GALVANIC (SACRIFICIAL ANODES) CATHODIC PROTECTION SYSTEM EVALUATION

USTB	KENTUCKY DEPARTMENT FOR ENVIRONMENTAL PROTECTION	*Mail completed form to:* DIVISION OF WASTE MANAGEMENT UNDERGROUND STORAGE TANK BRANCH 200 FAIR OAKS LANE, SECOND FLOOR FRANKFORT, KENTUCKY 40601 (502) 564-5981 http://waste.ky.gov/ust	FOR STATE USE ONLY

GENERAL INFORMATION

- This form shall be utilized to evaluate underground storage tank (UST) cathodic protection systems.
- Access to the soil directly over the cathodically protected structure that is being evaluated shall be provided.
- A site drawing depicting the UST cathodic protection system and all reference electrode placements shall be provided.

I. UST OWNER		II. UST FACILITY	
NAME:		NAME: MARATHON	AGENCY INTEREST NUMBER: 16564
ADDRESS:		ADDRESS: 111 E IRELAND RD	
CITY:	STATE:	CITY: SOUTH BEND, IN	COUNTY: ST JOSEPH

III. CP TESTER			IV. CP TESTER'S QUALIFICATIONS
TESTER'S NAME: RYAN HARTMAN			CERTIFICATION: ☐ NACE ☒ STI ☐ OTHER (specify) ____
COMPANY NAME: MIDWEST TANK TESTING			
ADDRESS: 209 S Calumet Rd Suite 4			CERTIFICATION NUMBER: CP-T1251
CITY: Chesterton	STATE: IN	ZIP: 46304	EXPIRATION DATE: October 24, 2021
PHONE: 219-561-3401	E-MAIL: ryan@midwesttanktesting.co		

V. REASON EVALUATION WAS CONDUCTED (MARK ONLY ONE)

☐ Initial – within 180 days of installation
☒ Routine – 3 year
☐ Reevaluation after fail due to adverse physical conditions – within 90 days
☐ Reevaluation after repair/modification – within 180 days

Date next cathodic protection system evaluation shall be conducted by: ____

VI. CATHODIC PROTECTION TESTER'S EVALUATION (MARK ONLY ONE)

Date of CP Evaluation: 9-24-20

☐ **PASS**	All protected structures at this UST facility pass the cathodic protection system evaluation and it is judged that adequate cathodic protection has been provided to the UST system (indicate all criteria applicable by completion of Section VIII)
☒ **FAIL**	One or more protected structures at this UST facility fail the cathodic protection system evaluation and it is judged that adequate cathodic protection has not been provided to the UST system (complete Section IX)
☐ **INCONCLUSIVE**	If the remote and the local potential readings do not both indicate the same test result on all protected structures (both pass or both fail), the cathodic protection system shall be reevaluated and/or retested by a corrosion expert (complete Section VII)

I certify that I have personally examined and am familiar with the information submitted in this and all attached documents, and that, I believe that the submitted information is true, accurate, and complete.

CP TESTER'S SIGNATURE: Ryan Hartman DATE: 9/24/2020

VII. CORROSION EXPERT'S EVALUATION (MARK ONLY ONE)

Date of CP Evaluation: ____

The evaluation shall be conducted and/or evaluated by a corrosion expert when: a) an inconclusive is indicated for any protected structure since both the local and the remote structure-to-soil potentials do not result in the same outcome (both pass or both fail); b) repairs to galvanized or uncoated steel piping are conducted or c) supplemental anodes are added to the tanks and/or piping without following an acceptable industry code.

☐ **PASS**	All protected structures at this UST facility pass the cathodic protection system evaluation and it is judged that adequate cathodic protection has been provided to the UST system (indicate all criteria applicable by completion of Section VIII)
☐ **FAIL**	One or more protected structures at this UST facility fail the cathodic protection system evaluation and it is judged that adequate cathodic protection has not been provided to the UST system (complete Section IX)

I certify that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

CORROSION EXPERT'S SIGNATURE: DATE:

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AGENCY INTEREST NUMBER: 16564

VIII. CRITERIA APPLICABLE TO EVALUATION (MARK ALL THAT APPLY)

☒ **850 ON**	Structure-to-soil potential more negative than -850 mV with respect to a $Cu/CuSO_4$ reference electrode with the protective current applied. (This criterion is applicable to any galvanically protected structure).
☐ **850 OFF**	Structure-to-soil potential more negative than -850 mV with respect to a $Cu/CuSO_4$ reference electrode with the protective current temporarily interrupted. (This criterion is applicable to those galvanic systems where anodes can be disconnected).
☐ **100 mV POLARIZATION**	Structure tested exhibits at least 100 mV of cathodic polarization (This criterion is applicable to those galvanic systems where anodes can be disconnected).

IX. ACTION REQUIRED AS A RESULT OF THIS EVALUATION (MARK ONLY ONE)

☐ **NONE**	Cathodic protection is adequate. No further action is necessary at this time. Evaluate again 3 yrs from the date of this evaluation. (see section V for exceptions)
☐ **REEVALUATION**	Cathodic protection may not be adequate. Reevaluate during the next 90 days to determine if passing results can be achieved.
☒ **REPAIR & REEVALUATION**	Cathodic protection is not adequate. Repair/modification is necessary as soon as practical, but within the next 90 days.

X. DESCRIPTION OF UST SYSTEM EVALUATED

TANK	PRODUCT	CAPACITY	TANKS	PIPING	FLEX CONNECTORS STP	FLEX CONNECTORS DISPENSERS
1	REG2		LINED STEEL			
2	REG		LINED STEEL			SS FLEX
3	DSL		LINED STEEL			SS FLEX
4	PREM		LINED STEEL			SS FLEX
5						
6						
7						

XI. DESCRIPTION OF CATHODIC PROTECTION SYSTEM REPAIRS AND/OR MODIFICATION

Provide detailed information about all modifications or repairs made to the cathodic protection system. Attach a detailed drawing of the UST facility and cathodic protection systems. Sufficient detail shall be given in order to clearly indicate where the reference electrode was placed for each structure-to-soil potential that is recorded on the survey forms. At a minimum indicate the following: ALL TANKS, ALL PIPING, ALL DISPENSERS, ALL BUILDINGS AND STREETS, ALL ANODES AND WIRES, LOCATION OF CP TEST STATIONS, EACH REFERENCE ELECTRODE PLACEMENT (indicated by a code:1,2,T-1,T-2) CORRESPONDING WITH THE APPROPRIATE LINE NUMBER IN SECTION XIII OF THIS FORM.

☐ Supplemental anodes for metallic pipe (attach corrosion expert's design or documentation that industry standard was followed).

☐ Supplemental anodes for a sti-P^3 ® tank (attach corrosion expert's design or documentation that industry standard was followed).

☐ Galvanically protected tanks/piping not electrically isolated (explain in "Remarks/Other" below).

Remarks/Other:

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XII. GALVANIC (SACRIFICIAL ANODE) CATHODIC PROTECTION SYSTEM CONTINUITY SURVEY

This section shall be utilized to conduct measurements of continuity on UST systems that are protected by galvanic cathodic protection systems.

STRUCTURE "A" [1]	STRUCTURE "B" [2]	STRUCTURE "A" [3] FIXED REMOTE VOLTAGE	STRUCTURE "B" [4] FIXED REMOTE VOLTAGE	POINT-TO-POINT [5] FIXED REMOTE VOLTAGE	ISOLATED / CONTINUOUS[6]
(EXAMPLE) PREMIUM TANK BOTTOM	(EXAMPLE) PREMIUM TANK FILL RISER	(EXAMPLE) - 921 mV	(EXAMPLE) - 915 mV		(EXAMPLE) INCONCLUSIVE
(EXAMPLE) PREMIUM TANK BOTTOM	(EXAMPLE) PREMIUM TANK FILL RISER			(EXAMPLE) 17 mV	(EXAMPLE) ISOLATED

COMMENTS:

1 Describe the cathodically protected structure being demonstrated as isolated from unprotected structures (e.g. Premium Tank).
2 Describe the unprotected structure being demonstrated as isolated from the protected structure (e.g. premium tank fill riser).
3 Record the measured structure-to-soil potential of the cathodically protected structure {"A"} in millivolts (e.g. – 921 mV).
4 Record the measured structure-to-soil potential of the unprotected structure {"B"} in millivolts (e.g. – 915 mV).
5 Record the voltage observed between the protected and the unprotected structures when conducting point-to-point testing (e.g. 17 mV).
6 Document whether the test (fixed cell and/or point-to-point) indicated the protected structure was isolated, continuous, or inconclusive.

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XIII. GALVANIC (SACRIFICIAL ANODE) CATHODIC PROTECTION SYSTEM SURVEY

This section shall be utilized to conduct a survey of a galvanic cathodic protection system by obtaining structure-to-soil potential measurements.

LOCATION[1] CODE	STRUCTURE [2]	CONTACT POINT [3]	LOCAL REFERENCE CELL PLACEMENT [4]	LOCAL VOLTAGE [5]	REMOTE VOLTAGE [6]	PASS/FAIL/ INCONCLUSIVE[7]
(example) 1	(example) PLUS TANK	(example) TANK BOTTOM	(example) PLUS TANK STP MANWAY	(example) - 928 mV	(example) - 810 mV	(example) INCONCLUSIVE
(example) 2	(example) PLUS PIPING	(example) DISPENSER 5/6	(example) UNDER DISPENSER 5/6	(example) - 890 mV	(example) - 885 mV	(example) PASS
	REG PIPING	STP	STP MANWAY	-469mV		FAIL
	DSL PIPING	STP	STP MANWAY	-480mV		FAIL
	PREM PIPING	STP	STP MANWAY	-462mV		FAIL
	DISP SS FLEX	DISP 1/2	DISP 1/2	-417mV		FAIL
		DISP 3/4	DISP 3/4	-402mV		FAIL
		DISP 5/6	DISP 5/6	-438mV		FAIL

COMMENTS: I ATTEMPTED TO GET READINGS FROM THE TANK BOTTOMS, I GOT READINGS BELOW 30mV FROM EACH TANK. THE READINGS FROM THE PIPING AT THE STPS AND FROM UNDER THE DISPENSERS WERE ALL WELL BELOW THE 850mV REQUIREMENTS.

1 Designate numerically or by code on the site drawing each local reference electrode placement (e.g. 1,2,3…, T-1, T-2, P-1, P-2,…. etc.).
2 Describe the structure that is being tested (e.g. plus tank, premium piping, flex connector, etc.).
3 Describe where contact with the structure that is being tested is made (e.g. plus tank @ test lead, diesel piping @ dispenser 5/6, etc.).
4 Describe the exact location where the reference electrode is placed for each "local" measurement (e.g. soil @ plus tank STP, soil @ dispenser 5/6, etc.).
5 Record the structure-to-soil potential measured with the reference electrode placed "local" in millivolts (e.g. – 865 mV)
6 Record the structure-to-soil potential measured with the reference electrode placed "remote" (copy voltage that was obtained during continuity survey)
7 Indicate whether the tested structure passed or failed the – 850 mV "on" criterion based on the interpretation of the test data.

If you have questions on how to fill out this form or to request a review of UST facility records, please contact the UST Branch at (502) 564-5981 or visit our website at http://waste.ky.gov/ust.

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