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Baker

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November 2, 2001

U.S. Environmental Protection Agency – Region II
290 Broadway – 22nd Floor
New York, New York 10007-1866

Attn: Mr. Timothy Gordon
Acting Chief, RCRA Caribbean Section

Re: Contract N62470-95-D-6007
Navy CLEAN, District III
Contract Task Order (CTO) 0033 and 0034
U.S. Naval Station Roosevelt Roads (NSRR), Puerto Rico
RCRA/HSWA Permit No. PR2170027203
Revision to Final Additional Data Collection Work Plan Tow Way Fuel Farm
Revision to Work Plan for Ecological Risk Assessment SWMU 7/8

Dear Mr. Gordon:

Baker Environmental, Inc. (Baker), on behalf of the Navy, is providing you with two copies of Pages 16, 17, 19, 19a, Figure 3-4, and Appendix A.1 (Sample Matrix) to be replaced in the Final Additional Data Collection Work Plan Tow Way Fuel Farm, that was submitted on September 27, 2001. Pages 16 and 17 were revised to reflect an error discovered dealing with the direction the surface water samples would be collected in conjunction with the adjacent sediment sample locations. Pages 17 (bottom), 19, and 19a, Figure 3-4, and Appendix A.1 were revised to account for the two additional sediment sample locations proposed adjacent to the land mass extending out to the Fueling Pier.

Baker is also providing you with two copies of Figure 4-1 to be replaced in the Work Plan for Ecological Risk Assessment for SWMU 7/8 that was submitted as Appendix C to the Final Additional Data Collection Work Plan for the Tow Way Fuel Farm submitted September 27, 2001. Figure 4-1 was revised to reflect the addition of the potentially complete and significant exposure pathway of ingestion of plant and/or contaminated plant tissues for chemicals that have entered food webs. Figure 4-1 was also revised to reflect the addition of the potentially complete and significant exposure pathway of the ingestion of sediment for the West Indian Manatee. These two pathways were inadvertently left off Figure 4-1 in the September 27, 2001 submission.

Please use the revised information (attached) for your review of the documents. Additional distribution has been made as indicated below.

Please do not hesitate to contact me at 412-269-2009, or Mr. Kevin Cloe, P.E. at 757-322-4736, if you have any questions.

Sincerely,

BAKER ENVIRONMENTAL, INC.

Mark E. Kimes, P.E.
Activity Manager

MEK/lp
Attachments

cc: Mr. Kevin R. Cloe, LANTDIV - Code EV23KRC (3 copies)
Ms. Madeline Rivera, NSRR (4 copies)
Mr. John Tomik, CH2M Hill Virginia Beach (1 copy)
Ms. Kathy Rogovin, Booz Allen & Hamilton (1 copy)
Mr. Mace Barron, Booz Allen & Hamilton (1 copy)
Mr. Carl Soderberg, US EPA Caribbean Office (1 copy)
Mr. Carmelo Vazquez, PR EQB (2 copies)

Replacement Pages for the Final Additional Data Collection Work Plan Tow Way Fuel Farm submitted September 27, 2001

The sample locations shown are approximate and may change based on observed site conditions (e.g., evidence of contamination and location access). All surface water sampling locations will be surveyed in the field utilizing a portable global positioning system (GPS) unit to gather the horizontal location.

The following paragraphs provide the rationale for the surface water sampling locations chosen.

7SW1

This surface water sample will be collected in the northwestern portion of the shoreline down gradient from the TWFF. This surface water sample will assist in determining if site chemicals are migrating with groundwater to the Ensenada Honda.

7SW2

This surface water sample will be collected southeast of surface water sample 7SW1. This surface water sample will assist in determining if site chemicals are migrating with groundwater to the Ensenada Honda.

7SW3

This surface water sample will be collected immediately adjacent to a storm sewer outfall as presented in Figure 3-4. This surface water sample will assist in determining if site chemicals are migrating with groundwater to the Ensenada Honda.

7SW4

This surface water sample will be collected southeast of surface water sample 7SW3. This surface water sample will assist in determining if site chemicals are migrating with groundwater to the Ensenada Honda.

7SW5

This surface water sample will be collected southeast of surface water sample 7SW4. This surface water sample will assist in determining if site chemicals are migrating with groundwater to the Ensenada Honda.

7SW6

This surface water sample will be collected southeast of surface water sample 7SW5. This surface water sample will assist in determining if site chemicals are migrating with groundwater to the Ensenada Honda.

7SW7

This surface water sample will be collected immediately adjacent to a storm sewer outfall as presented in Figure 3-4. This surface water sample will assist in determining if site chemicals are migrating with groundwater to the Ensenada Honda.

7SW8

This surface water sample will be collected immediately adjacent to a storm sewer outfall as presented in Figure 3-4. This surface water sample will assist in determining if site chemicals are migrating with groundwater to the Ensenada Honda.

7SW9

This surface water sample will be collected southeast of surface water sample 7SW8. This surface water sample will assist in determining if site chemicals are migrating with groundwater to the Ensenada Honda.

3.5 Sediment Sampling and Analysis Program

A total of fourteen sediment samples (7SD1 through 7SD14) will be collected from the Ensenada Honda located down gradient from the TWFF as shown on Figure 3-4. All sediment samples collected will be analyzed for VOCs, SVOCs, Appendix IX Metals, and total organic carbon (TOC) as presented in Appendix A.1.

Depth of water in Ensenada Honda is such that a boat may be necessary to access these sample locations. Depending on the depth of water at each sediment sample location, a variety of sampling methods can be utilized. If the water is deep in the vicinity of a sediment sample location, an Eckman

7SD5 – 7SD6

As presented on Figure 3-4, these two sediment sample locations will be collected immediately adjacent to the storm water sewer outfall located northeast of the Fueling Pier. This storm water sewer transfers runoff water from the TWFF to Ensenada Honda. The purpose for these two locations is to evaluate if chemicals are migrating with storm water to Ensenada Honda sediments. These sample locations will also assist in evaluating if chemicals are migrating with groundwater to Ensenada Honda sediments.

7SD7 – 7SD8

These two sediment sample locations will be collected in the inlet located on the northeast side of the Fueling Pier as presented on Figure 3-4. The purpose for these two locations is to determine the extent of contamination migrating from the TWFF if any were to be present.

7SD9 – 7SD10

As presented on Figure 3-4, these two sediment sample locations will be collected immediately adjacent to the storm water sewer outfall located northwest of Pier 2. This storm water sewer transfers runoff water from the TWFF to Ensenada Honda. The purpose for these two locations is to evaluate if chemicals are migrating with storm water to Ensenada Honda sediments. These sample locations will also assist in evaluating if chemicals are migrating with groundwater to Ensenada Honda sediments.

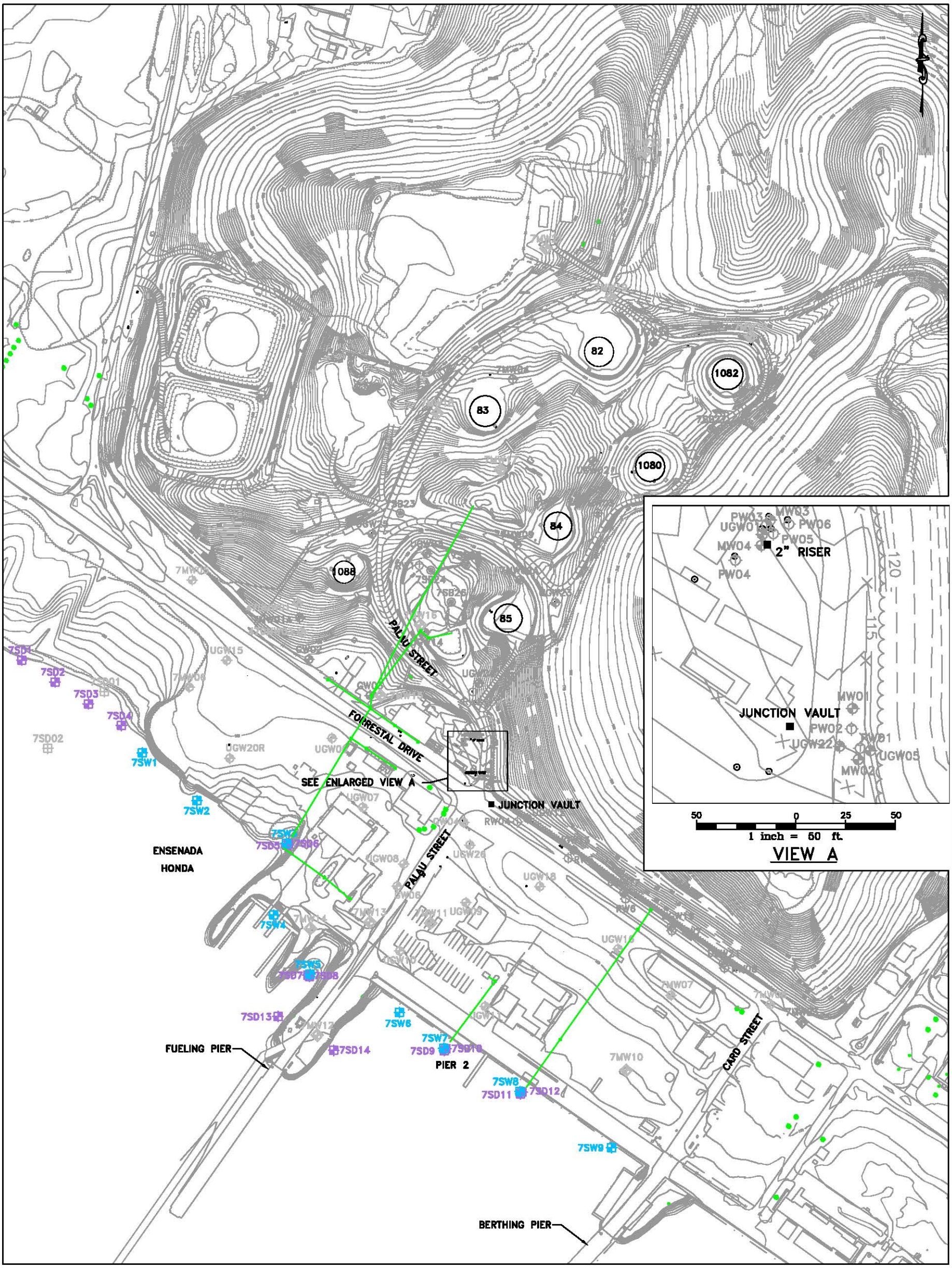
7SD11 – 7SD12

As presented on Figure 3-4, these two sediment sample locations will be collected immediately adjacent to the storm water sewer outfall located southeast of Pier 2. This storm water sewer transfers runoff water from the TWFF to Ensenada Honda. The purpose for two locations is to evaluate if chemicals are migrating with storm water to Ensenada Honda sediments. These sample locations will also assist in evaluating if chemicals are migrating with groundwater to Ensenada Honda sediments.

7SD13 - 7SD14

These two sediment sample locations will be collected adjacent to the landmass leading to the Fueling Pier as presented on Figure 3-4. The purpose for these two locations is to determine if contamination associated with Zone 3 is migrating from the TWFF if any were to be present.

The sample location mentioned above will aid in the ecological risk assessment process. The sample locations shown are approximate and may change based on observed site conditions (e.g., evidence



250 0 125 250

1 inch = 250 ft.

2034809G

NOTE:
–DATUM PLAN USED IS MEAN LOW WATER = 100.00 FT. AS ESTABLISHED BY U.S. NAVY SURVEY SECTION AS OF NOVEMBER 1941.

Baker

LEGEND

- PROPOSED GROUNDWATER SAMPLING LOCATION
- PROPOSED GROUNDWATER SAMPLING LOCATION
- PROPOSED SEDIMENT SAMPLING LOCATION
- PROPOSED SURFACE WATER SAMPLING LOCATION
- SOIL BORING LOCATION
- TERRAVAC PRODUCT RECOVERY WELL LOCATION
- ICHOR PRODUCT RECOVERY WELL LOCATION
- SOIL BORING/MONITOR WELL LOCATION
- MONITOR WELL LOCATION
- STORM SEWER

SOURCE: LANTDIV, FEB. 1992/1997

FIGURE 3–4
PROPOSED SURFACE WATER AND SEDIMENT SAMPLING LOCATIONS
TOW WAY FUEL FARM

NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE MATRIX - SWMU 7/8
ADDITIONAL DATA COLLECTION TOW WAY FUEL FARM
NAVAL STATION ROOSEVELT ROADS, PUERTO RICO

Sample Media	Sample ID	Sample Depth (ft bgs)	Organics			Monitored Natural Attenuation Parameters									Metals		Misc. Parameter	TCE Parameters		Comments
						Field Measurements						Laboratory								
			Appendix IX Volatiles (8260)	Appendix IX Semivolatiles (8270)	Appendix IX Semivolatiles - [1] (8270)	Dissolved Oxygen (Chemets)	Ferrous Iron (FE+2) (Hach Method 8146)	Alkalinity (Hach Method 8221)	Oxidation-Reduction Potential (Redox Meter)	pH (pH Meter)	Temperature (Conductivity Meter)	Nitrate (300.0/353.2)	Sulfate (375.4)	Methane (SW3810)	Appendix IX Total Metals (6010)	Appendix IX Dissolved Metals (Field Filtered/6010)	Groundwater Density	Ethene & Ethane (SW3810)	TOC (9060)	
Groundwater	7MW03	NA	X	X		X	X	X	X	X	X	X	X	X	X	X				
	7MW05	NA	X	X		X	X	X	X	X	X	X	X	X	X	X				
	7MW06	NA	X	X		X	X	X	X	X	X	X	X	X	X	X	X			
	7MW07	NA	X	X		X	X	X	X	X	X	X	X	X	X	X		X	X	
	7MW07D	NA	X	X		X	X	X	X	X	X	X	X	X	X	X		X	X	Duplicate
	7MW07MS	NA	X	X		X	X	X	X	X	X	X	X	X	X	X		X	X	Matrix Spike
	7MW07MSD	NA	X	X		X	X	X	X	X	X	X	X	X	X	X		X	X	Matrix Spike Duplicate
	7MW08	NA	X	X		X	X	X	X	X	X	X	X	X	X	X		X	X	
	7MW09	NA	X	X		X	X	X	X	X	X	X	X	X	X	X				
	7MW10	NA	X	X		X	X	X	X	X	X	X	X	X	X	X		X	X	
	7MW11	NA	X	X		X	X	X	X	X	X	X	X	X	X	X				
	7MW12	NA	X	X		X	X	X	X	X	X	X	X	X	X	X				
	7MW13	NA	X	X		X	X	X	X	X	X	X	X	X	X	X				
	7MW14	NA	X	X		X	X	X	X	X	X	X	X	X	X	X				
	7MW15	NA	X	X		X	X	X	X	X	X	X	X	X	X	X				
	7MW16	NA	X	X		X	X	X	X	X	X	X	X	X	X	X	X			
	7MW17	NA	X	X		X	X	X	X	X	X	X	X	X	X	X	X			
	7MW18	NA	X	X		X	X	X	X	X	X	X	X	X	X	X				
	7MW18D	NA	X	X		X	X	X	X	X	X	X	X	X	X	X				Duplicate
	7MW19	NA	X	X		X	X	X	X	X	X	X	X	X	X	X				
	7MW20	NA	X	X		X	X	X	X	X	X	X	X	X	X	X				
	7MW21	NA	X	X		X	X	X	X	X	X	X	X	X	X	X	X			
	7MW22	NA	X	X		X	X	X	X	X	X	X	X	X	X	X	X			
	7MW23	NA	X	X		X	X	X	X	X	X	X	X	X	X	X		X	X	
	UGW06	NA	X	X		X	X	X	X	X	X	X	X	X	X	X				
	UGW07	NA	X	X		X	X	X	X	X	X	X	X	X	X	X				
	UGW08	NA	X	X		X	X	X	X	X	X	X	X	X	X	X				

SAMPLE MATRIX - SWMU 7/8
ADDITIONAL DATA COLLECTION TOW WAY FUEL FARM
NAVAL STATION ROOSEVELT ROADS, PUERTO RICO

Sample Media	Sample ID	Sample Depth (ft bgs)	Organics			Monitored Natural Attenuation Parameters									Metals		Misc. Parameter	TCE Parameters		Comments
						Field Measurements						Laboratory								
			Appendix IX Volatiles (8260)	Appendix IX Semivolatiles (8270)	Appendix IX Semivolatiles - (1) (8270)	Dissolved Oxygen (Chemets)	Ferrous Iron (FE+2) (Hach Method 8146)	Alkalinity (Hach Method 8221)	Oxidation-Reduction Potential (Redox Meter)	pH (pH Meter)	Temperature (Conductivity Meter)	Nitrate (300.0/353.2)	Sulfate (375.4)	Methane (SW3810)	Appendix IX Total Metals (6010)	Appendix IX Dissolved Metals (Field Filtered/6010)	Groundwater Density	Ethene & Ethane (SW3810)	TOC (9060)	
Groundwater (Cont.)	UGW08D	NA	X	X		X	X	X	X	X	X	X	X	X	X	X				Duplicate
	UGW08MS	NA	X	X		X	X	X	X	X	X	X	X	X	X	X				Matrix Spike
	UGW08MSD	NA	X	X		X	X	X	X	X	X	X	X	X	X	X				Matrix Spike Duplicate
	UGW09	NA	X	X		X	X	X	X	X	X	X	X	X	X	X				
	UGW10	NA	X	X		X	X	X	X	X	X	X	X	X	X	X				
	UGW11	NA	X	X		X	X	X	X	X	X	X	X	X	X	X	X			
	UGW15	NA	X	X		X	X	X	X	X	X	X	X	X	X	X				
	UGW16	NA	X	X		X	X	X	X	X	X	X	X	X	X	X		X	X	
	UGW18	NA	X	X		X	X	X	X	X	X	X	X	X	X	X				
	UGW20R	NA	X	X		X	X	X	X	X	X	X	X	X	X	X				
	UGW20RD	NA	X	X		X	X	X	X	X	X	X	X	X	X	X				Duplicate
	UGW23	NA	X	X		X	X	X	X	X	X	X	X	X	X	X				
	UGW26	NA	X	X		X	X	X	X	X	X	X	X	X	X	X				
	GW04	NA	X	X		X	X	X	X	X	X	X	X	X	X	X				
	GW06	NA	X	X		X	X	X	X	X	X	X	X	X	X	X				
	470MW01	NA	X	X		X	X	X	X	X	X	X	X	X	X	X				
	470MW03	NA	X	X		X	X	X	X	X	X	X	X	X	X	X				
Surface Water	7SW1	NA	X	X											X	X				
	7SW2	NA	X	X											X	X				
	7SW3	NA	X	X											X	X				
	7SW4	NA	X	X											X	X				
	7SW4D	NA	X	X											X	X				Duplicate
	7SW4MS	NA	X	X											X	X				Matrix Spike
	7SW4MSD	NA	X	X											X	X				Matrix Spike Duplicate
	7SW5	NA	X	X											X	X				
	7SW6	NA	X	X											X	X				
	7SW7	NA	X	X											X	X				

SAMPLE MATRIX - SWMU 7/8
ADDITIONAL DATA COLLECTION TOW WAY FUEL FARM
NAVAL STATION ROOSEVELT ROADS, PUERTO RICO

Sample Media	Sample ID	Sample Depth (ft bgs)	Organics			Monitored Natural Attenuation Parameters									Metals		Misc. Parameter	TCE Parameters		Comments
						Field Measurements						Laboratory								
			Appendix IX Volatiles (8260)	Appendix IX Semivolatiles (8270)	Appendix IX Semivolatiles - (1) (8270)	Dissolved Oxygen (Chemets)	Ferrous Iron (FE+2) (Hach Method 8146)	Alkalinity (Hach Method 8221)	Oxidation-Reduction Potential (Redox Meter)	pH (pH Meter)	Temperature (Conductivity Meter)	Nitrate (300.0/353.2)	Sulfate (375.4)	Methane (SW3810)	Appendix IX Total Metals (6010)	Appendix IX Dissolved Metals (Field Filtered/6010)	Groundwater Density	Ethene & Ethane (SW3810)	TOC (9060)	
Surface Water (Cont.)	7SW8	NA	X	X											X	X				
	7SW9	NA	X	X											X	X				
Surface Soil	7MW16-00	0.0-1.0	X	X											X					
	7MW17-00	0.0-1.0	X	X											X					
	7MW18-00	0.0-1.0	X	X											X					
	7MW18-00D	0.0-1.0	X	X											X					Duplicate
	7MW18-00MS	0.0-1.0	X	X											X					Matrix Spike
	7MW18-00MSD	0.0-1.0	X	X											X					Matrix Spike Duplicate
	7MW19-00	0.0-1.0	X	X											X					
	7MW20-00	0.0-1.0	X	X											X					
	7MW21-00	0.0-1.0	X	X											X					
	7MW22-00	0.0-1.0	X	X											X					
	7SB23-00	0.0-1.0	X	X											X					
	7SB24-00	0.0-1.0	X	X											X					
	7SB25-00	0.0-1.0	X	X											X					
	7SB26-00	0.0-1.0	X	X											X					
	7SB27-00	0.0-1.0	X	X											X					
Subsurface Soil	7MW16-XX	(2)			X															
	7MW17-XX	(2)			X															
	7MW18-XX	(2)			X														X	
	7MW18-XXD	(2)			X														X	Duplicate
	7MW18-XXMS	(2)			X														X	Matrix Spike
	7MW18-XXMS	(2)			X														X	Matrix Spike Duplicate
	7MW19-XX	(2)			X														X	
	7MW20-XX	(2)			X														X	

SAMPLE MATRIX - SWMU 7/8
ADDITIONAL DATA COLLECTION TOW WAY FUEL FARM
NAVAL STATION ROOSEVELT ROADS, PUERTO RICO

Sample Media	Sample ID	Sample Depth (ft bgs)	Organics			Monitored Natural Attenuation Parameters									Metals		Misc. Parameter	TCE Parameters		Comments
						Field Measurements						Laboratory								
			Appendix IX Volatiles (8260)	Appendix IX Semivolatiles (8270)	Appendix IX Semivolatiles - (1) (8270)	Dissolved Oxygen (Chemets)	Ferrous Iron (FE+2) (Hach Method 8146)	Alkalinity (Hach Method 8221)	Oxidation-Reduction Potential (Redox Meter)	pH (pH Meter)	Temperature (Conductivity Meter)	Nitrate (300.0/353.2)	Sulfate (375.4)	Methane (SW3810)	Appendix IX Total Metals (6010)	Appendix IX Dissolved Metals (Field Filtered/6010)	Groundwater Density	Ethene & Ethane (SW3810)	TOC (9060)	
Subsurface Soil (Cont.)	7MW21-XX	(2)			X														X	
	7MW22-XX	(2)			X														X	
	7SB23-XX	(2)			X															
	7SB24-XX	(2)			X															
	7SB24-XXD	(2)			X															Duplicate
	7SB25-XX	(2)			X															
	7SB26-XX	(2)			X															
	7SB27-XX	(2)			X															
Sediment	7SD1	0.0-0.5	X	X											X				X	
	7SD2	0.0-0.5	X	X											X				X	
	7SD3	0.0-0.5	X	X											X				X	
	7SD4	0.0-0.5	X	X											X				X	
	7SD4D	0.0-0.5	X	X											X				X	Duplicate
	7SD5	0.0-0.5	X	X											X				X	
	7SD6	0.0-0.5	X	X											X				X	
	7SD7	0.0-0.5	X	X											X				X	
	7SD8	0.0-0.5	X	X											X				X	
	7SD9	0.0-0.5	X	X											X				X	
	7SD10	0.0-0.5	X	X											X				X	
	7SD10D	0.0-0.5	X	X											X				X	Duplicate
	7SD10MS	0.0-0.5	X	X											X				X	Matrix Spike
	7SD10MSD	0.0-0.5	X	X											X				X	Matrix Spike Duplicate
	7SD11	0.0-0.5	X	X											X				X	

SAMPLE MATRIX - SWMU 7/8
ADDITIONAL DATA COLLECTION TOW WAY FUEL FARM
NAVAL STATION ROOSEVELT ROADS, PUERTO RICO

Sample Media	Sample ID	Sample Depth (ft bgs)	Organics			Monitored Natural Attenuation Parameters									Metals		Misc. Parameter	TCE Parameters		Comments
						Field Measurements						Laboratory								
			Appendix IX Volatiles (8260)	Appendix IX Semivolatiles (8270)	Appendix IX Semivolatiles - [1] (8270)	Dissolved Oxygen (Chemets)	Ferrous Iron (FE+2) (Hach Method 8146)	Alkalinity (Hach Method 8221)	Oxidation-Reduction Potential (Redox Meter)	pH (pH Meter)	Temperature (Conductivity Meter)	Nitrate (300.0/353.2)	Sulfate (375.4)	Methane (SW3810)	Appendix IX Total Metals (6010)	Appendix IX Dissolved Metals (Field Filtered/6010)	Groundwater Density	Ethene & Ethane (SW3810)	TOC (9060)	
Sediment (Cont.)	7SD12	0.0-0.5	X	X											X				X	
	7SD13	0.0-0.5	X	X											X				X	
	7SD14	0.0-0.5	X	X											X				X	
Totals			89	89	16	44	44	44	44	44	44	44	44	44	89	56	6	8	34	

Notes: [1] Report: Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Indeno(1,2,3-cd)pyrene, 2-Methlynaphthalene, Naphthalene, Benzo(k)fluoranthene, Chrysene, Dibenzo(a,h)anthracene.

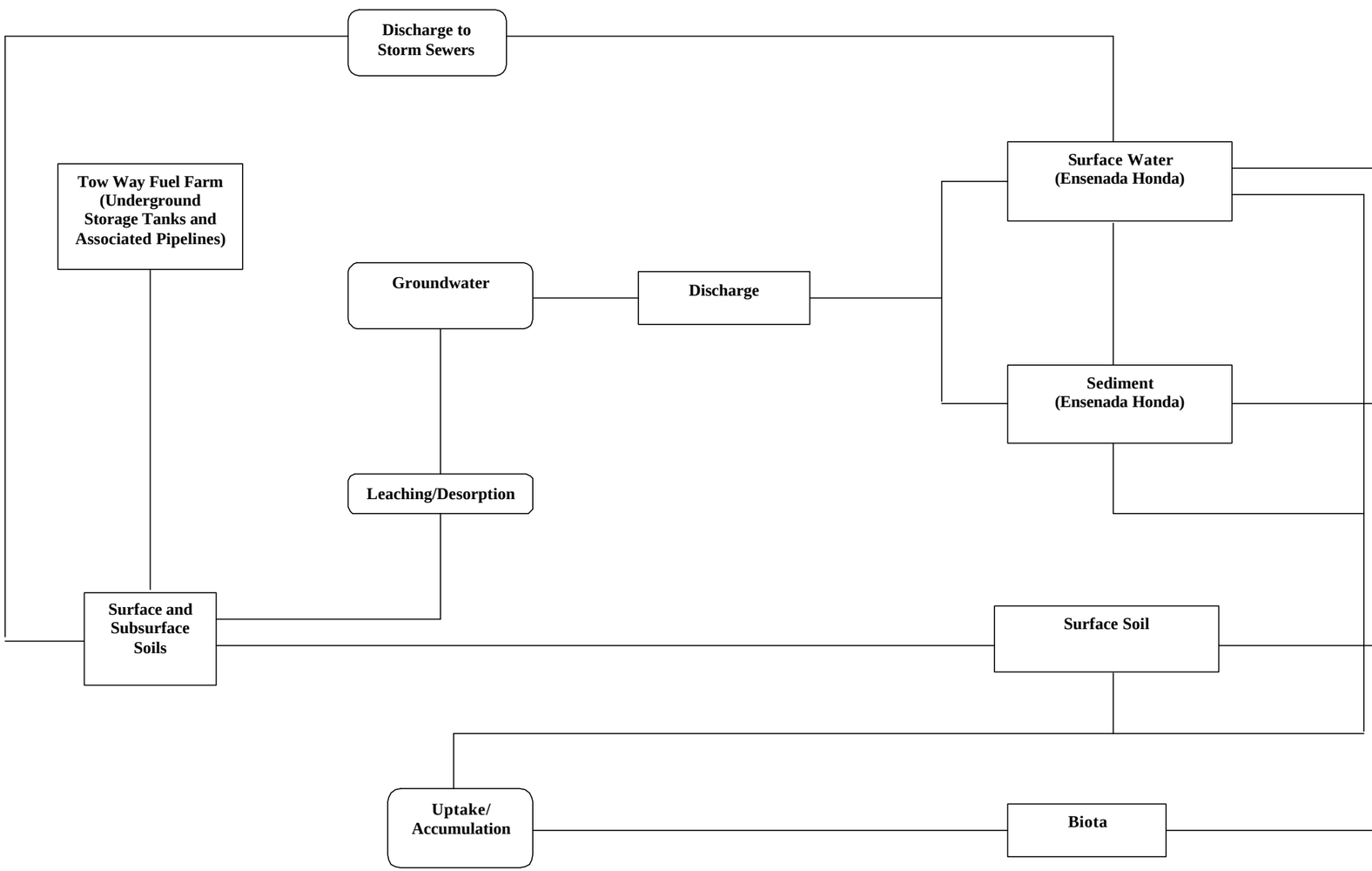
[2] Sample will be collected from the most contaminated zone.

XX - The sample depth designator in which the sample was collected (i.e. 01 = 1-3 ft bgs, 02= 3-5 ft bgs, etc.).

ft bgs - feet below ground surface.

NA - Not Applicable.

Replacement Pages for the Work Plan for Ecological Risk Assessment SWMU 7/8 submitted September 27, 2001



Exposure Routes	Aquatic							Terrestrial					
Receptors	Invertebrates	Plants	Fish	Amphibians	Reptiles	Birds	Mammals	Invertebrates	Plants	Amphibians	Reptiles	Birds	Mammals
Ingestion													
Direct Contact	•	•	•			•	x						
Ingestion	•		x			•	•						
Direct Contact	•	x	•			x	x						
Root Uptake		x											
Ingestion								•			x	•	x
Direct Contact								•			x	x	x
Root Uptake									•				
Ingestion	x		x			•	•				x	•	x

—— Potentially complete and significant pathway

FIGURE 4-1
PRELIMINARY CONCEPTUAL MODEL
TOW WAY FUEL FARM
NAVAL STATION ROOSEVELT ROADS, CEIBA, PUERTO RICO

• - Receptor/pathway will be evaluated quantitatively
x - Receptor/pathway will not be evaluated quantitatively.