

FY01 Characterization Plans in B-BX-BY and T-TX-TY Tank Farms

Tank Farm Vadose Zone Project

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Characterization Goal

- Provide Useful Additional Characterization of Vadose Zone Soils Contaminated by Tank Waste and Underlying Single Shell Tanks
 - Substantive Enhancement of Existing Data Base
 - Improvement of Risk Assessment

Characterization Process

- Collect Available Information
- Identify Specific Contamination Areas
- Develop Simple Conceptual Model
- Rank Areas by Contamination Level
- Select Areas for Characterization, Identify Data Gaps and Select Characterization Approach

Characterization Resources

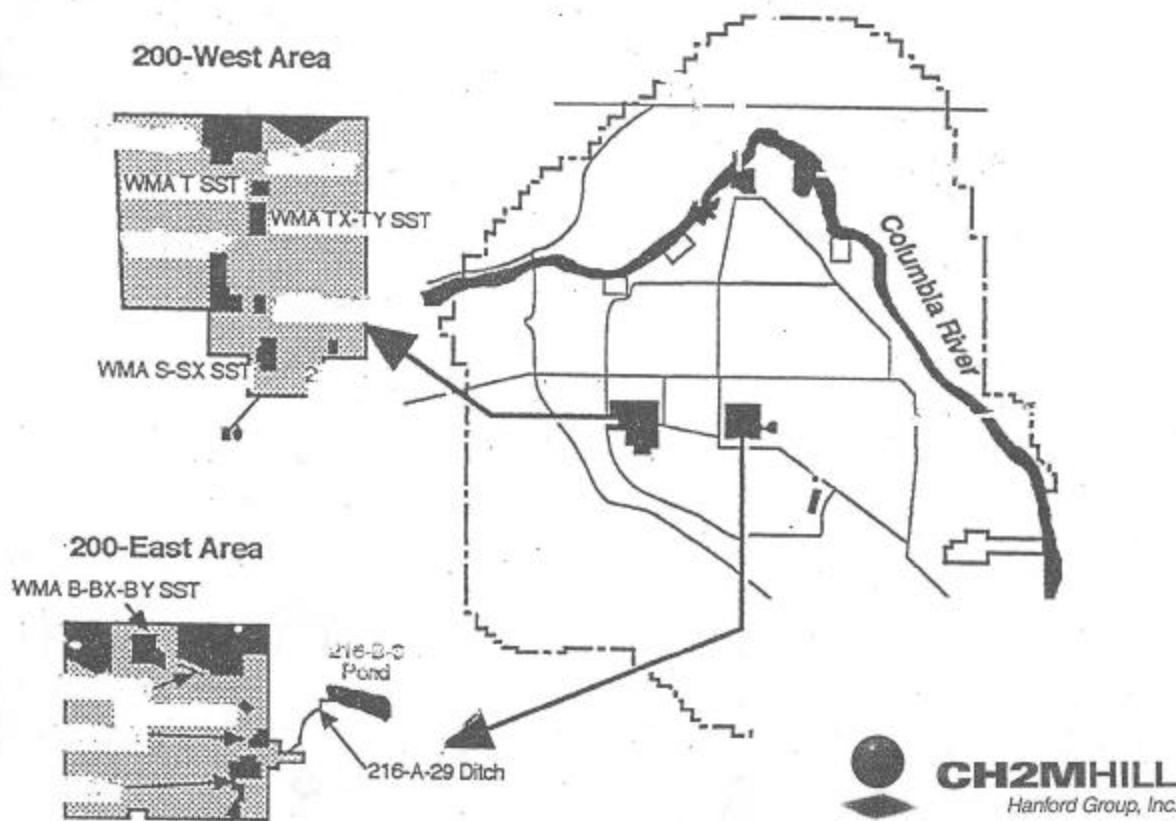
- Operations and Waste Transfer Records
 - Leak Time, Leak Volume, Waste Type, Soil Contamination Data
- Historical and Spectral Gamma Data
 - Gross Gamma Data (1970's through 1994), Specific Gamma-Emitters Location and Concentration (1990's)
- Groundwater Contamination Data(1990's)

Characterization Schedule

- B-BX-BY Waste Management Area (WMA)
Characterization Effort is Currently
Underway and Will Be Completed in FY01
- T-TX-TY WMA Characterization Program
is Being Finalized and Will Take Place in
FY02



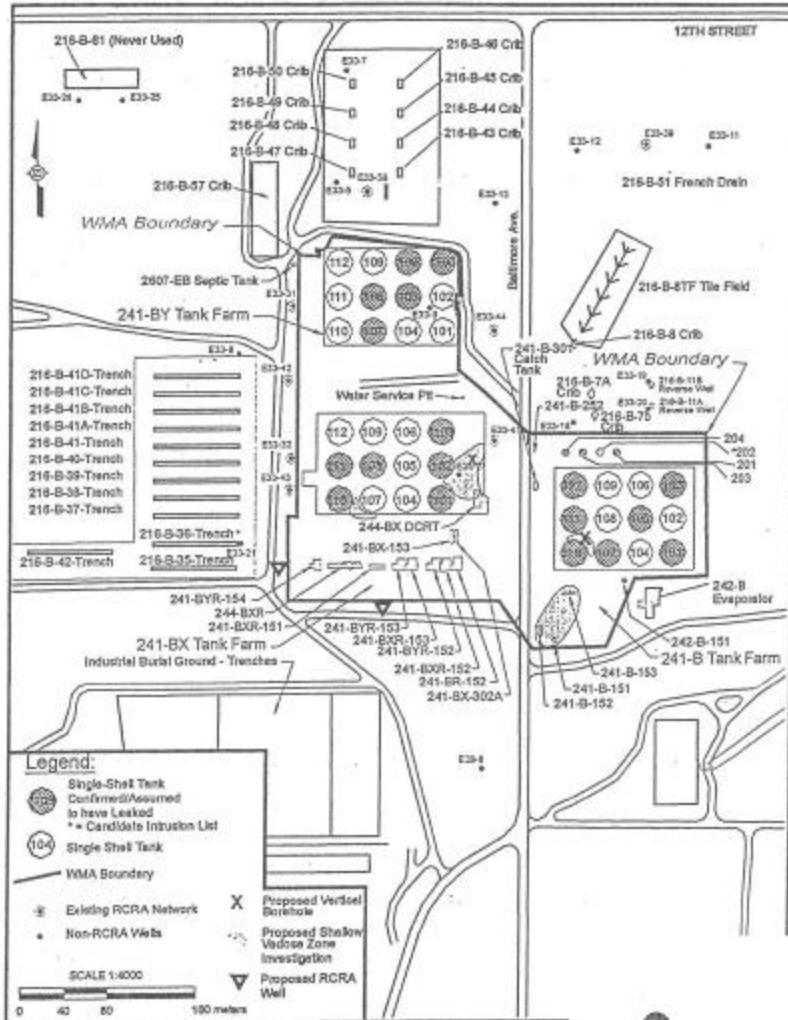
Location of B-BX-BY, T and TX-TY WMAs



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B-BX-BY Sampling Locations





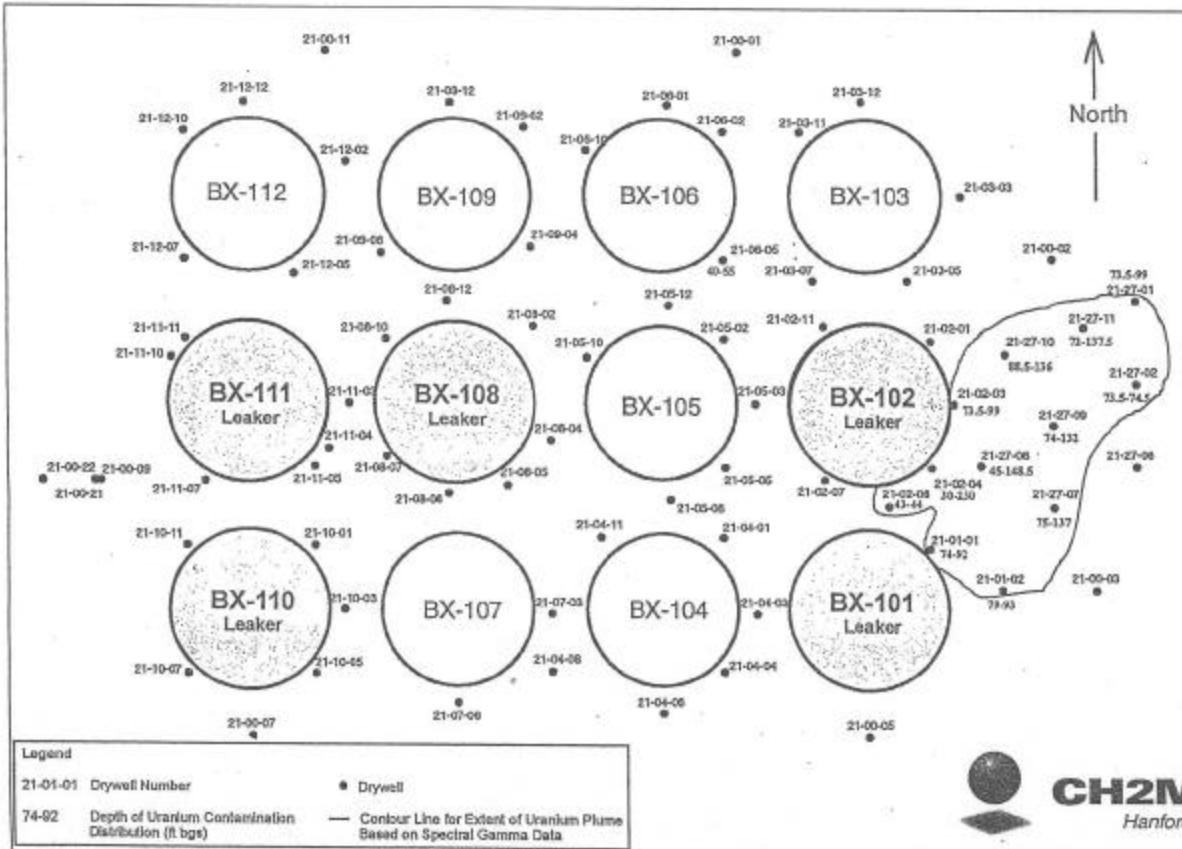
Synopsis of B-BX-BY Contamination Zones and Characterization Design

Area of Interest	Primary Characteristics			Associated Groundwater Contamination	Issues	Characterization Approach	Data to be Collected
	Leak Volume (gal)	Waste Source	Contaminants				
BX-102	91,600	Metal Waste	U, Tc	Probable (U and Tc)	Waste distribution above and below drywells, Tc Distribution	Deep borehole	Soil sample analysis, soil leaching; Groundwater analysis
						Cone penetrometer to shallow depth (about 40 ft) if vertical hole shows shallow contamination	gamma data across grid, limited soil sample analysis
B-110	10,000	B Plant (Cs/Sr Extraction)	Cs, Sr, Tc organics	None Observed	Horizontal and vertical waste distribution significance of organic complexation	Cone Penetrometer to shallow depth to find best deep borehole location	gamma data across grid, limited soil sample analysis
						Deep borehole	Soil sample analysis, soil leaching; Groundwater analysis
						Cone penetrometer to shallow depth (about 40 ft)	gamma data across grid, soil sample analysis
BX-110/BX-107	?	First Cycle	Cs, Sr?	None Observed	Connection between gamma near BX-110 and BX-107	Cone penetrometer to shallow depth (about 40 ft)	gamma data across grid, limited soil sample analysis
241B Diversion boxes	?	Metal Waste	none measured	None Observed	Waste distribution around boxes after cleanup	Cone penetrometer to shallow depths (about 40 ft)	gamma data across grid, limited soil sample analysis



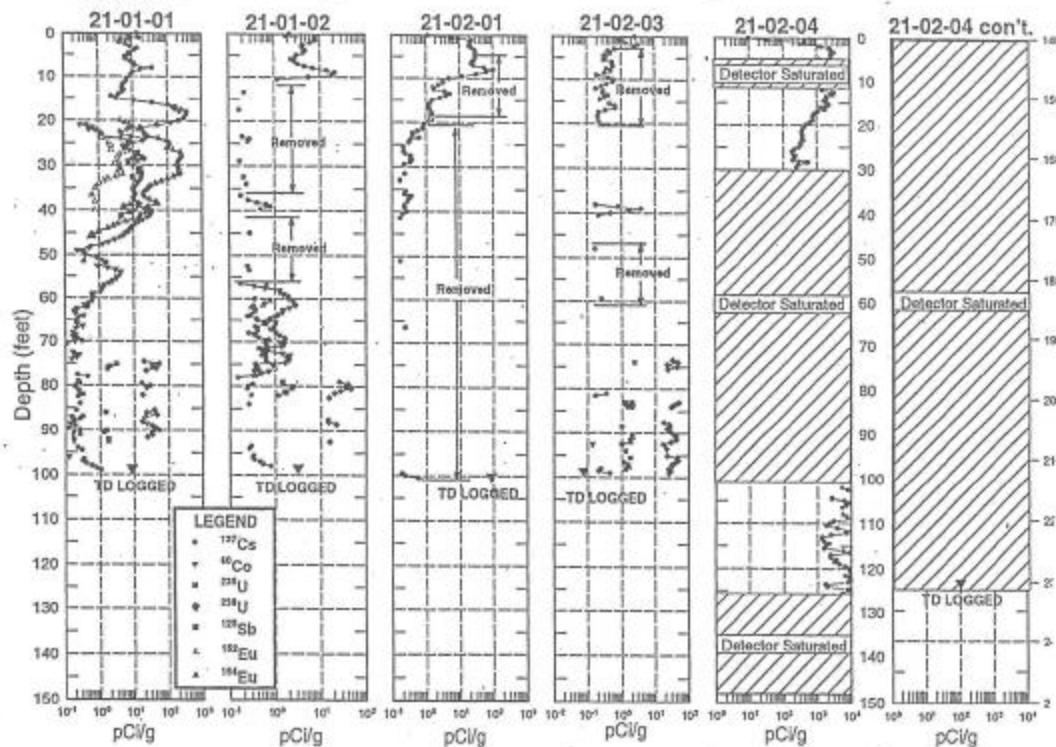


BX-102 Metal Waste Plume Map





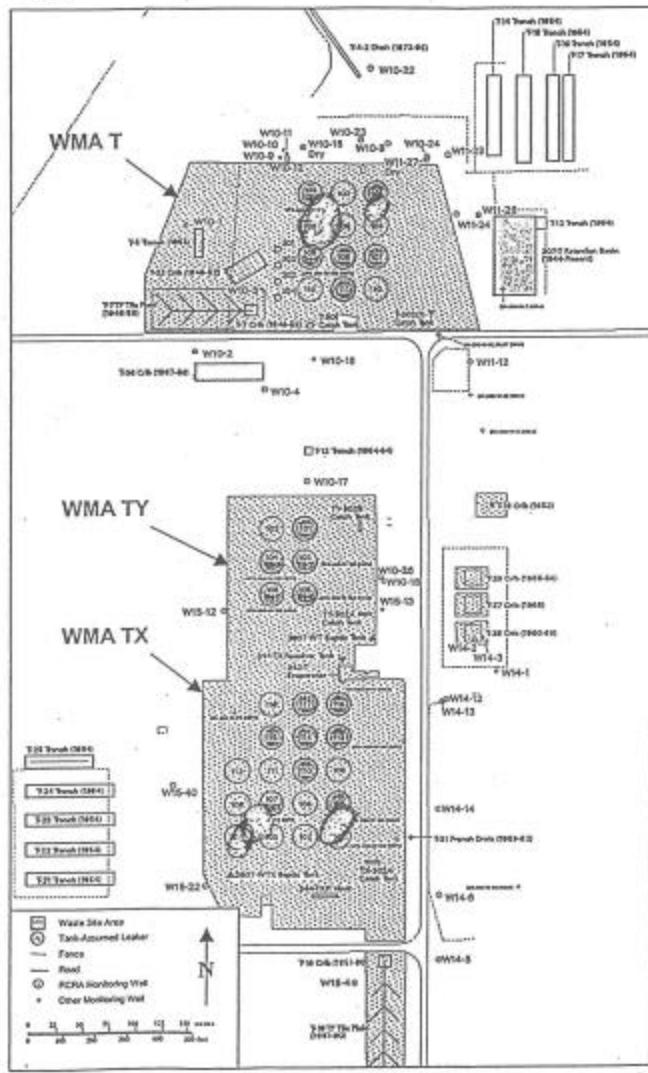
Spectral Gamma Logs from BX-102 Drywells



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T and TX-TY Contamination Zones



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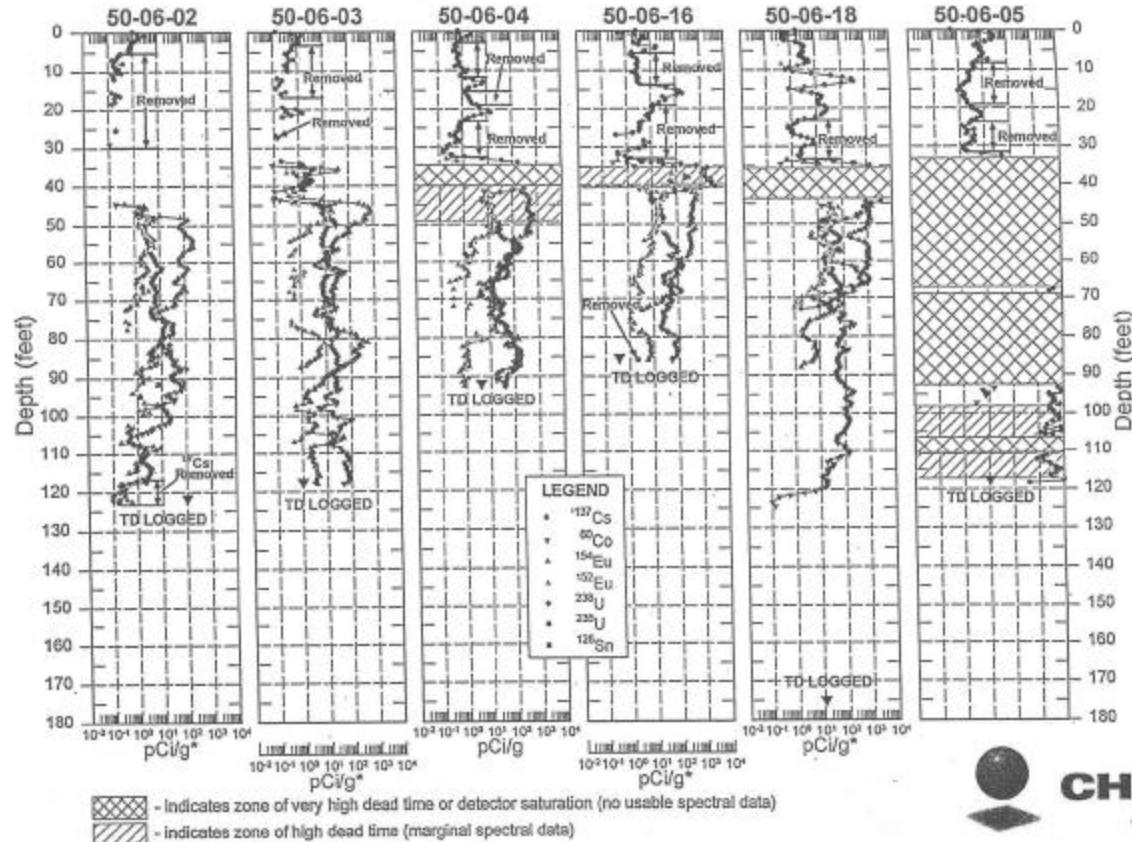
Synopsis of T-TX-TY Contamination Zones and Proposed Characterization Design

Area of Interest	Primary Characteristics			Associated Groundwater Contamination	Issues	Characterization Approach	Data to be Collected
	Leak Volume (gal)	Waste Source	Contaminants				
T-106	115,000	B Plant (Cs/Sr Extraction)	Cs, Eu, Co, U, Tc	Probable [Tc Cr and NO3]	Waste distribution below drywalls, Tc Distribution	Deep borehole SE of W10-96	Soil sample analysis, soil leaching; Groundwater analysis
T-103	1,300	B Plant (Cs/Sr Extraction)	Cs, Eu, Co	Possible, but could be T-106		None, Insignificant relative to T-106	
T-101	10,000	B Plant (Cs/Sr Extraction)	Cs, Eu, Co	Possible, but could be T-106		None, Insignificant relative to T-106	
TY-103	3,600	B Plant (Cs/Sr Extraction)	Cs, Co			None, relatively low Tc inventory	
TY-105	35,000	Uranium recover	Cs, Co	None Observed		None, relatively low Tc inventory	
TY-106	20,000	Uranium recover	Cs, Co	None Observed		None, relatively low Tc inventory	
TX-105 & TX-104	?	Metal Waste	U	Possible Tc in wells downstream	pump & treat effects, leak vol, Tc inventory and distribution	Deep borehole between TX-105 and TX-101	Soil sample analysis, soil leaching; Groundwater analysis
TX-107	8,000	B Plant (Cs/Sr Extraction)	Cs, Eu, Co	Possible Tc in wells downstream	pump & treat effects, leak vol, Tc, Cs inventory and distribution	Deep borehole south of TX-107	Soil sample analysis, soil leaching; Groundwater analysis





Spectral Gamma Logs from T-106 Drywells

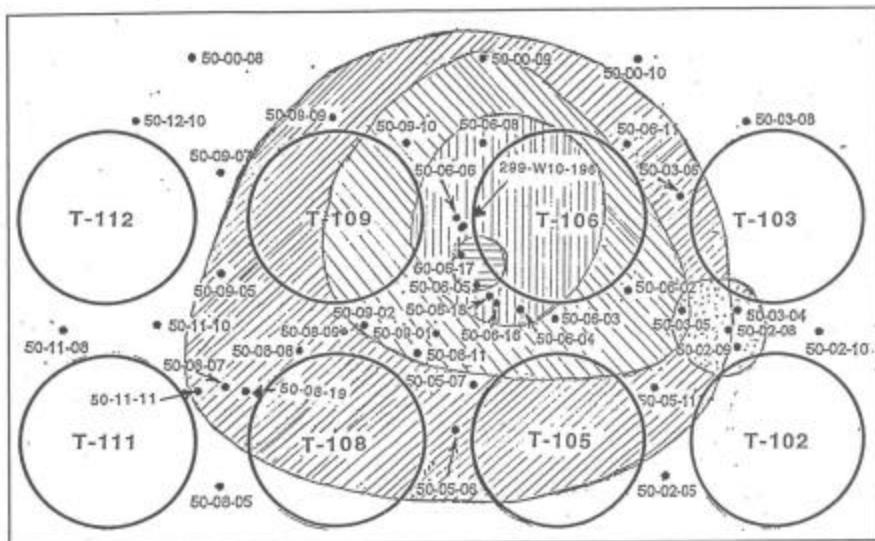


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Drywell Spectral Gamma Characteristics From T-106 Leak



Drywell Spectral Gamma Characteristics Due to Tank T-106 Leak

- Zone 1: Thick regions of $> 10^7$ pCi/g Cs-137 concentration from 35-100 ft
- Zone 2: Small regions of $> 10^7$ pCi/g Cs from 35-45 ft; Co-60 and europium isotopes from 35-100 ft
- Zone 3: No Cs-137 present; Co-60 from 35-100 ft and sporadic europium isotopes from 35-100 ft
- Zone 4: Co-60 65 ft and below, frequently to the bottom of the drywell(-100 ft)

Drywell Spectral Gamma Characteristics Due to Tank T-103 Leak

- Estimated zone of contamination from the tank T-103 leak primarily Co-60 and europium isotopes from 20-90 ft

