

2015 National Environmental Achievement Awards

Water Resources Utility of the Future Award

Project/Program Narrative

Introduction: The Milwaukee Metropolitan Sewerage District (MMSD) protects public health, the environment, and Lake Michigan by providing water reclamation and flood management services for 1.1 million people in 28 communities in the Milwaukee, Wisconsin area. Through planning and investing \$4 billion in grey infrastructure, we're capturing and cleaning an average of 98.3% annually, since 1994, of all the stormwater and wastewater that enters our regional system. We're bolstering grey with green infrastructure and a goal to create enough of it in the region to capture 740 million gallons of water every time it rains. Recently, MMSD added an \$86 million landfill gas project to its energy production portfolio, supplementing biogas and solar energy. MMSD turns biosolids into Milorganite®, a fertilizer sold across the United States and Canada with an exceptional rating from U.S. EPA. From Total Maximum Daily Load (TMDL) studies to 2050 long-range planning, MMSD is leaning heavily on watershed planning, strong science, and collaboration for cost effective solutions to healthier waterways and quality of life.

Eligibility / Criteria: Salmon and steelhead fish from Lake Michigan will soon be able to migrate an additional 37 miles upstream on the Menomonee River thanks to MMSD's efforts to remove a concrete roadblock from the riverbed and naturalize the channel. Restoring this stream habitat to a quality recreational fishing destination is one of many projects aimed at improving the environment and making the region a better place to live and raise a family. "Partners for a cleaner environment" is not just our slogan. It's fundamental to making significant improvements on a watershed level. Regional efforts to protect and improve our water resources have resulted in hundreds of millions of dollars in new development along Milwaukee area waterways. Kayakers are now a common sight during the warmer months. Today, sturgeon, walleye, smallmouth bass and many more fish species flourish in our urban

ivers. Not long ago, portions of those same rivers only supported carp and a few other bottom feeders.

Looking towards the future, other solutions for progress include:

- **Managing Water Where it Falls** – One of our key goals for the foreseeable future is educating our customers on why it's important to “help manage water where it falls” with green infrastructure (GI). To date, MMSD has funded enough traditional GI (green roofs, bio swales, porous pavement, rain gardens, etc.) in the region to capture 9.8 million gallons of water. That's a blip on the radar compared to our goal of creating 740 million gallons of GI by 2035. Our Fresh Coast 740 Program is catching on with a dedicated web site (www.freshcoast740.com) to document progress and show people what green infrastructure is all about. Stories, case studies, photos, and videos show people the many benefits of GI, including how it can bring Mother Nature into the concrete, urban environment and even reduce heating and cooling costs. We've sold or donated more than 20,000 rain barrels, which some people take great pride in painting and showing off in their yards. Additionally, MMSD's 2,800 acres of Greenseams® properties can, to date, capture and store 1.4 billion gallons of water. Greenseams® purchases undeveloped land with hydric soils from willing sellers to reduce the risk of future flooding and water pollution. Permanent conservation easements are placed on Greenseams® properties, which are open to the public for hiking, bird watching and passive recreation. To date, more than 100,000 native species trees have been planted on Greenseams® property restoration projects.
- **Creating our Energy** – Garbage provides a source of energy powerful enough to eventually run one of MMSD's two reclamation facilities for the region during dry weather. The District constructed a 19-mile-long pipeline to transport landfill gas to its Jones Island Water Reclamation Facility in downtown Milwaukee. 40-year-old turbines were replaced with units capable of converting landfill gas to energy. The \$86 million project is expected to save customers tens of millions of dollars over 20 years with a local source of renewable fuel that will reduce air pollution from traditional energy sources. The District is also ramping up power production from its biogas energy system at the South Shore Water Reclamation

Facility, where anaerobic digesters turn organic material, retrieved from cleaning wastewater, into methane gas. MMSD is experimenting with two styles of digester mixers that will increase methane production. The District also worked with Marquette University to identify high-strength wastes, elevated in BOD/COD values, to introduce into the digesters to create even more methane. Milwaukee's airport captures excess airplane deicing fluid and delivers it to MMSD for a sizeable boost in methane production. MMSD's biogas system is now capable of producing 65% of the energy needs at South Shore. The District's goal is to reach 100% by 2035.

- **Beneficial Reuse of Bugs** – The microscopic organisms, bugs, MMSD uses to clean water are actually famous. You can see them in bags of Milorganite® fertilizer in the movie *Caddyshack*. Milorganite® is a big draw for getting people to tour the Jones Island Water Reclamation Facility and learn more about what we do and why it is important. More than 1,700 residents toured the plant for a one day special event in 2014. MMSD has produced Milorganite since 1926, selling it around the United States and Canada, which reduces the amount of money we charge customers for operating and maintaining our clean water infrastructure.

- **Partners in Economic Development** – The District is collaborating with federal, state, and local government agencies, business groups, churches, non-profits, and residents to reinvigorate a once thriving industrial corridor in the City of Milwaukee that's been hard hit by unemployment and flooding over the years. The 30th Street Corridor shows great potential for Milwaukee's next modern employment center and economic hub, covering 880 acres. MMSD is laying out plans to reduce the risk of flooding and basement backups and create a greenway that can be used to convey stormwater and also serve as a recreational amenity for biking, running and walking during dry periods. In the City of Oak Creek, the District is working with numerous partners on an 85-acre development that's striving for zero runoff from the project area. Plans call for a new downtown center with a city hall and library, shopping, restaurants, a hotel and apartments. MMSD is committing about \$1 million for GI and a wetland to help achieve zero runoff.

- **Transformational Leadership** – Perhaps our biggest challenge in the near future, MMSD is conducting TMDL research, with funding assistance from the Great Lakes Restoration Initiative, that can drastically change the way urban, suburban, and rural neighbors address polluted stormwater runoff, the biggest remaining threat to clean rivers and lakes in the United States. The study area includes four watersheds that cover more than 1,000 square miles of land. Establishing an acceptable pollution diet that is cost effective and operational holds tremendous potential for success; however, getting all or a majority of stakeholders to accept the solutions on a watershed basis is an enormous test of leadership, collaboration, and education. It's a journey that we've already started with our regulators and one that will take time. In the meantime, MMSD will use the TMDL study results for long-range planning into the year 2050. What else is it going to take to protect and improve our rivers and Lake Michigan? To get those answers, we will sit at the table with federal and state regulators, regional planners, city leaders, technical advisory teams, residents, business leaders, environmental groups, nonprofits, religious groups and many more.

Results / Conclusion: Asset management and sound financial planning will keep MMSD's grey infrastructure operating at optimal strength, a key factor for maintaining significant water quality improvements in the region. However, further progress demands integrated watershed management, a marathon journey that the District is already down the path by miles. MMSD plans to forward the conversation on watershed-based permitting and water quality trading to maximize cost effectiveness. Our goals, by 2035, include: zero overflows and basement backups, improved stormwater management, using green infrastructure to capture the first half inch of rainfall, acquiring an additional 10,000 acres of river buffers through Greenseams®, achieving zero homes in the 1% probability floodplain, meeting 100% of District energy needs with renewable resources, and reducing our carbon footprint in sustainable fashion.