

SAVE THESE DATES

Stakeholder Meeting and Final Modeling Workshop

February 24, 2009, (9:00 am – Noon)

(Learn more about the final modeling results and TMDL recommendations.)

Technical Committee Meeting

February 26, 2009, (10:00 am – Noon)

Watershed Plan Committee Meeting

March 12, 2009, (10:00 am – Noon) (Kickoff for the 2009 Plan update)

I/E Committee Meeting

March 19, 2009, (1:30 pm – 3:30 pm)

Board Meeting

March 24, 2009, (9:00 am – Noon)

Technical Committee Meeting

March 26, 2009, (10:00 am – Noon)

Stakeholder Meeting

April 28, 2009, (9:00 am – Noon)

Please see the calendar page at www.barr-milton.org for event confirmation, agendas and additional details.



The Barrimeter

A Publication of the Barr/Milton Watershed Association

Issue No. 8
1st Quarter 2009

South Platte River Weed Management

By Tina Booton



A Stand of Salt Cedar

It was originally introduced as an ornamental plant and as a streambank stabilizer, but its spreading tends to crowd out other native stands of riparian and wetland vegetation. Like other phreatophytes, tamarisk is a long-rooted plant that can obtain water either from the water table or from the soil surface. This ability makes the plant capable of consuming large amounts of water along floodplains, riverbanks, streambanks, marshes, and irrigation ditches where it can be found.

South Platte River Watershed Weed Management Area, or South Platte River WMA, is currently in the process of drafting a plan that will specifically address tamarisk and Russian olive, another noxious weed, along the main stem of the South Platte River and its tributaries. The plan, called the Platte Invasives Endeavor Plan or PIE plan, will focus on means for control and eradication of the plants in the watershed. The plan will also include information on legislation, noxious weed ecology, control techniques, and drainage-specific information, as well as education and funding options.

The PIE plan is currently available to view on the Weld County Weed Division website at www.weldweeds.org. Interested parties are encouraged to read through the plan and provide input for the group. Other information is also available under the South Platte Watershed page concerning committee meetings and ways to support them.

Currently, the most effective method of control for salt cedar is to prevent its establishment through proper land management and monitoring susceptible areas for new infestations. If you already have salt cedar, there will be some cost-share opportunities available in 2009 to help offset the expense of eradication.

For more information visit: www.weldweeds.org or call 970-304-6496 ext. 3770.

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(Mailing Area)

Noxious weed control has become a major concern for many watersheds, including the South Platte River, as their spreading can have significant impacts on natural resources and the economy. A group of landowners and government employees recently organized in 2008 to help manage the problem of invasive weeds along the riparian zones of the South Platte. Known as the South Platte River Watershed Weed Management Area, the organization is focused on controlling the spread of noxious weeds through integrated weed control methods and by raising awareness of the problem. The group draws from 9 counties, including Denver, Adams, Boulder, Larimer, Weld, Morgan, Logan, Washington and Sedgwick, located near the watershed.

Although many noxious weeds will be addressed by the group, an initial focus will be mitigating the presence and spread of the phreatophyte species known as salt cedar, a.k.a. tamarisk (*Tamarix ramosissima*). Tamarisk is a non-native evergreen-like shrub first introduced from Eurasia in the early 1800's, and is now widespread in the U.S.

Milton Reservoir — Then and Now

by George Patten and Donald Staley,
Integral Consulting

Then...

Milton Reservoir was created as part of a project by area farmers to divert and allocate water resources in the area. The group became known as the Farmers Reservoir and Irrigation Company (FRICO), and by 1911 had established four major water diversions that supplied water to a system of canals and reservoirs including Barr, Standley, Marshall, and Milton. The

Milton Division was named after Milton Smith,



who helped organize FRICO and served as Vice-President during its development. Among the four diversions, each designed to provide water storage for irrigation, Milton was the only one whose reservoir was created from scratch.

Donald Staley, a former member of the Aristocrat Duck Club at Milton Reservoir, recalls some special memories there as a young adult in the mid 1970's:

"It was 4:30 in the morning when I got out of my uncle's truck to open a gate in what seemed to be a perfect snow storm. As we approached Milton we were excited by the sound of thousands of ducks and geese hovering near the water. We had to use a row boat to get to our hunting blind, which was a daunting task in the morning darkness. As daylight set in, we saw that the sky was filled with mallards and honkers, and snow. The wind blowing over the reservoir made white caps that reminded me of something out of Alaska. We attempted a few shots that morning, but the weather forced us to cut short that surreal day of hunting at Milton."

Following that day, around Thanksgiving in 1975, I was hoping for another trip to Milton with better weather. I got that opportunity in the summer 1976 when my uncle and I became members of the Aristocrat Duck Club. We returned to the lake on a beautiful, crystal clear day. We took a walking tour on foot trails around the lake since vehicles were prohibited beyond certain points. Other than a couple of residences in the far distance, there was little sign of human life. Herds of mule and white tails would make themselves known from time to time, as did the bald eagles. We counted eleven one morning. On the west side of the lake we studied a rookery with hundreds of nests in the trees, made by a stork-like bird that didn't reside there in the winter. This was where dove hunting was mainly done, where the wild bean fields met the trees. The best hunting took place at the northwest inlet where the water would meet the lake. My memory of those times at Milton is simply "wow". From the tranquility, to the beauty, to the best waterfowl hunting I've ever known."



I'll never forget how it used to be. Thanks!

Now...

While FRICO still owns and operates Milton Reservoir, the area has changed considerably since the early 1900's. Once a largely agricultural area, Milton has seen much greater visitation from sportsmen and others hoping to enjoy the area. Pelican Lake Ranch and other new developments signify the increased awareness for Milton as an important natural resource to the community. It now has four designated use classifications: agriculture, aquatic life warm, recreation, and water supply.



MODELING UPDATE

By Laurie Rink, FRICO

Issue #7 of the Barrimeter reported on the BMW water quality modeling efforts currently underway by ENSR. The model developed for the Barr/Milton Watershed provides information about the effectiveness of different management practices to improve water quality and lower pH. By simulating a range of conditions, or "scenarios", which could occur in the watershed, modelers test the response of the reservoirs to variable inputs.

When we last reported, the ENSR modeling team was testing a number of preliminary "base scenarios" in an attempt to understand the extremes of the system and determine the upper and lower boundaries associated with varying water flows, algal growth, pH, and nutrient concentrations. Results of the base scenario modeling were presented at Modeling Workshop #3 held on August 26, 2008.

Results from the base scenario model runs basically confirmed what was suspected all along - that phosphorus (P) loading needs to be dramatically reduced in order to achieve the pH standard. Preliminary output indicated that 90% to 95% of the existing P load must be reduced to meet an "allowable load", or that amount of P that the reservoirs can

assimilate without exceeding water quality standards. The model runs further demonstrated that a virtual elimination of all upstream sources of P would not necessarily result in the necessary reductions. This is likely due to the fact that in-lake sources of P stored in lake-bottom sediments are a significant source alone.

Results of the final scenario model runs will be presented at Modeling Workshop #4 on February 24, 2009. Results will also be documented in a technical report being prepared by ENSR. A draft of the technical report will be made available in late January 2009 with the intent to finalize the report shortly after the February 24th workshop.

The BMW Association intends to utilize results of ENSR's work in compiling a pH TMDL. The TMDL will be very specific in terms of defining an allowable in-lake load of nutrients that will reliably meet (i.e., not exceed) pH standards. Scenario outputs will provide the basis for describing in the TMDL how nutrient load reductions will be achieved, what the bottom-line water quality effect will be, and how reductions will be phased over time.

Equipped with results from this first round of model outputs, the BMW Technical Committee worked up a set of final model scenarios for consideration and approval by the stakeholders. The following set of scenarios (with various iterations of each) was submitted to ENSR in December 2008.

Scenario Set #1

- * Reduce P output at all municipal wastewater treatment facilities to 1.0 mg/l
- * Reduce P output at all municipal wastewater treatment facilities to 0.1 mg/l
- * Reduce P output at all municipal wastewater treatment facilities seasonally to 0.1 mg/l November through March, and 1.0 mg/l for remainder of year

Scenario Set #2

- * Assuming all municipal wastewater facilities at P of 0.1 mg/l
- * Add a 25% reduction in P from all permitted stormwater sources
- * Add a 25% reduction in P from all nonpermitted stormwater and nonpoint sources
- * Add a 70% reduction in internal (in-lake) P loading from the sediments

Scenario Set #3

- * Same as Set #2 except assume municipal wastewater facilities at seasonal P of 0.1 mg/l November through March, and 1.0 mg/l for remainder of year



Tech Corner...

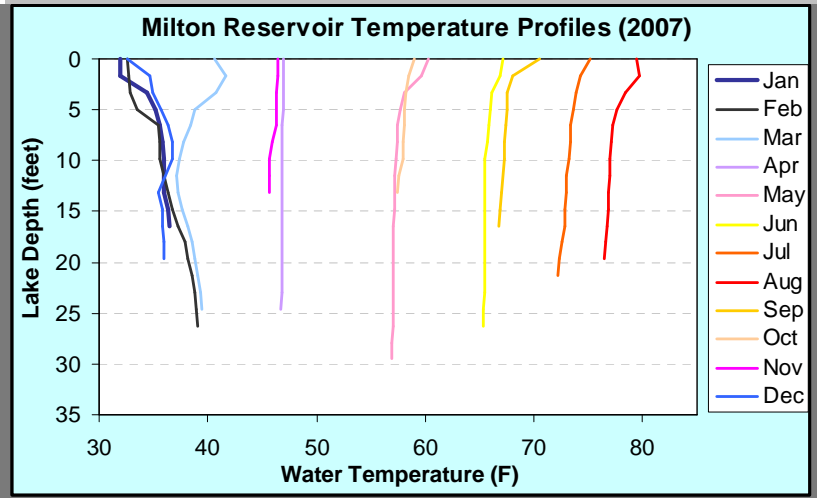
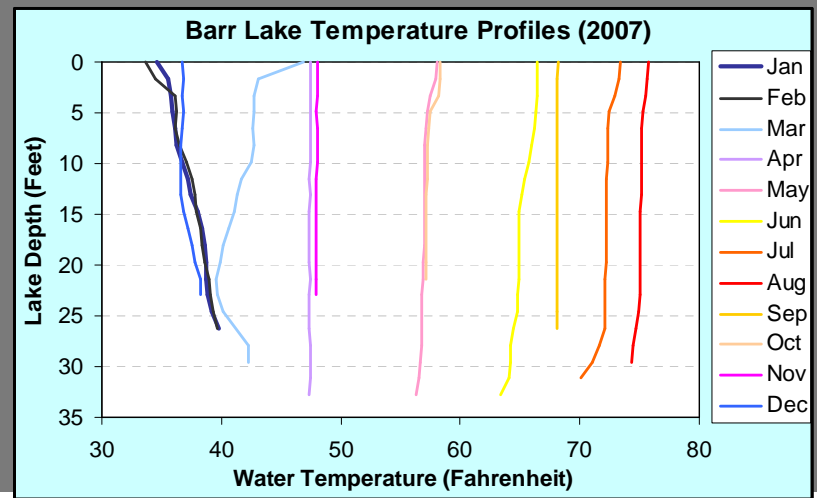
Water Temperature

By Steve Lundt,
Metro Wastewater Reclamation District

Water temperature can be a very influential factor in determining water quality and behavior in a lake or reservoir. Water temperature controls how the water moves within a lake, which determines the fate and transport of pollutants and the kinds of algae that will grow.

The unique thermal dynamics of water are the building blocks that drive how a reservoir looks from year to year and season to season. First, water is resistant to change in temperature. It takes a relatively large amount of energy to either warm up or cool down water. Lake temperatures, therefore, do not change that quickly or drastically over short periods of time.

Secondly, water changes in density with changes in temperature. For example, ice floats, but so does warmer water. How is this possible? The reason is that water is heaviest at 3.98°C (39°F). Anything colder or warmer is more buoyant. This explains why the temperature of water at the bottom of lakes is usually around 4-5°C. Water that is even one degree Celsius different from this temperature will not mix. This thermal layering of warmer water on top of cooler water leads to a complex stratification system in lakes and reservoirs.



Barr Lake and Milton Reservoir are only slightly stratified during the winter and summer due to their shallowness. Typically, any lake that is about 20-25 feet deep or less will mix top to bottom periodically, called polymictic. Barr and Milton's depths begin each spring at about 30 feet, and do stratify for a couple of months. Following summer agricultural demands, which can draw the reservoirs down to about 25 feet or less, the summer winds can mix the entire water column. This is why the temperature profiles for both Barr and Milton appear to be straight vertical lines. Water quality at the top, then, is essentially the same as the water quality at the bottom.

Finally, infrared light from the sun, seasonality, and climate change all play a role in the effects of temperature on lakes. Warmer water means stronger thermal stratification that can lead to less oxygen at the bottom of lakes. Shorter winters also mean longer growing seasons. The seasonality of lake temperature tends to remain consistent from year to year. The coolest month for Barr and Milton is January, while the warmest time occurs during late July and early August. Blue-green algae seem to flourish in Barr and Milton when water temperatures go above 20°C (68°F). This window of opportunity for the bloom-forming algae is from about June 10 to August 10 each year, or approximately 60 days. Blooms can occur earlier and later in the year when nutrients are available, and when there is plenty of light.

ECCV Applies for Beebe Draw Groundwater Discharge Permit

By Kipp Scott

The East Cherry Creek Valley Water and Sanitation District (ECCV), a member of the BMW Association, has submitted a permit application to the Water Quality Control Division (Division) of the Colorado Department of Public Health and Environment for a Groundwater Discharge Permit to the Beebe Draw alluvial aquifer.

ECCV is planning a reverse osmosis (RO) treatment facility near Brighton that will treat water from groundwater wells in the Beebe Draw. The treated water would serve the District's nearly 50,000 customers in the eastern portions of the City of Centennial and unincorporated Arapahoe County.

In its permit application, the District has proposed blending its RO return flow (up to 1.5 cfs per day) with surface water released from Barr Lake (up to 10 cfs per day) to *meet all domestic and agricultural water quality standards for native groundwater* in the area. The blended water would be released into the Bowles Seep Canal, situated in the Farmers Reservoir and Irrigation Company (FRICO) ditch system. This natural infiltration ditch would recharge the Beebe Draw, meeting FRICO's requirements on ECCV for augmentation. The District would monitor groundwater quality for compliance and submit the data in a monthly report to the Division.

CDPHE released a draft of the permit on October 24, 2008, followed by a 75-day comment period that included a public hearing in Brighton on January 6. The Division is now reviewing public comments and anticipates issuing a decision on the permit in 30 to 60 days. For more information on this project and the permit draft, please visit www.eccv.org and click on "RO Treatment Facility".

The 2008 Watershed Plan
is now available to download
from the Barr-Milton website.

<http://www.barr-milton.org>



Important
DATE!

Reminder: February 24th Workshop

- WHO:** BMW stakeholders, modelers, and anyone else interested in learning more about water quality in our watershed
- WHAT:** Public stakeholder meeting/modeling workshop #4
- WHERE:** Please see the BMW calendar page at <http://www.barr-milton.org> for confirmation and specifics.
- WHEN:** February 24, 2009, 9:00 a.m.— noon
- WHY:** View the latest modeling results and ask questions relevant to the Draft Modeling Report. Learn more about how these results may affect you and/or your organization.