

TASK ORDER NO. 11278.a

Pursuant to the

MASTER AGREEMENT FOR PROFESSIONAL SERVICES BETWEEN

CITY OF MERIDIAN (OWNER) AND J-U-B ENGINEERS, INC. (ENGINEER)

This Task Order is made this ____ day of October 2021 and entered into by and between the City of Meridian, a municipal corporation organized under the laws of the State of Idaho, hereinafter referred to as "City", and accepted by J-U-B ENGINEERS, INC., hereinafter referred to as "Engineer" pursuant to the mutual promises, covenant and conditions contained in the Master Agreement (category 2E) between the above mentioned parties dated October 1, 2019. The Project Name for this Task Order is as follows:

SEWER MASTER PLAN UPDATE FY22

PROJECT UNDERSTANDING-SUMMARY

The CLIENT regularly updates their Collection System Master Plan. The City has experienced significant growth since the last update was completed in 2017. This project will update the hydraulic model of the collection system, including the existing, committed and master plan models. Modeling assumptions, land use designations and unit flows will be updated. Flow monitoring was completed separately in FY21.

The updated Master Plan will provide the conceptual layout of the sewer trunk lines 10-inch and larger required to serve the City's impact area. Minor modifications to the Master Plan made by the City since the last update will also be incorporated. A Capital Improvement Plan will be developed to provide a prioritization for capital improvement projects based on the results of the system analysis and the growth projections.

SCOPE OF WORK

Task 1 – Management and Meetings

1. Subtask 001: Project Management
 - a. Set up project into J-U-B's financial and record keeping systems for document retention and project controls.
 - b. Conduct project planning and risk assessment.
 - c. Coordinate quality assurance / quality control (QA/QC) processes.
 - d. Communicate and coordinate J-U-B team activities with kickoff and progress meetings as required.

- e. Regularly monitor project status, budget and schedule.
 - f. During periods of project activity, provide a regular report to CLIENT on project status, budget and schedule.
 - g. Provide a monthly invoice including budget status.
 - h. Provide ongoing document handling and filing.
2. Subtask 002: Meetings
- a. Attend the following meetings throughout the duration of the projects:
 - i. *Kick-off meeting*
 - ii. *Land use and density review meeting*
 - iii. *Asset Management Program review meeting*
 - iv. *CIP review meeting*
 - b. Attend up to three (3) other meetings to discuss project issues or deliverables.
3. Subtask 003: Project Closeout
- a. Archive paper and electronic files and records.
 - b. Communicate the project completion to CLIENT and other affected agencies and stakeholders, as required.
 - c. Close financial billing and accounting records in J-U-B's financial and record-keeping systems.

Task 2 – Model Update and Analysis

1. Subtask 001: Data Collection and Modeling Assumptions Update
- a. Obtain and review updated GIS information from the City for all sewer lines, including rim and invert elevations.
 - b. Obtain updated condition assessment and prioritization scores for each sewer line in the existing system from the City's asset management program.
 - c. Lift Stations – Obtain and review pump curves, SCADA pumping data, operation set points and record drawings.
 - d. Obtain permit information for all permitted/significant users, including current permit limits and future permit limits.
 - e. Obtain current well backwash discharge rates.
 - f. Obtain and review water meter data from Meridian Utility Billing for use in updating existing sanitary flows.
 - g. Update the modeling assumptions to be used in the hydraulic model. Submit updated modeling assumptions to the City for review.
 - h. Address comments received through internal QA/QC and City review of the modeling assumptions. Incorporate the revised modeling assumptions into the Master Plan document as an appendix.
2. Subtask 002: Existing Model Scenario Update
- a. Existing System Layer Update

- i. Using GIS information provided by the City (sewer lines and manholes), update rim elevations, invert elevations, and pipe sizes in the model collection system layer. Rim and invert source information will also be maintained in the system layer. The collection system layer will be updated with the best available data for trunk lines ≥ 10 -inches in diameter. Pipes smaller than 10-inch in diameter will be considered non-critical, but those in the existing GIS layer will be included in the model to facilitate flow routing.
 - ii. Identify critical information gaps (≥ 10 -inches) that require field survey or record drawing information. Provide a list of needed record drawings and/or needed survey information to the City.
 - iii. Discrepancies, missing data and questions on rim and invert elevations will be discussed with the City and resolved with one of the following: field survey by City staff, record drawings, straight grading or interpolation.
 - iv. Non-critical information gaps (<10 inches) in rim and invert data will be approximated in the model using straight grading or interpolation.
 - v. Based on record drawings or field survey information provided by the City, add information to the collection system layer.
- b. Existing Flow Generation Layer Update
 - i. Update existing land use layer using parcel characteristics found in the county parcel GIS data.
 - ii. Develop existing sanitary flows by analyzing average winter water meter data from each parcel from Dec 2020, Jan 2021, and Feb 2021.
 - iii. Summarize unit flows for each land use type for use in future model scenarios.
- c. Update Existing Model Scenario
 - i. Load the updated layers and parameters into the new model, including the collection system layer, sanitary flows, infiltration flows and inflow parameters.
 - ii. Develop the following modeling scenarios:
 - (a) Calibration – Peak infiltration, no inflow event, sanitary flows
 - (b) Existing Model – Peak infiltration, design inflow event, existing sanitary flows
 - iii. Run the model for each scenario and resolve any errors, inconsistencies or issues identified.
- d. Model Calibration
 - i. Calibrate the model for the dry weather scenario. Update seasonal infiltration assumptions for each major sewer basin in the system based on recent gravity flow monitoring, WRRF flow data and lift station flow data. Calibration will identify the peak seasonal infiltration in each basin and confirm diurnal curves used in the model.
 - ii. Prepare flow graphs summarizing the model calibration. Incorporate the calibration graphs into the Master Plan document as an appendix.
- e. Existing Model Scenario Capacity Analysis

- i. Determine the allowable backwash rates for wells with treatment resulting in backwash discharges to the collection system under existing conditions.
 - ii. Add the design storm and current well backwash rates for use in Existing Model scenario analysis.
 - iii. Analyze the model for the Existing scenario.
 - iv. Identify collection system bottlenecks or trunks showing stress with respect to recommended design parameters in the existing collection system for existing flows.
 - v. Summarize flows into existing lift stations and the remaining pumping capacity.
- 3. Subtask 003: Committed Model Scenario Update
 - a. Committed Flow Generation Layer Update
 - i. Develop the 2021 committed flow layer for sanitary flows. Based on the most recent City limits as defined in the Ada County GIS. Unit flows developed in Subtask 2 will be used to estimate committed sanitary flows.
 - ii. Update the expired plats list and remove these parcels from the 2021 committed flow layer.
 - iii. Develop the associated infiltration flows for the 2021 committed flow layer. Infiltration values from the calibration will be applied to similar areas nearby.
 - iv. Estimate the difference between the existing service area and the committed model service area and the corresponding flow.
 - v. Coordinate with the City to update the City's WRRF benchmarking spreadsheet with the 2021 committed flow layers. Add benchmarking for each of the City's existing regional lift stations (South Black Cat LS, North Black Cat LS, Oaks/North McDermott LS).
 - b. Update Committed Model Scenario
 - i. Load the updated layers and parameters into the model.
 - ii. Develop the following modeling scenario:
 - (a) Committed Model – Peak infiltration, design inflow event, committed sanitary flows
 - iii. Run the model for the Committed Model scenario and resolve any errors, inconsistencies or issues identified.
 - c. Committed Model Scenario Capacity Analysis

- i. Analyze the model for the Committed scenario.
- ii. Identify collection system bottlenecks or trunks showing stress with respect to recommended design parameters in the existing collection system for committed flows.
- iii. Summarize committed flows into existing lift stations and the remaining pumping capacity.

4. Subtask 004: Demographics

- a. Obtain and review planning documents including the current comprehensive plan, specific area plans and associated updates such as Ten Mile, Downtown and the Fields District, and other current City planning documents.
- b. Determine populations and sewer availability for the existing service area. Utilizing the existing sewer model, City utility billing data and Ada County GIS parcel data; determine parcels where sewer is available, parcels that are connected to the sewer, developed parcels not connected to the sewer, undeveloped parcels and associated populations.
- c. Determine current and recent development density trends in the existing service area. For budget purposes it is assumed that up to ten (10) recent developments will be analyzed to determine current land development densities. Current development densities will be used to project future development densities for similar land use types.
- d. Compare current densities to Comprehensive Plan densities and establish future land use densities for use in the Master Plan. Review downtown Boise City development trends for reference and use in future density assumptions for downtown Meridian.
- e. Develop build-out population projections for the ultimate service area based on Comprehensive Plan designations.
- f. Meet with City staff from Planning and Engineering to review master planning boundary, future densities, land use assumptions and population projections. Meeting provided in Task 100.
- g. Revise and update densities and population projections based on discussions with the City.

5. Subtask 005: Master Plan Model Scenario Update

- a. Master Plan Collection System Layer Update

- i. Update conceptual horizontal and vertical alignments, as well as pipe size, for future trunk lines 10-inch and larger in diameter required to serve the City's master planning boundary. Incorporate modifications to the Master Plan System Layer made through on-call analyses since the previous Master Plan. Modify the Master Plan System Layer to account for expansion of the existing system and recent development.
 - ii. Examine current Master Plan routes for general constructability and improved routing efficiencies. Incorporate any current City capital improvement projects.
- b. Master Plan Service Area Layer Update
 - i. Update Master Plan service areas and injection points that define how an area is provided sewer service. Incorporate modifications to the Master Plan Service Area Layer made through on-call analyses since the previous Master Plan. Modify the Master Plan Service Area Layer to account for expansion of the existing system and recent development.
- c. Master Plan Flow Generation Layer Update
 - i. Update future land use type assignments to each parcel in the City's Impact Area using the current comprehensive plan. Include land use types from area specific plans such as Ten Mile, Downtown and the Fields District. Unit flows developed from the water meter analysis will be used to estimate flows. Densities developed during the demographic analysis will also be utilized. Existing and Committed Flows will be maintained as developed in the Existing Model and Committed.
 - ii. Update the master plan infiltration flow layer based on the new model calibration. Infiltration values from the calibration will be applied to similar areas nearby.
 - iii. Develop an alternate Master Plan Flow Generation Layer that examines increased densities for specific areas of the City. Committed and master plan sanitary flows will be increased by 20 percent. Existing sanitary flows will be held constant except for those within the downtown redevelopment area defined by the planning document "Destination: Downtown."
- d. Update Committed Model Scenario
 - i. Load the updated layers and parameters into the model.
 - ii. Develop the following modeling scenarios:
 - (a) Master Plan Model – Peak infiltration, design inflow event, master plan sanitary flows
 - (b) Increased Density Model – Peak infiltration design inflow event, increased density master plan sanitary flows
 - iii. Run the model for each scenario and resolve any errors, inconsistencies or issues identified.
- e. Master Plan Model Scenario Capacity Analysis

- i. Determine the allowable backwash rates for wells with treatment resulting in backwash discharges to the collection system under master plan conditions. Include analysis for wells where future treatment is planned (Well 26, 31, 10B, 24 and 32).
- ii. Analyze the model for the Master Plan scenario.
- iii. Identify collection system bottlenecks or trunks showing stress with respect to recommended design parameters in the existing collection system for master plan flows.
- iv. Summarize master plan flows into existing lift stations and the remaining pumping capacity.
- v. Evaluate the impacts that increasing densities has on model results by comparing the Master Plan Model and Increased Density Model results.
- vi. Compare model results to the 2017 Meridian Sewer Master Plan. Highlight and discuss any significant differences.

Deliverables

Updated WRRF benchmarking spreadsheet based on the 2021 committed flow layer.

Task 3 – Capital Improvement Plan

1. Subtask 001: Asset Management Program Coordination
 - a. Incorporate planned rehabilitation and replacement projects from the asset management program into the overall collection system Capital Improvement Plan (CIP). One meeting with City staff is assumed for budgeting purposes.
 - b. Update the downtown sewer realignment plan based on recent completed and current projects.
2. Subtask 002: Area Phasing Plans
 - a. Update the Southwest Phasing Plan outlining temporary inter-basin pumping in the southwest area to account for growth since the previous master plan.
 - b. Summarize the Northwest Phasing Plan outlining potential growth patterns and different City approaches to expanding the collection system infrastructure in the area. Identify which alternative to include in the CIP through discussion with the City
3. Subtask 003: Lift Station Phasing Plan
 - a. Update phasing plans for each existing and planned regional lift station. Include information on major components, required upgrades and capacity limitations.
4. Subtask 004: Capital Improvement Plan
 - a. Develop potential capital improvement projects to address the bottlenecks and capacity problems identified in the Existing, Committed and Master Plan model analyses. Includes potential capital improvements needed for the Increased Density Model scenario. Include projects from area phasing plans, lift station phasing plans, and rehabilitation and replacement projects.

- b. Review the potential capital improvements with the City and select preferred improvements. Discuss yearly goals for replacement and rehabilitation projects. One meeting with City staff is assumed for budgeting purposes.
- c. Prepare planning level opinion of probable capital costs for each of the preferred capital improvements and update preliminary unit costs for future replacement and rehabilitation projects.
- d. Develop and run a model scenario that contains all of the preferred CIP projects to confirm the capacity problems have been resolved.
- e. Develop a CIP that summarizes needed capital improvement projects, replacement and rehabilitation projects and associated costs. Develop an implementation schedule for the CIP. Evaluate the current budget versus needs outlined in the CIP and the City's replacement and rehabilitation goals.
- f. Include projects currently under construction and/or planned in the CIP.

Task 4 – Documentation

1 Subtask 001: Draft Master Plan Report

- a. Prepare a draft of chapters 1-3 of the Master Plan document (1-Introduction and Background; 2-Existing System Summary; 3-Existing Model). Figures associated with these chapters include maps of the service area, existing land use designations, existing collection system pipe size, existing reserve capacity, and existing depth over diameter. The modeling assumptions and model calibration appendices will be included.
- b. Address comments received through internal QA/QC and City review of Chapters 1-3 of the Master Plan document. Revise as necessary.
- c. Prepare a draft of Chapters 4-6 of the Master Plan document (4-Committed Model; 5-Demographics; 6-Master Plan Model). Figures associated with these chapters include maps of the committed model service area, future land use designations, committed model reserve capacity of existing pipes, committed model depth over diameter of existing pipes, master plan collection system pipe size, master plan reserve capacity of existing pipes, and master plan depth over diameter of existing pipes.
- d. Address comments received through internal QA/QC and City review of Chapters 4-6 of the Master Plan document. Revise as necessary.
- e. Draft chapters 7-8 (7-Capital Improvement Plan; 8-Summary) and the Executive Summary. Combine with previously completed chapters 1-6. Assimilate into one document including all figures and appendices. Perform

QA/QC review of the complete Master Plan Report by senior level staff independent from the project.

f. Address comments received through internal QA/QC and City review of the draft Master Plan Report. Revise as necessary.

2. Subtask 002: Final Master Plan Report

a. Submit one electronic copy (PDF) of the complete sealed Master Plan Report to DEQ for review and approval.

b. Address comments received from DEQ. Document DEQ comments, resolutions and approval in an appendix. Submit to City.

Deliverables

Draft Master Plan Report chapters 1-3 for City review – (PDF)

Draft Master Plan Report chapters 4-6 for City review – (PDF)

Draft Master Plan Report chapters 1-8, ES for City review – (PDF)

Final Master Plan Report – Five (5) hard copies and a PDF

GIS shapefiles containing master plan and model results

Updated hydraulic model files

Task 5 – Management Reserve Fund

1. The Management Reserve Fund establishes a pre-authorized budget for additional tasks that may be requested by the CLIENT's Authorized Representative and performed by J-U-B upon mutual agreement of scope, budget, and schedule.
2. J-U-B will not exceed the pre-authorized amount without CLIENT approval.

ASSUMPTIONS

While preparing our scope of services and fee schedule, we have made the following assumptions:

- Individual water meter usage can be linked to the corresponding parcel and used for sanitary flow generation.

- Additional wet weather calibration is not planned since a rain fall event was not captured during the recent flow monitoring project.
- A parcel is included in the committed model if it has been annexed into City. Parcels with expired preliminary plats are not included in the committed model. City to provide expired plat list.
- City will provide direction on growth patterns to assist in future land use and demographic assumptions.
- The previous master planning boundary will be used as the starting point for this analysis and discussion.
- Only one alternative from the Northwest Phasing Plan will be included in the CIP.
- Results and maps will be based on the Master Plan Model scenario. Maps of the Increased Density Scenario will not be included, only discussions in the master plan report.
- Not necessary to field survey flow lines of drains/creeks where master plan sewer crossings are proposed to confirm viability of the vertical alignment. Can be added as an additional service, if necessary.
- City will provide yearly programmed budget amounts for replacement and rehabilitation projects.
- Provide on-going review of J-U-B's work within a time acceptable to the City and J-U-B.
- *CLIENT is responsible for completing, or authorizing others to complete, all tasks not specifically included above in PART 2 that may be required for the project including, but not limited to:*
 - Provide record drawings of new existing collection system components (trunk sewers 10 inches or larger) that may be required for modeling. We anticipate that most of the information on the existing trunk lines is contained in the City's current GIS layer.
 - Provide design plans of any City Capital Improvements that are currently in the planning or design phases.
 - Provide asset management data, rehabilitation and replacement projects and planned budgets to support the development of the CIP.
- Additional Services - CLIENT reserves the right to add future tasks for subsequent phases or related work to the scope of services upon mutual

agreement of scope, additional fees, and schedule. These future tasks, to be added by amendment at a later date as Additional Services, may include:

- Surveying: Field survey flow lines of drains/creeks where master plan sewer crossings are proposed to confirm viability of the vertical alignment.
- Additional Model Scenarios: Developing and analyzing additional model scenarios beyond those specified in Part 2.
- Other additional services as directed by the City.

TIME OF COMPLETION and COMPENSATION SCHEDULE

COMPENSATION AND COMPLETION SCHEDULE			
Task	Description	Estimated Completion Date	Compensation
1	Project Management	Concurrent with work progress	\$15,600
2	Model Update and Analysis	Duration of task approximately 9 months. Priority given to completing Master Plan for Can Ada LS Basin (6 months after NTP).	\$150,700
3	Capital Improvement Plan	Duration of task approximately 2 months	\$45,300
4	Documentation	Draft for CLIENT review XX months after executed contract, notice to proceed, and receipt of all required data: Chp 1-3 = 6 months Chp 4-6 = 9 months Complete Draft = 11 months	\$27,700
5	Management Reserve Fund	As mutually agreed to by CLIENT and J-U-B	\$5,000
TASK ORDER TOTAL:			\$244,300.00

The Not-To-Exceed amount to complete all services listed above for this Task Order No. 11278.a is two hundred forty-four thousand three hundred dollars (\$244,300.00). No compensation will be paid over the Not-to-Exceed amount without prior written approval by the City in the form of a Change Order. No travel or expenses will be reimbursed through this agreement. All costs must be incorporated in the individual tasks within the Compensation and Completion Schedule above.

CITY OF MERIDIAN

J-U-B ENGINEERS

BY: _____
KEITH WATTS, Procurement Manager

BY: 
Lisa Bachman, Area Manager

Dated: _____

Dated: 10/25/2021

Council Approved: _____

City Project Manager:
Tyson Glock