Tetra Tech EM Inc.

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April 5, 1999

Ms. Francesca D'Onofrio
Department of Toxic Substances Control
Region 1
10151 Croydon Way, Suite 3
Sacramento, California 95827-2106

Subject: **National Aeronautics and Space Administration (NASA) Crows Landing Flight Facility, Investigation Derived Wastewater Disposal**

Dear Ms. D'Onofrio:

This letter presents and evaluates the results of analysis on a wastewater sample collected at National Aeronautics and Space Administration (NASA) Crows Landing Flight Facility and proposes disposal of the sampled water to the ground surface. The sample was obtained from the temporary storage tank that holds decontamination water from field investigation efforts and purge water from groundwater sampling at Installation Restoration Program (IRP) Site 17, Underground Storage Tank (UST) Cluster 1, and UST 117.

Temporary Storage Tank Water

On March 9, 1999, Tetra Tech EM Inc. (TtEMI) collected a water sample from the 20,000-gallon temporary storage tank adjacent to Building 136. The sample was analyzed for volatile organic compounds (VOC), total extractable petroleum hydrocarbons (TPH-E), and total purgeable petroleum hydrocarbons (TPH-P). Benzene was the only compound detected above established California maximum contaminant levels (MCLs) for groundwater. Analytical results are submitted as Attachment A.

The measured benzene concentration of 32.2 micrograms per liter (μg/L) exceeds the MCL of 1 μg/L established by the State of California. However, based on the guidelines in The Designated Level Methodology for Waste Classification and Cleanup Level Determination (RWQCB 1989), no significant threat to groundwater quality would be posed by discharging this water to the ground surface. That guidance states that the total designated level for a constituent of a liquid waste is calculated by multiplying the water quality goal by an environmental attenuation factor. The guidance recommends a "generic" attenuation factor of 100, stating:

> "In selecting a 'generic' environmental attenuation factor for purposes of deriving designated levels, the 100-fold factor should be used in those disposal situations which provide an 'average' degree of natural protection for water quality from the discharge of wastes under reasonable worst-case conditions. An example of such an average disposal situation would be a landfill in the alluvium of the Central Valley with a significant depth (i.e., greater than 30 feet) of soil containing appreciable and continuous clay or silty-clay strata between the base of the landfill and groundwater." (RWQCB 1989)

contains recycled fiber and is recyclable

This example accurately describes conditions at NASA Crows Landing, so an attenuation factor of 100 was used to derive the total designated levels for the chemicals detected in the water sample. Accordingly, discharge of water with chemical concentrations less than total designated levels is not expected to adversely affect groundwater.

The 1 µg/L benzene water quality goal and an attenuation factor of 100 yield a total designated level of 100 µg/L, well above the concentration detected in the sample. The total designated levels for all other compounds found in the water sample, when using Regional Water Quality Control Board's (RWQCB) beneficial use water quality limits as water quality goals and an attenuation factor of 100, are also well above the concentrations detected in the sample (RWQCB 1998). In addition, the benzene concentration in soil saturated with water containing 32 µg/L benzene would be below the U.S. Environmental Protection Agency (EPA) Region 9 Preliminary Remediation Goal (PRG) for residential soil of 0.62 milligrams per kilogram (mg/kg) (EPA 1998).

This evaluation indicates that discharge of the water in the tank to the ground surface will not adversely affect soil or groundwater. TtEMI therefore proposes to discharge the water to the ground by April 16, 1999. The water will be discharged in a manner that will not produce runoff from the immediate vicinity of the site. Please evaluate this proposal and respond with any questions or comments by April 9, 1999.

If you have questions or comments regarding this proposal, please call me at (303) 312-8815.

Sincerely,

Nathan Russell for

Keith Reamer
Installation Coordinator

NR/rkr

References:

Regional Water Quality Control Board (RWQCB). 1989. The Designated Level Methodology for Waste Classification and Cleanup Level Determination. June.

RWQCB. 1998. A Compilation of Water Quality Goals. March.

U.S. Environmental Protection Agency. 1998. Memorandum Regarding Region IX Preliminary Remediation Goals (PRG), 1998. U.S. Environmental Protection Agency, Region IX Waste Programs.

Attachment

cc: Hubert Chan, EFA West
Don Chuck, Moffett Federal Airfield
Bernard Tong, EFA West
Brian Staab, NASA
Robert Reeves, RWQCB

ATTACHMENT A

ANALYTICAL RESULTS

Applied P & Ch Laboratory
13760 Magnolia Ave. Chino CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

APCL Analytical Report

Submitted to:
Tetra Tech EM Inc.
Attention: Todd Bechtel
1099 18th Street, Ste 1960
Denver CO 80202
Tel: (303)295-1101 Fax: (303)295-2818

Service ID #: 801-991877
Collected by:
Collected on: 02/15-16/99

Received: 02/17/99
Extracted: 02/18/99
Tested: 02/17-24/99
Reported: 02/26/99

Sample Description: Water
Project Description: G0069-219C02 Crows Landing

Analysis of Water Samples

Component Analyzed	Method	Unit	CRDL (PQL)	Analysis Result Baker Tank 99-01877-1	Analysis Result 117-MW-06MD 99-01877-2
AMMONIA	350.2	mg/L	0.1	-	0.07J
NITROGEN, TOTAL KJELDAHL (TKN)	351.3	mg/L	0.1	-	<0.1
ORTHOPHOSPHATE	365.2	mg/L	0.05	-	0.03J
HETEROTROPHIC PLATE COUNT	SM9215	CFU/mL	1	-	1,400
CLP METALS-ROUTINE					
IRON, DISSOLVED	CLP-Metal	µg/L	100	-	40.6J
MANGANESE, DISSOLVED	CLP-Metal	µg/L	15.0	-	3.2J
GASOLINE + BTXE + MTBE					
Dilution Factor				1	1
GASOLINE RANGE ORGANICS	M8015V	mg/L	0.05	0.43	<0.05
BENZENE	8020	µg/L	0.5	32.2	<0.5
ETHYLBENZENE	8020	µg/L	0.5	2.6	<0.5
TOLUENE	8020	µg/L	0.5	16.1	<0.5
XYLENE (TOTAL)	8020	µg/L	1	19	<1
MTBE	8020	µg/L	5	<5	<5
Dilution Factor				1	1
DIESEL	M8015E	mg/L	0.5	<0.5	<0.5
JP-5	M8015E	mg/L	0.5	1 [a]	<0.5
MOTOR OIL	M8015E	mg/L	0.5	<0.5	<0.5

Component Analyzed	Method	Unit	CRDL (PQL)	Analysis Result CL1-MW-07MD 99-01877-3	Analysis Result CL1-MW-09MS 99-01877-4
AMMONIA	350.2	mg/L	0.1	<0.1	0.1
NITROGEN, TOTAL KJELDAHL (TKN)	351.3	mg/L	0.1	0.1	0.1
ORTHOPHOSPHATE	365.2	mg/L	0.05	<0.05	0.07
HETEROTROPHIC PLATE COUNT	SM9215	CFU/mL	1	2,700	86,000
CLP METALS-ROUTINE					
IRON, DISSOLVED	CLP-Metal	µg/L	100	49.8J	130
MANGANESE, DISSOLVED	CLP-Metal	µg/L	15.0	2.3J	13.5J

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APCL Analytical Report

Component Analyzed	Method	Unit	CRDL	Analysis Result Baker Tank 99-01877-1	117-MW-06MD 99-01877-2	CL1-MW-09MS 99-01877-4
CLP VOA - ROUTINE						
Dilution Factor				1	1	1
ACETONE	CLP-VOA	µg/L	10	43	2J	2J
BENZENE	CLP-VOA	µg/L	10	21	<10	80
BROMODICHLOROMETHANE	CLP-VOA	µg/L	10	<10	<10	<10
BROMOFORM	CLP-VOA	µg/L	10	<10	<10	<10
BROMOMETHANE	CLP-VOA	µg/L	10	<10	<10	<10
2-BUTANONE	CLP-VOA	µg/L	10	5J	<10	<10
CARBON DISULFIDE	CLP-VOA	µg/L	10	<10	<10	<10
CARBON TETRACHLORIDE	CLP-VOA	µg/L	10	1J	3J	1J
CHLOROBENZENE	CLP-VOA	µg/L	10	<10	<10	<10
DIBROMOCHLOROMETHANE	CLP-VOA	µg/L	10	<10	<10	<10
CHLOROETHANE	CLP-VOA	µg/L	10	<10	<10	<10
CHLOROFORM	CLP-VOA	µg/L	10	1J	0.5J	11
CHLOROMETHANE	CLP-VOA	µg/L	10	<10	<10	<10
1,1-DICHLOROETHANE	CLP-VOA	µg/L	10	<10	<10	<10
1,2-DICHLOROETHANE	CLP-VOA	µg/L	10	<10	<10	<10
1,1-DICHLOROETHENE	CLP-VOA	µg/L	10	<10	<10	<10
1,2-DICHLOROETHENE (TOTAL)	CLP-VOA	µg/L	10	<10	<10	<10
1,2-DICHLOROPROPANE	CLP-VOA	µg/L	10	<10	<10	<10
CIS-1,3-DICHLOROPROPENE	CLP-VOA	µg/L	10	<10	<10	<10
TRANS-1,3-DICHLOROPROPENE	CLP-VOA	µg/L	10	<10	<10	<10
ETHYLBENZENE	CLP-VOA	µg/L	10	1J	<10	<10
2-HEXANONE	CLP-VOA	µg/L	10	<10	<10	<10
4-METHYL-2-PENTANONE	CLP-VOA	µg/L	10	5J	<10	0.5J
METHYLENE CHLORIDE	CLP-VOA	µg/L	10	<10	<10	0.7J
STYRENE	CLP-VOA	µg/L	10	<10	<10	<10
1,1,2,2-TETRACHLOROETHANE	CLP-VOA	µg/L	10	<10	<10	<10
TETRACHLOROETHENE	CLP-VOA	µg/L	10	<10	<10	<10
TOLUENE	CLP-VOA	µg/L	10	7J	2J	<10
1,1,1-TRICHLOROETHANE	CLP-VOA	µg/L	10	<10	<10	<10
1,1,2-TRICHLOROETHANE	CLP-VOA	µg/L	10	<10	<10	<10
TRICHLOROETHENE	CLP-VOA	µg/L	10	<10	<10	<10
VINYL CHLORIDE	CLP-VOA	µg/L	10	0.4J	<10	<10
XYLENE (TOTAL)	CLP-VOA	µg/L	10	11	<10	<10