Contract 40

Micro-plastics water column and sediment residence times: quantifying the cycling and flux between bay waters and sediment, and the burial history of micro-plastics within the Matagorda and San Antonio Bay Systems

Second Interim Performance Report

September 15, 2023

Submitted To:

Matagorda Bay Mitigation Trust

Performing Laboratory:

Texas A&M University on behalf of Texas A&M University at Galveston

Authors:

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Dr. Karl Kaiser, Ph.D.

Personnel

Principal Investigator(s):

Drs. Timothy Dellapenna, Karl Kaiser, Peng Lin

Consulting MBMT Project Coordinator:

Mr. Steven J. Raabe

Location(s):

Texas A&M University at Galveston

Project Duration:

01 2023 – 31 August 2026

TAMU did not sign the contract until the end of Sept. 2023 so no progress has been made on this project during this reporting period.

Scope of work:

Sampling and research approaches designed for task:
Task 1: Sampling of suspended sediments and sediment cores:

Nothing to report.

Task 2: Estimation of the water column residence times of micro-plastics-bearing suspended sediments:

Nothing to report

Task 3: Characterization and quantification of micro-plastics in sediments:
Graduate student Bryan Gahn received training in core processing, and sample preparation for plastic analysis. He was also trained in running and maintaining the pyrolysis gas chromatography mass spectrometry instrument that is used for the quantification of plastic concentrations.

Task 4: Reconstruct the historical accumulation and record of micro-plastics in the Matagorda Bay systems:

Nothing to report

Task 5A: Acquisition of the seabed mixing depth associated with micro-plastics mobilization:

Nothing to report

Task 5B: Develop a quantified conceptual model of processes controlling occurrences of MPs within the bay sediment, fluxes of MPs between bay sediment and the water column and the residence times of MPs in the water column:

Nothing to report

Task 6: Report and Manuscript Writing and Presentations:

Nothing to report

Table 1

Core	Date	Lat	Lon	WaterDepth (ft)	Penetration (ft)	Recovery (ft)
MBMT-01	12/2/23	28.2759465	-96.6704605	7.7	4.8	3.1
MBMT-02	11/18/23	28.60667224	-96.46283052	6.8	4.8	3.7
MBMT-03	11/18/23	28.62842172	-96.5330047	6.9	4.8	3.4
MBMT-04	11/16/23	28.67792736	-96.57428356	4.7	4.6	3.7
MBMT-05	11/16/23	28.67791597	-96.60927514	6.1	4.3	3.6
MBMT-06	11/18/23	28.61980261	-96.58480018	7.8	4.6	3.9
MBMT-07	11/16/23	28.69428795	-96.64082817	5.1	4.7	3.8
MBMT-08	12/4/23	28.6942880	-96.6408282	5.8	4.8	3.5
MBMT-09	12/4/23	28.6451588	-96.3839248	5.6	4.8	3.8
MBMT-10	11/17/23	28.61018894	-96.3153256	11.7	4.8	4.1
MBMT-11	11/17/23	28.57130818	-96.36696799	13.1	4.8	3.2
MBMT-13	11/17/23	28.52368604	-96.43034384	12.8	4.8	3.7
MBMT-14	11/17/23	28.48583023	-96.33069854	13.2	4.7	4.2
MBMT-15	12/4/23	28.6688345	-96.2594148	7.7	4.7	4.1
MBMT-16	12/4/23	28.7043031	-96.1957829	4.7	4.8	3.8
MBMT-17	12/4/23	28.7359193	-96.1889555	2.7	4.8	4.3
MBMT-18	11/17/23	28.61862038	-96.23093524	8.4	4.4	3.4
MBMT-19	11/17/23	28.56191285	-96.17223003	12.4	4.8	3.9
MBMT-20	11/17/23	28.59846497	-96.125024	7.8	4.5	3.7
MBMT-21	11/17/23	28.60800031	-96.04460991	5.9	4.7	3.6
MBMT-22	11/18/23	28.58852111	-96.50791068	8.2	4.8	2.5
MBMT-23	11/18/23	28.64931608	-96.51314324	4.2	4.6	4.1
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SAB-01	12/2/23	28.2546179	-96.7041512	7.8	4.8	3.5
SAB-07	12/2/23	28.2788781	-96.7642942	7.5	4.8	3.8
SAB-08	12/2/23	28.2213882	-96.7482365	8.2	4.8	3.8

						-
ESP-01	12/2/23	28.3372866	-96.5563439	9.0	4.7	3.5
ESP-02	12/2/23	28.3803812	-96.4686837	9.0	4.7	2.7
ESP-03	12/2/23	28.3508306	-96.5042805	9.8	4.8	3.7
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EMB-01	12/3/23	28.6896223	-95.8711733	5.5	4.7	4.3
EMB-02	12/3/23	28.7096310	-95.8088160	5.8	4.7	4.0
EMB-03	12/3/23	28.7229163	-95.7459679	4.4	4.8	3.2
EMB-04 ALT	12/3/23	28.6513548	-95.9229158	5.7	4.7	3.8

Reviewed by:

9/15/2023

_____ Date: _____

Dr. Timothy Dellapenna, TAMUG, P.I.

Approved by:

_____ Date: 5/5/2024

Mr. Steven J. Raabe, Trustee