PROPOSAL
Design of Halverson-Dimler
Restoration Project

Submitted to:

MINNEHAHA CREEK WATERSHED DISTRICT
QUALITY OF WATER, QUALITY OF LIFE

Submitted by:

Applied Ecological Services

HR Green

August 17, 2012
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Ms. Tiffany Forner  
Minnehaha Creek Watershed District  
18202 Minnetonka Boulevard  
Deephaven, Minnesota  55391

Re: Design for the Halverson-Dimler Restoration Project (12-0078) – AES/HR Green Proposal

Dear Tiffany and Selection Team:

Applied Ecological Services and HR Green are pleased to provide you with our proposal to design and oversee implementation of the Halverson-Dimler Restoration Project. As demonstrated in our previous work for the Minnehaha Creek Watershed District (MCWD), the AES/HR Green Team is well qualified to provide the requested services for a competitive fee. We believe the interests of MCWD would be best achieved by selecting our team for the following reasons:

• **Experience:** Building on over three decades of ecological restoration design and implementation experience across the Upper Midwest (including multiple projects in Minnetrista), AES is uniquely qualified to design and oversee implementation of a sustainable, high-quality - yet affordable - restoration project. HR Green’s nearly 100-year track record providing engineering services for similar projects (including wetland restoration work in Minnetrista for MnDOT and trail planning/design work for MCWD) ensures that accurate survey, modeling, and related engineering services will be provided. This broad experience and our past work with the MCWD gives us confidence that our team and proposed approach will provide the greatest value.

• **Methodology:** For over five years, our AES/HR Green team has delivered restoration design and implementation services, as well as ecologically-grounded engineering solutions, to MCWD. We understand your mission and goals, and we align our approach to match each project. During our past projects for MCWD, we tailored our methodology to capitalize on each site’s unique constraints and opportunities, worked closely with MCWD staff and the Board, and facilitated discussions with City staff, the public, and project partners. Our history with the Halverson-Dimler site (as well as the Burroughs Easement) will enable us to efficiently identify and resolve issues, evaluate alternatives and provide sound recommendations.

• **Innovation:** Our integrated ecological-engineering team provides MCWD with qualified specialists for all aspects of this project. Our team recognizes the value of an interdisciplinary approach, and each of our firms is recognized as a leader in developing innovative approaches and technologies to achieve our clients’ objectives. We are very comfortable challenging each other’s ideas in order to guarantee that the very best solution is found to achieve MCWD’s goals.

On behalf of our team, thank you for your consideration.

Sincerely,

Douglas Mensing, MS (AES)  
Jonathon Kusa, PE, LEED AP (HR Green)
STATEMENT OF METHODOLOGY AND EXPERIENCE

Background Information

Applied Ecological Services (AES) and HR Green have collaborated effectively on restoration design and construction projects for many years. Firm overviews for each company are provided below, followed by our special qualifications, project team, and relevant experience.

Applied Ecological Services (AES) is a broad-based ecological consulting, contracting and restoration firm that was founded in 1978. Our staff of experienced scientists, project managers, and practitioners is adept at tackling difficult and unique environmental problems on a variety of scales. AES has been the principal ecological designer and contractor in many diverse, large-scale restoration and site remediation projects, including creative developments and beneficial re-use projects that have drawn national acclaim. At AES, our consulting ecologists, engineers, landscape architects, planners, and contracting staff all hold a solid foundation in science. Informed decisions result in completed projects, satisfied clients and sustainable ecological systems.

Restoration design and implementation are AES signature services. Our Consulting-Contracting-Restoration Nursery structure enables us to provide comprehensive services, including master planning, development of detailed ecological restoration and management plans, construction documents, implementation, construction oversight, and ecological monitoring and management. We partner frequently with other experts to provide the best team for a given project. We work within our clients’ schedules and resources to identify the most cost-effective solutions to their project challenges, while helping to capitalize on a site’s unique opportunities. The project descriptions and references included in this proposal speak clearly to our related experience and satisfied clients.

HR Green is a professional services firm offering engineering, planning, surveying and environmental services, and technical consulting to clients in diverse market sectors, including municipal, transportation, state and federal government, commercial, industrial, institutional and educational. We specialize in environmental, water/wastewater, transportation, buildings and municipal projects.

Founded in 1913 by Howard R. Green, the company initially provided civil engineering services to local governments in Iowa. The company has more than 45 professionals in the St. Paul office and over 300 additional people in Iowa, Illinois, South Dakota, Missouri, Kansas, Texas, California and Pennsylvania.

We believe that our longstanding relationships and satisfied clients demonstrate that we are a company that people want to work with. HR Green values the individual contributions of our employees while putting the power of teamwork to work in finding solutions that meet our clients’ needs. This philosophy gives us the privilege of being associated with some of the best and brightest professionals in the industry; people who have your interests in mind.
AES/HR Green Team Qualifications and MCWD Experience

The AES/HR Green Team has exceptional qualifications in the fields of restoration design (including wetlands and uplands), surface water engineering, trail design, construction document development, construction oversight, and monitoring. Our holistic approach entails:

1. Understanding our client’s project goals;
2. Accurately assessing existing site conditions;
3. Identifying the site’s unique opportunities and constraints;
4. Evaluating project alternatives;
5. Integrating ecology, engineering, and landscape architecture to best achieve project goals;
6. Developing an effective, appropriate, and realistic design; and
7. Ensuring proper implementation through oversight and monitoring.

The AES/HR Green Team will use this approach for designing the Halverson-Dimler Restoration Project. AES brings the experience of hundreds of ecological restoration design projects over 30 years, many from design through construction management. Our staff has worked in Minnesota for over 20 years and is intimately familiar with the challenges and opportunities of native ecosystems and solutions for restoring a broad range of wetland and upland habitats. HR Green has been a leader in surface water engineering and management throughout the Upper Midwest for decades, bringing solid, proven engineering to bear while also integrating innovative technologies.

MCWD Experience:

The MCWD will receive exceptional outcomes and value from the AES/HR Green Team. We use an interdisciplinary and holistic approach to site assessment, needs analysis, cost-benefit analysis, and design. Most importantly, our team’s approach is designed to find the best solution for the site that maximizes its multiple and unique opportunities.

Both AES and HR Green have a proven track record of successfully completing planning, design, and construction projects for the MCWD, both independently and as a team. Our team’s project experience with the MCWD includes:

- Painter Creek Stormwater Management & Wetland/Prairie Restoration (AES)
- Burroughs Site Ecological Management Plan (AES)
- Whitman Site Ecological Restoration & Management Program (AES)
- Methodist Hospital (Park Nicollet) Hospital Stream Meander and Boardwalk Final Design and Construction Observation (HR Green)
- Long Lake Regional Infiltration Feasibility Study (HR Green & AES)
- Dutch Lake Wetland Restoration Feasibility Study (HR Green & AES)
- Reach 20-22 Concept and Final Design (HR Green)
- Parley Lake Wetland Site Assessment & Feasibility Study (AES)
- Big Island Feasibility Study (AES)
- Wasserman Phase I Feasibility Study (HR Green)
- Halsted’s Bay Wetland Restoration Feasibility Study (HR Green)
- Long Lake Water Quality Improvement Feasibility Study (HR Green)
- Ecological Contracting Services (several sites) (AES)
Building on our past work and that of the MCWD, the AES/HR Green Team is confident we can deliver the high quality and cost-competitive solutions sought for the Halverson-Dimler Restoration Project. Our team’s key members, individual qualifications, similar experience, project understanding, and approach follow.

Project Team Qualifications:

Applied Ecological Services

Douglas Mensing, MS  |  Project Manager (AES)

Doug has over 20 years of professional and research experience in the ecological and environmental fields. He has applied expertise in conservation planning, design, and development; natural resource inventory and assessment (NRIA); restoration design; construction oversight; ecological monitoring; park master planning; flora and fauna surveys; multifunctional greenway corridor design; alternative/ecological stormwater assessment, restoration, monitoring, and management; low impact development (LID); lakeshore and streambank restoration and bioengineering techniques; natural resource damage assessments; wetland determinations, delineations, assessment, permitting and mitigation; wetland mitigation banking and monitoring; wetland vegetation and water chemistry monitoring; bioassessment techniques; and geographic information systems (GIS). As a consulting ecologist, Doug manages and provides technical support for a broad range of these types of conservation and ecological projects. Much of his recent work has focused on working with clients to design projects in a more ecologically sensitive fashion, conserving natural features and functions, and promoting sustainability. Doug will commit 20% of his time to this project.
Kim Alan Chapman, PhD  | Ecology QA/QC (AES)
Kim has over 25 years of experience in ecological research, natural resource planning, land restoration and management, and wildlife biology. He worked as staff ecologist for the Michigan Natural Heritage Program, as Midwest regional ecologist for The Nature Conservancy (TNC), and as science and stewardship director for the Minnesota Chapter of TNC. Kim taught conservation biology, environmental studies, botany, and vegetation management at the University of St. Thomas, University of Minnesota and Macalester College. His master’s research focused on grassland and savanna ecology, and in his doctoral research, he documented the differences in bird communities in response to development in nature reserves, rural lands and suburbs. He has authored or co-authored dozens of articles and reports for scientific and non-scientific publications, including Valley of Grass: Tallgrass Prairie and Parkland of the Red River Valley, which won a Minnesota Book Award. Dr. Chapman’s past projects involved land and watershed evaluation, regional ecological planning, subdivision and urban ecological design, ecological management and restoration, ecological research, botany, ornithology, Midwestern flora and fauna, grassland and forest ecology, vegetation classification, government programs and group process facilitation. Kim will commit 2% of his time to this project.

J. Douglas Eppich, PhD, PE  | Engineering QA/QC (AES)
Doug Eppich founded the Engineering Group at AES in 1996 and has championed the firm’s water quality initiatives. Doug has over 35 years of professional experience in stormwater management planning and design. His work promotes water quality enhancement and groundwater recharge benefits that are rarely incorporated into traditional engineering designs. Doug’s experience includes design of treatment wetlands, water quality data collection and assessment, stream channel stabilization and restoration, floodway and floodplain analyses, and design of detention, retention and infiltration systems for storm water treatment and volume reduction. Doug also provides expert witness testimony regarding storm water quality. Doug received his B.S. in Civil Engineering from Iowa State University and his M.S. and Ph.D. in Civil Engineering from the University of Illinois. He is a licensed professional engineer in Illinois, Indiana, Iowa, Kansas, Minnesota, Missouri, Nebraska, Ohio, Pennsylvania and Wisconsin and is an active member of the American Society of Civil Engineers (ASCE) and the Illinois Association for Floodplain and Stormwater Management (IAFSM). Doug will commit 5% of his time to this project.

Edward Kallas III, PE  | Lead Drafting (AES)
Ed has twenty-two years of experience associated with the development, design and construction of various civil engineering projects. Ed has worked on a variety of different projects including commercial and residential site developments, wetland and prairie restoration, stream stabilization and storm water management facilities.

Ed is a Staff Engineer for AES and regularly creates project designs for an array of different projects and has also served as Project Manager and Inspector/Resident Engineer—regularly coordinating project scope, budget, and schedules; completing project permit applications with various local, state, and federal agencies; determining grading, planning storm water utilities, modeling storm water run-off and designing bioretention/infiltration facilities and determining water quality performance.

Ed is proficient in Microsoft Office; AutoCAD Civil 3D; MicroStation V8; HydroCAD; Autodesk’s Hydraflow Hydrograph, Storm Sewer and Express; TR-20; TR-55; HEC-HMS; HEC-RAS; P8; WinSLAMM and RECARGA. Ed will commit 5% of his time to this project.
Jacob Blue, MS, RLA, ASLA  Trail Design (AES)
Senior Landscape Architect, Jacob Blue, provides design direction and oversight for large and small scale conservation design and restoration projects. He is a national leader in defining and practicing ecological landscape architectural design, or ‘Ecotecture’. Because of his unique design strengths and his understanding of native plants, Blue is keenly interested in the use of native species in landscape design and habitat restoration as well as the aesthetic implications of their use. Blue was a member of the Vegetation Technical Subcommittee for the Sustainable Sites Initiative (SITES) report in 2009, a landscape assessment tool that will become part of the USGBC LEED program, and currently serves on the Technical Core Committee of SITES. He is also co-author of the Sustainable Sites Handbook. He has provided design leadership for corporate campus restoration plans, urban stream stabilization projects, conservation development projects and residential landscapes. In addition he has led professional design charrettes, incorporating both scientific and design/aesthetic needs of a site. Blue is a registered Landscape Architect in three states and has conducted graduate ecology research. Jacob will commit 2% of his time to this project.

Caitlin Kersten, MLA  Drafting & Trail Design (AES)
Caitlin is experienced in all aspects of ecosystem restoration, specializing in wetland and stream ecosystems. Throughout her education and career, Kersten has demonstrated the ability to design hybrid conceptual graphics that utilize hand and computer rendering techniques. She often produces construction drawings using AutoCad, Adobe Illustrator, or hand drafting techniques. Caitlin develops site-scale designs which utilize native plants to create inviting and attractive public spaces. Caitlin is also skilled in open space planning; during the process, always seeking to harmonize ecological, infrastructural, and recreational uses. Caitlin will commit 10% of her time to this project.

Matt Lasch  Restoration Specialist (AES)
Matt took over the Minnesota Branch Contracting Manager position in 2008. Since joining AES in 2006, Matt has been involved with all aspects of project development and implementation for several conservation developments and ecological restorations. His Branch Manager responsibilities include client relations, site analysis, restoration scheduling, crew assignments, safety, and construction oversight. His previous experience with AES was as Crew Leader for 2½ years. As crew leader, Matt prepared and scheduled projects, implemented work directives, documented the completion of ecological work, and worked with clients. Since 1993 he has trapped and banded migrating raptors along Lake Superior’s North Shore with another researcher. In 2005 he completed an analysis of 30 years of migration data from that location and wrote a paper on raptor migration trends. While a student, Matt worked on other ecological issues, including a study of river insects in an agricultural region. Matt will commit 2% of his time to this project.

HR Green

Jonathon Kusa, PE  Lead Engineer, Project QA/QC (HR Green)
Jonathon has over 12 years of experience working in policy and engineering for storm water resources projects. His experience includes planning and design work for MCWD, South Washington Watershed District, and Capitol Region Watershed District, as well as numerous county and municipalities throughout the Midwest. Jonathon understands that while resolving the technical details of a specific project are important, the project must fit within the context of a holistic approach or management plan. His specific strengths lie in the areas of client management, team leadership, surface water engineering, water quality BMP design, software modeling, and QA/QC. Jonathon is a critical thinker, willing to
question and consider issues to achieve an optimal outcome. He is the Water Resources Practice Leader for HR Green. Jonathon will commit 10% of his time to this project.

**Dan Mielke, EIT  |  Project Engineer (HR Green)**

Dan has three years’ experience in hydrologic and hydraulic modeling, stormwater management design and construction, and floodplain mapping. He is proficient with a variety of water quality and hydraulic modeling software, as well as design software from AutoCAD and MicroStation. He is a graduate of St. Anthony Falls Laboratory and brings a wealth of knowledge from his work there. Dan has completed several recent projects for MCWD including the LLC-8 study and Reach 20 Concept and Final Designs. Dan will commit 25% of his time to this project.

**Ted McCaslin  |  GIS (HR Green)**

Ted is a Project Manager for a range HR Green’s environmental planning and permitting projects with 10 years of experience. He has environmental planning project and task management experience related to Geographic Information Systems for Natural Resource Inventories, Wetlands Delineation and Mitigation Design, Habitat and Biological Survey and Permitting, Minnesota Environmental Policy Act (EAWs, etc.) Studies, National Environmental Policy Act (NEPA) Studies, Environmental Site Assessments, and RCRA Compliance. Ted is a Certified Wetland Delineator and a member of CRWD’s Citizens’ Advisory Committee. Ted will commit 10% of his time to this project.

**Joel Odens, RLA  |  Landscape Architect (HR Green)**

Joel has provided landscape architecture services for a large number and diverse cross-section of projects throughout the Midwest. His experience includes urban master planning and design for municipal streetscapes, highway corridor beautification, parks, trails and memorials, as well as residential areas and industrial and commercial campuses. As a LEED Accredited Professional, Joel is knowledgeable of sustainable design concepts and the inclusion of stormwater best management practices in landscape design. Joel will commit 10% of his time to this project.

**Damien J. Schaub  |  Survey Crew Chief (HR Green)**

Damien has served HR Green’s clients since 2001 as a survey technician, and as a survey crew chief since 2004. He has conducted preliminary, topographic and boundary surveys, construction staking and as-built surveys. He is experienced with GPS systems and robotic total stations for collection of survey data. Damien’s diverse project experience includes airport concourses and taxiways, highways, street reconstruction, underground utilities, site development, educational facilities and stream restoration projects.
Similar Project Experience and References

**Empire Wetland and Prairie Restoration  | Empire Township, MN**

Applied Ecological Services combined the expertise of our ecological consulting and contracting divisions for a design and construction project at the Empire Wastewater Treatment Plant, a 400-acre property bordering the Vermillion River, near Farmington, Minnesota. With funding from the Metropolitan Council, Friends of the Mississippi River hired AES to perform all design, permit, construction and maintenance activities for a 50-acre wetland/prairie complex. A key focus of the project was improved stormwater management, and the final design enabled valuable wetland credits to be deposited into the Minnesota Wetland Bank. The site has great ecological significance in part because it borders the intersection of two wildlife corridors: one along the Vermillion and one that extends northeast toward the Mississippi River. A former wet meadow, drained for farming purposes in the 1900s, became the focal point of the wetland restoration. At the onset of the project, portions of the 50-acre site consisted of degraded wetland areas dominated by invasive, non-native reed canary grass (*Phalaris arundinacea*).

AES designed subtle berms and basins to cost-effectively restore the site’s hydrology and wetland character. These restored wetlands provide enhanced stormwater management for the area by trapping sediment and nutrients and allowing cleaner water to infiltrate into the ground and to the Vermillion River. Upland areas consist of native mesic and wet prairie, providing exceptional wildlife habitat and passive recreational opportunities for the public.

AES restoration contractors implemented a large-scale native seeding initiative, which also incorporated the use of local cooperatives and subcontractors. AES’ contracting division was also responsible for all ecological management during the initial site establishment period, including prescribed burning, selective herbicide management, woody species removal and mechanical removal of non-native species.

The project was a 2005 finalist in the land use category for the Minnesota Environmental Initiative Awards. Today, the restored wetland site provides high-quality wetland and prairie habitat for a wide range of species while also performing important surface water management functions. The site is used by numerous sora (an uncommon wetland bird), dickcissels (a rare grassland bird), several duck species and other native wildlife. In 2012, AES was again awarded a multiyear management contract for the site.

**Contact Reference:** Karen Jensen, Senior Planner/Environmental Engineer, Metropolitan Council (651-602-1401; karen.jensen@metc.state.mn.us)
Minnehaha Creek Channel Realignment and Boardwalk Design  | St. Louis Park, MN

Park Nicollet and MCWD selected the HR Green/Inter-Fluve design team to complete a stream re-meander and boardwalk design for the Park Nicollet Methodist Hospital campus. The project included stream modeling using XPSWMM, floodplain modeling and permitting, client/agency coordination, completion of the required Environmental Assessment Worksheet, boardwalk design and construction observation. The project was completed in spring 2009.

Contact Reference: James Wisker, MCWD

Trillium Nature Sanctuary  | St. Paul, MN

HR Green is currently leading a multi-firm team (including AES) to develop final construction documents and construction oversight for this proposed nature sanctuary near downtown St. Paul. Elements of the project include: recreating Trout Brook (currently confined to a stormwater pipe); designing enhanced sand-filter treatment ponds and ecologically vibrant wetlands; restoring native forest and savanna habitats; designing a trail system through the park; and integrating public art into the site.

Contact Reference: Kathleen Anglo, Project Manager (651-266-6368; kathleen.anglo@ci.stpaul.mn.us)

Painter Creek Stormwater Management & Wetland/Prairie Restoration  | Minnetrista, MN

AES was retained by the MCWD to develop a detailed restoration program for a site identified as a high priority for stormwater management and ecological restoration within the MCWD. AES reviewed, compiled, and revised others’ work, met with the MCWD and project partners (including Hennepin County and the USFWS) and achieved concurrence on a comprehensive restoration plan for the site, including construction of a treatment wetland designed to manage nutrient-rich runoff prior to reaching Painter Creek. AES prepared a detailed Ecological Restoration and Management Program and full construction documents for this project, which entailed prairie restoration, woodland restoration, and wetland reconstruction and enhancement for improved stormwater management. AES’s Contracting Division has performed all the restoration work onsite and will continue to manage the project through at least 2012.

Contact Reference: Renae Clark, MCWD
Dutch Lake Wetland Feasibility Study  | Minnetrista, MN

Dutch Lake is currently on the threshold for impaired water consideration. The MCWD previously identified a wetland upstream of Dutch Lake as a potential project site for nutrient removal. The team of HR Green and AES was retained by MCWD to complete a Feasibility Study assessing nutrient loadings and potential treatments. Our assessment revealed that the targeted wetland contained uncommon and sensitive plant species that would be harmed by conversion to a treatment wetland. This high-quality wetland would also benefit from nutrient reductions, which moved our attention upstream for nutrient removal opportunities. A conceptual treatment wetland was designed upstream of the high quality wetland, providing solutions for both the sensitive wetland as well as Dutch Lake.

Contact Reference: James Wisker, MCWD

Long Lake Water Quality Improvement Project – Conceptual Downtown Redevelopment Stormwater Design  | Long Lake, MN

The City of Long Lake has proposed a redevelopment of its downtown area that encompasses a significant portion of the drainage area of Sub-basin LLC-38 discharging directly to Long Lake. HR Green was selected to seek opportunities to supplement similar redevelopment projects, with the intent of augmenting municipal projects with innovative Best Management Practices to assist in achieving MCWD goals. The project purpose was to reduce the overall amount of nutrient loading and stormwater volumes entering Long Lake and downstream waters. The project included identification of partnership opportunities, preliminary engineering and conceptual design of proposed improvements, and estimates for cost-sharing/shared implementation of the proposed improvements.

Contact Reference: Eric Evenson, MCWD

Wasserman Lake Wetland Restoration Project  | Victoria, MN

Wasserman Lake, located in the Six Mile Marsh Subwatershed of the MCWD, is currently on the State list of Impaired Waters. A draft TMDL was developed for the lake in 2005. The 2007 MCWD Comprehensive Water Resources Management Plan identified the wetlands upstream of Wasserman Lake as a capital project to achieve and reduce external nutrient loading to the lake. HR Green and Inter-Fluve evaluated the feasibility and effectiveness of multiple wetland/stream bank restoration alternatives relative to existing conditions for removal of total phosphorus. The study included evaluation of wetland and stream location, size, technical criteria, and approximate construction and design cost estimates. Based on the preliminary designs and analysis using XPSWMM, PLOAD and P8 modeling, the preferred stepped wetland and restored stream
alternative along a new alignment would result in the reduction of total phosphorus loading to Wasserman Lake by 62 lbs/year.

**Contact Reference: James Wisker, MCWD**

**St. Paul Como 3 Subwatershed Study | Capitol Region Watershed District**

HR Green was contracted by Capitol Region Watershed District to complete a study to identify potential BMP facilities within the Como 3 Subwatershed, to efficiently reduce the phosphorus loading into Lake Como by 107 lbs/year. The targeted nutrient reductions would improve water quality for wildlife, residents, and park users. Preliminary basin sites were identified based on criteria established by the study team. Existing information was gathered from various sources and a stormwater runoff model was created using XP-SWMM. A P8 model was developed to evaluate water quality, specifically phosphorus loading. These models set a baseline for stormwater volume and phosphorus loading that was later used to identify and evaluate selected high priority BMP locations. HR Green worked collaboratively with the City of St. Paul and the St. Paul Parks and Recreation Department to obtain required data, evaluate potential BMP locations, and coordinate with planned projects, including Residential Street Vitality Program (RSVP) projects in the subwatershed area.

**Contact Reference: Bob Fossum, CRWD: (651) 644-8888**

**Quarry Hill Ravine and Bank Stabilization | Rochester, MN**

This project involved providing design services to resolve ravine and drainage way stabilization and surface drainage problems in Quarry Hill Park. Significant upstream development from the park had resulted in extensive bank erosion and head-cut problems along several streams. This project involved BMP and stabilization engineering designs that utilized natural systems to create effective and aesthetically pleasing results.

The Quarry Hill Park and Nature Center receives about 70,000 visitors a year, including many student visitors participating in its educational program. It is considered one of Rochester's most important natural assets. HR Green provided design and construction observation/administration services to resolve over 6,500 LF of ravine and drainage way stabilization and surface drainage problems in the park, while managing the ongoing public access needs in the park.

This project involved stormwater Best Management Practices and stabilization engineering designs that utilize natural systems to create effective and aesthetically pleasing results. The system was modeled in XPSWMM, spreadsheets and HEC-RAS. Significant attention was devoted to erosion control design and implementation, given the location of the project in a very popular city park. HR Green teamed with Inter-Fluve and provided engineering, survey, project management, construction management, quality assurance/control and field services throughout the project.

Additionally, HR Green provided design and construction management/oversight services to expand an existing pond at Quarry Hill Park to provide expanded recreational opportunities.

**Contact Reference: Barb Huberty, City of Rochester: (507) 328-2425**
Wild Meadows Conservation Development | Medina, MN

Wild Meadows is a residential development project located in Medina, Minnesota that elevates the practice of ecological restoration within a development project to a new level. The design of Wild Meadows was inspired by other successful AES conservation developments including Prairie Crossing, an award-winning development outside of Chicago. AES served as the ecological consultant on the design and currently provides professional design and construction services.

AES worked with the development team to design around and with the existing natural resources on the site. 200 acres of the 345-acre site (58%) is being restored to native open space consisting of maple-basswood forest, oak savanna, dry prairie, mesic prairie, wet prairie, and wetlands. AES is currently planting and managing these areas.

AES designed the ecological stormwater management system for the site (the Stormwater Treatment Train™ (STT)) that guides stormwater naturally through gentle vegetated swales and a series of mesic to wet prairie restorations, prior to entering restored wetlands. An extensive 6-year hydrologic monitoring program is being implemented by AES to provide data regarding the effectiveness of this alternative system. The hydrologic monitoring program includes analysis of runoff prior to, during, and immediately following full build-out.

Conservation development techniques used in the project include minimal road widths, planted cul-de-sacs, reduced land alteration, reduced infrastructure, alternative stormwater management, forest conservation (preserving and expanding the onsite maple-basswood forest remnant), use of conservation easements and other restrictions, and devoting more than half of the site to restored and protected open space.

Project Understanding

The Halverson-Dimler site is an important natural resource within the MCWD. The site contains more than 209 acres and is located within a MCWD Key Conservation Area, a Metro Conservation Corridor, and a Regional Ecological Corridor. AES has been in discussions with the MCWD regarding the Halverson-Dimler Restoration Project over the past year. We have contributed numerous recommendations regarding the restoration approach, participated in multiple meetings with the MCWD and project partners, and we have completed a field reconnaissance of the site.

Through this process, and through our past ecological planning work on the adjacent Burroughs parcel, AES has become very familiar with the project area as well as the MCWD’s goals and the site’s unique challenges and opportunities. AES and HR Green have discussed the project extensively and we have reviewed the Request for Proposals in detail.

We are also aware of, or have reviewed, additional data collected by HCES, USFWS (especially survey data), Cross River Consulting, BWSR, MnDOT, the University of Minnesota, Otto Associates, and
Wenck Associates. Data that we have not been able to review will, of course, be assimilated into our restoration design, if we are awarded the project.

Your RFP clearly outlines MCWD’s purpose, project elements, and the expectations of the selected consultant. The RFP scope of work has been thoroughly reviewed by our team and is included by reference as the foundation of our project understanding.

In brief, the scope of work includes development of an Ecological Restoration and Management Plan, including a summary of existing ecological conditions, restoration goals, target native plant communities, invasive species management, implementation schedule, cost estimate, and an engineer-sealed construction plan set with technical specifications. This work will cover the restoration of uplands and wetlands and construction of a bituminous, ADA-compliant spur trail leading from the Dakota Rail Trail to a lookout on the site.

A bid package with standard forms will be prepared and advertised. A team representative will be present at the pre-bid meeting and bidder questions will be addressed. We will attend the bid opening and, upon tabulation, we’ll make a recommendation (unless a potential conflict of interest exists among bidders). We’ll also attend a pre-construction meeting, and up to 10 construction observation meetings while providing professional contract management.

We’ll also conduct 12 vegetation warranty inspections over 3 years and perform 4 years of ecological monitoring. We will then prepare construction status reports summarizing project progress, and submit monitoring reports over each of 4 years of monitoring.

Lastly, a Vegetation Management Plan will be prepared per MCWD’s standards, including recommendations for volunteer seed collection and vegetation maintenance.

Upland restoration will include restoring approximately 90 acres of former farmland to prairie through soil preparation and native seeding. Higher diversity plantings will be installed in more prominent viewsheds and higher use areas.

We understand the intent is for these prairie areas to be converted to oak savanna in the future. Our team will provide design guidance to facilitate this transition. The site’s existing oak woodland areas will be enhanced through the removal of invasive plant species. Hydrology will be restored to most of the site’s historic wetlands through tile removal/or abandonment; however, wetlands that extend up to or beyond the site’s boundaries will be investigated further to determine the feasibility of enhancement opportunities.

An HR Green Minnesota-registered engineer will direct and certify modeling and assessment of hydrologic regimes to ensure that design changes in water levels, inundation period, and flow regimes do not adversely affect adjacent property owners or public infrastructure (e.g., Dakota Rail Trail, Halstead Drive).

Wetland vegetation will be restored by removing unwanted species and seeding or planting appropriate native species. The expansive Six Mile Creek wetlands will not be addressed as part of this restoration plan; however, restoration design for the Burroughs Easement will also be included at no additional cost.

Existing gas line easements and other utilities will be considered during the design. Additional survey data will be collected to facilitate project design, and control staking and post-construction surveys will be conducted during project implementation.
We fully understand that close coordination with the MCWD, project partners, and the public is essential to designing a robust, collaboratively supported project. The entire restoration design will be coordinated with MCWD staff and the Board of Directors. Trail design will be coordinated via meetings with MCWD, City of Minnetrista, Three Rivers Park District, and the Turtle Creek Homeowners Association.

Seed mix details will be coordinated with MnDOT, BWSR, HCES, and USFWS. AES has already met with most of these partners and discussed seeding strategies appropriate to the site.

The AES/HR Green Team will assist with acquisition of necessary permits, including NPDES (SWPPP), WCA, and MCWD. A wetland delineation report may be required; therefore, it is included in our scope/budget. Site buildings will be removed by others; however, the existing barn may remain.

**Proposed Approach**

Based on our extensive ecological restoration experience, the goals of this project, and the nuances of this site, we offer the following recommendations to maximize the benefits of the Halverson-Dimler Restoration Project while simultaneously controlling costs.

- **Design with aesthetics** in mind. Our design will involve seeding enhanced wildflower drifts with a moderate-diversity seed matrix, especially in high visibility areas with limited plant plugging. Although some cost will be attributed to removal of the existing sediment trap berms on the site, we recommend their removal in order to restore more natural landforms to the property. Dense perennial prairie vegetation in these areas will prevent erosion from these moderate slopes.

- **Design with maintenance** in mind. All restoration steps, from site preparation through post-construction management, will be designed for cost-effective implementation and low maintenance.

- **Design with water quality** in mind. While this may not be a specific focus of this project, considerations with little or no additional cost can provide meaningful improvements in water quality. We are not proposing extensive modeling and engineered/solutions, but we will propose to design healthy ecosystems in a water-flow series to provide an effective, natural stormwater treatment train to benefit the site and downstream aquatic resources. As you know, restoring wetlands, prairies, and woodlands enhances ecosystem services with direct benefits to surface waters. Enhancements include such benefits as infiltration, evapotranspiration, filtration and adsorption of sediment and phosphorus, storage and rate control, and downstream stream bank stabilization.

- **Design with target wildlife** habitat in mind. This will include consideration of endangered/threatened species, species of concern, and regional connectivity, which could become an integral part of the public interpretive program. Again, a little thought and little to no additional investment can go a long way, and this site offers opportunity for meaningful blocks of core habitat to be established for a wide range of species, including rare and habitat-specialist species.

- **Conduct innovative engineering modeling and evaluation to protect local infrastructure.** We propose to apply a 2D XPSWMM model using the “Rainfall on Surface” feature, which allows
for a detailed evaluation of the targeted surfaces down to a 2ft x 2ft grid size if needed. Existing GIS mapping will be used for establishing drainage boundaries and ponding depths. The City of Minnetrista has hardcopy plans for adjacent properties, which will be utilized to determine freeboard. Local road plans will be utilized for evaluation of impacts to embankments and culverts at the adjacent transportation facilities.

- **Trail design and public access** has been a recent focus of MCWD within the Reach 20 project and other MCWD projects. HR Green has been actively working with the MCWD to establish trail and public access design themes and goals, which will be effectively translated to designs on paper and in the field for this project.

- While it will require additional investigation, we anticipate **hydrologic restoration** of Wetland 9 will provide cost-effective reed canary grass control through flooding, setting the stage for subsequent/phased, cost-effective seeding/planting.

- **Oak savanna** preparation will also be addressed. This could involve collection of acorns on-site or in the region, by volunteers, along with the establishment of an on-site nursery. AES and our in-house restoration nursery (Taylor Creek Restoration Nursery, [www.restorationsertnurseries.com](http://www.restorationsertnurseries.com)) have more experience than any other native species nursery in designing and establishing on-site native plant nurseries.

- Our design will include a seeding plan that would facilitate **efficient mechanical and volunteer harvest of native seed**. Several of our past projects have included this goal, and it has been our pleasure to see them flourish over time.

- We have recommendations for baseline and subsequent monitoring for wildlife and water quality – which is not included in our scope/budget – but we would welcome the opportunity to discuss this with the MCWD and pursue grant or other funding.

**Value-Added Services**

AES and HR Green have previously completed numerous studies, reports, designs, specifications, and construction projects for MCWD and other clients, addressing scopes very similar to the Halverson-Dimler Restoration Project.

In particular, our work on Dutch Lake Wetland and recently on the Long Lake Regional Infiltration Project indicated clearly that our team is comprised of strategic, technically qualified thinkers, with the ability to identify the most appropriate solution to achieve MCWD goals, even if those appropriate solutions are no-build recommendations.

We are familiar with the MCWD’s staff, processes, and expectations for the project, and we have effectively addressed these same issues in previous work. The AES/HR Green Team has shown that we are focused on finding the right solutions for MCWD, not just implementing the first solution proposed or following business as usual.

We look forward to the opportunity to assist MCWD in achieving your goal to create an exceptional quality natural resource that provides a diversity of benefits to your constituents and the natural environment.
PROJECT TEAM CONTACT

Douglas Mensing, MS – Project Manager
Applied Ecological Services
21938 Mushtown Road
Prior Lake, Minnesota  55372
(952) 447-1919, Ext. 2 (Direct)
(612) 202-2252 (Cell)

CONFLICTS OF INTEREST

AES and HR Green have no known conflicts of interest pertaining to this project.
<table>
<thead>
<tr>
<th>ID</th>
<th>Task</th>
<th>Description</th>
<th>Estimated Hours</th>
<th>Budget</th>
<th>Schedule</th>
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<tbody>
<tr>
<td>3. a</td>
<td>Initial Project Mtg</td>
<td>Mtg with MCWD &amp; Project Partners</td>
<td>8</td>
<td>$1,092.00</td>
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<td>3. b, c</td>
<td>Data Collection</td>
<td>Collect necessary data for design, engineering/ modeling</td>
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<td>4. a-f</td>
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<td>4. g, h</td>
<td>Meeting-Presentation</td>
<td>Review 60% design with staff, Present to MCWD Board</td>
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<td>4. i</td>
<td>Public meeting</td>
<td>Present 60% design to public for comment</td>
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<td>$1,722.00</td>
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<td>5. j</td>
<td>Optional Task</td>
<td>Restoration Design to include Burroughs Easement</td>
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<td>Sept-Nov 2012</td>
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<td>6</td>
<td>Permitting Assistance</td>
<td>Assist in preparing all required permit applications &amp; materials</td>
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<td>7</td>
<td>Final Design</td>
<td>Design Final Construction Documents</td>
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<td>8</td>
<td>Construction Observation</td>
<td>Observation, Staking, As-Built Drawings</td>
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<td>9</td>
<td>Post-Construction Monitoring</td>
<td>Vegetation Monitoring, Reporting</td>
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<td>10</td>
<td>Develop Veg. Mgmt Plan</td>
<td>Vegetation Mgmt Plant for post-restoration</td>
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<td>11</td>
<td>Hourly Rate</td>
<td>Hourly rate for additional work beyond scope</td>
<td>see rates below</td>
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Sub-Total 455  $51,291.00
Contingency (10%)  
Total  $56,420.10

**Consultant -**

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<th>Firm Allocation</th>
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<tr>
<td>Doug Mensing (AES, $115/hr)</td>
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<td>Kim Alan Chapman (AES, $140/hr)</td>
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<tr>
<td>J. Douglas Eppich (AES, $165/hr)</td>
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<td>Edward Kallas (AES, $105/hr)</td>
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<td>Jacob Blue (AES, $160/hr)</td>
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<td>Caitlin Kersten (AES, $75/hr)</td>
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<td>Matt Lasch (AES, $100/hr)</td>
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<td>67% AES Time Allocation</td>
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<tr>
<td>Jonathon Kusa (HR Green $165/hr)</td>
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<td>Dan Mielke (HR Green, $98/hr)</td>
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<td>Ted McCaslin (HR Green, $125/hr)</td>
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<td>Joel Odens (HR Green, $122/hr)</td>
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<td>Damien J. Schaub (HR Green, survey rate $150/hr)</td>
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<td>33% HR Green Allocation</td>
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Total 100% 100%