

CITY OF MADISON

REQUEST FOR PROPOSALS



Title: WATERSHED STUDY – UPPER BADGER MILL CREEK

City Agency: Engineering Division

Due Date: January 15, 2021
4:00 PM CST

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1 NOTICE TO PROPOSERS

1.1 Summary of Services Requested

The City of Madison (City) is seeking proposals from a firm or team (Consultant) for advanced watershed modeling for the Upper Badger Mill Creek Watershed in the City of Madison, WI. This Request for Proposals (RFP) is intended to solicit information from interested firms including qualifications of project team and key personnel, project understanding and potential challenges, previous related project experience, level of effort, and schedule of services. City of Madison Engineering staff will use submitted RFP responses to select the Consultant the watershed.

The Upper Badger Mill Creek Watershed is a rapidly development watershed on the far west side of Madison. In 2000, the City finished a study which analyzed existing hydrologic and hydraulic (H&H) conditions at the time of that study and projected future H&H conditions.

The City does not have a full watershed model that represents 2020 land use conditions. The scope of work provided in this RFP will guide creation of the model representing 2020 land use conditions.

1.2 Summary

The City of Madison, like many communities, has seen a recent increase in extreme flood events. This increase has occurred most notably in Madison since 2016, when a large and intense rain event in late July caused extensive flooding of public and private property on Madison's west side. Large events in July 2017 and June 2018 caused similar flooding, again largely focused on Madison's west side.

On August 20, 2018, Dane County experienced an unusual precipitation event that caused flooding in excess of that seen in any of the prior events mentioned. Rain gages monitoring that event registered between 3-4" of precipitation on Madison's east side and 8-10" of precipitation on its west side over (approximately) a 12-hr period. Many of Madison's west side neighborhoods experienced flash flooding, resulting in millions of dollars in property damage.

In response to the damage incurred due to recent extreme rainfall events, as well as the likely increasing frequency of such events due to global climate change, the Madison Common Council authorized the City of Madison Engineering Division (City Engineering) to develop watershed models and plans for watersheds of greatest concern in the Madison area. Specific watershed information is included in Exhibits 1.

1.3 Project Area

The projects area included in this RFP process is the Upper Badger Mill Creek watershed shown in Exhibit 1.

The Greentree/McKenna and East Badger Mill Creek watersheds both discharge into the Upper Badger Mill Creek project area. Existing conditions models are complete for both watersheds. Greentree/McKenna was developed in XP-SWMM 1D/2D v2019.1.2 and East Badger Mill Creek was developed in PC-SWMM 1D/2D v7.2. The hydrology utilized in both watersheds is SWMM hydrology with Horton Infiltration. The Existing Conditions computer models for both watersheds will be provided to the selected consultant.

The City developed an H&H model for a small portion of this watershed in 2020 to understand the impact of a single development. The modeling is provided on the City's ftp site for this RFP.

Areas with known issues during large events include:

- the Raymond Road crossing at the Marty farm
- a pedestrian underpass under S High Point Road just north of Snow Mist Trail fills with stormwater

- a low area north of Midtown Commons Park provides significant detention and will need to be incorporated into future development plans
- McKee Road overtops and can flow into the neighborhood north of North Pass; a berm has been constructed to help alleviate flooding of the homes
- Nesbitt Pond overtops to the northeast into the open space between Nesbitt Road and the pond

It is expected that the CONSULTANT complete site investigations to become familiar with the watershed.

1.4 Important Dates

Deliver Proposal no later than the due time and date indicated below. The City will reject late Proposals:

Issue Date: December 11, 2020
Questions Due Date: January 6, 2021
Answers Posted Date: January 8, 2021
Proposal Due Date: January 15, 2021, 4:00 PM CST

1.5 Format

Submit Proposal as identified in distinct parts within the Proposal package.

Submit one electronic copy of all materials via email. If file is too large to email, please coordinate a link to send large files with Caroline Burger at cburger@cityofmadison.com.

The City will not consider illegible Proposals.

Elaborate Proposals (i.e., expensive artwork), beyond that sufficient to present a complete and effective Proposal, are not necessary or desired.

1.6 Delivery of Proposals

Delivery of electronic files to: City of Madison Engineering Division
Watershed Study – Upper Badger Mill Creek
Attn: Caroline Burger
City County Building, Room 115
210 Martin Luther King Jr. Blvd.
Madison, WI 53703

1.7 Appendix A: Standard Terms & Conditions

Proposers are responsible for reviewing this attachment prior to submission of their Proposals. City of Madison Standard Terms and Conditions are the minimum requirements for the submission of Proposals.

1.8 Appendix B: Sample Contract for Purchase of Services

Proposers are responsible for reviewing this attachment prior to submission of their Proposals. The Sample Contract for Purchase of Services shall serve as the basis of the contract resulting from this RFP. The terms of this template contract shall become contractual obligations following award of the RFP. By submitting a proposal, Proposers affirm their willingness to enter into a contract containing these terms.

1.9 Affirmative Action Notice

If Contractor employs 15 or more employees and does aggregate annual business with the City of \$50,000 or more for the calendar year in which the PO and/or Contract is in effect, Contractor shall file, within thirty (30) days from the PO/Contract effective date and BEFORE RELEASE OF PAYMENT, an Affirmative Action Plan designed to ensure that Contractor provides equal employment opportunity to all and takes affirmative action in its utilization of applicants and employees who are women, minorities

and/or persons with disabilities. A sample affirmative action plan, Request for Exemption forms, and instructions are available at: www.cityofmadison.com/civil-rights/contract-compliance/vendors-suppliers/forms or by contacting a Contract Compliance Specialist at the City of Madison Affirmative Action Division at (608) 266-4910. Vendors must register for an account to complete the required forms online, here: <https://elam.cityofmadison.com/citizenaccess>

Contractor shall also allow maximum feasible opportunity to small business enterprises to compete for any subcontracts entered into pursuant to this PO/Contract.

Job postings: All Contractors who employ 15 or more employees (regardless of the dollar amount of this contract or their annual aggregate business with the City) must notify the City of all external job openings at locations in Dane County, Wisconsin, and agree to interview candidates referred by the City or its designated organization. Job posting information is available at: <http://www.cityofmadison.com/civil-rights/programs/referrals-and-interviews-for-sustainable-employment-raise-program>. Instructions for Contractors: http://www.cityofmadison.com/civil-rights/documents/RaISE_Job_Posting_Instructions.pdf

The complete set of Affirmative Action requirements for this purchase can be found in **paragraph 20 of Appendix A – Standard Terms and Conditions** and, if applicable, in **Section 13 of Appendix B – Sample Contract for Purchase of Services**.

1.10 City of Madison Contact Information

The City of Madison is the
procuring agency:

Caroline Burger
City of Madison Engineering Division
cburger@cityofmadison.com

For questions regarding
Affirmative Action Plans please
contact:

Contract Compliance
Department of Civil Rights
City-County Bldg., Room 523
210 Martin Luther King, Jr. Blvd.
Madison, WI 53703
PH: (608) 266-4910
dcr@cityofmadison.com

The City employs spam filtering that occasionally blocks legitimate emails, holding them in ‘quarantine’ for four calendar days. The contacts listed in this RFP will acknowledge all emails received. Proposers not receiving acknowledgement within twenty-four hours shall follow-up via phone with specific information identifying the originating email address for message recovery.

1.11 Inquiries and Clarifications

Proposers finding any significant ambiguity, error, conflict, discrepancy, omission, or other deficiency in this RFP document shall immediately notify the City and request clarification. In the event that it is necessary to provide additional clarification or revision to the RFP, the City will post addenda – see 1.12 below. Proposers are strongly encouraged to check for addenda regularly.

Proposals should be as responsive as possible to the provisions stated herein. Exceptions are not permitted. The City of Madison reserves the right to disqualify any and all bids that are non-responsive or that include exceptions.

Any questions regarding the submittal process and/or aspects of the RFP may be made via e-mail to Caroline Burger at cburger@cityofmadison.com. Only email communications will be accepted.

An acknowledgement of receipt of the questions will be emailed to the Consultant as the questions are received. No questions will be accepted after 4:00 p.m. (CDT) January 6, 2021. All questions and responses will be sent and posted no later than January 8, 2021 by 4:00 p.m.

1.12 Addenda

In the event that it is necessary to provide additional clarification or revision to the RFP, the City will provide an addendum to all consultants. The addendum will be provided via email to the contact listed on the RFP. If other group members would like to be included on the email for addendum it's the consultant's responsibility to identify those persons wishing to receive the email.

1.13 Local Vendor Preference

The City of Madison has adopted a local preference purchasing policy granting a scoring preference to local suppliers. Only suppliers registered as of the bid's due date will receive preference. Learn more and register at the City of Madison website: www.cityofmadison.com/business/localPurchasing.

1.14 Acceptance/Rejection of Proposals

The City reserves the right to accept or reject any or all Proposals submitted, in whole or in part, and to waive any informalities or technicalities, which at the City's discretion is determined to be in the best interests of the City. Further, the City makes no representations that a contract will be awarded to any proposer responding to this request. The City expressly reserves the right to reject any and all Proposals responding to this invitation without indicating any reasons for such rejection(s).

The City reserves the right to postpone due dates and openings for its own convenience and to withdraw this solicitation at any time without prior notice.

1.15 Withdrawal or Revision of Proposals

Proposers may, without prejudice, withdraw Proposals submitted prior to the date and time specified for receipt of Proposals by requesting such withdrawal before the due time and date of the submission of Proposals. After the due date of submission of Proposals, no Proposals may be withdrawn for a period of 90 days or as otherwise specified or provided by law. Proposers may modify their Proposals at any time prior to opening of Proposals.

1.16 Non-Material and Material Variances

The City reserves the right to waive or permit cure of nonmaterial variances in the offer if, in the judgment of the City, it is in the City's best interest to do so. The determination of materiality is in the sole discretion of the City.

1.17 Public Records

Proposers are hereby notified that all information submitted in response to this RFP may be made available for public inspection according to the Public Records Law of the State of Wisconsin or other applicable public record laws. Information qualifying as a "trade secret"—defined in State of Wisconsin Statutes—may be held confidential.

Proposers shall seal separately and clearly identify all information they deem to be "trade secrets," as defined in the State of Wisconsin Statutes. Do not duplicate or co-mingle information, deemed confidential and sealed, elsewhere in your response.

S. 19.36(5)

(5) TRADE SECRETS. An authority may withhold access to any record or portion of a record containing information qualifying as a trade secret as defined in s. 134.90(1)(c).

s. 134.90(1)(c)

(c) "Trade secret" means information, including a formula, pattern, compilation, program, device, method, technique or process to which all of the following apply:

1. The information derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by, other persons who can obtain economic value from its disclosure or use.
2. The information is the subject of efforts to maintain its secrecy that are reasonable under the circumstances.

The City cannot ensure that information will not be subject to release if a request is made under applicable public records laws. The City cannot consider the following confidential: a bid in its entirety, price bid information, or the entire contents of any resulting contract. The City will not provide advance notice to Proposers prior to release of any requested record.

To the extent permitted by such laws, it is the intention of the City to withhold the contents of Proposals from public view—until such times as competitive or bargaining reasons no longer require non-disclosure, in the City's opinion. At that time, all Proposals will be available for review in accordance with such laws.

1.18 Usage Reports

Annually, the successful Proposers shall furnish to City Purchasing usage reports summarizing the ordering history for each department served during the previous contract year. The report, at a minimum, must include each and every item or service ordered during the period, its total quantities and dollars by item/service and in total. The City reserves the right to request usage reports at any time and request additional information, if required, when reviewing contract activity.

1.19 Tax Exempt

The City of Madison as a municipality is exempt from payment of federal excise taxes (Registration Number 39-73-0411-K) and State of Wisconsin taxes per Wisconsin statute 77.54(9a). Federal Tax ID #39-6005507. A completed Wisconsin Department of Revenue Form S-211 (R.2-00) can be found on the City website. Our tax-exempt number is ES 42916.

1.20 Proposers Responsibility

Proposers shall examine this RFP and shall exercise their judgment as to the nature and scope of the work required. No plea of ignorance concerning conditions or difficulties that exist or may hereafter arise in the execution of the work under the resulting contract, as a consequence of failure to make necessary examinations and investigations, shall be accepted as an excuse for any failure or omission on the part of the Proposers to fulfill the requirements of the resulting contract.

2 SCOPE OF SERVICES

Specific tasks for this RFP have been identified below, along with the required deliverable per task. All cost estimates shall reference the specific task number or sub-task component as outlined in the **Cost Proposal** document, included with the RFP.

Please note, the Scope of Services outlined below is distinct to the Upper Badger Mill Creek Watershed Study. It is the responsibility of the CONSULTANT to read the Scope of Services for each watershed included in a RFP issuance, as they differ significantly.

TASK 1 Review Existing Data and Support Data Collection Plan Development

1.1 CONSULTANT will review existing data for the watershed including City-provided GIS data. City data provided is listed in *Exhibit 2*. CONSULTANT will also identify additional sources of data that will be used and/or needed for model setup.

1.2 CONSULTANT will determine where field survey data is required to complete model input requirements, or as necessary, for conducting the stormwater modeling. Survey data may include: open channel cross sections, culvert crossings, pipe inverts / size, and structure rims, to provide the necessary input data for the modeling. Exact locations will be identified in collaboration with the City.

All survey data will utilize Wisconsin County Coordinate System – Dane Zone, NAD83 (HARN). All survey data shall be referenced to NAVD 88 (pre-2007 adjustment) feet for vertical datum. Survey data shall be provided to the City in a format compatible with ArcCollector software. The City will provide a standard survey data template to the CONSULTANT.

Task 1 Deliverables:

- 1) List of data gaps and needs
- 2) Point shapefile of survey locations
- 3) Completed survey in ArcCollector format

TASK 2 Develop Existing Conditions Model for the Watershed

CONSULTANT will conduct the hydrologic and hydraulic modeling as described in this project using CHI's PC-SWMM 1D and 2D software. The version of the software will be the most recent version and will not change after the calibration process. CONSULTANT shall document the version of either software used for construction of the model.

CONSULTANT will also use ArcGIS as-needed for the project; where the City is on a different version of ArcGIS than the CONSULTANT, CONSULTANT will save files to version the City is in. City is currently utilizing ArcGIS v10.6.

2.1 A Modeling Guidance document has been created for the Watershed Studies to provide for consistency in modeling among watersheds. It is understood this document will evolve as modeling tools and data change. The CONSULTANT will coordinate with City and other Consultants to update the Modeling Guidance document where appropriate for these watershed studies (see *Exhibit 3*). Coordination may be done via email or phone.

- 2.1.1 The Modeling Guidance document will be updated and maintained to reflect group decisions on the modeling source documents, naming conventions, standardized coordinate systems, modeling input parameters, and other factors to maximize the consistency among the models being developed for all watersheds.
- 2.1.2 The Modeling Guidance document will include documentation of modeling parameters and agreed-upon changes to parameters with a log of dates,
- 2.1.3 The Modeling Guidance document will include documentation of all other agreed-upon changes by the City and CONSULTANT.

- 2.1.4 The City will have final veto authority over any and all changes to the Modeling Guidance document.
- 2.2 For the purpose of this contract, the level of effort required shall be reflected in the assumptions made within the Modeling Guidance document, dated November 3, 2020 and provided with this RFP. Any further assumptions or changes to the Modeling Guidance document that will result in a measurable increase in the level of effort will be consulted with the City and adjustments to the contract cost will be determined prior to proceeding.
- If the CONSULTANT considers the level of effort outlined in the Modeling Guidance to be insufficient to positively identify areas that do not meet the City's flood mitigation goals (as outlined in the Modeling Guidance document) in some or all of the project area, they are encouraged to address that in their response to this RFP.
- If the CONSULTANT considers the level of effort outlined in the Modeling Guidance to be sufficient to meet the City's flood mitigation goals, but would recommend increased level of effort in some or all parts of the model to meet a different standard, they are encouraged to scope the proposal to the level of effort outlined in the Modeling Guidance document. Discussion of the increased level of effort, and its associated costs, should be included with this submittal as an Additional Task or Service in the Attachments/Appendices section of the CONSULTANT's response to this RFP (see Section 4.2 of this RFP).
- 2.3 The CONSULTANT shall develop models utilizing both SWMM Hydrology and SCS Curve Number Hydrology. The City is requesting SCS Curve Number Hydrology to aid in the review of new developments that occur in the watershed.
- 2.4 Applicable portions of the private conveyance system may be included; the expectation is that private systems and private properties will be analyzed to the extent necessary to build and calibrate the models. This effort is not intended to result in solutions to solve flooding on private property but it may be necessary in order to accurately build and calibrate the model. If additional work beyond the assumptions are required on a case by case basis, that should be noted and provided to the City for consideration of additional compensation.
- 2.5 Because the watershed is rapidly developing, the 2016 LiDAR data will not reflect 2020 land use topographic conditions in all areas. The CONSULTANT is expected to incorporate the 3D Surfaces from grading plans into the data use for the 2D model where development has occurred since the 2016 LiDAR flight.
- 2.6 CONSULTANT will complete field verification, site visits, and evaluations as necessary to create the existing conditions model.

Task 2 Deliverables:

- 1) GIS shapefiles and feature classes including:
 - a. Subbasins
 - b. Flow paths
 - c. Modeled conveyance network (pipes, structures, greenways, etc)

TASK 3 Execute Existing Conditions Model

- 3.1 CONSULTANT will run the developed model for the 1-, 2-, 5-, 10-, 25-, 100-, and 500-yr, 24-hr design events for both SWMM Hydrology and SCS CN Hydrology.
- 3.2 CONSULTANT shall also run one long-duration (>24-hr) event as described in the Modeling Guidance document for the existing conditions model.
- 3.3 CONSULTANT will review model results with City Engineering staff.

TASK 4 Existing Conditions Report

CONSULTANT will prepare a Draft Watershed Existing Conditions Report and provide draft documents for City staff review. The City has developed an outline for the report and will provide it to the CONSULTANT.

Follow City review, the CONSULTANT will revise the Draft Watershed Existing Conditions Report to create the Final Watershed Existing Conditions Report.

Report shall include the following:

- 1) Introduction
- 2) Description of existing conditions.
- 3) Current land uses and assumptions
- 4) Land use maps
- 5) Soils maps
- 6) Major storm infrastructure networks
- 7) Maximum extent of flooding figures / inundation mapping under the 1-, 2-, 5-, 10-, 25-, 100-, and 500-yr, 24-hr design events
- 8) Modeling Guidance documentation.

Task 4 Deliverables:

- 1) Color figures showing the maximum extent of flooding during each storm event. The figures shall be color coded to show depth of flooding (typical ranges utilized are: 0.01'-0.25', 0.25'-0.5', 0.5'-1.0', and greater than 1').
- 2) Table noting the flooding depth and duration for up to 25 locations for each design storm. Locations will be determined through coordination with City staff.
- 3) Draft and Final in hard copy format (1 copy) and pdf format.
- 4) Model files and documentation.
- 5) GIS files generated for model development. All files shall be delivered to the City on an external hard drive.

PROJECT COORDINATION

TASK 5 Progress Meetings and Coordination

CONSULTANT will attend the kick-off meeting and up to six (6) additional in-person monthly progress meetings as requested by the City and participate in preparing meeting minutes summarizing the discussions held during the meetings.

The meetings will be watershed-specific.

Task 5 Deliverables: Electronic meeting summaries within 3 days of each meeting.

3 ROLES AND RESPONSIBILITIES

Responsibilities of the City of Madison

1. Provide the initial Purchase Order of \$10,000 for project start-up/initial modeling activities following selection of Consultant for each watershed study area. **Note, this Purchase Order is included in the total contract value identified in the Proposal cost submitted with the response.**
2. The City of Madison Engineering Division will provide the following data as described in *Exhibit 2: Data provided by City*
 - a. Pond data
 - b. Greenway data
 - c. Watershed/outfall data
 - d. Pipe data
 - e. Storm structure data
 - f. 2018-2019 as-built geodatabase
 - g. Citywide source area cover layer (including impervious areas)
 - h. Curve number generator tool (used to supplement percent impervious calculations)
 - i. DEM & Contours
 - j. Historic flooding data
 - k. Access to GT-web (online viewer for City's infrastructure)
 - l. VPN access to City's server where construction drawings and other project specific-data is stored.
 - m. Modeling Guidance Documentation: See *Exhibit 3: City of Madison Modeling Guidance*

Responsibilities of the Consultant

The Consultant shall be responsible for the following:

1. Provide items identified in the Scope of Work
2. Provide a detailed schedule and project updates on a monthly basis, including development of milestones.
3. Prepare minutes for all meetings. Draft meeting minutes shall be provided in digital format to the City within 3 days for review and comment by staff.
4. Provide and update active Action Items List.
5. A \$10,000 initial Purchase Order will be issued for each Watershed Study. It is expected the PO will be used for the effort for:
 - a. For project start-up activities
 - b. Initial modeling activities.
 - c. Initial survey (if deemed appropriate by CONSULTANT)

4 SCHEDULE AND SUBMISSION CONTENT

4.1 Timeline

TIMELINE	
RFP released	December 11, 2020
Submission deadline	January 15, 2021
Selection of Consultant(s)	January 29, 2021
Anticipated Project Start/Project Kick off Meeting	February 12, 2021
Anticipated Project Completion	December 31, 2021

TASK	2021											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Kick off Meeting												
1												
2												
3												
4												
5												

4.2 Evaluation Criteria and Submission Contents

Evaluation Criteria

Scoring will be weighted as follows:

1. 20% for Project Understanding and Approach
2. 20% for Team Composition, Performance, and Key Personnel
3. 20% for Relevant Project Experience
4. 5% for Commitment to Racial Equity and Social Justice
5. 5% for Local Vendor Preference
6. 30% for Cost

Submission Contents

There are no page limits for the Proposal submission. Please keep responses clear and concise.

Below is a detailed list of items required in each submittal section:

1. Cover Letter
 - a. Lead Consultant name and mailing address
 - b. Contact person's name, title, phone number, and email address
 - c. Signature of the individual(s) authorized to negotiate and bind the Consultant contractually
2. Project Understanding and Approach (20%)
 - a. Describe the Team's understanding of the unique conditions in the watershed and how they will be accounted for.
 - b. Describe the opportunities related to the anticipated work, including challenges or unique issues related to specific watershed conditions.
 - c. Describe Team's understanding of scope of work. This scope is similar to that of the watershed studies currently underway.
 - i. If Consultant proposes to follow scope of work as stated, there is not a need to reiterate scope.
 - ii. If comments are provided on the proposed scope of work, organize comments by task number as identified in the Scope of Services.
 - iii. If proposed scope differs from what is identified in this RFP the Consultant shall identify any areas in the scope that they do not intend to follow and provide reasoning.
 - iv. Where approaches are specifically asked for, Consultant shall provide scope of work for task number.
 - v. Additional scope items should be summarized in a separate section in the Attachments/Appendices Section.
3. Team Composition, Performance, and Key Personnel (20%)
 - a. Summarize the Consultant Team's background and focus.
 - b. Provide a Team organizational chart that identifies a project manager and the relationship among consulting team members, including sub-consultants.
 - c. Briefly summarize the Key Personnel's role for this project.
 - d. Where a proposal is being submitted for more than one watershed study, provide documentation showing adequate staff capacity to complete the work within the proposed schedule.
4. Relevant Project Experience (20%)
 - a. Provide up to 5 relevant projects, including Client and Project information, Team's responsibility in the projects, the challenges presented by each project, and the final results. Include which Key Personnel were involved.

- b. Limit project examples to those completed within the last 10 years.
 - c. List the project year(s), Key Personnel, and Client contact person and telephone number for each.
5. Commitment to Racial Equity and Social Justice: (5%)

The City of Madison's values include [racial equity and social justice](#), and wishes to contract with businesses who have similar values. Please indicate how the prime firm has prioritized racial equity and social justice in its operations, practices, and policies and which demographic groups were the focus of such efforts:

 - a. Hiring and workplace culture
 - b. User-centered/innovative design
 - c. Community outreach
 - d. Hiring subconsultant(s)
6. Local Vendor Preference (5%)

See Section 1.13
7. Schedule, Level of Effort, and Costs (30%)
 - a. Include schedule for completion by Task.
 - b. Provide information showing Team can meet schedule outlined in this RFP. For example, include percent availability for Key Personnel.
 - c. Complete attached Cost Proposal and include with submittal.
 - d. Costs to include:
 - i. List proposed costs by Main Task (1-5)
 - ii. Provide unit costs for meetings
 1. Public information meetings
 2. Stake holder or focus group meetings
 3. Monthly progress meetings with City staff
 - iii. Provide a total not-to exceed dollar value for any reimbursable expenses associated with each individual task, including the type of expense, such as mileage, printing expenses, etc.
 - iv. Provide detailed project budget, estimated hours by position title per task, and billing rates for all personnel to be assigned to the project.
8. Attachments/Appendices
 - a. Resumes (suggested length: 2 pages maximum per resume)
 - b. References: Provide three references for the consultant team. Include the reference contact's name, address, phone number and relationship to the firm/team.
 - c. Additional Tasks or Services: Consultants may offer suggestions for additional tasks to be conducted during the watershed study. Provide a summary of the tasks that were not identified in the provide Scope of Work, along with a separate line item with costs for those services they wish the City to consider.
 - d. Comments on Contract Standard Terms and Conditions: The entity that would enter into the contract with the City for the RFP will need to be able to meet the City's Standard Terms and Conditions or be able to come to a mutual agreement with the City on the Standard Terms and Conditions. If they are not able to meet those conditions it may impact the City's selection. Firms should acknowledge if they are able to meet the City's Standard Terms and Conditions or if they have had experience with successfully negotiating mutually agreeable exceptions to the City's standard language.

4.3 Submittal Details

Submit Proposal to the following address by 4:00 p.m. on January 15, 2021:

City of Madison Engineering Division
Watershed Study – Upper Badger Mill Creek
Attn: Caroline Burger
City County Building, Room 115
210 Martin Luther King Jr. Blvd.
Madison, WI 53703

Complete submittals shall consist of one (1) electronic copy in pdf format containing the entire response. Incomplete submittals shall not be considered.

5 EVALUATION OF PROPOSALS

Responses to this RFP will be reviewed by a Selection Committee chosen by the City Engineer based on the appropriateness of the Proposal, budget, and ability to meet the proposed timeline.

If necessary, the City Selection Committee may elect to interview a subset of respondents to this RFP to better understand differing proposed approaches to the projects. Each interview will be scheduled by the City following submission of all proposals. The City reserves the right to interview any subset of respondents the Selection Committee chooses for further review.

Cost Proposal - Watershed Study - Upper Badger Mill Creek

Task or Item	Cost
Task 1	\$
Task 2	\$
Task 3	\$
Task 4	\$
Task 5	\$
Reimbursable expenses and incidentals (cost not to exceed)	\$
TOTAL COST	\$

Unit Costs	Cost per Progress Meeting	\$

Additional Tasks	Additional Task 1	\$
	Additional Task 2	\$
	Additional Task 3	\$



INSTRUCTIONS FOR CONTRACTOR

DO NOT ATTACH TO CONTRACT

**Your contract *MUST* include the following information,
or it will not be signed by the City.**

- Check one box at top of Page 1 for the type of business entity.
- Sections 3 & 4 will be completed by the City and should be complete before you sign.
- Put a name in Sec. 7.A. – person responsible for administering the contract.
- Affirmative Action:** Check the appropriate box in Sec. 13.B., Article IV and complete the appropriate online form for the box you have checked:

All contractors:

Access the online forms for Affirmative Action compliance at this link: www.cityofmadison.com/civil-rights/contract-compliance/vendors-suppliers/forms. If you do not already have an approved, current Affirmative Action Plan on file with the City of Madison, read the “*Instructions for Completing City of Madison Affirmative Action Plan*” at the above link. This will direct you to register for an account. If you already have an account you may click on the link for “*Affirmative Action Plan for Vendors and Suppliers*” to proceed. If you have never filed a plan or request for exemption, you must create an account in our online system. If you are exempt under Article IV, Sections C or D you will still need to create an account and go through some steps to confirm your exemption. Register for an account here: <https://elam.cityofmadison.com/citizenaccess>.

Affirmative Action Questions? Contact Dept. of Civil Rights, Contract Compliance: (608) 266-4910.

- Complete Sec. 15 – Official Notices. This is the name/job title/address of the person at your organization to receive legal notices under the contract.
- Signature line. A person with authority to bind the organization should sign, date, and print name and job title where shown on the signature page. Contractor signs first, City signs last.
- Print, sign and return three (3) complete, signed hard copies to the address for the City in Sec. 15 (Notices) unless otherwise instructed. (Under some circumstances, the City will accept a signed, scanned PDF of the entire contract. Please ask if you want to use this method.)
 - Make sure all exhibits/attachments are labeled and attached after the signature page, unless otherwise instructed.
 - Double-sided is OK, but all attachments should begin on a new page.
 - City will sign last, and will send you one hard copy with original signatures unless otherwise agreed.
- Enclose CERTIFICATE OF INSURANCE (C.O.I.) showing proof of insurance required by Sec. 27.

Insurance Instructions:

Certificate Holder: City of Madison
Attn: Risk Manager
210 Martin Luther King Jr. Blvd. Room 406
Madison, WI 53703

Proof of all insurance required in the contract must be shown. Use City’s certificate at this link: www.cityofmadison.com/finance/documents/CertInsurance.pdf

Insurance delivery options: (a) enclose hard copy of certificate with hard copies of contract mailed to the address in Section 15 of the contract, or (b) email certificate to City Risk Manager Eric Veum at: eveum@cityofmadison.com and cc: your City contact person on the email. Call Eric Veum at (608) 266-5965 with insurance questions.

Failure to complete these steps will result in contract not being signed.

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City of Madison
CONTRACT FOR PURCHASE OF SERVICES
(Design Professionals)

1. **PARTIES.**

This is a Contract between the City of Madison, Wisconsin, hereafter referred to as the "City" and _____ hereafter referred to as "Contractor".

The Contractor is a: Corporation Limited Liability Company General Partnership LLP
(to be completed by contractor) Sole Proprietor Unincorporated Association Other: _____.

2. **PURPOSE**

The purpose of this Contract is as set forth in Section 3.

3. **SCOPE OF SERVICES AND SCHEDULE OF PAYMENTS.**

Contractor will perform the following services and be paid according to the following schedule(s) or attachment(s):

List all attachments here by name, and attach and label them accordingly.

Order of Precedence: In the event of a conflict between the terms of this Contract for Purchase of Services and the terms of any document attached or incorporated herein, the terms of this Contract for Purchase of Services shall control and supersede any such conflicting term.

4. **TERM AND EFFECTIVE DATE**

This Contract shall become effective upon execution by the Mayor, (or the Purchasing Agent, if authorized) on behalf of the City of Madison, unless another effective date is specified in the Attachment(s) incorporated in Section 3, however in no case shall work commence before execution by the City of Madison. The term of this Contract shall be insert dates or reference attachments as needed.

5. **ENTIRE AGREEMENT.**

This Contract for Purchase of Services, including any and all attachments, exhibits and other documents referenced in Section 3 (hereafter, "Agreement" or "Contract") is the entire Agreement of the parties and supersedes any and all oral contracts and negotiations between the parties. If any document referenced in Section 3 includes a statement that expressly or implicitly disclaims the applicability of this Contract for Purchase of Services, or a statement that such other document is the "entire agreement," such statement shall be deemed rejected and shall not apply to this Contract.

6. **ASSIGNABILITY/SUBCONTRACTING.**

Contractor shall not assign or subcontract any interest or obligation under this Contract without the City's prior written approval. All of the services required hereunder will be performed by Contractor and employees of Contractor.

7. **DESIGNATED REPRESENTATIVE**

- A. Contractor designates _____ as Contract Agent with primary responsibility for the performance of this Contract. In case this Contract Agent is replaced by another for any reason, the Contractor will designate another Contract Agent within seven (7) calendar days of the time the first terminates his or her employment or responsibility using the procedure set forth in Section 15, Notices.
- B. In the event of the death, disability, removal or resignation of the person designated above as the Contract agent, the City may accept another person as the Contract agent or may terminate this Agreement under Section 25, at its option.

8. **PROSECUTION AND PROGRESS.**

- A. Services under this Agreement shall commence upon written order from the City to the Contractor. This order will constitute authorization to proceed.
- B. The Contractor shall complete the services under this Agreement within the time for completion specified in the Scope of Services, including any amendments. The Contractor's services are completed when the City notifies the Contractor in writing that the services are complete and are acceptable. The time for completion shall not be extended because of any delay attributable to the Contractor, but it may be extended by the City in the event of a delay attributable to the City, or in the event of unavoidable delay caused by war, insurrection, natural disaster, or other unexpected event beyond the control of the Contractor. If at any time the Contractor believes that the time for completion of the work should be extended because of unavoidable delay caused by an unexpected event, or because of a delay attributable to the City, the Contractor shall notify the City as soon as possible, but not later than seven (7) calendar days after such an event. Such notice shall include any justification for an extension of time and shall identify the amount of time claimed to be necessary to complete the work.
- C. Services by the Contractor shall proceed continuously and expeditiously through completion of each phase of the work.
- D. Progress reports documenting the extent of completed services shall be prepared by the Contractor and submitted to the City with each invoice under Section 24 of this Agreement, and at such other times as the City may specify.
- E. The Contractor shall notify the City in writing when the Contractor has determined that the services under this Agreement have been completed. When the City determines that the services are complete and are acceptable, the City will provide written notification to the Contractor, acknowledging formal acceptance of the completed services.

9. **AMENDMENT.**

This Contract shall be binding on the parties hereto, their respective heirs, devisees, and successors, and cannot be varied or waived by any oral representations or promise of any agent or other person of the parties hereto. Any other change in any provision

of this Contract may only be made by a written amendment, signed by the duly authorized agent or agents who executed this Contract.

10. **EXTRA SERVICES.**

The City may require the Contractor to perform extra services or decreased services, according to the procedure set forth in Section 24. Extra services or decreased services means services which are not different in kind or nature from the services called for in the Scope of Services, Section 3, but which may increase or decrease the quantity and kind of labor or materials or expense of performing the services. Extra services may not increase the total Contract price, as set forth in Section 23, unless the Contract is amended as provided in Section 9 above.

11. **NO WAIVER.**

No failure to exercise, and no delay in exercising, any right, power or remedy hereunder on the part of the City or Contractor shall operate as a waiver thereof, nor shall any single or partial exercise of any right, power or remedy preclude any other or further exercise thereof or the exercise of any other right, power or remedy. No express waiver shall affect any event or default other than the event or default specified in such waiver, and any such waiver, to be effective, must be in writing and shall be operative only for the time and to the extent expressly provided by the City or Contractor therein. A waiver of any covenant, term or condition contained herein shall not be construed as a waiver of any subsequent breach of the same covenant, term or condition.

12. **NONDISCRIMINATION.**

During the term of this Contract, the Contractor agrees not to discriminate against any employee or applicant for employment because of race, religion, marital status, age, color, sex, handicap, national origin or ancestry, income level or source of income, arrest record or conviction record, less than honorable discharge, physical appearance, sexual orientation, gender identity, political beliefs or student status. Contractor further agrees not to discriminate against any subcontractor or person who offers to subcontract on this Contract because of race, religion, color, age, disability, sex, sexual orientation, gender identity or national origin.

13. **AFFIRMATIVE ACTION.**

A. The following language applies to all contractors employing fifteen (15) or more employees (MGO 39.02(9)(c):

The Contractor agrees that, within thirty (30) days after the effective date of this Contract, Contractor will provide to the City of Madison Department of Civil Rights (the "Department"), certain workforce utilization statistics, using a form provided by the City.

If the Contract is still in effect, or if the City enters into a new Agreement with the Contractor, within one year after the date on which the form was required to be provided, the Contractor will provide updated workforce information using a second form, also to be furnished by the City. The second form will be submitted to the Department no later than one year after the date on which the first form was required to be provided.

The Contractor further agrees that, for at least twelve (12) months after the effective date of this Contract, it will notify the Department of each of its job openings at facilities in Dane County for which applicants not already employees of the Contractor are to be considered. The notice will include a job description, classification, qualifications, and application procedures and deadlines, shall be provided to the City by the opening date of advertisement and with sufficient time for the City to notify candidates and make a timely referral. The Contractor agrees to interview and consider candidates referred by the Department, or an organization designated by the Department, if the candidate meets the minimum qualification standards established by the Contractor, and if the referral is timely. A referral is timely if it is received by the Contractor on or before the date stated in the notice.

The Department will determine if a contractor is exempt from the above requirements (Sec. 13.A.) at the time the Request for Exemption in 13.B.(2) is made.

**B. Articles of Agreement, Request for Exemption, and Release of Payment:
The "ARTICLES OF AGREEMENT" beginning on the following page, apply to all contractors, unless determined to be exempt under the following table and procedures:**

NUMBER OF EMPLOYEES	LESS THAN \$50,000 Aggregate Annual Business with the City *	\$50,000 OR MORE Aggregate Annual Business with the City *
14 or less	Exempt**	Exempt**
15 or more	Exempt**	Not Exempt

*As determined by the Finance Director

**As determined by the Department of Civil Rights

(1) **Exempt Status:** In this section, "Exempt" means the Contractor is exempt from the Articles of Agreement in section 13.B.(5) of this Contract and from filing an Affirmative Action plan as required by Section IV of the Articles of Agreement. The Department of Civil Rights ("Department") makes the final determination as to whether a contractor is exempt. If the Contractor is not exempt, sec. 13.B.(5) shall apply and Contractor shall select option A. or B. under Article IV therein and file an Affirmative Action Plan.

(2) **Request for Exemption – Fewer Than 15 Employees:** (MGO 39.02(9)(a)2.) Contractors who believe they are exempt based on number of employees shall submit a Request for Exemption on a form provided by the Department within thirty (30) days of the effective date of this Contract.

(3) **Exemption – Annual Aggregate Business:** (MGO 39.02(9)(a)c.): The Department will determine, at the time this Contract is presented for signature, if the Contractor is exempt because it will have less than \$50,000 in annual aggregate business with the City for the calendar year in which the contract is in effect. CONTRACTORS WITH 15 OR MORE

EMPLOYEES WILL LOSE THIS EXEMPTION AND BECOME SUBJECT TO SEC. 13.B.(5) UPON REACHING \$50,000 OR MORE ANNUAL AGGREGATE BUSINESS WITH THE CITY WITHIN THE CALENDAR YEAR, BEGINNING IN 2019.

(4) Release of Payment: (MGO 39.02(9)(e)1.b.) All non-exempt contractors must have an approved Affirmative Action plan meeting the requirements of Article IV below on file with the Department within thirty (30) days of the effective date of this Contract and prior to release of payment by the City. Contractors that are exempt based on number of employees agree to file a Request for Exemption with the Department within thirty (30) days of the effective date and prior to release of payment by the City.

(5) Articles of Agreement:

ARTICLE I

The Contractor shall take affirmative action in accordance with the provisions of this Contract to insure that applicants are employed, and that employees are treated during employment without regard to race, religion, color, age, marital status, disability, sex, sexual orientation, gender identity or national origin and that the employer shall provide harassment-free work environment for the realization of the potential of each employee. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation and selection for training including apprenticeship insofar as it is within the control of the Contractor. The Contractor agrees to post in conspicuous places available to employees and applicants notices to be provided by the City setting out the provisions of the nondiscrimination clauses in this Contract.

ARTICLE II

The Contractor shall in all solicitations or advertisements for employees placed by or on behalf of the Contractors state that all qualified or qualifiable applicants will be employed without regard to race, religion, color, age, marital status, disability, sex, sexual orientation, gender identity or national origin.

ARTICLE III

The Contractor shall send to each labor union or representative of workers with which it has a collective bargaining Agreement or other Contract or understanding a notice to be provided by the City advising the labor union or workers representative of the Contractor's equal employment opportunity and affirmative action commitments. Such notices shall be posted in conspicuous places available to employees and applicants for employment.

ARTICLE IV

(This Article applies to non-public works contracts.)

The Contractor agrees that it will comply with all provisions of the Affirmative Action Ordinance of the City of Madison (MGO 39.02) including the Contract compliance requirements. The Contractor warrants and certifies that one of the following paragraphs is true (check one):

- A. Contractor has prepared and has on file an affirmative action plan that meets the format requirements of Federal Revised Order No. 4, 41 CFR part 60-2, as established by 43 FR 51400 November 3, 1978, including appendices required by City of Madison ordinances or it has prepared and has on file a model affirmative action plan approved by the Madison Common Council.
- B. Within thirty (30) days after the effective date of this Contract, Contractor will complete an affirmative action plan that meets the format requirements of Federal Revised Order No. 4, 41 CFR Part 60-2, as established by 43 FR 51400, November 3, 1978, including appendices required by City of Madison ordinance or within thirty (30) days after the effective date of this Contract, it will complete a model affirmative action plan approved by the Madison Common Council.
- C. Contractor believes it is exempt from filing an affirmative action plan because it has fewer than fifteen (15) employees and has filed, or will file within thirty (30) days after the effective date of this Contract, a form required by the City to confirm exempt status based on number of employees. If the City determines that Contractor is not exempt, the Articles of Agreement will apply.
- D. Contractor believes it is exempt from filing an affirmative action plan because its annual aggregate business with the City for the calendar year in which the contract is in effect is less than fifty thousand dollars (\$50,000), or for another reason listed in MGO 39.02(9)(a)2. If the City determines that Contractor is not exempt, the Articles of Agreement will apply.

ARTICLE V

(This Article applies only to public works contracts.)

The Contractor agrees that it will comply with all provisions of the Affirmative Action Ordinance of the City of Madison, including the Contract compliance requirements. The Contractor agrees to submit the model affirmative action plan for public works Contractors in a form approved by the Director of Affirmative Action.

ARTICLE VI

The Contractor will maintain records as required by Section 39.02(9)(f) of the Madison General Ordinances and will provide the City's Department of Affirmative Action with access to such records and to persons who have relevant and necessary information, as provided in Section 39.02(9)(f). The City agrees to keep all such records confidential, except to the extent that public inspection is required by law.

ARTICLE VII

In the event of the Contractor's or subcontractor's failure to comply with the Equal Employment Opportunity and Affirmative Action provisions of this Contract or Sections 39.03 and 39.02 of the Madison General Ordinances, it is agreed that the City at its option may do any or all of the following:

- A. Cancel, terminate or suspend this Contract in whole or in part.
- B. Declare the Contractor ineligible for further City contracts until the Affirmative Action requirements are met.
- C. Recover on behalf of the City from the prime Contractor 0.5 percent of the Contract award price for each week that such party fails or refuses to comply, in the nature of liquidated damages, but not to exceed a total of five percent (5%) of the Contract price, or ten thousand dollars (\$10,000), whichever is less. Under public works contracts, if a subcontractor is in noncompliance, the City may recover liquidated damages from the prime Contractor in the manner described above. The preceding sentence shall not be construed to prohibit a prime Contractor from recovering the amount of such damage from the noncomplying subcontractor.

ARTICLE VIII

(This Article applies to public works contracts only.)

The Contractor shall include the above provisions of this Contract in every subcontract so that such provisions will be binding upon each subcontractor. The Contractor shall take such action with respect to any subcontractor as necessary to enforce such provisions, including sanctions provided for noncompliance.

ARTICLE IX

The Contractor shall allow the maximum feasible opportunity to small business enterprises to compete for any subcontracts entered into pursuant to this Contract. (In federally funded contracts the terms "DBE, MBE, and WBE" shall be substituted for the term "small business" in this Article.)

14. **SEVERABILITY.**

It is mutually agreed that in case any provision of this Contract is determined by any court of law to be unconstitutional, illegal or unenforceable, it is the intention of the parties that all other provisions of this Contract remain in full force and effect.

15. **NOTICES.**

All notices to be given under the terms of this Contract shall be in writing and signed by the person serving the notice and shall be sent registered or certified mail, return receipt requested, postage prepaid, or hand delivered to the addresses of the parties listed below :

FOR THE CITY:

(Department or Division Head)

FOR THE CONTRACTOR:

16. **STATUS OF CONTRACTOR/INDEPENDENT/TAX FILING.**

It is agreed that Contractor is an independent Contractor and not an employee of the City, and that any persons who the Contractor utilizes and provides for services under this Contract are employees of the Contractor and are not employees of the City of Madison.

Contractor shall provide its taxpayer identification number (or social security number) to the Finance Director, 210 Martin Luther King Jr. Blvd, Room 406, Madison, WI 53703, prior to payment. The Contractor is informed that as an independent Contractor, s/he may have a responsibility to make estimated tax returns, file tax returns, and pay income taxes and make social security payments on the amounts received under this Contract and that no amounts will be withheld from payments made to this Contractor for these purposes and that payment of taxes and making social security payments are solely the responsibility and obligation of the Contractor. The Contractor is further informed that s/he may be subject to civil and/or criminal penalties if s/he fails to properly report income and pay taxes and social security taxes on the amount received under this Contract.

17. **GOODWILL.**

Any and all goodwill arising out of this Contract inures solely to the benefit of the City; Contractor waives all claims to benefit of such goodwill.

18. **THIRD PARTY RIGHTS.**

This Contract is intended to be solely between the parties hereto. No part of this Contract shall be construed to add, supplement, amend, abridge or repeal existing rights, benefits or privileges of any third party or parties, including but not limited to employees of either of the parties.

19. **AUDIT AND RETAINING OF DOCUMENTS.**

The Contractor agrees to provide all reports requested by the City including, but not limited to, financial statements and reports, reports and accounting of services rendered, and any other reports or documents requested. Financial and service reports shall be provided according to a schedule (when applicable) to be included in this Contract. Any other reports or documents shall be provided within five (5) working days after the Contractor receives the City's written requests, unless the parties agree in writing on a longer period. Payroll records and any other documents relating to the performance of services under the terms of this Contract shall be retained by the Contractor for a period of three (3) years after completion of all work under this Contract, in order to be available for audit by the City or its designee.

20. **CHOICE OF LAW AND FORUM SELECTION.**

This Contract shall be governed by and construed, interpreted and enforced in accordance with the laws of the State of Wisconsin. The parties agree, for any claim or suit or other dispute relating to this Contract that cannot be mutually resolved, the venue shall be a court of competent jurisdiction within the State of Wisconsin and the parties agree to submit themselves to the jurisdiction of said court, to the exclusion of any other judicial district that may have jurisdiction over such a dispute according to any law ..

21. **COMPLIANCE WITH APPLICABLE LAWS.**

The Contractor shall become familiar with, and shall at all times comply with and observe all federal, state, and local laws, ordinances, and regulations which in any manner affect the services or conduct of the Contractor and its agents and employees.

22. **CONFLICT OF INTEREST.**

- A. The Contractor warrants that it and its agents and employees have no public or private interest, and will not acquire directly or indirectly any such interest, which would conflict in any manner with the performance of the services under this Agreement.
- B. The Contractor shall not employ or Contract with any person currently employed by the City for any services included under the provisions of this Agreement.

23. **COMPENSATION.**

It is expressly understood and agreed that in no event will the total compensation under this Contract exceed \$_____.

24. **BASIS FOR PAYMENT.**

A. **GENERAL.**

- (1) The City will pay the Contractor for the completed and accepted services rendered under this Contract on the basis and at the Contract price set forth in Section 23 of this Contract. The City will pay the Contractor for completed and approved "extra services", if any, if such "extra services" are authorized according to the procedure established in this section. The rate of payment for "extra services" shall be the rate established in this Contract. Such payment shall be full compensation for services rendered and for all labor, material, supplies, equipment and incidentals necessary to complete the services.
- (2) The Contractor shall submit invoices, on the form or format approved by the City and as may be further specified in Section 3 of this Contract. The City will pay the Contractor in accordance with the schedule, if any, set forth in Section 3. The final invoice, if applicable, shall be submitted to the City within three months of completion of services under this Agreement.
- (3) Should this Agreement contain more than one service, a separate invoice and a separate final statement shall be submitted for each individual service.
- (4) Payment shall not be construed as City acceptance of unsatisfactory or defective services or improper materials.
- (5) Final payment of any balance due the Contractor will be made upon acceptance by the City of the services under the Agreement and upon receipt by the City of documents required to be returned or to be furnished by the Contractor under this Agreement.
- (6) The City has the equitable right to set off against any sum due and payable to the Contractor under this Agreement, any amount the City determines the Contractor owes the City, whether arising under this Agreement or under any other Agreement or otherwise.
- (7) Compensation in excess of the total Contract price will not be allowed unless authorized by an amendment under Section 9, AMENDMENT.
- (8) The City will not compensate for unsatisfactory performance by the Contractor.

B. **SERVICE ORDERS, EXTRA SERVICE, OR DECREASED SERVICE.**

- (1) Written orders regarding the services, including extra services or decreased services, will be given by the City, using the procedure set forth in Section 15, NOTICES.
- (2) The City may, by written order, request extra services or decreased services, as defined in Section 10 of this Contract. Unless the Contractor believes the extra services entitle it to extra compensation or additional time, the Contractor shall proceed to furnish the necessary labor, materials, and professional services to complete the services within the time limits specified in the Scope of Services, Section 3 of this Agreement, including any amendments under Section 9 of this Agreement.
- (3) If in the Contractor's opinion the order for extra service would entitle it to extra compensation or extra time, or both, the Contractor shall not proceed to carry out the extra service, but shall notify the City, pursuant to Section 15 of this Agreement. The notification shall include the justification for the claim for extra compensation or extra time, or both, and the amount of additional fee or time requested.
- (4) The City shall review the Contractor's submittal and respond in writing, either authorizing the Contractor to perform the extra service, or refusing to authorize it. The Contractor shall not receive additional compensation or time unless the extra compensation is authorized by the City in writing.

25. **DEFAULT/TERMINATION.**

- A. In the event Contractor shall default in any of the covenants, agreements, commitments, or conditions herein contained, and any such default shall continue unremedied for a period of ten (10) days after written notice thereof to Contractor, the City may, at its option and in addition to all other rights and remedies which it may have at law or in equity against Contractor, including expressly the specific enforcement hereof, forthwith have the cumulative right to immediately terminate this Contract and all rights of Contractor under this Contract.
- B. Notwithstanding paragraph A., above, the City may in its sole discretion and without any reason terminate this Agreement at any time by furnishing the Contractor with ten (10) days' written notice of termination. In the event of termination under this subsection, the City will pay for all work completed by the Contractor and accepted by the City.

26. **INDEMNIFICATION.**

The Contractor shall be liable to and hereby agrees to indemnify, defend and hold harmless the City of Madison, and its officers, officials, agents, and employees against all loss or expense (including liability costs and attorney's fees) by reason of any claim or suit, or of liability imposed by law upon the City or its officers, officials, agents or employees for damages because of bodily injury, including death at any time resulting therefrom, sustained by any person or persons or on account of damages to property, including loss of use thereof, arising from, in connection with, caused by or resulting from the contractors and/or any subcontractor's negligent acts, errors or omissions, in the performance of this Agreement.

27. **INSURANCE**

- A. The Contractor will insure, and will require each subcontractor to insure, as indicated, against the following risks to the extent stated below. The Contractor shall not commence work under this Contract, nor shall the Contractor allow any

Subcontractor to commence work on its Subcontract, until the insurance coverage required below has been obtained and approved by the City Risk Manager, under the procedures in Section 27.C., below.

Commercial General Liability

The Contractor shall procure and maintain during the life of this Contract, Commercial General Liability insurance including, but not limited to bodily injury, property damage, personal injury, and products and completed operations (unless determined to be inapplicable by the Risk Manager) in an amount not less than \$1,000,000 per occurrence. This policy shall also provide contractual liability in the same amount. Contractor's coverage shall be primary and list the City of Madison, its officers, officials, agents and employees as additional insureds. Contractor shall require all subcontractors under this Contract (if any) to procure and maintain insurance meeting the above criteria, applying on a primary basis and listing the City of Madison, its officers, officials, agents and employees as additional insureds.

Automobile Liability

The Contractor shall procure and maintain during the life of this Contract Business Automobile Liability insurance covering owned, non-owned and hired automobiles with limits of not less than \$1,000,000 combined single limit per accident. Contractor shall require all subcontractors under this Contract (if any) to procure and maintain insurance covering each subcontractor and meeting the above criteria.

Worker's Compensation

The Contractor shall procure and maintain during the life of this Contract statutory Workers' Compensation insurance as required by the State of Wisconsin. The Contractor shall also carry Employers Liability limits of at least \$100,000 Each Accident, \$100,000 Disease – Each Employee, and \$500,000 Disease – Policy Limit. Contractor shall require all subcontractors under this Contract (if any) to procure and maintain such insurance, covering each subcontractor.

Professional Liability

The Contractor shall procure and maintain professional liability insurance with coverage of not less than \$1,000,000. If such policy is a "claims made" policy, all renewals thereof during the life of the Contract shall include "prior acts coverage" covering at all times all claims made with respect to Contractor's work performed under the Contract. This Professional Liability coverage must be kept in force for a period of six (6) years after the services have been accepted by the City.

- B. Acceptability of Insurers. The above-required insurance is to be placed with insurers who have an A.M. Best rating of no less than A- (A minus) and a Financial Category rating of no less than VII.
- C. Proof of Insurance, Approval. The Contractor shall provide the City with certificate(s) of insurance showing the type, amount, effective dates, and expiration dates of required policies prior to commencing work under this Contract. Contractor shall provide the certificate(s) to the City's representative upon execution of the Contract, or sooner, for approval by the City Risk Manager. If any of the policies required above expire while this Contract is still in effect, Contractor shall provide renewal certificate(s) to the City for approval. Certificate Holder language should be listed as follows:
 - City of Madison
 - ATTN: Risk Management, Room 406
 - 210 Martin Luther King, Jr. Blvd.
 - Madison, WI 53703The Contractor shall provide copies of additional insured endorsements or insurance policies, if requested by the City Risk Manager.
- D. Notice of Cancellation. The Contractor and/or Insurer shall give the City thirty (30) days advance written notice of cancellation, non-renewal or material changes to any of the above-required policies during the term of this Contract.

28. **OWNERSHIP OF CONTRACT PRODUCT.**

All of the work product, including, but not limited to, documents, materials, files, reports, data, including magnetic tapes, disks of computer-aided designs or other electronically stored data or information (the "Documents"), which the Contractor prepares pursuant to the terms and conditions of this Contract are the sole property of the City. The Contractor will not publish any such materials or use them for any research or publication, other than as expressly required or permitted by this Contract, without the prior written permission of the City. The grant or denial of such permission shall be at the City's sole discretion.

The Contractor intends that the copyright to the Documents shall be owned by City, whether as author (as a Work Made For Hire), or by assignment from Contractor to City. The parties expressly agree that the Documents shall be considered a Work Made For Hire as defined by Title 17, United States Code, Section 101(2).

As further consideration for the City entering into this Contract, the Contractor hereby assigns to City all of the Contractor's rights, title, interest and ownership in the Documents, including the right to procure the copyright therein and the right to secure any renewals, reissues and extensions of any such copyright in any foreign country. The City shall be entitled to the sole and exclusive benefit of the Documents, including the copyright thereto, and whenever required by the City, the Contractor shall at no additional compensation, execute all documents of assignment of the full and exclusive benefit and copyright thereof to the City. Any subcontractors and other independent Contractors who prepare portions of the Documents shall be required by the Contractor to execute an assignment of ownership in favor of the City before commencing work.

29. **BAN THE BOX - ARREST AND CRIMINAL BACKGROUND CHECKS.** (Sec. 39.08, MGO. Applicable to contracts exceeding \$25,000.)
- A. **DEFINITIONS.**
 For purposes of this section, "Arrest and Conviction Record" includes, but is not limited to, information indicating that a person has been questioned, apprehended, taken into custody or detention, held for investigation, arrested, charged with, indicted or tried for any felony, misdemeanor or other offense pursuant to any law enforcement or military authority.
 "Conviction record" includes, but is not limited to, information indicating that a person has been convicted of a felony, misdemeanor or other offense, placed on probation, fined, imprisoned or paroled pursuant to any law enforcement or military authority.
 "Background Check" means the process of checking an applicant's arrest and conviction record, through any means.
- B. **REQUIREMENTS.** For the duration of this Contract, the Contractor shall:
- (1) Remove from all job application forms any questions, check boxes, or other inquiries regarding an applicant's arrest and conviction record, as defined herein.
 - (2) Refrain from asking an applicant in any manner about their arrest or conviction record until after conditional offer of employment is made to the applicant in question.
 - (3) Refrain from conducting a formal or informal background check or making any other inquiry using any privately or publicly available means of obtaining the arrest or conviction record of an applicant until after a conditional offer of employment is made to the applicant in question.
 - (4) Make information about this ordinance available to applicants and existing employees, and post notices in prominent locations at the workplace with information about the ordinance and complaint procedure using language provided by the City.
 - (5) Comply with all other provisions of Sec. 39.08, MGO.
- C. **EXEMPTIONS:** This section does not apply when:
- (1) Hiring for a position where certain convictions or violations are a bar to employment in that position under applicable law, or
 - (2) Hiring a position for which information about criminal or arrest record, or a background check is required by law to be performed at a time or in a manner that would otherwise be prohibited by this ordinance, including a licensed trade or profession where the licensing authority explicitly authorizes or requires the inquiry in question.
- To be exempt under sec. C.(1) or (2) above, Contractor must demonstrate to the City that there is a law or regulation that requires the hiring practice in question. If so, the contractor is exempt from this section for the position(s) in question.
30. **WEAPONS PROHIBITION.**
 Contractor shall prohibit, and shall require its subcontractors to prohibit, its employees from carrying weapons, including concealed weapons, in the course of performance of work under this Contract, other than while at the Contractor's or subcontractor's own business premises. This requirement shall apply to vehicles used at any City work site and vehicles used to perform any work under this Contract, except vehicles that are an employee's "own motor vehicle" pursuant to Wis. Stat. sec. 175.60(15m).
31. **AUTHORITY.**
 Contractor represents that it has the authority to enter into this Contract. If the Contractor is not an individual, the person signing on behalf of the Contractor represents and warrants that he or she has been duly authorized to bind the Contractor and sign this Contract on the Contractor's behalf.
32. **COUNTERPARTS, ELECTRONIC SIGNATURE AND DELIVERY.**
 This Contract may be signed in counterparts, each of which shall be taken together as a whole to comprise a single document. Signatures on this Contract may be exchanged between the parties by facsimile, electronic scanned copy (.pdf) or similar technology and shall be as valid as original; and this Contract may be converted into electronic format and signed or given effect with one or more electronic signature(s) if the electronic signature(s) meets all requirements of Wis. Stat. ch. 137 or other applicable Wisconsin or Federal law. Executed copies or counterparts of this Contract may be delivered by facsimile or email and upon receipt will be deemed original and binding upon the parties hereto, whether or not a hard copy is also delivered. Copies of this Contract, fully executed, shall be as valid as an original.

IN WITNESS WHEREOF, the parties hereto have set their hands at Madison, Wisconsin.

CONTRACTOR:

(Type or Print Name of Contracting Entity)

By: _____
(Signature)

(Print Name and Title of Person Signing)

Date: _____

**CITY OF MADISON, WISCONSIN
a municipal corporation:**

By: _____
Satya Rhodes-Conway, Mayor

Date: _____

Approved:

David P. Schmiedicke, Finance Director

Date: _____

By: _____
Maribeth Witzel-Behl, City Clerk

Date: _____

Approved as to Form:

Eric T. Veum, Risk Manager

Date: _____

Michael Haas, City Attorney

Date: _____

For City Use Only: SIGNATURE INSTRUCTIONS FOR CONTRACTS SIGNED BY MAYOR/CLERK:

Obtain contractor's signature first. Route this contract & all of its attachments for City signatures using the City Clerk's Contract Routing Database. Include 1 copy of authorizing resolution & 1 copy of the Certificate of Insurance.

NOTE: Certain service contracts may be executed by the designee of the Finance Director on behalf of the City of Madison:

By: _____
Mary Richards, Procurement Supervisor

Date: _____

MGO 4.26(3) and (5) authorize the Finance Director or designee to sign purchase of service contracts when all of the following apply:

- (a) The funds are included in the approved City budget.
- (b) An RFP or competitive process was used, or the Contract is exempt from competitive bidding under 4.26(4)(a).
- (c) The City Attorney has approved the form of the Contract.
- (d) The Contract complies with other laws, resolutions and ordinances.
- (e) The Contract is for a period of 1 year or less, OR not more than 5 years AND the average cost is not more than \$100,000 per year, AND was subject to competitive bidding. (If over \$50,000 and exempt from bidding under 4.26(4)(a), regardless of duration of the Contract, the Common Council must authorize the Contract by resolution and the Mayor and City Clerk must sign, per 4.26(5)(b).)

Emergency Service contracts may also be signed by the designee of the Finance Director if the requirements of MGO 4.26(3)(c) are met.

For City Use Only: SIGNATURE INSTRUCTIONS FOR CONTRACT TO BE SIGNED BY FINANCE (PURCHASING):

Obtain contractor's signature first. Attach the contractor-signed contract with all attachments/exhibits and the certificate of insurance to the requisition in MUNIS.



CITY OF MADISON

(STC-Form: 12/18/2018)

1. **General.** Throughout this document, "City of Madison," "City" and "Purchasing" shall be synonymous and mean the City of Madison. The words "bid" and "proposal" are synonymous, as are the words "bidder," "proposer" and "contractor." The phrases "request for proposal," "invitation for bids," "request," "invitation," and "solicitation" shall also be synonymous.
As applied to the winning or selected bidder, the words "bid," "proposal," and "contract" are synonymous.
2. **Entire Agreement, Order of Precedence.** These standard terms and conditions shall apply to any Purchase Order issued as a result of this Request for Bid/Proposal, except where expressly stated otherwise in the RFP or in a written instrument covering this purchase signed by an authorized representative of the City and the Contractor, in a form approved by the City Attorney (a "Separate Contract"). If such a separate contract is executed it shall constitute the entire agreement and no other terms and conditions, whether oral or written, shall be effective or binding unless expressly agreed to in writing by the City.
If a Separate Contract is not executed, these Standard Terms and Conditions, the City's request for proposals, the version of the vendor's bid that was accepted by the City, and the City's Purchase Order (if any) shall constitute a contract and will be the entire agreement.
Order of Precedence: If there is a conflict between this Section A and any terms in the vendor's accepted bid or proposal, this Section A shall control unless the parties expressly agree to another order of precedence, in writing. If there is a conflict between this Section A and a Separate Contract, the terms and conditions of the Separate Contract shall control.
- I. TERMS FOR SUBMISSION OF BIDS: The following section applies to the bid/selection process only.**
3. This invitation for bids does not commit the City to award a contract, pay any costs incurred in preparation of bids, or to procure or contract for services or equipment. The City may require the bidder to participate in negotiation and to submit such additional price or technical or other revisions to his or her bids as may result from negotiation. The bidder shall be responsible for all costs incurred as part of his or her participation in the pre-award process.
The City reserves the right to accept or reject any or all bids submitted, in whole or in part, and to waive any informalities or technicalities which at the City's discretion are determined to be in the best interests of the City. Further, the City makes no representations that a contract will be awarded to any offeror responding to this request. The City expressly reserves the right to reject any and all bids responding to this invitation without indicating any reasons for such rejections(s).
The City reserves the right to postpone due dates and openings for its own convenience and to withdraw this solicitation at any time without prior notice.
4. **Addenda.** Changes affecting the specifications will be made by addenda. Changes may include, or result in, a postponement in the bid due date. Bidders are required to complete the Bidder Response Sheet, acknowledging receipt of all parts of the bid, including all addenda.
5. **Price Proposal.** All bidders are required to identify the proposed manufacturer and model, and to indicate the proposed delivery time on the attached Proposal Form. Failure to do so may cause the bid to be considered not responsive. If desired, the bidder may include product literature and specifications. The price quoted will remain firm throughout each contract period. Any price increase proposed shall be submitted sixty (60) calendar days prior to subsequent contract periods and shall be limited to fully documented cost increases to the bidder which are demonstrated to be industry-wide.
6. **Price Inclusion.** The price quoted in any bid shall include all items of labor, materials, tools, equipment, and other costs necessary to fully complete the furnishing and delivery of equipment or services pursuant to the specifications attached thereof. Any items omitted from the specifications which are clearly necessary for the completion of the project shall be considered a portion of the specifications although not directly specified or called for in these specifications.
7. **Pricing and Discount.**
 - a. Unit prices shown on the bid/proposal or contract shall be the price per unit of sale (e.g., gal., cs., doz., ea., etc.) as stated on the bid/proposal or contract. For any given item, the quantity multiplied by the unit price shall establish the extended price. If an apparent mistake exists in the extended price, the unit price shall govern in the bid/proposal evaluation and contract administration.
 - b. In determination of award, discounts for early payment will only be considered when all other conditions are equal. Early payment is defined as payment within fifteen (15) days providing the discount terms are deemed favorable. All payment terms must allow the option of Net 30.
8. **F.O.B. Destination Freight Prepaid.** Bid prices must include all handling, transportation and insurance charges. Failure to bid FOB Destination Freight Prepaid may disqualify your bid.
9. **Award.**
 - a. The City will have sole discretion as to the methodology used in making the award. Where none is specified, the award will be made to the lowest responsible bidder in compliance with the specifications and requirements of this solicitation.
 - b. The right is reserved to make a separate award of each item, group of items or all items, and to make an award in whole or in part, whichever is deemed in the best interest of the City.
10. **Responsiveness and Responsibility.** Award will be made to the responsible and responsive bidder whose bid is most advantageous to the City with price and other factors considered. For the purposes of this project, responsiveness is defined as the bidder's conformance to the requirements of the solicitation. Being not responsive includes the failure to furnish information requested.
Responsibility is defined as the bidder's potential ability to perform successfully under the terms of the proposed contract. Briefly, a responsible bidder has adequate financial resources or the ability to obtain said resources; can comply with required delivery taking into

account other business commitments; has a satisfactory performance record; has a satisfactory record of integrity and business ethics; and has the necessary organization, experience and technical skills.

The City reserves the right to refuse to accept any bid from any person, firm or corporation that is in arrears or is in default to the City, or has failed to perform faithfully any previous contract with the City. If requested, the bidder must present within five (5) working days evidence satisfactory to the City of performance ability and possession of necessary facilities, financial resources, adequate insurance, and any other resources required to determine the bidder's ability to comply with the terms of this solicitation document.

11. Cancellation.

- a. The City reserves the right to cancel any contract in whole or in part without penalty due to non-appropriation of funds.
- b. In the event the Bidder shall default in any of the covenants, agreements, commitments, or conditions and any such default shall continue unremedied for a period of ten (10) days after written notice to the Bidder, the City may, at its option and in addition to all other rights and remedies which it may have, terminate the Agreement and all rights of the Bidder under the Agreement.
- c. Failure to maintain the required certificates of insurance, permits, licenses and bonds will be cause for contract termination. If the Bidder fails to maintain and keep in force the insurance, if required, the City shall have the right to cancel and terminate the contract without notice.

II. CONDITIONS OF PURCHASE: The following section applies to purchases/contracts after the award. See Paragraphs 1 & 2 for applicability and order of precedence.

12. Specifications.

- a. All bidders must be in compliance with all specifications and any drawings provided with this solicitation. Exceptions taken to these specifications must be noted on your bid.
- b. When specific manufacturer and model numbers are used, they are to establish a design, type, construction, quality, functional capability and/or performance level desired. When alternates are bid/proposed, they must be identified by manufacturer, stock number, and the bidder/proposer is responsible for providing sufficient information to establish equivalency. The City shall be the sole judge of equivalency. Bidders are cautioned to avoid bidding alternates which do not meet specifications, which may result in rejection of their bid/proposal.

13. Regulatory Compliance.

- a. Seller represents and warrants that the goods or services furnished hereunder, including all labels, packages, and container for said goods, comply with all applicable standards, rules and regulations in effect under the requirements of all Federal, State and local laws, rules and regulations as applicable, including the Occupational Safety and Health Act (OSHA), as amended, with respect to design, manufacture or use for their intended purpose of said goods or services. Seller shall furnish Material Safety Data Sheets (MSDS) whenever applicable.
- b. If it is determined by the City that such standards are not met, the seller agrees to bear all costs required to meet the minimum standards as stated above for the equipment/products furnished under this contract.

14. Warranty. Unless otherwise specifically stated by the bidder, products shall be warranted against defects by the bidder for ninety (90) days from the date of receipt. If bidder or manufacturer offers warranty that exceeds 90 days, such warranty shall prevail.

15. Ownership of Printing Materials. All artwork, camera-ready copy, negative, dies, photos and similar materials used to produce a printing job shall become the property of the City. Any furnished materials shall remain the property of the City. Failure to meet this requirement will disqualify your bid.

16. Item Return Policy. Bidder will be required to accept return of products ordered in error for up to twenty-one (21) calendar days from date of receipt, with the City paying only the return shipping costs. Indicate in detail on the Bidder Response Sheet, your return policy.

17. Payment Terms and Invoicing. The City will pay properly submitted vendor invoices within thirty (30) days of receipt, providing good and/or services have been delivered, installed (if required), and accepted as specified.

- a. Payment shall be considered timely if the payment is mailed, delivered, or transferred within thirty (30) days after receipt of a properly completed invoice, unless the vendor is notified in writing by the agency of a dispute before payment is due.
- b. Invoices presented for payment must be submitted in accordance with instructions contained on the purchase order, including reference to purchase order and submittal to the correct address for processing. Invoice payment processing address is shown on the upper middle section of the purchase order. Send invoices to Accounts Payable address on the purchase order. Do not send invoices to Purchasing or ship to address.
- c. Bidders, proposers shall include discounts for early payment as a percent reduction of invoice. Invoice discounts shall be determined where applicable, from the date of acceptance of goods and/or the receipt of invoice, whichever is later. Discounts for early payment terms stated on the bid/proposal must be shown plainly on the invoice; discounts for early payment not shown on the invoice will be taken.
- d. Invoices submitted not in accordance with these instructions will be removed from the payment process and returned within ten (10) days.

18. F.O.B. Destination Freight Prepaid. Unless otherwise agreed in writing, the vendor shall bear all handling, transportation and insurance charges. Title of goods shall pass upon acceptance of goods at the City's dock.

19. Tax Exemption. The City of Madison is exempt from the payment of Federal Excise Tax and State Sales Tax. **The City Tax Exempt number is ES 42916.** Any other sales tax, use tax, imposts, revenues, excise, or other taxes which are now, or which may hereafter be imposed by Congress, the State of Wisconsin, or any other political subdivision thereof and applicable to the sale of material delivered as a result of the bidder's bid and which, by terms of the tax law, may be passed directly to the City, will be paid by the City.

20. Affirmative Action.

A. The following language applies to all successful bidders employing fifteen (15) or more employees (MGO 39.02(9)(c):

The Contractor agrees that, within thirty (30) days after the effective date of this Contract, Contractor will provide to the City of Madison Department of Civil Rights (the "Department"), certain workforce utilization statistics, using a form provided by the City.

If the Contract is still in effect, or if the City enters into a new Agreement with the Contractor, within one year after the date on which the form was required to be provided, the Contractor will provide updated workforce information using a second form, also to be furnished by the City. The second form will be submitted to the Department no later than one year after the date on which the first form was required to be provided.

The Contractor further agrees that, for at least twelve (12) months after the effective date of this Contract, it will notify the Department of each of its job openings at facilities in Dane County for which applicants not already employees of the Contractor are to be considered. The notice will include a job description, classification, qualifications, and application procedures and deadlines, shall be provided to the City by the opening date of advertisement and with sufficient time for the City to notify candidates and make a timely referral. The Contractor agrees to interview and consider candidates referred by the Department, or an organization designated by the Department, if the candidate meets the minimum qualification standards established by the Contractor, and if the referral is timely. A referral is timely if it is received by the Contractor on or before the date stated in the notice.

The Department will determine if a contractor is exempt from the above requirements (Sec. 20.A.) at the time the Request for Exemption in 20.B.(2) is made.

B. Articles of Agreement, Request for Exemption, and Release of Payment:

The "ARTICLES OF AGREEMENT" beginning on the following page, apply to all contractors, unless determined to be exempt under the following table and procedures:

NUMBER OF EMPLOYEES	LESS THAN \$50,000 Aggregate Annual Business with the City*	\$50,000 OR MORE Aggregate Annual Business with the City*
14 or less	Exempt**	Exempt**
15 or more	Exempt**	Not Exempt

*As determined by the Finance Director

**As determined by the Department of Civil Rights

(1) Exempt Status: In this section, "Exempt" means the Contractor is exempt from the Articles of Agreement in section 20.B.(5) of this Contract and from filing an Affirmative Action plan as required by Section IV of the Articles of Agreement. The Department of Civil Rights ("Department") makes the final determination as to whether a contractor is exempt. If the Contractor is not exempt, sec. 20.B.(5) shall apply and Contractor shall select option A. or B. under Article IV therein and file an Affirmative Action Plan.

(2) Request for Exemption – Fewer Than 15 Employees: (MGO 39.02(9)(a)2.) Contractors who believe they are exempt based on number of employees shall submit a Request for Exemption on a form provided by the Department within thirty (30) days of the effective date of this Contract.

(3) Exemption – Annual Aggregate Business: (MGO 39.02(9)(a)c.): The Department will determine, at the time this Contract is presented for signature, if the Contractor is exempt because it will have less than \$50,000 in annual aggregate business with the City for the calendar year in which the contract is in effect. CONTRACTORS WITH 15 OR MORE EMPLOYEES WILL LOSE THIS EXEMPTION AND BECOME SUBJECT TO SEC. 20.B.(5) UPON REACHING \$50,000 OR MORE ANNUAL AGGREGATE BUSINESS WITH THE CITY WITHIN THE CALENDAR YEAR, BEGINNING IN 2019.

(4) Release of Payment: (MGO 39.02(9)(e)1.b.) All non-exempt contractors must have an approved Affirmative Action plan meeting the requirements of Article IV below on file with the Department within thirty (30) days of the effective date of this Contract and prior to release of payment by the City. Contractors that are exempt based on number of employees agree to file a Request for Exemption with the Department within thirty (30) days of the effective date and prior to release of payment by the City.

(5) Articles of Agreement:

ARTICLE I

The Contractor shall take affirmative action in accordance with the provisions of this Contract to insure that applicants are employed, and that employees are treated during employment without regard to race, religion, color, age, marital status, disability, sex, sexual orientation, gender identity or national origin and that the employer shall provide harassment-free work environment for the realization of the potential of each employee. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation and selection for training including apprenticeship insofar as it is within the control of the Contractor. The Contractor agrees to post in conspicuous places available to employees and applicants notices to be provided by the City setting out the provisions of the nondiscrimination clauses in this Contract.

ARTICLE II

The Contractor shall in all solicitations or advertisements for employees placed by or on behalf of the Contractors state that all qualified or qualifiable applicants will be employed without regard to race, religion, color, age, marital status, disability, sex, sexual orientation, gender identity or national origin.

ARTICLE III

The Contractor shall send to each labor union or representative of workers with which it has a collective bargaining Agreement or other Contract or understanding a notice to be provided by the City advising the labor union or workers representative of the Contractor's equal employment opportunity and affirmative action commitments. Such notices shall be posted in conspicuous places available to employees and applicants for employment.

ARTICLE IV

(This Article applies to non-public works contracts.)

The Contractor agrees that it will comply with all provisions of the Affirmative Action Ordinance of the City of Madison (MGO 39.02) including the Contract compliance requirements. The Contractor warrants and certifies that one of the following paragraphs is true (check one):

- A. Contractor has prepared and has on file an affirmative action plan that meets the format requirements of Federal Revised Order No. 4, 41 CFR part 60-2, as established by 43 FR 51400 November 3, 1978, including appendices required by City of Madison ordinances or it has prepared and has on file a model affirmative action plan approved by the Madison Common Council.
- B. Within thirty (30) days after the effective date of this Contract, Contractor will complete an affirmative action plan that meets the format requirements of Federal Revised Order No. 4, 41 CFR Part 60-2, as established by 43 FR 51400, November 3, 1978, including appendices required by City of Madison ordinance or within thirty (30) days after the effective date of this Contract, it will complete a model affirmative action plan approved by the Madison Common Council.
- C. Contractor believes it is exempt from filing an affirmative action plan because it has fewer than fifteen (15) employees and has filed, or will file within thirty (30) days after the effective date of this Contract, a form required by the City to confirm exempt status based on number of employees. If the City determines that Contractor is not exempt, the Articles of Agreement will apply.
- D. Contractor believes it is exempt from filing an affirmative action plan because its annual aggregate business with the City for the calendar year in which the contract is in effect is less than fifty thousand dollars (\$50,000), or for another reason listed in MGO 39.02(9)(a)2. If the City determines that Contractor is not exempt, the Articles of Agreement will apply.

ARTICLE V

(This Article applies only to public works contracts.)

The Contractor agrees that it will comply with all provisions of the Affirmative Action Ordinance of the City of Madison, including the Contract compliance requirements. The Contractor agrees to submit the model affirmative action plan for public works Contractors in a form approved by the Director of Affirmative Action.

ARTICLE VI

The Contractor will maintain records as required by Section 39.02(9)(f) of the Madison General Ordinances and will provide the City's Department of Affirmative Action with access to such records and to persons who have relevant and necessary information, as provided in Section 39.02(9)(f). The City agrees to keep all such records confidential, except to the extent that public inspection is required by law.

ARTICLE VII

In the event of the Contractor's or subcontractor's failure to comply with the Equal Employment Opportunity and Affirmative Action provisions of this Contract or Sections 39.03 and 39.02 of the Madison General Ordinances, it is agreed that the City at its option may do any or all of the following:

- A. Cancel, terminate or suspend this Contract in whole or in part.
- B. Declare the Contractor ineligible for further City contracts until the Affirmative Action requirements are met.
- C. Recover on behalf of the City from the prime Contractor 0.5 percent of the Contract award price for each week that such party fails or refuses to comply, in the nature of liquidated damages, but not to exceed a total of five percent (5%) of the Contract price, or ten thousand dollars (\$10,000), whichever is less. Under public works contracts, if a subcontractor is in noncompliance, the City may recover liquidated damages from the prime Contractor in the manner described above. The preceding sentence shall not be construed to prohibit a prime Contractor from recovering the amount of such damage from the noncomplying subcontractor.

ARTICLE VIII

(This Article applies to public works contracts only.)

The Contractor shall include the above provisions of this Contract in every subcontract so that such provisions will be binding upon each subcontractor. The Contractor shall take such action with respect to any subcontractor as necessary to enforce such provisions, including sanctions provided for noncompliance.

ARTICLE IX

The Contractor shall allow the maximum feasible opportunity to small business enterprises to compete for any subcontracts entered into pursuant to this Contract. (In federally funded contracts the terms "DBE, MBE, and WBE" shall be substituted for the term "small business" in this Article.)

21. Nondiscrimination. During the term of this Contract, the Contractor agrees not to discriminate against any employee or applicant for employment because of race, religion, marital status, age, color, sex, handicap, national origin or ancestry, income level or source of income, arrest record or conviction record, less than honorable discharge, physical appearance, sexual orientation, gender identity, political beliefs or student status. Contractor further agrees not to discriminate against any subcontractor or person who offers to subcontract on this Contract because of race, religion, color, age, disability, sex, sexual orientation, gender identity or national origin.

22. Prevailing Wage. Where applicable under federal law, the Contractor warrants that prevailing wages will be paid to all trades and occupations.
23. Indemnification. **The Contractor shall be liable to and hereby agrees to indemnify, defend and hold harmless the City of Madison, and its officers, officials, agents, and employees against all loss or expense (including liability costs and attorney's fees) by reason of any claim or suit, or of liability imposed by law upon the City or its officers, officials, agents or employees for damages because of bodily injury, including death at any time resulting therefrom, sustained by any person or persons or on account of damages to property, including loss of use thereof, arising from, in connection with, caused by or resulting from the acts or omissions of Contractor and any of Contractor's subcontractors in the performance of this agreement, whether caused by or contributed to by the negligence of the City or its officers, officials, agents or employees.**
24. Insurance.
The Contractor will insure, and will require each subcontractor to insure, as indicated, against the following risks to the extent stated below. The Contractor shall not commence work under this Contract, nor shall the Contractor allow any Subcontractor to commence work on its Subcontract, until the insurance required below has been obtained and corresponding certificate(s) of insurance have been approved by the City Risk Manager.
- Commercial General Liability - The Contractor shall procure and maintain during the life of this contract, Commercial General Liability insurance including, but not limited to, products and completed operations, bodily injury, property damage, personal injury, and products and completed operations (unless determined to be inapplicable by the Risk Manager) in an amount not less than \$1,000,000 per occurrence. This policy shall also provide contractual liability in the same amount. Contractor's coverage shall be primary and list the City of Madison, its officers, officials, agents and employees as additional insureds. Contractor shall require all subcontractors under this Contract (if any) to procure and maintain insurance meeting the above criteria, applying on a primary basis and listing the City of Madison, its officers, officials, agents and employees as additional insureds.
 - Automobile Liability - The Contractor shall procure and maintain during the life of this contract Business Automobile Liability insurance covering owned, non-owned and hired automobiles with limits of not less than \$1,000,000 combined single limit per accident. Contractor shall require all subcontractors under this Contract (if any) to procure and maintain insurance covering each subcontractor and meeting the above criteria.
 - Worker's Compensation - The Contractor shall procure and maintain during the life of this contract statutory Workers' Compensation insurance as required by the State of Wisconsin. The Contractor shall also carry Employers Liability limits of at least \$100,000 Each Accident, \$100,000 Disease – Each Employee, and \$500,000 Disease – Policy Limit. Contractor shall require all subcontractors under this Contract (if any) to procure and maintain such insurance, covering each subcontractor.
 - Professional Liability - The Contractor shall procure and maintain professional liability insurance with coverage of not less than \$1,000,000. If such policy is a "claims made" policy, all renewals thereof during the life of the contract shall include "prior acts coverage" covering at all times all claims made with respect to Contractor's work performed under the contract. This Professional Liability coverage must be kept in force for a period of six (6) years after the services have been accepted by the City.
 - Acceptability of Insurers - The above-required insurance is to be placed with insurers who have an A.M. Best rating of no less than A- (A minus) and a Financial Category rating of no less than VII.
 - Proof of Insurance, Approval. The Contractor shall provide the City with certificate(s) of insurance showing the type, amount, effective dates, and expiration dates of required policies prior to commencing work under this Contract. Contractor shall provide the certificate(s) to the City's representative upon execution of the Contract, or sooner, for approval by the City Risk Manager. If any of the policies required above expire while this Contract is in effect, Contractor shall provide renewal certificate(s) to the City for approval. Certificate Holder language should be listed as follows:
City of Madison
ATTN: Risk Management, Room 406
210 Martin Luther King, Jr. Blvd.
Madison, WI 53703
The Contractor shall provide copies of additional insured endorsements or insurance policies, if requested by the City Risk Manager. The Contractor and/or Insurer shall give the City thirty (30) days advance written notice of cancellation, non-renewal or material changes to any of the above-required policies during the term of this Contract.
25. Work Site Damages. Any damage, including damage to finished surfaces, resulting from the performance of this contract shall be repaired to the Owner's satisfaction at the Contractor's expense.
26. Compliance.
- Regulations. The Contractor shall give all notices and comply with all laws, ordinances, rules, regulations and lawful orders of any public authority bearing on the performance of the work.
 - Licensing and Permits. The Contractor selected under this bid shall be required to demonstrate valid **possession of appropriate required licenses and will** keep them in effect for the term of this contract. The Contractor shall also be required, when appropriate, to obtain the necessary building permits prior to performing work on City facilities.
27. Warranty of Materials and Workmanship.
- The Contractor warrants that, unless otherwise specified, all materials and equipment incorporated in the work under the Contract shall be new, first class, and in accordance with the Contract Documents. The Contractor further warrants that all workmanship shall be first class and in accordance with the Contract Documents and shall be performed by persons qualified in their respective trades.
 - Work not conforming to these warranties shall be considered defective.
 - This warranty of materials and workmanship is separate and independent from and in addition to any other guarantees in this Contract.
28. Replacement of Defective Work or Materials. Any work or material found to be in any way defective or unsatisfactory shall be corrected or replaced by the Contractor at its own expense at the order of the City notwithstanding that it may have been previously overlooked or passed

by an inspector. Inspection shall not relieve the Contractor of its obligations to furnish materials and workmanship in accordance with this contract and its specifications.

29. Reservation of the Right to Inspect Work. At any time during normal business hours and as often as the City may deem necessary, the Contractor shall permit the authorized representatives of the City to review and inspect all materials and workmanship at any time during the duration of this contract, provided, however, the City is under no duty to make such inspections, and any inspection so made shall not relieve the Contractor from any obligation to furnish materials and workmanship strictly in accordance with the instructions, contract requirements and specifications.

30. Sweatfree Procurement of Items of Apparel. If this bid results in the procurement of \$5,000 or more in garments or items of clothing, any part of which is a textile, or any shoes/ footwear, then Sec. 4.25 of the Madison General Ordinances, "Procurement of Items of Apparel", is hereby incorporated by reference and made part of this contract. See Section 4.25(2) at www.municode.com for applicability specifics. The contractor shall follow labor practices consistent with international standards of human rights, meaning that, at a minimum, contractor shall adhere to the minimum employment standards found in Section 4.25 and shall require all subcontractors and third-party suppliers to do the same. For purposes of sec. 4.25, "Subcontractor" means a person, partnership, corporation or other entity that enters into a contract with the contractor for performance of some or all of the City-contracted work and includes all third-party suppliers or producers from whom the contractor or its contractors obtains or sources goods, parts or supplies for use on the city contract and is intended to include suppliers at all level of the supply chain. The standards in Sec. 4.25 shall apply in all aspects of the contractor's and subcontractor's operations, including but not limited to, manufacture, assembly, finishing, laundering or dry cleaning, (where applicable), warehouse distribution, and delivery. Contractor acknowledges that by entering into this contract, Contractor shall be subject to all of the requirements and sanctions of sec. 4.25 of the Madison General Ordinances.

The sanctions for violating Sec. 4.25 under an existing contract are as follows:

- a. Withholding of payments under an existing contract.
- b. Liquidated damages. The contractor may be charged liquidated damages on an existing contract of two thousand dollars (\$2,000) per violation, or an amount equaling twenty percent (20%) of the value of the apparel, garments or corresponding accessories, equipment, materials, or supplies that the City demonstrates were produced in violation of the contract and/or this ordinance per violation; whichever is greater.
- c. Termination, suspension or cancellation of a contract in whole or in part.
- d. Nonrenewal when a contract calls for optional renewals.
- e. Nonrenewal for lack of progress or impossible compliance. The City reserves the right to refuse to renew the contract that calls for optional renewals, when the contractor cannot comply with the minimum standard under (4)(b) and the noncompliance is taking place in a country where:
 - (1) Progress toward implementation of the standards in this Ordinance is no longer being made; and
 - (2) Compliance with the employment standards in the Ordinance is deemed impossible by the City and/or any independent monitoring agency acting on behalf of the City. Such determination shall be made in the sole opinion of the City and may be based upon examination of reports from governmental, human rights, labor and business organizations and after consultation with the relevant contractors and sub-contractors and any other evidence the City deems reliable.
- f. Disqualification of the contractor from bidding or submitting proposals on future City contracts, or from eligibility for future city procurements as defined in sub. (2), whether or not formal bidding or requests for proposals are used, for a period of one (1) year after the first violation is found and for a period of three (3) years after a second or subsequent violation is found. The disqualification shall apply to the contractor who committed the violation(s) whether that be under the same corporate name, or as an individual, or under the name of another corporation or business entity of which he or she is a member, partner, officer, or agent.

The exercise by the City of any or all of the above remedies, or failure to so exercise, shall not be construed to limit other remedies available to the City under this Contract nor to any other remedies available at equity or at law.

31. Local Purchasing. The City of Madison has adopted a local preference purchasing policy granting a 5 percent request for proposal and 1 percent request for bid scoring preference to local vendors.

To facilitate the identification of local suppliers, the City has provided an on-line website as an opportunity for suppliers to voluntarily identify themselves as local, and to assist City staff with their buying decisions. Proposers seeking to obtain local preference are required to register on the City of Madison online registration website. Only vendors registered as of the bid due date will receive preference. Additional information is available at: www.cityofmadison.com/business/localPurchasing.

32. Weapons Prohibition. Contractor shall prohibit, and shall require its subcontractors to prohibit, its employees from carrying weapons, including concealed weapons, in the course of performance of work under this Contract, other than while at the Contractor's or subcontractor's own business premises. This requirement shall apply to vehicles used at any City work site and vehicles used to perform any work under this Contract, except vehicles that are an employee's "own motor vehicle" pursuant to Wis. Stat. sec. 175.60(15m). This section does not apply to employees who are required to carry a weapon under the express terms of the Contract (such as armed security guard services, etc.).

33. Software & Technology Purchases.

- a. Software Licenses. All software license agreements shall include the City's mandatory legal terms and conditions as determined by the City Attorney. Please be advised that no City employee has the authority to bind the City by clicking on an End User License Agreement (EULA) or any other click-through terms and conditions without being specifically authorized by the City's Chief Information Officer through procedures approved by the City Attorney and Risk Manager. All legal documents associated with the purchase or download of software must be reviewed by the City Attorney and may only be signed by an individual authorized to do so.
- b. Network Connection Policy. If this purchase includes software support, software maintenance, network services, and/or system development services and will require a Network Connection the City Network (as defined in the following link), the City's Network Connection Policy found at this link: www.cityofmadison.com/attorney/documents/posNetworkConnection.doc is hereby incorporated and made a part of the Contract and Contractor agrees to comply with all of its requirements.

34. Ban the Box - Arrest and Criminal Background Checks.

This provision applies to service contracts of more than \$25,000 executed by the City on January 1, 2016 or later, unless exempt by Sec. 39.08 of the Madison General Ordinances (MGO).

a. Definitions. For purposes of this requirement, "Arrest and Conviction Record" includes, but is not limited to, information indicating that a person has been questioned, apprehended, taken into custody or detention, held for investigation, arrested, charged with, indicted or tried for any felony, misdemeanor or other offense pursuant to any law enforcement or military authority.

"Conviction record" includes, but is not limited to, information indicating that a person has been convicted of a felony, misdemeanor or other offense, placed on probation, fined, imprisoned or paroled pursuant to any law enforcement or military authority.

"Background Check" means the process of checking an applicant's arrest and conviction record, through any means.

b. Requirements. For the duration of any contract awarded under this RFP, the successful contractor shall:

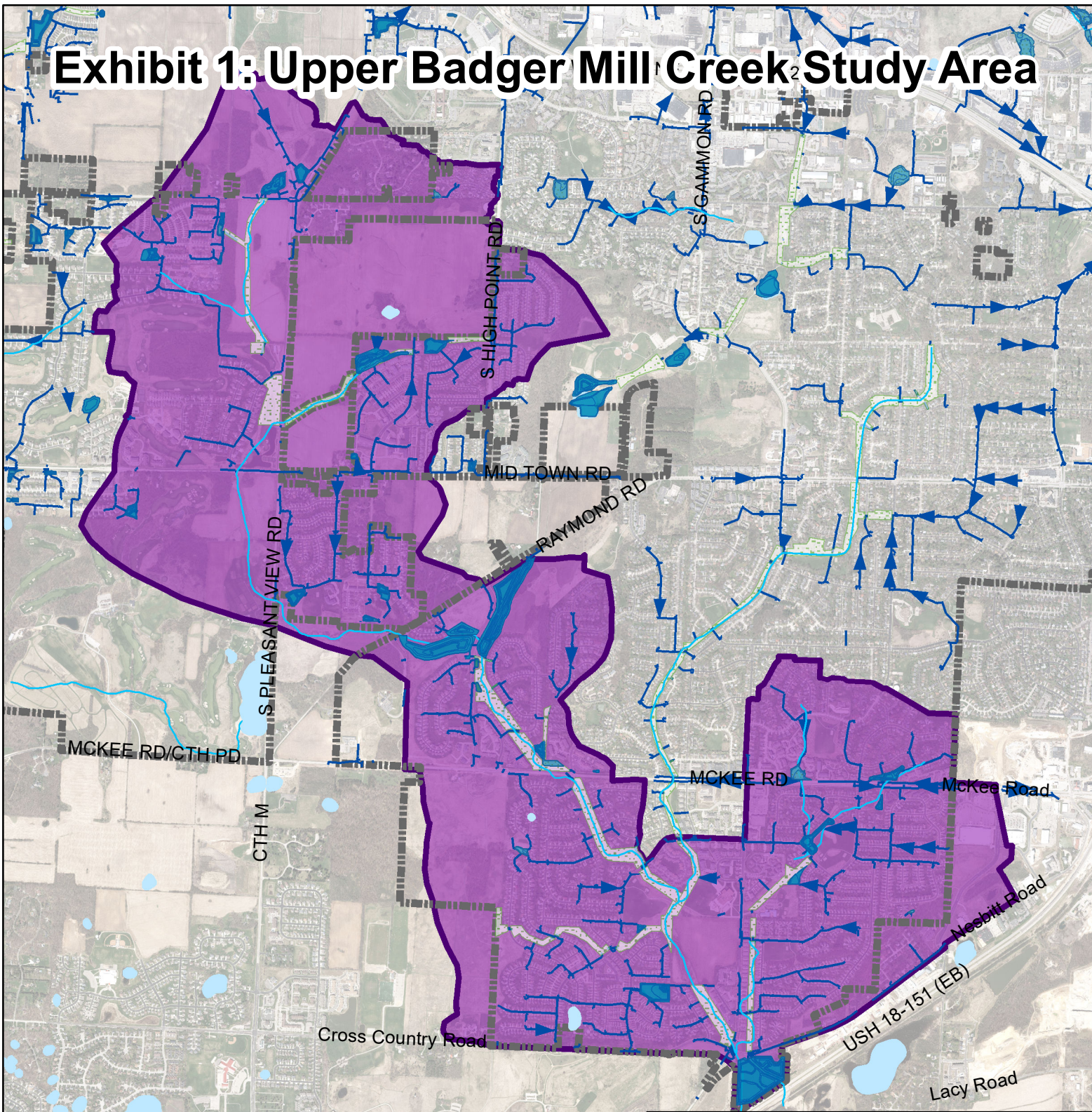
- (1) Remove from all job application forms any questions, check boxes, or other inquiries regarding an applicant's arrest and conviction record, as defined herein.
- (2) Refrain from asking an applicant in any manner about their arrest or conviction record until after a conditional offer of employment is made to the applicant in question.
- (3) Refrain from conducting a formal or informal background check or making any other inquiry using any privately or publicly available means of obtaining the arrest or conviction record of an applicant until after a conditional offer of employment is made to the applicant in question.
- (4) Make information about this ordinance available to applicants and existing employees, and post notices in prominent locations at the workplace with information about the ordinance and complaint procedure, using language provided by the City.
- (5) Comply with all other provisions of Sec. 39.08, MGO.

c. Exemptions: This section does not apply when:

- (1) Hiring for a position where certain convictions or violations are a bar to employment in that position under applicable law, or
- (2) Hiring a position for which information about criminal or arrest record, or a background check is required by law to be performed at a time or in a manner that would otherwise be prohibited by this ordinance, including a licensed trade or profession where the licensing authority explicitly authorizes or requires the inquiry in question.

To be exempt under sec. C.1. or 2. above, contractor must demonstrate to the City that there is a law or regulation that requires the background check in question. If so, the contractor is exempt from this section for the position(s) in question.

Exhibit 1: Upper Badger Mill Creek₂ Study Area



Study Area: ~ 3,191 acres

-  Watershed Boundary
-  Surface Water
-  Storm Sewer
-  Greenways
-  Stormwater Treatment Ponds
-  Municipal Boundary



0 0.25 0.5 Miles

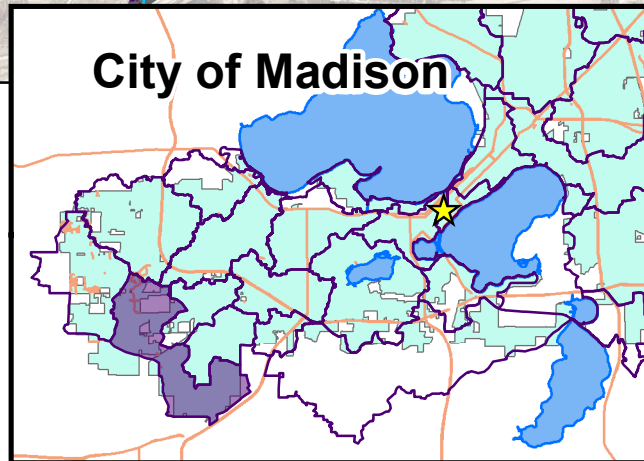


Exhibit 2: Data Provided by City

City of Madison GIS and Related Data for Watershed Modeling

The following data are provided to the consultants for use in responding to the RFPs and developing watershed models under contract with the City. The consultant shall not use these data for any other purpose or share this data with anyone else.

The available data is not a complete dataset. The City is in process of updating and consolidating data. This document describes what is currently available. Updated data will be supplied to the consultant as it becomes available during the studies.

Data are stored in two locations.

1. Some can be downloaded from the City's Open Data (<https://cityofmadison.maps.arcgis.com/home/index.html>) portal via links shown with each dataset.
2. Others are only available via visiting the City FTP site.
City FTP: <ftp://ftp.cityofmadison.com/>
Login: cityftp
Password: 2upload!
Folder: Watershed Studies December 2020

Where applicable, data for other municipalities within the watersheds will need to be obtained from that municipality.

Pond Data

- **Pond_Contours** (*FTP/Watershed Studies Folder in FloodStudies_2021.gdb*)
 - Stage/storage information for all City ponds included in the TMDL permit. New ponds are based on as-built information, while older ponds are based on construction plans, pond survey information, or rules of thumb.
- **Pond_Greenway** (*FTP/Watershed Studies Folder in FloodStudies_2021.gdb*)
 - Pond polygons in layer as Type= "Pond," show the Storm Water Utility administrative pond parcel information. This includes official pond name, year built, node number, etc. The node number is how the City tracks pond data, therefore specific data is stored in folders titled per pond node.
- **Pond As-Built Information**
 - A list of pond data is organized per watershed and classified by pond node. There may be data, including construction drawings or as-built information for each pond. The data can be retrieved from the City upon request.

Greenway Data

- **Greenway_Polys** (*FTP/Watershed Studies Folder in FloodStudies_2021.gdb*)
 - Greenway polygons in layer as Type= "Greenway," show the Storm Water Utility administrative greenway parcel information. This includes official greenway name, year built, node number, etc.
- **Greenway Information**
 - A list of greenway data is organized per watershed and classified by each greenway node. There may be data available for each greenway. Often, the only data available are greenway rating information and photos. Newly reconstructed greenways may include construction plans, as built information, etc. The data can be retrieved from the City upon request.
- **Meander_Lines** (*FTP/Watershed Studies Folder in FloodStudies_2021.gdb*)
 - Provides linework for some greenway centerlines. Data layer is not complete and data missing may need to be field verified.
- **Ditch_Pipes** (*FTP/Watershed Studies Folder in FloodStudies_2021.gdb*)

- Provides linework for some pipes and/or ditches within the Greenways. Data layer is not complete and data missing may need to be field verified.

Watershed/Outfall Data

- **OutfallBasins_QCed_FTD** (*FTP/Watershed Studies Folder in FloodStudies_2021.gdb*)
 - Outfall_Basins is the City's most up-to-date outfall basin information. It was originally drafted on light tables using contours for each 30" pipe in the 1990's. Some outfall basin boundaries have been updated based on updated data however, some have not. These recently were merged to drain to the first treatment device.
 - The City anticipates the Consultant will reference the outfall basins but will delineate the subcatchments for the model independently of this file.
- **WatershedStudies** (*FTP/Watershed Studies Folder in FloodStudies_2021.gdb*)
 - Boundaries for the watershed studies. Will need to be refined during watershed study using latest topographic data.
- Historic watershed studies/watershed information
 - Historic watershed study information, primarily water quality focused, organized per watershed

Storm Pipe and Structure Data

- **Storm_Pipes** (*FTP/Watershed Studies Folder in FloodStudies_2021.gdb and downloadable as a shapefile on [City of Madison Open Data website](#)*)
 - Storm pipes are mapped by the City of Madison's mapping division. The invert data is based on as-built information. Due to an updated process in 2005, the City has the most confidence in data from 2005 forward.
 - The City Surveyors started using GPS (Global Positioning System- Survey Grade) to set Control for the 2005 construction Season. This system provided uniform elevations all over the City of Madison. Prior to 2005 Hydrants were used as benchmark elevations for projects; hydrant elevations came from a variety of sources and were inconsistent over the City.
 - The City is modifying its data per the schema that is downloadable from the Open Data portal, however it is not yet fully populated. The new schema will have To_El and From_El populated, which was designed to assist with watershed modeling. Based on available data, consultants may need to infer elevations or request survey for important locations within the modeled conveyance system.
- **Storm Sewer Structures** (*FTP/Watershed Studies Folder in FloodStudies_2021.gdb and downloadable as a shapefile on [City of Madison Open Data website](#)*)
 - Storm structures are mapped by the City of Madison's mapping division. The invert data is based on as-built information. Due to an updated process in 2005, the City has the most confidence in data from 2005 forward.
 - The City Surveyors started using GPS (Global Positioning System- Survey Grade) to set Control for the 2005 construction Season. This system provided uniform elevations all over the City of Madison. Prior to 2005 Hydrants were used as benchmark elevations for projects; hydrant elevations came from a variety of sources and were inconsistent over the City.
- **Storm_Pipes_Private** (*FTP/Watershed Studies Folder in FloodStudies_2021.gdb*)
 - Data was mapped where private storm connects into the public storm sewer. This data is from parking lot construction plans from private development and does not always reflect what was built
- **Storm_Struct_Private** (*FTP/Watershed Studies Folder in FloodStudies_2021.gdb*)
 - Data was mapped from parking lot construction plans from private development and does not always reflect what was built

2018, 2019, and 2020 Data

- The available GIS data is up-to-date through 2017. A separate as-built geodatabase will be provided for stormwater infrastructure updates made after 2017.

Impervious Data

- This data was created in 2020 and represents the land cover and connectedness of impervious surfaces in the city. It will be posted when available (January 2021).

Aerial Photograph, DEM, Contours, LiDAR

- **2018 imagery** is hosted as an image server here:
https://gisimg.cityofmadison.com/arcgis/rest/services/ImageServices/2018_CITY_COLOR/ImageServer
- **2020 imagery** is hosted as an image server by Dane County here:
<https://dcimapapps.countyofdane.com/arcgisimg/rest/services>
- **LiDAR** data from 2016 is available online in tiles:
https://bin.ssec.wisc.edu/pub/wisconsinview/lidar/Dane/Madison_2016_City_Delivery/
- **Citywide_Raster_small_cell** (*FTP/Watershed Studies Folder in FloodStudies.gdb*)
 - The Citywide_Raster_Small_cell was derived by patching individual rasters together.
 - The LiDAR used to create the raster is vertically accurate to 2' on average. In roads, or on hard surfaces, it may be accurate to closer to 1', however in greenways and other tall-grass, high-foliage areas, it may be accurate to 2'-4'. Therefore, use the raster with caution.

Flooding Data (*FTP/Watershed Studies Folder in Flood_Data.gdb*)

Feature Class Name	Description
FEMA_Reported_Aug20_Public	Public flood damage locations reported to FEMA. Codes: <ul style="list-style-type: none"> ○ A-Debris Removal ○ B- Emergency Protective Measures ○ C-Roads and Bridges ○ D-Water Control Facilities ○ E-Buildings and Equipment ○ F-Utilities ○ G-Parks, Recreation, Other
FEMA_CityDamage_Aug20	Public infrastructure damaged in the flood with repair reimbursements submitted to FEMA. Some overlap with FEMA public reported points.
OtherCollected_FloodPts_Aug20	Locations of issues received (emails/calls) by City Engineering staff as a result of the August 20, 2018 flood event (some overlap with FEMA reported points).
Flood_Report_Pts_MMDDYYYY	Locations of issues received via the City's online flood reporting form; date attached to feature class is the date that the data was pulled from the flood report form.
Historic_FloodPts	Intersections, points, and areas that have been noted over the years as having some flood/drainage related issue; includes 911 calls from June 16, 2018 event; attribute data is variable
Operations_FloodPts	Locations generated from City of Madison Operations work orders and calls received requiring flood/drainage related maintenance issues over the years.
Priority_Inlets	City Engineering Operations priority inlets for maintenance.
BI_FloodPts_Aug20_Private	2-1-1 and Building Inspection collected private damage information from Aug 20 th storm damage. BI used this data to create preliminary damage estimates based on FEMA's flood damage calculator.

Feature Class Name	Description
Street_Flooding	Layer generated manually by looking at historic data points to determine streets that have had flooding issues, plus institutional knowledge.
Business_FloodPts_Aug20	Businesses that had direct impact on their properties from the August 20, 2018 flooding

MODELING GUIDANCE

Version 2020_11_03 (DRAFT)

Round 3 and 4 Study Consultants

The City recognizes that an important aspect of modeling is professional judgement; and it will be up to the Consultant to appropriately define parameters, variables, and methodology. However, it is in the City's best interest to have relative uniformity amongst City models. This guidance document was developed to provide uniformity. Where inputs and assumptions differ from those outlined in this document, the Consultant will be expected to justify and document the differences and reasons for the differences.

The purpose of the watershed modeling is to construct planning-level models of the watershed to identify locations with significant conveyance system deficiencies. The identified solutions will be conceptual solutions, not design-level solutions. Characterization of localized street flooding is not a focus.

City of Madison Flooding Level of Service Goals

1. 10-year design storm event:
 - a. No surcharging onto the street for up to the 10-year design storm; water shall be contained within the pipes and structures.
 - b. There are locations within the City where low points exist that pond water; these low points are excluded from this goal and will be addressed as streets are redesigned.
 - c. For locations limited by known inlet capacity, allow no more than 0.5 feet of water above storm sewer inlet rim.
2. 25-year design storm event:
 - a. Centerline of street to remain passable during 25-year design storm with no more than 0.2 feet of water at the centerline.
 - b. Note that the Watershed Study modeling approach will not explicitly account for cross flow conditions where more gutter flow on one side of the street can overtop the crown.
3. 100-year design storm event:
 - a. No home or business will be flooded during the 100-year design storm.
 - b. Enclosed depressions to be served to the 100-year design storm (which can include safe overland flow within street, easements, greenways or other public lands).
 - c. Greenway crossings at streets to be served to the 100-year design storm.
4. 500-year design storm event:
 - a. Safely convey stormwater; i.e. limited impact on private property
5. Provide flooding solutions that do not negatively impact downstream properties.

Due to the inherent variability and complexity of stormwater conveyance systems, it is understood it may not be practical to meet the above level of service goals in all areas of the City.

Guidance for Solutions

1. For the purpose of the watershed studies "deficiencies" in the system shall be defined as existing infrastructure, drainage capacity, or system limitations that fail to meet the goals stated in 1-5 above.
2. Watershed deficiencies will be reviewed, and solutions will be provided up to, the 100-yr design storm.
3. In areas where flooding occurs in events exceeding the 100-year storm, those areas will not be prioritized for engineering solutions, but will be identified in existing conditions model for 500-year event storms.
4. Proposed solutions will be identified for only the publicly owned drainage system.
5. Drainage issues that are private (water from the public infrastructure such as streets, greenways, ponds and/or easements is not the cause of the drainage issue) will not require modeling solutions but should be noted, where possible, in the existing conditions analysis so staff may

work with property owners if necessary. (See Also Hydraulics section of Modeling Guidance for discussion on private system existing conditions modeling.)

Emergency Vehicle Allowable Flood Depths (email from Fleet on 5/12/2020)

1. SUVs – up to 6-inches
2. Large Trucks – up to 3-feet
3. Ambulances, vans, and pick-up trucks – between 6-inches and 3-feet

MODELING PARAMETERS:

Initial model parameters are the following items:

1. Include storm sewers and culvert segments for the trunk line drainage system and major conveyance to that system. Additional conveyance components may be included if felt necessary by the modeler to understand the conveyance system drainage.
2. Inlet capacity will not be included in the model. It is assumed that sufficient inlets are present accommodate stormwater. In areas where there is known chronic flooding that has been reported to Engineering, additional detail may be requested.
3. Incorporate significant existing storm water management facilities (public and private) into the model.
4. Subdivide provided outfall basins into smaller watersheds as needed in order to properly execute the model.
5. Coordinate System and Vertical Datum
 - a. Horizontal Coordinate System: Wisconsin County Coordinate System – Dane Zone NAD83 (HARN).
 - b. Vertical Datum: NAVD88 (pre 2007 adjustment) ft (City of Madison Datum + 845.6)
 - c. Various data sources have different horizontal and vertical datums, check datum for each data source prior to use.
6. Monitoring Data Time Zone: Different sources of monitoring data use different time zones. Also, some adjust for daylight savings time whereas others do not. When using the monitoring data, check both the time zone and if the data is adjusted for daylight savings time.
7. Monitoring Data Review: Familiarize yourself with the location of the monitoring gage at each site. Also, visit the monitoring site following a rain event to review the site conditions for things that would impact the measurements. For example, is there debris clogging anything?
8. Naming convention
 - a. Names are limited to 20 characters where possible. Both PC-SWMM and XP-SWMM can take lengthy names but both indicate shorter is better for avoiding truncating names.
 - b. Subcatchments:
 - i. Begin with Subcatchments naming convention provided by the City in the Outfall Basin feature class.
 1. Add a three-digit designator to the end of the name, beginning with 000
 2. As subcatchments are subdivided, increase the added designator by 1.
 3. Example: ME04-A-0014-H (*Provided by City*) → ME04-A-0014-H-MAD-C-000 (*For the original basin*) → ME04-A-0014-H-001 (*For first subdivision*)
 - ii. Final outfall basin feature class file, including supporting files used to compute runoff timing and volume parameters shall be part of the deliverables provided to the City of Madison.
 - iii. Note first downstream stormwater control practice as attribute in subcatchment feature class.
 - c. Structures and Junctions:
 - i. Node (Junction/Storage/Outfall) names for existing structures shall retain the asset identification provided by the City.
 - ii. Proposed Structure names are to be determined by the Consultant but shall be given a "logical" name that reflects general location, function, or other.
 - iii. For junctions that need to be added that are storm sewer tees as constructed,

use the downstream manhole / structure with “_01” added in increasing order moving from downstream to upstream. For example, the first junction added for a tee upstream of MI3350-001 would be MI3350-001_01

- d. Pipes:
 - i. Conduit names for existing pipes shall retain the asset identification provided by the City, except that:
 1. The first two letters (i.e AE, IN, etc) can be removed
 2. Leads with an asset ID that takes up all 20 characters can be shortened to the corresponding assigned ID. For example, IN3350-032_AS3350-007_3350-001 can be changed to 3350-032_3350-001_001
 - ii. Proposed Pipe names are to be determined by the Consultant but shall be named in a manner similar to the City pipe naming convention, which includes the upstream and downstream structure names.
- e. Channel/Street Flow Segments:
 - i. Conduit names for drainage-ways shall be named in a manner that identifies the greenway segment it represents by Greenway Node Number and the distance from the upstream end. Example: GR7541-062_125 would represent a channel segment that begins 125 feet into the North Door Creek Greenway – Sprecher Road Section.
 - ii. Conduit names for streets shall be named with “Rd_”[US_Node_Name]_[DS_Node_Name] and remove the first two letters in the node name similar to how pipes are named.
- f. Natural Channels:
 - i. Natural channel transects shall be named with the same ID as the conduit name.
 - ii. Street models as natural channels shall be named in a manner that is easily identifiable for the street or street type it represents.
 - iii. A shapefile shall be created documenting where natural channel transects are cut.
- g. Other SWMM Features (Weirs, orifices, etc)
 - i. Other SWMM features shall have readily identifiable names corresponding to the type of feature they are trying to model. For example, an orifice for a detention pond should have an ID that is “<Detention Pond ID>_ORIF_01”, keeping within a 20 character limit.
- h. Ponds
 - i. Use the pond name identifier from GT-Viewer combined with a common name. For example, the ponds at Odana Hills Golf Course would be “PD3461-001_OdanaHills”
 - ii. Use abbreviation of name if unofficial full name creates a model name longer than 20 characters.
- i. Non-City owned infrastructure
 - i. Consultant may choose name if consistent naming convention is not created by entity that owns infrastructure
 - ii. If Consultant chooses name, all infrastructure owned by another entity shall start with the same few characters. For example, DOT infrastructure could all start with “DOT-” or Fitchburg owned infrastructure could start with “Fit-”

9. Data Notation

The GIS data describing the conveyance system is not complete. In some instances the modeler will be able to make assumptions based on available data. In other locations, the data will require survey. The City is tracking the accuracy of the data with the ultimate goal of having a complete record.

When the modeling is creating the GIS data describing the structures and pipes, they shall create a new attribute in their GIS data and categorize the data as the following:

- a. Structures:
 - Source_IE
 - Source_Rim

- b. Pipes:
 - Source_ToIE
 - Source_FromIE
- c. Private:
 - Notes
- d. Source –enter Number and text in bold in attribute
 0. **Converted:** legacy EI's taken from the structure, all EI's received the structures outgoing EI by default when converted in 2020. *This does not mean this data is ***better*** than the survey data, if it looks suspect, you should investigate and try to clarify the source (especially for pre-2005 data, or structures/pipes within ponds/gwys)*
 1. **Survey:** Survey data (current)
 2. **AsBuilt >2004:** As-Builts (2005-present) since City used GPS-Survey Grade to set control improving consistency citywide
 3. **AsBuilt pre-2005:** As-Builts (pre-2005)
 4. **ConstPlan:** Construction plans
 5. **GTV:** GTV in-line text, no plans to support
 6. **Interpolate:** interpolated (saddled structure had inverts on either side and interpolated—should eventually be surveyed)
 7. **Inferred:** best guess, (can't get survey now or is pulled from LiDAR, but should eventually be surveyed)
 8. **No data:** Needs survey (searched and unable to find—should eventually be surveyed, but a higher priority)
- e. When creating a model, Engineers will verify/update:
 - i. Structures:
 - Source_IE
 - Source_Rim
 - Project_No
 - ii. Pipes:
 - Source_ToIE
 - Source_FromIE
 - Project_No
 - iii. Private:
 - Notes
 - PLP_address
 - GTV
 - Survey (survey will need to confirm all fields)

10. Rainfall

- a. MSE4 24-hour Distribution and NOAA Atlas 14 Depths

Recurrence Interval (years)	Rainfall Depth (inches)
2	2.8
5	3.5
10	4.1
25	5.0
50	5.7
100	6.6
500	8.8

- b. Long-Duration Storm – Two 24-hour, 100-year MSE4 storm events with the time between peak rainfalls shorted from 24 hours to 12 hours.

11. Hydrology (SWMM Method with Horton Infiltration) (References: A, B, C, J)

- Parameters listed are default parameters and may need to be adjusted based on calibration data.
- a. Subcatchment Detail for Street Drainage
 - i. Contributing area to the existing storm sewer system that is to be modeled (Determined on a watershed by watershed basis)
- b. SWMM Routing Parameters (if calibration is not available to adjust parameters)
 - i. Percent Impervious
 1. Use City Surface Cover Layer
 2. If City Surface Cover Layer not available, Follow Step 1 (pages 1-3) of the “HowTo_CalculateCN” document
 - ii. DCIA
 1. Use City Surface Cover Layer
 2. If not available, Reference WinSLAMM Standard Land Use DCIA Spreadsheet
 - iii. Width – Estimated based on subcatchment shape. Estimation methodology shall be documented.
A single width shall be calculated for the entire subcatchment and used for all three sub-areas.
It is expected Width is one of the first calibration parameters for peak flow.
 - iv. Slope – Computed manually or estimated based on LiDAR. Computation or estimation methodology shall be documented.
 - v. In XP-SWMM, each subcatchment is to be split into area of (1) DCIA, (2) non-DCIA, and (3) pervious area. Within the model, the non-DCIA shall be routed to the pervious area.
 - vi. In PC-SWMM, indicate the percent being routed to pervious in the subcatchment attribute.
- c. Horton Infiltration
 - i. For typical urban pervious area (Based on range of values for different soil types, moisture conditions, and vegetation conditions found in Reference A):

HSG Group ^a	Max Infil. Rate (in/hr)	Min Infil. Rate (in/hr)	Decay Rate (1/hr)	Dry Days ^b	Maximum Infiltration Volume (in)
A	4.0	1.0	4.0	3.1	
B	2.0	0.5	4.0	4.4	
C	1.0	0.2	4.0	7.0	
D	0.5	0.1	4.0	9.9	
Water	0	0	0	0	

^aFor HSG listed as A/D, B/D, C/D, the default approach will be to assume the HSG associated with the lower infiltration rate (HSG D).

^bUse equation 4-12, pg 99, SWMM Reference Manual Volume 1 – Hydrology (Revised), January 2016

- ii. Impervious Manning’s n – 0.016
- iii. Pervious Manning’s n – 0.20
- iv. Depression Storage for Impervious – 0.05 inches
- v. Depression Storage for Pervious – 0.15 inches
- vi. Zero Depression Storage – 25 percent
- vii. Factors for adjusting
 1. Forest – Multiply max and min infiltration rates by 2.
 2. Farmland (row crops) – Multiply max and min infiltration rates by 1.2.
 3. Farmland (close crops) - Multiply max and min infiltration rates by 1.8.
 4. Other land uses – discuss with City staff
- viii. Area-weight the Horton Infiltration parameters for each subcatchment based on the area of each soil type within a subcatchment. Remove impervious area from area-weighting.

- ix. It is understood the NRCS/SCS updates the soil mapping at various times. The project teams will identify a date the soils data will be downloaded and that will be the data used for the duration of the project.
 - d. Evaporation: Turn off evaporation from calibration and design storm event runs.
12. Hydrology (SCS CN Hydrology – ONLY USE WHERE DESIGNATED BY CITY) (References B, K)
- a. Runoff Curve number, Percent Impervious, Directly Connected impervious Area
 - i. In areas where impervious areas are delineated:
 - 1. Use impervious/Pervious areas from City provided Surface Cover Layer.
 - 2. Impervious areas shall use a runoff curve number of 98.
 - 3. Urban pervious areas that are mowed and maintained can assume the area is Open Space in good condition listed in Table 4-9 of Reference B.
 - 4. All other pervious land uses shall match descriptions listed in Table 4-9 of Reference B.
 - 5. Create a composite subbasin runoff curve number that incorporates both impervious and pervious areas.
 - ii. In areas where Impervious areas are not delineated:
 - 1. Use City Surface Cover Layer. Where not available use provided WinSLAMM land use file and the “HowTo_CalculateCN” Document.
 - 2. Areas not delineated in City Provided WinSLAMM land use file shall defer to Dane County Land Use Map.
 - 3. Match WinSLAMM land uses with Dane County Land Use and repeat item “i.” of this section.
 - 4. Impervious areas shall use a runoff curve number of 98.
 - 5. Urban pervious areas that are mowed and maintained can assume Open Space in good condition listed in Table 4-9 of Reference B.
 - 6. All other pervious land uses shall match descriptions listed in Table 4-9 of Reference B.
 - 7. Create a composite subbasin runoff curve number that incorporates both impervious and pervious areas.
 - b. Routing Parameters
 - i. Width - In PC-SWMM only, Estimated based on subbasin shape. Estimation methodology shall be documented. It is expected that width is one of the first calibration parameters to be adjust for peak flow.
 - ii. Slope - In PC-SWMM only, computed manually or estimated based on LiDAR. Computation or estimation methodology shall be documented.
 - iii. Time of Concentration - In XP-SWMM only, calculate each watershed time of concentration based on equations listed in SCS Urban Hydrology for Small Watershed, 2nd Ed., (TR-55), June 1986 (Reference K). The max flow length for sheet flow is 75 feet in urban areas and 150 feet in agricultural/natural areas.
 - iv. In XP-SWMM and PC-SWMM, the percent impervious shall be zero and the composite runoff curve number shall incorporate impervious and pervious areas.
13. 1D Hydraulics (References: A, B, D, E, F, G)
- Dynamic mode with constant / variable timestep sufficient to model system accurately.
 - Conduit lengthening shall not be used unless prior approval from City on reason.
 - Parameters are default parameters and may need to be adjusted based on calibration data.
 - This list is not intended to be exhaustive.
- a. System to be Modeled
 - i. Public
 - 1. Standard: Trunk line and major conveyance components to trunk line.
 - 2. Process for Exceptions: Provide justification for conveyance components not included.
 - 3. Use engineering judgement for inclusion of additional detail beyond this

standard.

- ii. Private
 - 1. Standard: Not included
 - 2. Process for requiring inclusion of private pipes:
 - a. Stormwater management detention facilities providing significant detention
 - b. When necessary to understand the functioning of the public system. For example, the West Towne Mall parking lot drainage system.
 - iii. Greenways and major surface drainages
 - iv. Significant stormwater detention facilities (public and private).
 - 1. Private systems may be simplified if serving a single site.
 - 2. Provide justification for detention facilities not included.
- b. Loss Coefficients (see drawing at end of document)
- i. Entry
 - 1. Culverts – Select Inlet Type based on the Help File or HEC-RAS Hydraulic Reference Manual
 - 2. Storm Sewer (internal at MHs) = 0.05
 - 3. Storm Drainage Structures (MH) at 45 degree bend = 0.25
 - 4. Storm Drainage Structures (MH) at 90 degree bend = 0.5
 - 5. For culverts and entrances to storm sewer from an open channel or pond, both the energy loss coefficient and the inlet control (culvert code) shall be used.
 - ii. Exit
 - 1. Culverts –
 - a. Exit closed conduit to open channel = 0.5
 - b. Exit closed conduit to lake or pond = 1.0
 - 2. Storm Sewer (internal at MHs) = 0.05
 - 3. Storm Drainage Structures (MH) at 45 degree bend = 0.25
 - 4. Storm Drainage Structures (MH) at 90 degree bend = 0.5
- c. Coefficient of Discharge
- i. Weirs
 - 1. Sharp Crested – 3.0
 - 2. Roadway embankment – 2.6
 - 3. Flatter overflow – Use engineering judgment
 - ii. Orifices
 - 1. 0.6
- d. Manning's n
- i. Pipes
 - 1. Concrete Pipe: 0.013
 - 2. Other n values shall be chosen within generally acceptable ranges.
 - ii. Channels
 - 1. Use Chow's Open Channel Hydraulics, Reference E
 - iii. Bank Flow, including developed urban areas
 - 1. Use Chow's Open Channel Hydraulics, Reference E
- e. Transect Placement and Modifiers
- i. Splitting long open channels
 - 1. Changes in cross section
 - 2. Significant changes in slope and roughness
 - 3. Overflow points
 - ii. Segment Lengths
 - iii. Channel Geometry
 - iv. Provide shapefile where natural channel transects are selected along with XS Identifier
- f. Tailwater Conditions:
- i. Lake Mendota: one foot over Summer Maximum – 851.10

- ii. Lake Monona: TBD
 - iii. Lake Wingra (100-year WSE): 848.0
 - iv. Yahara River between Lakes Mendota and Monona: TBD
 - g. Inlet Clogging Factors
 - i. Continuous Slopes
 - 1. Street slope < 1% - 25% Clogging
 - 2. Street slope >= 1% - No Clogging
 - ii. Sags – 50% Clogging
14. 2D Data (References: A, G, H, I)
- a. Surface Roughness – The average Manning’s n may vary by land cover / land use. Referencing TR-55, the following roughness can be used for sheet flow conditions. Choose based on professional judgement and document in the report.
 - i. Impervious areas - 0.1
 - ii. Turf grass areas - 0.24
 - iii. Wooded – 0.4
 - iv. Prairie – 0.15
 - v. Other – reference TR-55
 - b. Channel Roughness: Where the 2D surface experiences channel flow, rather than sheet flow, utilize the Manning’s n values for open channels
 - c. There is not currently a city-wide impervious area layer. The consultant may choose to delineate the impervious area for the watershed. Or, the existing data may be utilized. The following assumptions can be made using the existing land use data:
 - i. For non-residential parcels, impervious and pervious area is available, therefore, that shall be used.
 - ii. A percent impervious is available for residential parcels. Calculate a composite roughness using the percent impervious area. Remove roofs from the composite roughness calculation – reference the Dane County land use for residential roofs. (roofs will be entered as blocked obstructions)
 - iii. Average the roughness within the ROW based impervious and pervious area.
 - d. Blocked Obstructions – enter roofs as Inactive Areas in XP-SWMM and Obstructions in PC-SWMM
 - i. Non-residential – use City impervious area data for roofs
 - ii. Residential – use Dane County roof layer
 - e. Grid cell/mesh size: Use size that balances model run time and sufficient 2D overland flow detail.
 - f. Grid/mesh orientation: Where possible, align grid/mesh with major channel flow direction. If not practical, then use orientation that minimizes run time.
15. Rain-on-Grid Analysis (Draft form, still being explored by City, do not use without discussion with City)
- a. Hydrology

For a full study area Rain-on-Grid model, no nodes or pipes should be active within the Runoff Mode.

 - i. Rainfall - All runoff is generated using Rainfall / Flow Area layers. Individual layers shall be created for each rainfall event, with only the applicable one active during each scenario. Rainfall distributions stated above in Section 9 shall be used.
 - ii. Landuse – Layers for the following land uses must be created: Buildings, Impervious, Turf Grass, Wooded, Prairie, Water and any other applicable layers. Land use layers for Turf Grass, Wooded, Prairie, and any other pervious land coverage, shall be additionally divided up into Hydrologic Soil Groups A, B, C, and D. These layers should cover the entire study area. Under the Land use data tab, inputs for Manning’s Roughness, Rainfall Abstraction, and Infiltration must be completed.

1. Manning's Roughness:
 - a. Buildings – Variable roughness must be used. A Depth-Roughness relationship as follows is appropriate:

Depth (ft)	Roughness
0.00	0.01
0.30	0.01
0.31	0.1
10.0	0.3

- b. Impervious – A constant roughness of 0.016
 - c. Turf Grass, Prairie, Wooded, and other Pervious – Variable roughness would be most appropriate to account for sheet flow at low flow depths. The consultant shall use roughness coefficients stated above in Sections 10.c and 12.a to develop these roughness curves.
 - d. Water – A constant roughness of 0.01.
2. Rainfall Abstraction:
 - a. Buildings and Impervious – Initial Abstraction of 0.04 inches (XP-SWMM Default). Continuing loss should remain 0.0.
 - b. Pervious - This shall remain unchecked, as Initial and Continuing losses will be accounted for via the Horton Infiltration parameters.
3. Infiltration:
 - a. Buildings and Impervious – This shall remain unchecked
 - b. Pervious – Horton Infiltration as described above in Section 10.c shall be created for each pervious land use layer.

- b. 2D Model Settings
 - i. Grid extent shall cover the entire study area.
 - ii. Default area type shall be set to Active Area. There should not be any inactive areas within the model.
 - iii. Default land use should be set to one of the pervious layers (suggested to use layer with largest total area). However, this should not have any impact on the modeling if there is full coverage of land use layers.
 - iv. Head boundaries shall be set anywhere where surface flow is able to leave the study area.
- c. 1D Model Network
 - i. The 1D storm sewer network shall be extensive enough to include enough inlets throughout the watershed so that surface water can adequately pass from the 2D surface into the 1D model. Multiple inlets at the same location may be combined to a single node. Inlets either side of the street shall remain separate nodes.
 - ii. Each inlet node must have Link Spill Crest to 2D checked. Each culvert inlet/outlet must have Link Invert to 2D checked. If calibration shows not enough flow is entering each inlet node, Spill Crest elevations may be lowered below the 2D cell elevation (0.5 ft is an acceptable initial lowering value)

16. Non-Modeling Data

- a. When utilizing XP-SWMM, provide attributed describing the source of data in the representative GIS feature classes
- b. When utilizing PC-SWMM, also add attributes to the entities describing their data sources.

17. Solutions

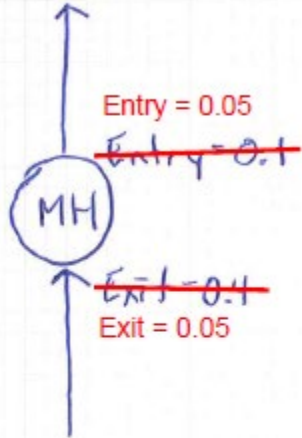
- a. Analysis – what are the underlying causes of flooding in:
 - i. Areas reported in the “Flood Download” from City staff
 - ii. Other flooded areas in the modeling not identified in the “Flood Download”

1. If more than 10 total areas, work with City staff to prioritize locations to evaluate
- iii. City to identify suggested solutions and provide to Consultant for consideration
- iv. Consultant to identify solutions independently and take lead on overall solutions for watershed
- b. Prioritize Solutions
 - i. Property Damage
 - ii. Major arterials where emergency vehicles cannot get through
 - iii. More criteria - TBD
- c. Displaying solutions/Order of solutions
 - i. Show each solution independently and then combined
 - ii. Order
 1. Property/pipe owned by Stormwater Utility
 2. Pipe size needed to solve remainder of issues
 3. Other public properties
 - a. Janet will provide areas where there are non-starters in Parks
 4. Private properties
 - iii. Show structures removed from the 100-yr event (Process still in draft form; Check with City before proceeding)
 1. Intersect the flood raster with the building outlines
 2. Buffer buildings by 5-feet to account for inaccuracies of building footprint layer
 3. Any building outline that intersects the buildings is considered "flooded", regardless of depth
- d. Overlay TIP map with inundation mapping to understand where immediate future project opportunities are
- e. Freeboard – City does not have a minimum freeboard requirement
- f. Properties adjacent to greenway and new greenway crossings – Current ordinance states property low building opening must be 4' above invert of downstream greenway street structure crossing. Therefore, may need to make structures wider, instead of deeper, to not flood upstream properties

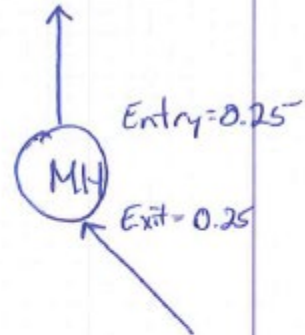
REFERENCES

- A. Model Help Files and User Forums
- B. Storm Water Management Model version 5.1 User's Manual. (Available at: <https://www.epa.gov/water-research/storm-water-management-model-swmm-version-51-users-manual>)
- C. SWMM reference manual volume I – hydrology (Available at: <https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockkey=P100NYRA.txt>)
- D. SWMM reference manual volume volume II – hydraulics (Available at: <https://nepis.epa.gov/Exe/ZyPDF.cgi/P100S9AS.PDF?Dockkey=P100S9AS.PDF>)
- E. Chow, Open Channel Hydraulics, 1959
- F. HEC-RAS Hydraulic Reference Manual. (Available at: <https://www.hec.usace.army.mil/software/hec-ras/documentation/HEC-RAS%205.0%20Reference%20Manual.pdf>)
- G. ASCE Two-Dimensional Modeling Using HEC-RAS, Lecture 8 – Troubleshooting and Reviewing, Page 31; 2017.
- H. Australian Rainfall & Runoff Revision Projects, Project 15: Two Dimensional Modeling in Urban and Rural Floodplains, November 2012.
- I. FLO-2D Reference Manual, FLO-2D Software, 2012.
- J. ASCE Manual of Engineering Practice No 28.
- K. SCS Urban Hydrology for Small Watershed, 2nd Ed., (TR-55), June 1986

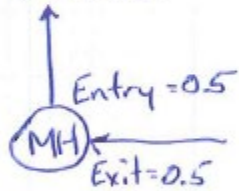
Straight-Through Manhole



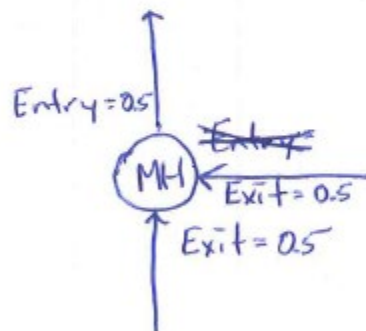
45° Bend Manhole



90° Bend Manhole



TEE Manhole



TEE (No Manhole)

