

Metropolitan Wastewater Management Commission



partners in wastewater management

MEMORANDUM

DATE: November 5, 2010

TO: Metropolitan Wastewater Management Commission (MWMC)

FROM: Todd Miller, Assistant Project Manager

SUBJECT: Riparian Shade Sponsorship Projects Update

ISSUE

In the interest of generating regulatory credits for thermal load compliance, the MWMC is pursuing two riparian shading sponsorship projects. Accordingly, two sponsorship agreements, as approved by the Commission, were executed in April 2010 as follows:

- The McKenzie Watershed Council, for potential MWMC sponsorship of Cedar Creek shading, and
- The City of Springfield, for potential MWMC sponsorship of Mill Race shading.

These agreements were required by Oregon Department of Environmental Quality (DEQ) for Clean Water State Revolving Fund (CWSRF) Sponsorship funding. Since April 2010, staff has worked with the McKenzie Watershed Council and City of Springfield to identify the first phases of riparian restoration work and associated funding for implementation of the projects. Accordingly, staff anticipates bringing the two riparian shading sponsorship contracts to the Commission for approval at the January 2011 MWMC meeting.

This memo provides (1) a brief history of the regulatory framework under which riparian shading projects may provide thermal load credits to help the MWMC meet regulatory requirements during the critical compliance periods, and (2) a status report describing progress made toward implementing the sponsorship projects.

BACKGROUND

The MWMC has incorporated riparian shading sponsorship projects into its thermal Total Maximum Daily Load (TMDL) mitigation approach as the result of and in response to evolving regulations and opportunities. This section describes historical background in four main areas that relate to the MWMC's riparian shading sponsorship efforts. These are:

- The MWMC's regulatory obligations for temperature
- The US Environmental Protection Agency's (USEPA's) and Oregon DEQ's riparian shading regulatory framework

- The MWMC's riparian shading project development
- The MWMC's CWSRF sponsorship option loan for funding of non-point-source projects

The MWMC's Regulatory Obligations for Temperature

- 1996 – The Oregon Temperature Management Standard required the MWMC to implement a Temperature Management Plan (TMP).
- 2002 – The MWMC's TMP was included under the National Pollutant Discharge Elimination System (NPDES) Wastewater Discharge Permit for the Water Pollution Control Facility (WPCF). The thermal load limit applied during the dry season from May 1 to October 31; the period when water quality in the Willamette River is temperature limited.
- 2006 – The DEQ established the Willamette Basin TMDL which resulted in a revised thermal waste load allocation (WLA) for the MWMC measured in millions of kilocalories per day (mKcal/day). The WLA is affected by:
 - The flow and temperature of the Willamette River
 - The flow and temperature of the WPCF effluent

In addition, the TMDL imposed more stringent limitations during the “shoulder periods” of May 1 to May 15 and October 15 to October 31. These shoulder month temperature limits were driven by the colder water needed for winter salmon spawning, which spans from early fall to late spring.

- 2009 – Following the legal challenge to the DEQ's TMDL and allocation methodology, the plaintiffs (the MWMC and the City of Albany) entered into a settlement agreement with the DEQ. The settlement agreement ensured TMDL compliance through the MWMC's current NPDES permit renewal cycle without requiring reduction measures beyond the recycled water projects identified in the MWMC's 2004 Facilities Plan. However, the Settlement Agreement recognized riparian shading and water quality trading as measures that could be acceptable and potentially required to maintain temperature compliance.

Riparian Shading Regulatory Framework

Both the US EPA and Oregon DEQ allow and encourage watershed-based solutions through their water quality rules and policies. Accordingly, Oregon DEQ allows point source dischargers to develop riparian shading projects elsewhere in the watershed, and receive thermal load credits. Dischargers can trade these credits or use them directly as thermal offsets. This strategy is recognized as a cost-effective means of reducing thermal loads. A history of the relevant rules and policies is provided below.

- 2003 – EPA issued a Water Quality Trading Policy document promoting the use of water-quality trading for temperature and other constituents in meeting requirements of the federal Clean Water Act.

- 2004 – The Oregon DEQ issued the nation’s first NPDES permit to include temperature trading to the Tualatin-watershed-based Clean Water Services.
- 2005 through 2009 – The Oregon DEQ issued and later updated a Water Quality Trading Internal Management Directive (IMD). The water quality trading IMD recommended protocols to achieve regulatory credits through riparian shading projects on water-quality impaired (e.g. temperature-limited) streams. The IMD identified the key elements required of riparian shade projects to qualify for water quality credit:
 - Shade effects must be calculated and verified as additional to that which would occur through natural plant establishment.
 - Shade credits are applied on a 20-year life span basis (credits expire at year 20)
 - Shade credits are allocated at a 1:2 ratio to reflect the average shade produced by growing trees over the 20-year time period
 - Shading should occur on water bodies within defined service areas as identified on the DEQ’s fish use designation maps
 - Shade value must be calculated for the calendar day with lowest solar input that falls under the targeted compliance period (i.e., for the MWMC, October 31)
 - Shade must be verified through use of the DEQ’s shade model (Shade-a-lator version 6.2) or the equivalent.

The DEQ’s Water Quality Trading Fact Sheet (Attachment 1) provides a summary of the regulatory premise for riparian shading.

The MWMC’s Riparian Shading Project Development

- 2003 – The MWMC’s consideration of riparian shading as a temperature management strategy dates back to initial development of the TMP and the Facilities Plan. Both the November 2003 Technical Memorandum No. 12 (Thermal Load Evaluation) associated with the Facilities Plan and the January 2004 Temperature Management Assessment Report identified water quality effluent trading via riparian shading as among the MWMC’s potential alternatives to temperature compliance.
- 2008 through 2009 – During this period, two main developments occurred:
 - In 2008, the Long Tom Watershed Council prepared a report for the City of Eugene on the potential to sponsor restoration of riparian shade along the lower Long Tom River for regulatory credit. The DEQ contributed Shade-a-lator model results. However, later consultation with the DEQ revealed that the Long Tom was not a designated salmon spawning stream and, therefore, was not eligible for regulatory temperature credits per the DEQ’s guidance under the 2009 IMD.
 - Staff began pursuing other potential stream shading projects with local partners in 2008. Staff presented updates on the implementation potential of these projects at the June 2008 and January 2009 Commission meetings. Of the

riparian shading projects identified, two have continued to meet the qualifications for funding and eligibility for water quality shade credits: Cedar Creek and the Springfield Mill Race.

The MWMC's CWSRF Sponsorship Option for Nonpoint Projects

- 2008 – In January 2008, staff applied for CWSRF construction loans offered through the DEQ. CWSRF loans provide favorable interest and repayment terms to agencies implementing measures to comply with program requirements found in the federal Clean Water Act. The CWSRF program also offered the Sponsorship Option – a mechanism for public agencies to fund (sponsor), and receive credit for watershed-based solutions to water quality improvement through an interest-rate reduction on water treatment construction loans. Subsequent developments in 2008 included:
 - At the June 2008 meeting, the Commission approved by motion staff's pursuit of prioritized riparian shade projects under the Sponsorship Option. The Commission directed staff to prioritize projects on the basis of cost and resulting regulatory credit.
 - In September 2008, staff submitted a Sponsorship Option application amendment to the DEQ. The amendment requested funding for the entire Springfield Mill Race and Cedar Creek, and Debrick Slough (part of Eugene's Delta Ponds restoration area). In 2009, the City of Eugene notified the MWMC it had secured other funding for the Debrick Slough restoration.
 - At the November 2008 meeting, the Commission approved authorization of the CWSRF Sponsorship Loan Agreement.
 - The loan was executed in December 2008.
- 2009-2010 – At the October 2009 Commission meeting, the Commission approved, by motion, Sponsorship Agreements with the McKenzie Watershed Council and the City of Springfield (the project implementation partners for Cedar Creek and Mill Race shading projects). The Agreements were entered into in April 2010 and fulfill a DEQ loan requirement for CWSRF Sponsorship funding (Attachments 2 and 3). The Agreements document the authority of the implementation partners to complete the shade projects on Cedar Creek and the Springfield Mill Race. The Agreements also document the funding relationship between the MWMC and the implementation partners and the requirement that projects result in shade credits for the MWMC.

Negotiations between the MWMC and the implementation partners began once the Sponsorship Agreements were in place. The Sponsorship Agreements reference the option to fund projects as listed in the MWMC's Sponsorship Option Loan Agreement:

- Cedar Creek: Up to 18,000 feet of stream channel and up to \$250,000 project costs.

- Springfield Mill Race: Up to 16,000 feet of stream channel and up to \$200,000 project costs.

DISCUSSION

Compliance with the temperature TMDL may be achieved through several strategies. Riparian shading and water quality trading represent two of the strategies for temperature compliance. Cedar Creek and the Mill Race are the only potential MWMC sponsorship projects yet identified that meet both the CWSRF funding and the thermal trading credit requirements. Both projects' scopes will include:

- Landowner outreach and planting agreements,
- Site preparation including invasive weed control,
- Planting and tree establishment, and
- Watering and maintenance for a four year period, after which trees are considered "free to grow."

The MWMC will contract with the McKenzie Watershed Council to develop, implement, and maintain the Cedar Creek shade project. A similar arrangement will be made with the City of Springfield for Mill Race shading. Staff anticipates requesting Commission approval for these contracts by the January 2011 Commission meeting.

Project Budget

The proposed budgets for the Cedar Creek and Mill Race sponsorship projects, are based on the estimated costs presented in Table 1 below.

Table 1 – Riparian Shading Sponsorship Estimated Project Costs

Project	Acres ⁽¹⁾	Cost per acre	Total cost ⁽²⁾
Mill Race	16.6	\$12,000	\$200,000
Cedar Creek	20.8	\$12,000	\$250,000

(1) Based on lineal stream distance assuming a 50-foot riparian buffer

(2) Costs are rounded to the nearest ten-thousand dollars

Staff has since received unit cost estimates for similar projects:

- Clean Water Services (Portland area) – \$14,247 per acre
- McKenzie Watershed Council – \$9,000 to \$15,000 per acre, average \$12,000 per acre
- Other agencies – \$13,000 to \$21,000 per acre

These unit cost estimates are in the range of the \$12,000 per acre shown in Table 1.

Anticipated Thermal Offsets

To estimate shade credit potential of plantings, staff ran the Shade-a-lator model on both Cedar Creek and the Springfield Mill Race. The model analysis revealed that potential shading on the south bank of these streams accounts for over 80% of the shade credit benefit. The near-bank riparian area also presents the most shade value. Therefore, staff determined the projects should be primarily located on the south banks and within a 50-foot riparian buffer off the stream.

The Mill Race Shade-a-lator model is still preliminary, as the area is now under construction

and the final topographic data is not yet available. Therefore, the estimates presented herein are based on the Cedar Creek results. Given the assumptions above, the Shade-a-lator model estimated approximately 10 mKcal/day of thermal credit over 18,000 feet of added riparian shade for the Cedar Creek project.

Sponsorship Option Project Cost-Benefits

The Sponsorship Option mechanism provides funding for watershed restoration at no additional cost to the MWMC. The funding is derived from a reduced interest rate on the CWSRF loan repayments. Without the sponsorship option, the \$450,000 value associated with the proposed riparian shading projects would be lost in the form of loan interest paid to the DEQ in association with the capital program projects (i.e., the Tertiary Filtration Phase I projects). With the sponsorship option, the anticipated interest rate on the MWMC's \$8,000,000 loan is 2.44%, reduced from the regular rate of 3.08%. This difference accounts for the funding of the riparian shading projects.

Ecosystem Marketplace Temperature Credit Investment Opportunities

Future opportunities to directly invest in water quality trading credits may be forthcoming. Based on existing models for wetland mitigation banking and greenhouse gas emissions trading, private-public partnerships are emerging in Oregon to develop ecosystem markets for environmental services such as stream temperature mitigation. The Willamette Partnership and the Freshwater Trust are two Oregon organizations working on developing these marketplaces. The Willamette Partnership was developed in tandem with Clean Water Services' approach to identifying and securing riparian trading projects in the Tualatin watershed.

Currently, no investment-ready temperature-credit market exists in the upper Willamette watershed. Future opportunities for the MWMC to work with the Willamette Partnership, Freshwater Trust, and local watershed councils could result in such an arrangement.

First Phase of Sponsorship Project Contracts

Both the Cedar Creek and Mill Race projects require site assessment and selection, planting plans, and landowner agreements prior to commencing ground preparation and planting work. Staff is working with the implementation partners to define the appropriate scopes of work and delivered products to start the first phases of the sponsorship projects. The McKenzie Watershed Council identified landowner outreach and development of planting plans as the first phase of work. City of Springfield staff is currently defining the site plans and estimated costs for planting select reaches of the Mill Race restoration project as the first phase of work.

ACTION REQUESTED

No action is requested. This memo presents information to the Commission in advance of staff requests to authorize riparian shade sponsorship contracts currently under negotiation. Staff will request authorization by resolution of the resulting agreements at a future meeting.

Water Quality Trading

What is water quality trading?

Water quality trading is a program that allows DEQ permittees discharging wastewater to Oregon's waterways to obtain pollutant reduction credits from other pollutant dischargers or pollution-reduction activities within the same geographic area. These permittees typically include sewage treatment plants and industrial wastewater plants. Operators of other types of activities that impact the state's waterways, such as hydroelectric dams, may also participate in trading.

When is trading allowed?

DEQ only allows trading when it addresses the source or sources of the pollution problem and does not negatively affect the environment. Trading cannot be used to avoid existing federal and state treatment requirements.

Examples of water quality trading

The following are examples of trading:

- Wastewater treatment plants trade between themselves – one plant is allowed to discharge more of a pollutant provided another plant discharges less.
- A wastewater treatment plant offsets its pollution impact with activities that reduce the pollutant of concern but are not located at the plant. For example, a treatment plant discharging warm treated wastewater to a river is allowed to plant trees and other vegetation on the river bank instead of installing wastewater chillers.

This approach makes sense in areas where instream temperatures are warm enough to be unhealthy for fish and the main cause of warming is the removal of bank vegetation (no shade to block the sun from warming the water) rather than the wastewater discharge. Allowing this type of trade also has additional benefits: wildlife habitat is created; the treatment plant saves money because it does not have to purchase and operate wastewater chillers; and greenhouse gas emissions from operation of the chillers are prevented.

Why does DEQ encourage trading?

Trading provides the opportunity for DEQ and stakeholders to improve water quality in ways that offer the best overall protection of the environment. It is an important tool because the

best opportunities for improving water quality are not always at the end of a permittee's discharge pipe. Trading can also result in additional benefits, such as restoration of fish and wildlife habitat and reduced compliance costs for permittees.

Trading examples in Oregon

DEQ allows Clean Water Services, the public agency that operates sewage treatment plants in Washington County, to trade between its plants that discharge to the Tualatin River (one plant can discharge more of a pollutant provided another plant discharges less). DEQ also allows the agency to plant trees and other vegetation to shade streams that flow to the Tualatin River rather than install wastewater chillers. (For more information, see <http://www.deq.state.or.us/wq/wqpermit/cwsp permit.htm>). Water quality trading is also being considered in the Clackamas, Rogue and Klamath basins.

DEQ guidance on trading

DEQ recently updated its guidance to DEQ staff on how to evaluate proposed trading activities and develop conditions to regulate these trades. The guidance, titled *Water Quality Trading in NPDES Permits Internal Management Directive (December 2009)*, focuses on trades conducted to comply with National Pollutant Discharge Elimination System permit requirements because DEQ expects the majority of trading activity to be driven by permittees discharging warm wastewater to Oregon's waterways. The guidance may also be useful to parties involved with re-certification of hydroelectric projects that are trying to develop comprehensive approaches to comply with water quality standards.

More information

For DEQ guidance and more information on trading, please visit DEQ's website at: <http://www.deq.state.or.us/wq/trading/trading.htm>. You may also contact Ranei Nomura, Western Region Eugene Office, at (541) 686-7799, toll-free in Oregon at 1-800-844-8467, or by email at nomura.ranei@deq.state.or.us.

Alternative formats

Alternative formats (Braille, large type) of this document can be made available. Contact DEQ's Office of Communications & Outreach, Portland, at (503) 229-5696, or toll-free in Oregon at 1-800-452-4011, ext. 5696



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DEQ is a leader in restoring, maintaining and enhancing the quality of Oregon's air, land and water.

Last Updated: 01/15/2010
By: Ranei Nomura
DEQ 09-WQ-012

**Sponsorship Agreement and Documentation of Authority
to Implement a Riparian Shading Project
with the Metropolitan Wastewater Management Commission**

Project Name: Lower Cedar Creek Riparian Restoration

Implementation Partner: McKenzie Watershed Council

Sponsorship Amount: \$250,000

Project Description: The project will restore riparian vegetation and stream function and habitat throughout the lower Cedar Creek watershed related to the goals of the Metro Waterways Study preferred alternative to be adopted by regional partners as facilitated by the Lane Council of Governments. The project entails landowner outreach, project development/planting design, and riparian vegetation control and establishment as under the coordination of the McKenzie Watershed Council. Funding partnerships may be utilized to leverage available programs to assist with planting costs with local sponsorship of project development.

Purpose: This agreement documents the authority of the Implementation Partner named above to conduct the activities associated with the above-named project that will result in riparian shading projects. Furthermore, this agreement documents the potential sponsorship of the riparian shading project by the Metropolitan Wastewater Management Commission (MWMC) up to the above-stated Sponsorship Amount. Pursuant to, and pending satisfaction of, the intent and conditions set forth below, the MWMC may negotiate agreement(s) to pay the Implementation Partner to implement the shade project (“Project Sponsorship”).

Intent: The MWMC has applied for and received a loan from the Department of Environmental Quality (DEQ) via the Clean Water State Revolving Fund (CWSRF) to finance wastewater design and construction projects and to fund water resource projects for riparian shade via the CWSRF Sponsorship Option.

The above-named project is an eligible Sponsorship project per the CWSRF loan application process as listed in Appendix E of CWSRF Loan Agreement #R64840 and as described in the MWMC’s Sponsorship Application for the CWSRF as submitted on May 28, 2008 and as appended on September 24, 2008.

The MWMC, at its discretion, may enter into an agreement/contract with the Implementation Partner to fund the planting of riparian shade trees associated with the eligible project. This Sponsorship Agreement will be presented to the DEQ to document the potential Project Sponsorship via Loan #R64840.

Conditions Precedent to Project Sponsorship: Three primary criteria for Project Sponsorship exist.

**Sponsorship Agreement and Documentation of Authority
to Implement a Riparian Shading Project
with the Metropolitan Wastewater Management Commission**

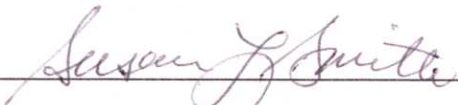
(1) The MWMC will only fund riparian restoration activities for which riparian shade establishment is the primary purpose. Auxiliary project components shall be funded from other sources.

(2) The riparian shade project must result in regulatory shade credits for the MWMC approved by the DEQ. Qualification of the project for shade credits will be verified with the DEQ prior to project sponsorship. Riparian shade credit values will be determined by MWMC staff using the Shadealator shade model, version 6.2, developed by DEQ.

(3) The riparian shade project must be maintained and monitored by either the Implementation Partner or a designated party (a) as long as the MWMC has a liability to the DEQ via the CWSRF loan, and (b) to ensure proper establishment of the shade potential.

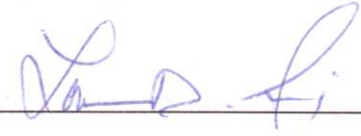
Shade establishment, maintenance, and monitoring agreements will be developed through the contractual negotiation for project sponsorship to be developed between the MWMC and the Implementation Partner.

Authorization: Through signature below, the MWMC and the Implementation Partner agree that each is authorized to fund and implement the above-named project.

Signed: 

Date: 4-20-10

Name: Susan L. Smith
Title: Executive Officer
Organization: MWMC

Signed: 

Date: 10-23-09

Name: LARRY SIV
Title: DIRECTOR
Organization: MCKENZIE WATERSHED COUNCIL
AND MCKENZIE WATERSHED ALLIANCE

Approved as to Form:



**Sponsorship Agreement and Documentation of Authority
to Implement a Riparian Shading Project
with the Metropolitan Wastewater Management Commission**

Project Name: Springfield Mill Race

Implementation Partner: City of Springfield

Sponsorship Amount: \$200,000

Project Description: Establishment of shade trees associated with the Springfield Mill Race Ecosystem Restoration project, including the lower Mill Race downstream of the Booth-Kelly Center and private lands as practical. Shading project will include development of a riparian planting plan, negotiation with property owners, invasive species control and bank stabilization, and planting, establishment, and maintenance of riparian vegetation.

Purpose: This agreement documents the authority of the Implementation Partner named above to conduct the activities associated with the above-named project that will result in riparian shading projects. Furthermore, this agreement documents the potential sponsorship of the riparian shading project by the Metropolitan Wastewater Management Commission (MWMC) up to the above-stated Sponsorship Amount. Pursuant to, and pending satisfaction of, the intent and conditions set forth below, the MWMC may negotiate agreement(s) to pay the Implementation Partner to implement the shade project ("Project Sponsorship").

Intent: The MWMC has applied for and received a loan from the Department of Environmental Quality (DEQ) via the Clean Water State Revolving Fund (CWSRF) to finance wastewater design and construction projects and to fund water resource projects for riparian shade via the CWSRF Sponsorship Option.

The above-named project is an eligible Sponsorship project per the CWSRF loan application process as listed in Appendix E of CWSRF Loan Agreement #R64840 and as described in the MWMC's Sponsorship Application for the CWSRF as submitted on May 28, 2008 and as appended on September 24, 2008.

The MWMC, at its discretion, may enter into an agreement/contract with the Implementation Partner to fund the planting of riparian shade trees associated with the eligible project. This Sponsorship Agreement will be presented to the DEQ to document the potential Project Sponsorship via Loan #R64840.

Conditions Precedent to Project Sponsorship: Three primary criteria for Project Sponsorship exist.

- (1) The MWMC will only fund riparian restoration activities for which riparian shade establishment is the primary purpose. Auxiliary project components shall be funded from other sources.


**Sponsorship Agreement and Documentation of Authority
to Implement a Riparian Shading Project
with the Metropolitan Wastewater Management Commission**

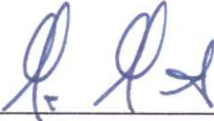
(2) The riparian shade project must result in regulatory shade credits for the MWMC approved by the DEQ. Qualification of the project for shade credits will be verified with the DEQ prior to project sponsorship. Riparian shade credit values will be determined by MWMC staff using the Shadealator shade model, version 6.2, developed by DEQ.

(3) The riparian shade project must be maintained and monitored by either the Implementation Partner or a designated party (a) as long as the MWMC has a liability to the DEQ via the CWSRF loan, and (b) to ensure proper establishment of the shade potential.

Shade establishment, maintenance, and monitoring agreements will be developed through the contractual negotiation for project sponsorship to be developed between the MWMC and the Implementation Partner.

Authorization: Through signature below, the MWMC and the Implementation Partner agree that each is authorized to fund and implement the above-named project.

Signed: 
Date: 4/20/10
Name: Susan L. Smith
Title: Executive Officer
Organization: MWMC

Signed: 
Date: 4/7/10
Name: Gino Grimaldi
Title: City Manager
Organization: City of Springfield

REVIEWED & APPROVED
AS TO FORM
JOSEPH J. LEAHY
DATE: 3/22/10
OFFICE OF CITY ATTORNEY

Approved as to Form:


G. David Jewett