METROPOLITAN SEWER DISTRICT OF GREATER CINCINNATI

Project ID 10142910 Ludlow Run Sustainable Source Control Contract 95x12762

Progress Report for Professional Services provided July 3, 2023 through July 30, 2023

Arcadis U.S., Inc.

At the request of the Metropolitan Sewer District of Greater Cincinnati, Arcadis worked on the following items as summarized below.

Task 1 Project Administration - Planning

- Performed project administration and resource management; communicated updates to MSDGC project manager.
- Updated Schedule

Task 2 Data Review and Collection

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Task 3 Collection System Model Review

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Task 4 Model Update and Calibration

- Continued working on calibration based on following Submodels, Boundary Conditions and Inflows for Model Calibration
 - o Submodels:
 - Ludlow 007/008/010
 - Ludlow 009
 - Ludlow 074/075/075
 - Ludlow 017
 - Ludlow 011/012
- Schedule delay, calibration work had to be transitioned to new staff for medical reasons. The transition of work to new staff took some time to complete. The schedule has been updated to reflect this transition. Calibration efforts are continuing with new modeling team since transition.
- Additional delays due to understanding of Modeling features including the Spring Grove Cemetery and manhole installations on Howard Avenue upstream of meter MC-KR-075. Arcadis will provide an updated schedule with next invoice.

	w Run Sustainable Source Control	Original Start	Finish	MSDGC Schedule 28-Jun-2 2020 2021 2022 2023 2024
		Duration		May Jun Jul Aug Sep Oct Nov Dec Jan F Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan F Mar Apr M Jun Jul Aug Sep Oct Nov Dec Jan F Mar Apr M Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr
1 <mark>42910 L</mark> u	dlow Run Sustainable Source Control	1019 29-Apr-20 A	25-Mar-24	▼: 25-Ma
ask 1 Pro	ject Administration - Planning	752 29-Apr-20 A	25-Mar-24	25-Ma
1.010	Notice to Proceed for PM Task 1	0 29-Apr-20 A		Notice to Proceed for PIM Task 1
1.020	PM during Planning Project	610 29-Apr-20 A	25-Mar-24	PMdu
1.030	Prepare Task 1 Deliverables	26 29-Apr-20 A	03-Jun-20 A	Prepare Task 1 Deliverables
1.040	Submit Draft Project Management Plan and Baseline Schedule for MSDGC Review	0	03-Jun-20 A	Submit Draft Project Management Plan and Baseline Schedule for MSDGC Review
1.050	Submit Draft QA/QC Plan for MSDGC Review	0	03-Jun-20 A	Submit Draft QA/QC Plan for MSDGC Review
1.060	Submit Draft Risk Management Plan for MSDGC Review	0	03-Jun-20 A	
1.070	MSDGC Review of Draft Deliverables	10 04-Jun-20 A	17-Jun-20 A	MSDGC Review of Draft Deliverables
1.080	Resolve MSDGC Comments and Update Task 1 Deliverables	10 18-Jun-20 A	20-Jul-20 A	Resolve MSDGC Comments and Update Task 1 Deliverables
1.085	Submit Revised Draft Task 1 Deliverables	0	01-Jul-20 A	♦ Submit Revised Draft Task 1 Deliverables
1.090	Submit Final Project Management Plan	0	21-Jul-20 A	◆ Submit Final Project Management Plan
1.100	Submit Final QA/QC Plan	0	21-Jul-20 A	◆ Submit Final QA/QC; Plan
1.110	Submit Final Risk Management Plan and Update Risk Register	0	21-Jul-20 A	◆ Submit Final Risk Management Plan and Update Risk Register
1.140	Community Meeting	0 30-Jun-20 A		Community Meeting
1.150	Planning Workshop and Project Meeting 1	0 04-Dec-20 A		Planning Workshop and Project Meeting 1
1.160	Project Meeting 2	0 18-Jun-21 A		◆ Project Meleting 2
1.170	Project Meeting 3	0 10-Sep-21 A		
1.180	Project Meeting 4	0 03-Dec-21 A		Project Meeting 4
1.190	Project Meeting 5	0 25-Feb-22 A		♦ Project Meeting 5
1.200	Project Meeting 6	0 20-May-22 A		♦ Project Meeting 6
1.210	Project Meeting 7	0 12-Aug-22 A		◆ Project Meeting 7
1.220	Project Meeting 8	0 04-Nov-22 A		♦ Project Meeting 8
1.230	Project Meeting 9	0 27-Jan-23 A		◆ Project Meeting 9
1.240	Progress Meeting 10	0 17-Mar-23 A		◆ Progress Meeting 10
sk 2 Dat	a Review and Collection	829 18-Jun-20 A	22-Aug-23	▼ 22-Aug-23, Task 2 Data Review and Collect
2.010	MSDGC NTP for Data Review and Collection and Collection System Model Review (Task 2 and 3)	0 18-Jun-20 A		◆ MSDGC NTP for Data Review and Collection and Collection System Model Review (Task 2 and 3)
2.020	Obtain Data from MSDGC (NTP on 6/18/2020)	15 18-Jun-20 A	13-Nov-20 A	Contrain Data from MSDGC (NTP on 6/18/2020)
2.030	Review Data	45 18-Jun-20 A	13-Nov-20 A	Review Data
2.040	Initial Site Visit with MSDGC	0 08-Sep-20A		Initial Site Visit with MSDGC
2.050	Prepare Draft Data Review Technical Memorandum	15 20-Aug-20 A	16-Sep-20 A	Prepare Dtaft Data Review Technical Merhorandum
2.060	Submit Draft Data Review Tech Memo for MSDGC Review	0	16-Sep-20 A	Submit Draft Data Review Tech Memo for MSDGC Review
2.070	MSDGC Review of Draft Data Review Tech Memo	10 16-Sep-20 A	06-Oct-20 A	MSDGC Review of Draft Data Review Tech Memo
2.080	Resolve MSDGC Comments, Continue Collecting Data, and Update Data Review Tech Memo	10 07-Oct-20 A	11-Dec-20 A	Resolve MSDGC Comments, Continue Collecting Data, and Update Data Review Tech Memo
2.090	Submit Final Data Review Tech Memo	0	11-Dec-20 A	♦ Submit Final Data Review Tech Memo
2.100	Collect additional data as requested (as authorized by MSDGC)	40 28-Jun-23	22-Aug-23	Collect additional data as requested (as au
	lection System Model Review	731 01-Sep-20A	-	▼ 11-Jul-23, Task 3 Collection System Model Review
3.010	Obtain Model and Model Data from MSDGC	0 01-Sep-20A		Obtain Model and Model Data from MSDGC
3.010	Review Flow and Rain Data and Review Model	40 01-Sep-20A	24-Nov-20 A	
3.020	Prepare Draft Model Review Technical Memorandum, Preliminary Review	15 04-Nov-20 A	24-Nov-20 A	
	Checklist, and Flow Monitoring Plan			
.040	Submit Draft Model Review Tech Memo, Preliminary Review Checklist, and Flow Monitoring Plan for MSDGC Review	0	24-Nov-20 A	
3.050	MSDGC Review of Draft Model Review Tech Memo	13 25-Nov-20 A	11-Dec-20 A	
3.060	Resolve MSDGC Comments and Update Model Review Tech Memo and Flow Monitoring Plan	20 14-Dec-20 A	08-Jan-21 A	Resolve MSDGC Comments and Update Model Review Tech Memo and Flow Monitoring Plan
3.070	Submit Final Model Review Tech Memo and Flow Monitoring Plan	0	08-Jan-21 A	Submit Final Model Review Tech Memo and Flow Monitoring Plan
3.080	Perform system survey as recommended in Model Review Tech Memo (with MSDGC Approval)	10 22-Feb-23 A	11-Jul-23	Perform system survey as recommended in Mode
ek 4 Mer		761 20-Jan-21 A	06-Oct-23	v 06-Oct-23, Task 4/Model Update ar
	del Update and Calibration		00-001-20	.
4.005	MSDGC NTP for Task 4	0 20-Jan-21 A	00.00	◆ MSDGC NTP for Task 4
4.010	MSDGC Install Flow Monitors	10 15-Mar-21 A	26-Mar-21 A	MSDGC Install Flow Monitors
4.020	Review Flow Monitor Data during Collection	347 29-Mar-21 A	26-Jul-22 A	Review Flow Monitor Data during Collection
4.030	Receive Flow Monitoring Data	0	26-Jul-22 A	◆ Receive Flow Monitoring Data
4.040	Update Hydraulic Model, Review Delineation	18 27-Jul-22 A	22-Feb-23 A	
4.041	Receive Flow Splits, Flow Paths and Delineation (Hazen)	0 50 22-Aug-22 A	19-Aug-22 A	
4.042	Full Data Review and Flow Event Development			

10142910 Ludlow Run Sustainable Source Control				MSDGC Schedule												28-Jun-23 14:06										
tivity ID	Activity Name	Original Start Duration	Finish	2020 May Jun Jul Aug Sep Oct Nov Dec Jan F Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan F Mar Apr I											2022				2023				2024			
				May Jun	Jul Aug	g Sep Oct	t Nov De	c Jan F	F Mar Apr Ma	y Jun Jul	Aug Sep	Oct Nov D	ec Jan	FMar	Apr M	Jun Jul	Aug Sep O	ct Nov De	c Jan	F Mar Apr N	V Jun J					
4.050	Validate and Calibrate Hydraulic Model	85 22-Feb-23 A	14-Aug-23	_																		Validate and 0				
4.060	Prepare Draft Task 4 Deliverables based on MSDGC Modeling guidelines	105 10-Nov-22 A	28-Aug-23																			Prepare Dr	aft Task 4 Deliv	verables based on MSD		
4.070	Submit Event File (Step 4) for Review	0	10-Nov-22 A															🔶 Subn	1.1.1.1	File (Step 4) for	1 1					
4.075	MSDGC Review and Approval of Event File	10 10-Nov-22 A	22-Feb-23 A																			Approval of Event File				
4.080	Submit Data File (Step 5) for Review	0	17-Nov-22 A															♦ Sub	omit Data	File (Step 5) for	r Review					
4.085	MSDGC Review and Approval of Data Review File	10 17-Nov-22 A	22-Feb-23 A																	MSDGC Re	eview and A	Approval of Data Rev	iew File			
4.090	Submit Model Calibration (Model to Monitor Comparisons) (Step 6) for Review	0	17-Jul-23																		•	 Submit Model Cali 	bration (Model	to Monitor Comparison		
4.095	MSDGC Review of Calibration, Revisions and Approval	20 18-Jul-23	14-Aug-23				-+				+											MSDGC Revi	ew of Calibrati	on, Revisions and Appro		
4.100	Submit Model for Review (Step 7)	0	14-Aug-23																			 Submit Model 	for Review (S	tep 7)		
4.105	MSDGC Review of Model, Revisions and Approval	10 15-Aug-23	28-Aug-23																			MSDGC R	eview of Mode	l, Revisions and Approv		
4.110	Prepare Draft Modeling Report	10 29-Aug-23	11-Sep-23																			📕 Prepare	Draft Mødeling	Report		
4.115	Submit Draft Modeling Report (Step 8)	0	11-Sep-23																			🔶 Submit D	oraft Modeling	Report (Step 8)		
4.120	MSDGC Review of Draft Modeling Report	10 12-Sep-23	25-Sep-23																			MSDG	C Review of D	Draft Modeling Report		
4.130	Resolve MSDGC Comments and Update Modeling Report	10 25-Sep-23	06-Oct-23																			📕 Reso	lve MSDGC C	Comments and Update		
4.140	Submit Final Modeling Report and Model Files	0	06-Oct-23																			🔶 Subr	nit Final Mode	ing Report and Model F		
4.150	Develop Baseline Project Model	10 29-Aug-23	11-Sep-23																			📕 Develop	Baseline Proje	ct Model		
Task 5 P	lanning and BCE	160 15-Aug-23	25-Mar-24																			-		25- Mar-24, Ta		
5.010	Perform Conditions and Capacity Analysis	20 15-Aug-23	11-Sep-23	1 1				1 1			1 1				1 1			1 1			· · · · · · · · · · · · · · · · · · ·	Perform	Conditions and	l Capacity Analysis		
5.020	Perform Alternatives Analysis and Modeling	50 12-Sep-23	20-Nov-23																				Perform Alte	ernatives Analysis and N		
5.030	Prepare Alternatives Analysis Report	20 21-Nov-23	18-Dec-23																				Prepar	e Alternatives Analysis F		
5.040	Submit Draft Alternatives Analysis Report for MSDGC Review	0	18-Dec-23																				🔶 Submi	t Draft Alternatives Anal		
5.050	MSDGC Review of Draft Alternatives Analysis Report	10 19-Dec-23	01-Jan-24																				📕 MSE	DGC Review of Draft Alt		
5.060	Conduct Alternatives Analysis Review Meeting	0 05-Jan-24																					🔶 Cor	nduct Alternatives Analys		
5.070	Resolve MSDGC Comments and Update Alternatives Analysis Report	15 02-Jan-24	22-Jan-24																				— F	Resolve MSDGC Comm		
5.080	Submit Final Alternatives Analysis Report	0	22-Jan-24																				\$ 🔶	Submit Final Alternatives		
5.090	Prepare Draft BCE	20 23-Jan-24	19-Feb-24																					Prepare Draft BCE		
5.100	Submit Draft BCE for MSDGC Review	0	19-Feb-24																					♦ Submit Draft BCE f		
5.110	MSDGC Review of Draft BCE	10 20-Feb-24	04-Mar-24																					M\$DGC Review		
5.120	Conduct BCE Review Meeting	0 08-Mar-24																						Conduct BCE R		
5.130	Resolve MSDGC Comments and Update BCE	15 05-Mar-24	25-Mar-24																					Resolve MSD		
5.140	Submit Final BCE Report	0	25-Mar-24																					Submit Final I		
5.999	End of Planning Phase	0	25-Mar-24*																					End of Planni		

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