the flow duration curve for more frequent storms, such as those with less than one-year re-occurrence (partial series). The question of the increased frequency and duration of erosive or channel forming flows (typically one- and two-year storms) was raised. Steve replied that the recommendations were made based on a more qualitative, rather than quantitative analysis.

Discussion Items

Do any areas warrant 100 percent pre-development volume controls at this time?
Flooding of the Yahara Lakes was suggested as a high priority for continued study. We do not know exactly what strategies/actions are needed to mitigate high lake levels. One concern is the standard practice of using the 1981 rainfall time series for stormwater calculations. It was suggested that we should be looking at what effect a 90 percent control standard has using heavier precipitation years (e.g., 1993, 2000, 2004, and 2008). In terms of flooding; it should be evaluated whether event based, or cumulative effects are more critical. A comment was made that this standard shouldn't necessarily address flooding of the Yahara Lakes, especially if this can be resolved by other means (e.g., lowering lake operating limits, operating the lakes closer to the minimum level, etc.). It would be useful to check the sensitivity of the lakes. This could be relatively easily accomplished by looking at stage/discharge relationships. A SWAT model is being prepared for the Yahara Lakes watershed.

Other priority areas include DNR Outstanding and Exceptional Resource Waters, and closed basins. A suggestion for Badger Mill Creek was no increase in rates/volumes using actual conditions based on aerial photos, as opposed to modeling. 1995 was suggested as the base year because of the aerial photography available. It was suggested that 1995 represented a more accurate pre-development condition. A comment was made that a 90 percent standard using the curve number in the ordinance may be equivalent to 100 percent of actual conditions now. This should be a topic of future discussion. We also need to add a spring and early fall recharge component to RECARGA.

It would also be useful to study infiltration practices; how they are working and if they are not working, why not? This information could go into a handbook for better design.

It would also be good to have more information on the instream biological effects of development, with and without controls.

What should be the timeline for additional research and data collection before re-evaluating the volume control standard?
It was agreed that five years would be a good target to try and collect this information and re-evaluate whether any revisions to the 90 percent standard was needed.

Should updated rainfall data be used when it becomes available?
Regarding climate change and precipitation, it appears that we are years away from any models that will be useful as it relates to precipitation. The variation of results among current models is very large. The belief is that there will be more precipitation in the spring and that it will be in liquid vs. solid or frozen form. The National Oceanic and Atmospheric Administration (NOAA) has not detected any significant increases in total precipitation over the last couple decades. NOAA is in the process of updating the precipitation frequency data for Wisconsin. Dane County intends to incorporate the new data into its

stormwater ordinance when they are available. Since the proposed CARPC standard parallels the Dane County ordinance, it would follow suit.

Review, Discussion and Revision of the draft TAC Recommendations

Mike Rupiper went through the draft recommendations line by line in terms of consensus among the committee members. Overall, the members present reached agreement on the revised document. There was a dissenting opinion expressed that did not support the 100 percent volume goal. This was because of questions as to the feasibility of implementation and potential unintended effects, such as promoting sprawl. The statement was revised to read the TAC recognizes the potential benefits of 100 percent volume control. It was also suggested that CARPC adopt a phased approach and that the 90 percent standard be re-evaluated in five years to determine whether a more stringent control is needed.

In terms of an infiltration cap, exemptions, and exclusions it was agreed to use Dane County Chapter 14 and NR 151 stormwater ordinances as a base. The cap would be set at two percent for both commercial and residential land uses, with an alternate recharge standard beyond that. Recharge targets will be based on estimates published by the Wisconsin Geological and Natural History Survey, with the option for more detailed field-based information if available.

In terms of future research, it was recommended that biological information (i.e., flora, fauna, habitat) should also be evaluated as to the effects of the proposed 90 percent volume standard, and whether or not the standard should be changed.

Next Meeting

A subsequent meeting will be scheduled in February to review the final draft, make any further changes, and release it as a recommendation document to the Capital Area Regional Planning Commission.