

## Environment and Natural Resources Trust Fund 2009 Phase 2 Request for Proposals (RFP)

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**LCCMR ID: 060-B2**

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**Project Title:** A Citizen-Based Approach to Stormwater Management

**Total Project Budget:** \$ \$492,023

**Proposed Project Time Period for the Funding Requested:** 3 years, July 2009-June 2012

**Other Non-State Funds:** \$ \$34,860.00

**Priority:** B2. Reduce Peak Water Flows

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**First Name:** Becky

**Last Name:** Rice

**Sponsoring Organization:** Metro Blooms

**Address:** PO Box 17099

Minneapolis MN 55417

**Telephone Number:** 651-699-2426

**Email:** becky@metroblooms.org

**Fax:**

**Web Address:** www.metroblooms.org

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**Region:**

Metro

**County Name:**

Hennepin

**City / Township:**

Minneapolis

**Summary:** The effectiveness of rain gardens to improve the quality of impaired waters will be evaluated for three citizen-organizing approaches and residential test areas around Powderhorn Lake in Minneapolis.

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**Main Proposal:** 1008-2-040-proposal-LCCMR\_2009\_proposal\_MetroBlooms\_submitted[1].pdf

**Project Budget:** 1008-2-040-budget-LCCMR\_2009\_Project\_Budget\_submitted(1).pdf

**Qualifications:** 1008-2-040-qualifications-LCCMR\_2009\_Quals\_FINAL.pdf

**Map:** 1008-2-040-maps-PowderhornMap-MetroBloomGrant093008[1].pdf

**Letter of Resolution:** 1008-2-040-resolution-board authorization.pdf

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# Metro Blooms - MAIN PROPOSAL

## PROJECT TITLE: A Citizen-Based Approach to Stormwater Management: Rain Gardens to Improve Impaired Waters

### I. PROJECT STATEMENT

A citizen-based approach will be used to reduce the volume of stormwater runoff and improve water quality of impaired lakes and streams. Rain gardens reduce the impact on downstream water bodies by reducing peak flows and capturing and treating pollutants. This project will assess the effectiveness of rain gardens through evaluation of three citizen-organizing approaches and a test study of residential areas around Powderhorn Lake in Minneapolis (refer to site map).

Two new citizen-organizing approaches will be developed from, and compared to, Metro Blooms' existing citywide approach. This model is centered around a five-part rain garden workshop series, promoted through a variety of mass media. The series informs the home owner of the benefits of rain gardens and runoff reduction to our waterways, provides reduced-cost design and consultation services, and includes a native plant reimbursement program. The two new approaches are (1) a Neighborhood of Rain Gardens approach that focuses on improvements to a specific water body, and (2) a similar approach for faith-based institutions. The results of the existing approach, which has been improved since its 2005 inception, proclaim its success: many workshops had waiting lists and over 1,300 rain gardens were installed metrowide. Building on the ability to tap the enthusiasm of homeowners to install rain gardens, this project moves to the next step – how the rain gardens affect the water quality of an impaired lake. This project proposes to develop alternatives for substantial, fast-paced and highly focused citizen-based rain garden initiatives within the sub-watersheds of a specific impaired lake and to evaluate the impact and results, so that urban areas statewide can benefit from this approach to clean up impaired waters.

Powderhorn Lake in Minneapolis is the targeted impaired water for this pilot project. It is categorized as an aquatic recreation lake, and listed by the State of Minnesota as impaired for “nutrient/eutrophication biological indicators”. With 90% of the inflow to Powderhorn Lake contributed by local runoff, this lake is an excellent test area for the effectiveness of residential area rain gardens. The paired watershed study method (Clausen and Spooner, 1993) will be used to assess a test area (volume and water quality).

A series of workshops will be developed and organized for clusters of residential property owners and for faith-based institutions within test group sub-watersheds. Approximately 150 home owner (6 larger institution) rain garden sites will be identified. In addition to informational workshops and on-site design services, hands-on construction services will be provided. The most common barrier identified through surveys of property owners is initiating construction. Youth programs (e.g. MN Conservation Corp) will assist with construction services. The project will be integrated with Metro Blooms' successful, 25-year old Garden Evaluation and Recognition program to build on the same volunteer pool for evaluation of existing and project-installed rain gardens. Before-and-after monitoring of test and control sites will be performed to determine reductions in stormwater volume, total suspended solids, and total phosphorus pollutant loadings that drain to Powderhorn Lake. Results and “lessons learned” will be integrated into the Total Maximum Daily Load (TMDL) adaptive management by the City of Minneapolis, the Minneapolis Park & Recreation Board (MPRB), and Minnehaha Creek Watershed District (MCWD).

### II. DESCRIPTION OF PROJECT RESULTS

#### Result 1: Data Analysis and Project Documentation

**Budget:** \$83,674

This task analyzes the effectiveness of citizen-based stormwater management programs and documents the results through two reports: “Evaluation of Three Citizen-Based Approaches to Stormwater Management” and “Citizen-Based Approach to Improve Powderhorn Lake Water Quality”. Budget is also allocated for project coordination, report preparation, and production.

#### **Deliverable**

1. Project Status Reports
2. & 3. Report 1: Draft/Final, Report 2: Draft/Final

#### **Completion Date**

Biannual: Jul 2009-Jul 2012  
May 2012/June 2012

#### Result 2: Citywide Approach

**Budget:** no request

Continue with Metro Blooms' existing approach to engage citizens and have them volunteer to install rain gardens on their property. Workshop information packets provided (partner funded).

**Reference:** Clausen, J.C. and J. Spooner. 1993. Paired Watershed Study Design. Prepared for U.S.EPA. Office of Water. Washington, D.C. 841-F-93-009.

**Deliverable**

1. Workshops (40 over 2 years)
2. Participation records
3. Year-end survey results

**Completion Date**

Jun 2012  
 Quarterly: Sep 2009-Jun 2012  
 Aug 2010/11, Apr 2012

**Result 3: Neighborhood Approach**

Promote and host Neighborhood of Rain Gardens approach through construction services.

**Budget: \$152,858****Deliverable**

1. Neighborhood Rain Garden Organizing (150 gardens)
2. Participation records
3. Year-end survey results w/ onsite evaluation

**Completion Date**

Oct 2011  
 Oct & Jun 2009-2012  
 Aug 2010/11, Apr 2012

**Result 4: Institution Approach**

Organize and install 6 rain gardens with faith-based organizations using the Result 3 model.

**Budget: \$52,636****Deliverable**

- 1-3. Same as for Result 3.

**Completion Date**

Same as for Result 3

**Result 5: Evaluation and Recognition Program**

Expand on the successful Minneapolis Garden Evaluation and Recognition program to a metrowide Rain Garden Evaluation and Recognition program.

**Budget: \$129,855****Deliverable**

1. Recruitment of volunteer evaluators & garden nominations
2. Evaluation of 1,000 rain gardens
3. Promotion and recognition (general, top 10 rain gardens)
4. GIS map of rain gardens in Twin Cities metropolitan area

**Completion Date**

Sep 2010/ongoing  
 July 2010-Sep 2011  
 Oct 2010-May 2012  
 June 2012

**Result 6: Monitoring**

Monitoring and data management for Powderhorn Lake paired watershed study.

**Budget: \$73,000****Deliverable**

1. Installation/maintenance of equipment (2 sites@3 yrs; 2 sites@1 yr)
2. Data management

**Completion Date**

Spring 2009\*-Jun 2012  
 Ongoing (\*City funding)

**III. PROJECT STRATEGY AND TIMELINE****A. Project Partners**

Multiple project partners, many providing matching funds and in-kind services, will deliver this project. Each partner brings invested team members looking for answers and sustainable programs to achieve their organization's water quality goals. Metro Blooms is the lead organization with technical assistance and evaluation provided by Craddock Consulting Engineers. The following organizations (contact person) will be significantly involved (refer to budget): City of Minneapolis (Lois Eberhart), MPRB (Tim Brown), MCWD (Julie Westerlund), Hennepin County (Ellen Sones), and the McKnight Foundation (Ron Kroese).

**B. Project Impact**

The study results have direct benefits to Powderhorn Lake, an impaired water body in Minneapolis and within the MCWD. The study results will be integrated into adaptive management by the City, MPRB, and MCWD for achieving TMDLs. The publicity for the various programs will also increase awareness in the metro area about urban runoff and the impact the private citizen can have on water quality. The organizing approach analysis and the paired watershed study can be applied to urban areas statewide.

**C. Time**

This will be a three-year project: July 2009 through June 2012. Rain garden organizing and installation, and calibration monitoring will occur in the first year. Rain gardens will be installed in years 1 and 2; monitoring and garden assessment will occur in years 2 and 3.

**D. Long-Term Strategy**

Long-term success in reducing impairments to urban lakes will require better citizen-based approaches in order to increase public awareness and to effect behavior change. With the approaches for stormwater management that this study will produce, the City, the MPRB and the MCWD will be able to improve their public outreach and adaptive management for meeting TMDLs.

## Metro Blooms - Project Budget

### IV. TOTAL PROJECT REQUEST BUDGET (3 Years)

<b>BUDGET ITEM</b>	<b>AMOUNT</b>	<b>% FTE</b>
<b>Personnel:</b>		
Program Coordination - 2 staff for 3 years (Results 1,3-5)	\$ 217,650	50%
<b>Contracts:</b>		
Landscape Design Assistants (U MN Landscape Architecture 3rd & 4th yr students; Results 3,4)	\$ 15,320	
Landscape ecologist (rain garden design consultation; Results 3,4)	\$ 5,980	
Latino Community Organizer (Latino neighborhood rain garden organizing; Results 3,4)	\$ 3,650	
Landscape Crew (MN Cons Corp and Green Team) <sup>1</sup> (Results 3,4)	\$ 51,400	
Project Consultant (Result 1)	\$ 73,440	
<b>Equipment:</b> Excavator (Results 3,4)	\$ 5,000	
<b>Other:</b>		
Monitoring (Result 6)	\$ 73,000	
Website/GIS (Results 1,3-6)	\$ 7,650	
Workshop Materials (Results 2-4)	\$ 5,700	
Promotions, Printing and Postage (Results 1,3-5)	\$ 28,900	
Local travel (Results 1,3-6)	\$ 4,333	
<b>TOTAL PROJECT BUDGET REQUEST TO LCCMR</b>	<b>\$ 492,023</b>	

### V. OTHER FUNDS (3 Years)

<b>SOURCE OF FUNDS</b>	<b>AMOUNT</b>	<b>Status</b>
<b>Remaining \$ From Previous Trust Fund Appropriation (if applicable):</b>	n/a	
<b>Other Non-State \$ Being Leveraged During Project Period:</b>		
Minneapolis - City of <sup>2</sup> (Result 2)	\$ 105,000	<i>Pending</i>
Minnehaha Creek Watershed District (MCWD) <sup>2</sup> (Result 2)	\$ 60,000	<i>Pending</i>
Minneapolis Parks & Rec Board (Result 3-Green Team <sup>1</sup> )	\$ 34,860	<i>Pending</i>
Hennepin County <sup>2</sup> (Result 2)	\$ 54,600	<i>Pending</i>
McKnight Foundation <sup>3</sup> (Result 2)	\$ 80,000	<i>Pending</i>
Other Organizations <sup>4</sup> (Result 2)	\$ 135,000	<i>Pending</i>
<b>Other State \$ Being Spent During Project Period:</b>	n/a	
<b>Subtotal - Other Source of Funds</b>	<b>\$ 469,460</b>	
<b>In-kind Services During Project Period:</b>		
Private Property Owners (labor & materials - 78 rain gardens annually)	\$ 34,650	
Master Gardener/Garden Evaluators (75 volunteers/1500 hours annually) <sup>5</sup>	\$ 67,500	
Minneapolis, City of (technical review; study assistance)	\$ 8,500	
Minneapolis Parks & Rec Board (monitoring activities)	\$ 17,800	
<b>Subtotal - In-Kind Services</b>	<b>\$ 128,450</b>	
<b>Past Spending: Proposed spring 2009 monitoring and other activities<sup>6</sup></b>	<b>\$ 190,414</b>	

<sup>1</sup>Green team youth will grow and supply native plants for rain gardens and assist with installation. MCC landscape crew provide garden excavation. Their involvement represents a significant in-kind match committed by other partners.

<sup>2</sup>Assumes three years of funding based on the annual 2007 funding to Metro Blooms by this organization. This supports the existing Metro Blooms workshop approach (Result 2). Rain gardens installed through this approach will be evaluated as part of this project under Results 1 & 5 (for costs and benefits, quality of gardens, maintenance requirements, etc.).

<sup>3</sup>Proposal to be reviewed at November meeting of the Board.

<sup>4</sup>Total funding from other partners participating in the Metro Blooms existing program. The rain gardens installed for these areas will be included in the analysis of Result 2:City Approach. These gardens will be evaluated after Years 1&2 as part of Result 1&5 activities. The partners include: Mississippi WMO, Shingle Creek & Middle Mississippi WMC, St. Louis Park - City of, Washington CD, Ramsey Washington Metro WD, Lower MN River WD, Nine Mile Creek WD, Plymouth - City of, Bassett Creek WD, Elm Creek WD, West Mississippi WD, Hopkins - City of, Minnetonka - City of, and Workshop Attendees have invested \$92,714 over past 2 years in city-based rain garden workshop program across Twin Cities metro area. Assumes three years of \$45,000 funding during this project time period.

<sup>5</sup>The Rain Garden Evaluation is modeled after 25-year old Minneapolis Garden Evaluation and Recognition Program that is almost entirely volunteer driven. Its expansion to rain garden evaluation and recognition represents a sustainable measurement, maintenance and rain garden promotion program with multiple benefits metrowide and as a model statewide.

<sup>6</sup>Proposed Spring 2009 monitoring (\$32,900) to provide pre-test conditions and previous two years of past partner funding from Minneapolis (\$68,914), MCWD (\$20,000), Hennepin Co.(\$33,600), and the McKnight Foundation (\$35,000) on city-based approach resulting in rain gardens that will be evaluated under Results 1&5.

# METRO BLOOMS PROJECT TEAM QUALIFICATIONS

Our project team brings all the right partners together to deliver this project. Integral to this project is citizen involvement and Metro Blooms has demonstrated success in enlisting private home owners to install rain gardens and rallying volunteers for educational outreach and garden evaluations. Craddock Consulting Engineers, a consultant for a recently completed LCCMR project, will lead the technical studies working closely with key partners: City of Minneapolis, Minneapolis Parks and Recreation Board (MPRB), and Minnehaha Creek Watershed District (MCWD).

Since 2005, **Metro Blooms** has partnered with cities, watersheds and counties across the metro area to educate more than 3,300 Twin Cities' residents on stormwater runoff – with an **estimated 1,300 rain gardens installed**.

**Metro Blooms** mission is to promote and celebrate gardening to beautify our cities and help heal and protect our

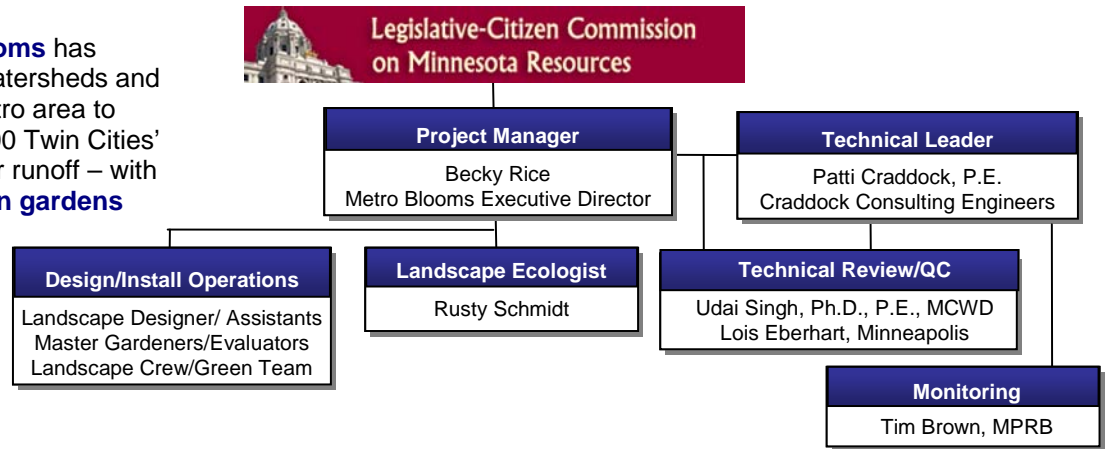
environment. Metro Blooms, a 501c(3) nonprofit corporation, was known originally as the Blooming Boulevards program of the City of Minneapolis, an active community outreach and education program that has promoted and recognized publicly visible gardens since 1983. The focus expanded to rain gardens in 2005 and they have consistently filled workshops and received excellent feedback from citizens and community organizers. Metro Blooms will be the lead organization for this project, led by **Executive Director, Rebecca Rice**. Ms. Rice leads a small staff (1.7 FTE), contracting with 15 cities and watershed districts across the Twin Cities metropolitan area in 2008 to organize 16 rain garden workshop series and educate more than 1,100 workshop attendees about the benefits of rain gardens. Prior to joining Metro Blooms, Rebecca led fundraising and financial management for congregational organizing and community health organizations in Minnesota.

**Rusty Schmidt, landscape ecologist**, packs the meeting rooms for his rain garden workshops. He has been conducting workshops for Metro Blooms since 2007. He has co-authored with Dan Shaw "Plants for Stormwater Design," Volumes 1 and 2; and "The Blue Thumb Guide to Raingardens: Design and Installation for Homeowners in the Upper Midwest." He has designed habitat restorations, raingardens, bio-infiltration swales, bio-retention basins and stormwater ponds. His projects have ranged from small backyard rain gardens to a 500-foot long rain garden for a commercial property.

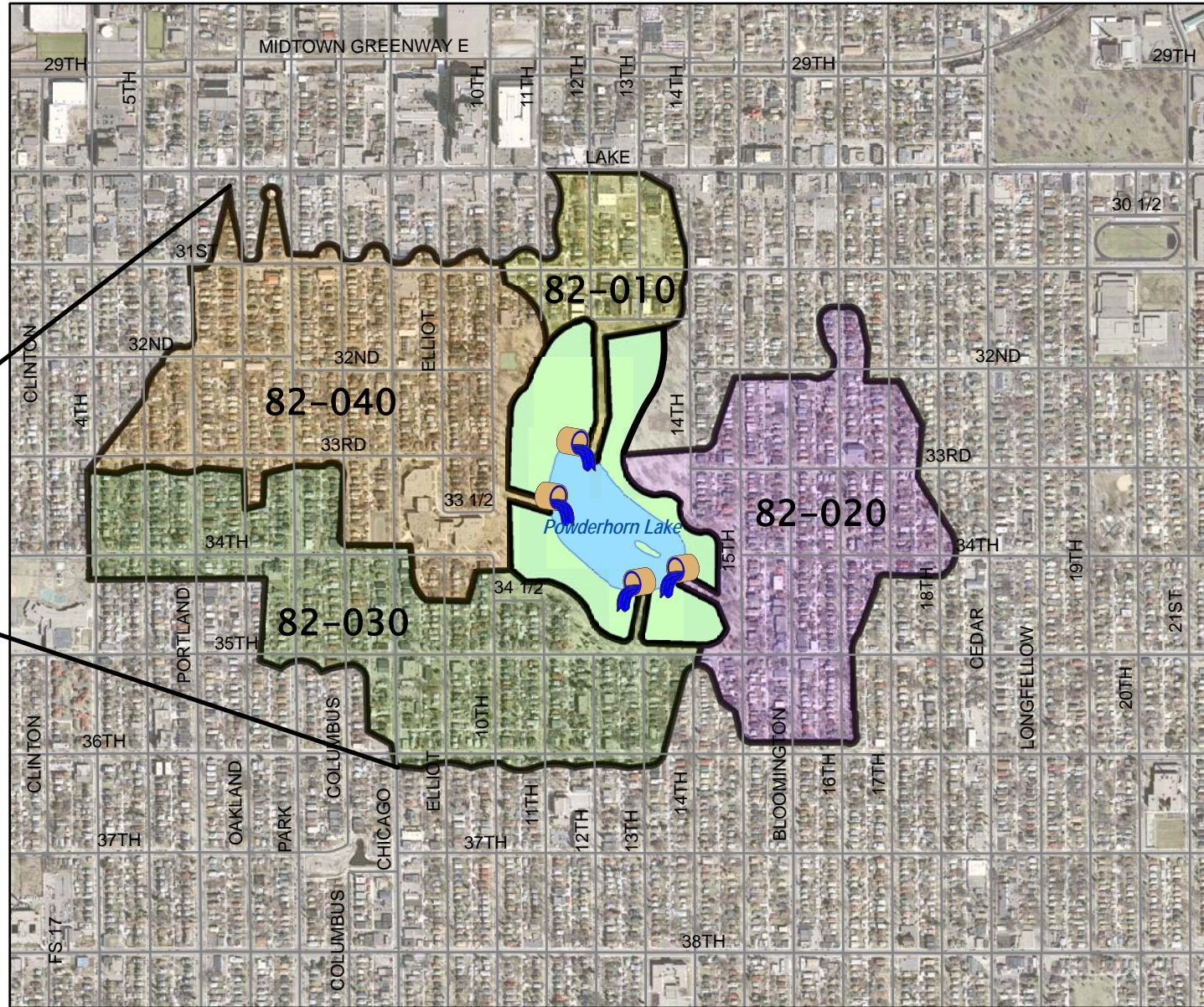
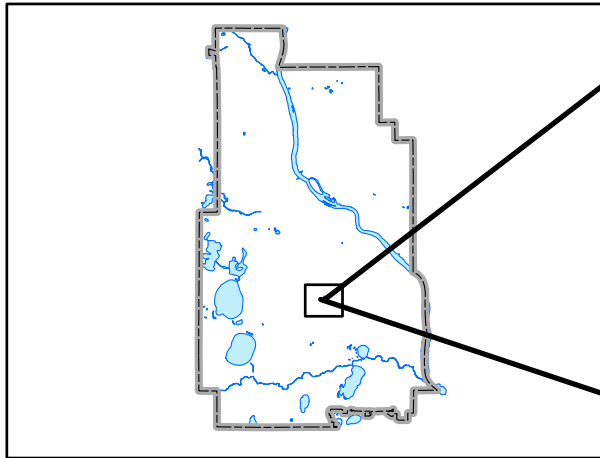
**Patti Craddock, Craddock Consulting Engineers**, will provide technical oversight and perform the data analysis to evaluate the citizen-based approaches and the paired watershed study of Powderhorn Lake. Ms. Craddock has 20 years of experience as an environmental engineer specializing in water and wastewater treatment facility/infrastructure planning, design, and construction. Ms. Craddock has worked on a variety of water quality studies including: a Cleanwater Partnership Project for Schwanz Lake, Eagan; monitoring programs for infiltration and inflow of sewer systems, water quality of lakes, streams, and large rivers and; preparation of quality assurance plans for water quality monitoring programs. Ms. Craddock was the consultant project manager on a \$300,000 LCCMR study administered by Metropolitan Council on "Recycling Treated Municipal Wastewater for Industrial Water Use". Papers developed from the study, completed in June 2007, have been presented at the WateReuse Symposium, Dallas, TX (Sep 2008) and WEFTEC, Chicago (Oct 2008).

Technical review for the project will be provided by key partner leaders: Udai Singh, MCWD's water quality specialist and Lois Eberhart, City of Minneapolis' Surface Water & Sewers Administrator. Ms. Eberhart manages the city's stormwater and wastewater regulatory programs and initiatives, and was formerly the project manager for the City of Minneapolis' innovative Heritage Park stormwater management system, as well as the original project manager for the \$175,000 LCCMR funded "Bassett Creek Valley Channel and Habitat Restoration" project. Dr. Singh brings 15 years of research and engineering experience and detailed knowledge of the study watershed, particularly as manager of MCWD's Hydrological Data Monitoring program.

The MPRB, the entity responsible for monitoring the Minneapolis Chain of Lakes and related stormwater discharges, will provide monitoring services for the Powderhorn Lake study. MPRB, led by Tim Brown, P.E. bring system-specific knowledge, local accessibility and outreach activities to strengthen the project team.



# Sub-Watersheds Draining to Powderhorn Lake



Outfall Number	Total Acres	Residential Percentage	Population
82-010	23.5	72%	457
82-020	73.5	94%	1,285
82-030	90.0	91%	1,998
82-040	98.5	85%	1,881
Total	285.51	88%	5,621

