the Watershed Watch

Newsletter of the Jordan River Watershed Council Fall 2010, Volume 7

Mission: The Jordan River Watershed Council is dedicated to the ecological and economic sustainability of the Salt Lake Countywide Watershed through the promotion of stakeholder involvement.

In This Issue

Stimulus Funded River Restoration!

Update on Salt Lake County's Jordan River Projects

by Watershed Planning & Restoration Program Staff

Last year, Salt Lake County received funding from the American Recovery and Reinvestment Act of 2009 (ARRA) to stabilize seven sites along the Jordan River. Currently, restoration work on four sites in Salt Lake City—a City/County partnership—is complete and the newly planted vegetation is growing! The remaining three sites are nearing completion.

The goal of stabilization is to reduce bank erosion which contributes to the high sediment loads in the Jordan. Sediment can be beneficial for a river in providing nutrients, however, when loads are too high the sediments can rob the water of oxygen. Stabilization can be achieved in a variety of ways, depending on the nature of the problem. The four Salt Lake City sites required bank stabilization, two of the remaining sites used grade control structures, and the final site was a cliff that required a modified form of bank stabilization.

Bank stabilization is needed where banks have become too steep, eroding vertically in many cases (see "before" picture at right). Extremely steep slopes cannot support the vegetation that helps stabilize and secure the soil. Construction equipment is used to reshape the bank, rock is added at the base of the slope (called "toe protection"), and the bank is then planted with native vegetation. A biodegradable coir fabric is placed on the slope to help with stabilization until the plants can become established. In some places *emergent benches* were included in the design. An emergent bench is graded to an elevation within 12" above seasonal low water levels. This creates a flat, low lying area closest to the water's edge

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Vertically eroding banks are clearly visible in the "before" picture at one of seven Jordan River sites to receive stimulus funds for restoration. Bank stabilization included regrading the banks, placing a rock layer to protect the base (toe) of the slope, and revegetating with native plants.

Questions? Comments?
Contact us at (801) 468-2711
www.waterresources.slco.org

SALT LAKE COUNTY
Watershed Planning & Restoration Program
2001 S. State St., N3100
Salt Lake City, UT 84190

Protecting the Future; Cleaning Up the Past

Update on the Jordan River Riparian Project in Midvale

by Watershed Planning & Restoration Program Staff

Since 2008, Salt Lake County Flood Control & Water Quality has been working collaboratively with the Environmental Protection Agency (EPA), the Utah Division of Environmental Quality (DEQ) and Midvale City to stabilize the Jordan River's banks along the Midvale Slag Superfund Site. This is the final element of the site cleanup and will ensure that the river does not erode its bank and release contaminants buried at the site into the river. Metals smelters operating at the site from 1871 through 1958 left behind lead, arsenic, cadmium, antimony, and other contaminants in soils and shallow groundwater.

Fieldwork for this final phase of cleanup will be conducted September 2010 to January 2011—from 6400 South to 7800 South—and will include bank stabilization, removal of invasive plants, and revegetation with native grasses, wildflowers, shrubs and trees. This restoration work will help protect water quality while providing valuable habitat for fish, birds and other animals.

Salt Lake County appreciates the community support for this important project as well as the support of EPA, DEQ and Midvale City. Find out more at *www.epa.gov/region8/superfund/ut/midvale.* □

STIMULUS RESTORATION PROJECTS
continued from cover

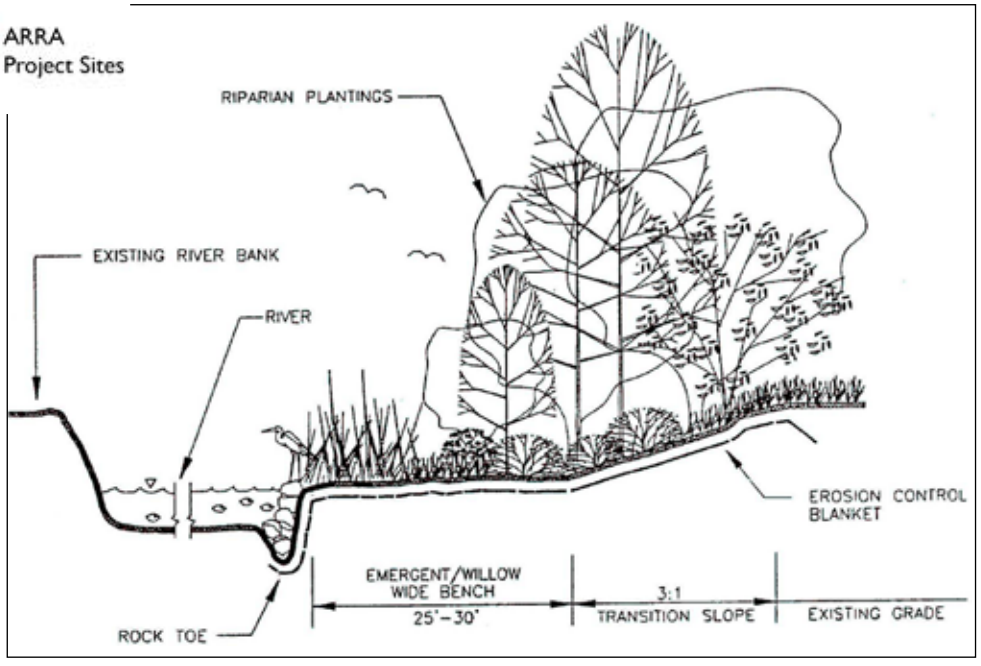
that supports the establishment of water-loving plants and also provides flood water storage (see illustration).

Grade control structures are physical structures installed in the river that are used to stabilize the bed of the river from cutting down. When a riverbed cuts down, it can cause the banks to erode at an accelerated rate since they are being undermined. The structures used at the two river sites were also designed to help direct the flow of the river into the center and away from vulnerable banks.

The most dramatic change can be seen at the cliff site. What was a nearly vertical cliff that posed a hazard to anyone standing on top or below, has been cut back to a safer and more gradual slope. Fortunately only the top 25 feet needed to be cut back, as there is a bird nesting area in a clay layer further down. Large stones were added at the base to help prevent the river from cutting further into the cliff, which could lead to more sloughing of the cliff face.

Salt Lake County was thrilled to win ARRA funds last year. With a combined length of over 4,000 linear feet, these restoration sites on the Jordan River will help protect water quality, provide flood control protection, and provide habitat for plants and animals! □

Salt Lake County received American Recovery and Reinvestment Act funds in 2009 to complete streambank restoration work at seven sites on the Jordan River



"Emergent Bench" design used in many of Salt Lake County's bank stabilization projects

What's up with the Jordan River?

Update from the Utah Division of Water Quality

by Carl Adams & Hilary Arens
Watershed Protection Section, Utah DWQ

When last we left our intrepid Jordan River, it was battling increased temperatures, high salinity and, it's most perilous foe, low dissolved oxygen... During the intervening time we've learned a number of things that have helped define our strategy for improving the Jordan River's water quality.

First, the high salinity, or total dissolved solids (TDS), is due primarily to the fact that we live in a salty watershed. Our current standard of 1,200 mg/L is not attainable during all times of the year due to natural, uncontrollable sources. The combination of saline springs, saline shallow groundwater and evaporation has led the Division of Water Quality (DWQ) to pursue a site specific standard of 1,300 mg/L that will accurately reflect the natural background levels of the Jordan River basin. Even with a site specific standard, we will still have to develop a TMDL for the segment of river that runs from 7800 South to Bluffdale Road.

Second, the temperatures in the river from the Narrows to the confluence with Little Cottonwood Creek are higher at times than the cold water fishery standard of 20° Celsius (68°F) allows. Working with a stream modeler at Utah State University, temperature probes have been in the river for over a year and in July 2010 a seepage study was conducted to determine which inflows have the highest potential to influence temperature—whether from tributaries, storm water, or groundwater. We will then follow the appropriate course of action, whether it is for a use attainability analysis or a TMDL for temperature in those segments.

Third, the water quality model for the Jordan River (QUAL2Kw) has been thoroughly tested and validated and the results show that excess organic matter is the most immediate cause of low dissolved oxygen in the Lower Jordan River. Organic matter is generally defined as coming from a once living organism and is capable of, or is the product of, decay, including everything from leaves and twigs, to paper wrappers and oil washed from streets. We should continue to minimize organic matter loading into the river, which many of our partner agencies have been doing for years through stormwater management, street sweeping, trash collection, and related efforts. But we also recognize that a larger scale organic matter budget will need to be conducted to better understand where the organic matter loads into the Jordan are coming from, how much, and when.

Which leads to my final point—DWQ will submit the Jordan River water quality study to EPA as a phased TMDL in April, 2011. Phased TMDLs incorporate the principles of adaptive management, building on what we know and resolving what we don't, while making incremental changes in management to address the water quality problem. In this first phase of the TMDL we will include generalized bulk allocations among the sources. This will allow us to establish what we know so far and present it to the public and EPA with the understanding that we will continue to further refine it in the next 5 years based upon additional study.

We've come a long way in our understanding, but still have a ways to go to fully restore the health of the Jordan River from lake to lake. More info at *www.waterquality.utah.gov/TMDL/index.htm*. □

TMDL–Total Maximum Daily Load, a calculation of the maximum amount of a pollutant allowed to enter a waterbody, so that the waterbody will meet and continue to meet water quality standards for that particular pollutant. If multiple pollutants are an issue, a TMDL is written for each one.

Overall, the goal of developing a TMDL is to end up with an implementation plan or a watershed plan designed to meet water quality standards and restore impaired waterbodies.

Source: http://www.epa.gov/owow/TMDL/overviewoftmdl.html

Jordan River vista (Photo ©Adriaan Boogaard)

Stream Function Index Reports Complete

Addendum to Salt Lake Countywide Water Quality Stewardship Plan

by Watershed Planning & Restoration Program Staff

The Stream Function Index (SFI) is a rapid assessment tool used to monitor stream conditions. It was developed to help watershed managers achieve the goals of the Salt Lake Countywide Water Quality Stewardship Plan (WaQSP).

The WaQSP—undertaken in 2006 and completed in 2009—provides a framework of goals and policies to ensure water quality stewardship that is consistent with the Clean Water Act and the representative needs of local residents. The 2009 SFI evaluated the condition of 26 streams and the Jordan River. The results highlight areas where current water quality conditions are good and need to be protected, as well as where management policies and practices are needed to improve conditions.

The Final Reports

The SFI Main Report summarizes the complete study and its results. Individual City Reports for each of the 16 cites in Salt Lake County were also published, focusing on streams within city boundaries to address specific issues and recommendations. The results of the SFI are being used to: identify water quality stressors, conduct detailed studies where needed, identify and prioritize improvements, secure partnerships and funding, implement projects and programs, and re-evaluate streams using 2009 data as the baseline to monitor improvement.

Improving the SFI

Both the SFI and the WaQSP identified the need for a greater body of water quality data in order to more completely and accurately assess the condition of County waterways. To address these needs, an expanded water quality data collection program was undertaken by Salt Lake County in 2009, and includes:

- Installation of 5 new stream flow gage stations with water quality sampling capabilities
- Initiatation of a long-term macroinvertebrate sampling program using the Utah Division of Water Quality (DWQ) and U.S. Environmental Protection Agency (EPA) protocol so data can be shared
- Initiation of a 2-year *E. coli* sampling study in cooperation with DWQ

All County data will be entered into databases available online, details at *www.waterquality.utah.gov/Monitoring*.

County staff applying rapid assessment data collection techniques (top); collecting samples for E.coli testing (bottom)

The SFI and the WaQSP are important resources for Salt Lake County, local municipalities, and agencies who manage or have jurisdiction over the waterways in the County. The reports are free and available at the Salt Lake County Government Center, both hard copies and on CD; call (801) 468-2711 for more info. Pdf's are available online at *www.waterresources.slco.org*. □

Field trip to a UTA wetland creation & enhancement project at Salt Lake County's Redwood Nature Area

Another Successful Watershed Symposium!

Thank you to everyone who made the 4th Annual Salt Lake Countywide Watershed Symposium a resounding success, August 4th & 5th at the Utah Cultural Celebration Center in West Valley City. Mayor Peter Corroon's keynote speech kicked off the event, followed by signing of the Jordan River Commission agreement. Breakout sessions, field trips and workshops covered a broad scope of topics on watershed and water quality issues of local, regional, and national relevance.

Approximately 250 people attended each day, representing water quality professionals, academics, environmental advocates, industry, and the public. As with previous years, we received great feedback. The consensus is that the Watershed Symposium is a worthwhile event that people would like to see grow. With continuing support, we hope to do just that!

Visit www.waterresources.slco.org for abstracts, presentations, and photos.