

<b>Change Number</b> M-24-00-02	<b>Federal Facility Agreement and Consent Order  Change Control Form</b> <small>Do not use blue ink. Type or print using black ink.</small>	May 22, 2001
<b>Originator</b> Jane Hedges, Ecology		<b>Phone</b> 509-736-3016
<input type="checkbox"/> I - Signatories	<input checked="" type="checkbox"/> II - Executive Manager	<input type="checkbox"/> III - Project Manager
<b>Change Title</b> Establish calendar year 2001 RCRA well installation interim milestones in support of Hanford Federal Facility Agreement and Consent Order (HFFACO) Major Milestone M-24-00M.		
<b>Description/Justification of Change</b>  <b>Introduction:</b> Regulatory requirements applicable to the generation, transport, storage, treatment, and/or disposal of hazardous and mixed wastes are established by the <i>Resource Conservation and Recovery Act of 1976 (RCRA)</i> , Washington's Hazardous Waste Management Act (HWMA), and the HFFACO, as amended. The Hanford Facility RCRA Permit was issued by the Washington State Department of Ecology (Ecology) and the United States Environmental Protection Agency (EPA) in August 1994. Ecology and EPA designated the Hanford Site as a single RCRA facility with over 60 individual liquid and solid waste treatment, storage and disposal (TSD) units. The HFFACO recognizes that all of the TSD units cannot be permitted simultaneously and has set up a schedule for submitting unit-specific Part B RCRA/dangerous waste permit applications and closure plans to Ecology. The HFFACO also establishes requirements to monitor the groundwater beneath land disposal units and the single-shell tanks (SSTs). The groundwater monitoring systems are required to meet the requirements in the State of Washington's Dangerous Waste Regulations (WAC 173-303-645).		
<b>Impact of Change</b> Modifies regulatory requirements governing groundwater monitoring at Hanford Site hazardous waste facilities. Administrative action required to incorporate this change into Appendix D.		
<b>Affected Documents</b> The Hanford Federal Facility Agreement and Consent Order, as amended, The U. S. Department of Energy's (USDOE's) annual Land Disposal Restrictions Report (should LDR subject wastes be generated as a result of this modification), Hanford site internal planning, management, and budget documents (e.g., Agreement Action Plan - Appendix D, USDOE and USDOE contractor Baseline Change Control documents; Multi Year Work Plans, Sitewide Systems Engineering Control documents, Project Management Plans, and the Hanford site Integrated Priority List).		
<b>Approvals</b>		
W. Wade Ballard USDOE	6/1/01 Date	<input checked="" type="checkbox"/> Approved <input type="checkbox"/> Disapproved
Not Applicable EPA	Date	<input type="checkbox"/> Approved <input type="checkbox"/> Disapproved
Muelha Ecology	5/22/01 Date	<input checked="" type="checkbox"/> Approved <input type="checkbox"/> Disapproved

**RECEIVED**  
JUN 20 2001

**EDMC**

**Description/Justification of Change (continued)**

Currently, there are twenty-four TSD units monitored under RCRA to determine if they are impacting groundwater. The TSD units, located in various parts of the Hanford Site, include:

<u>100 AREA</u>	<u>200 EAST AREA</u>	<u>200 WEST AREA</u>	<u>300 AREA</u>
(1) 1301-N LWDF	(5) 216-A-29 Ditch	(15) 216-S-10 Pond & Ditch	(23) 316-5 Process Trenches
(2) 1324-N/N/A LWDF	(6) 216-B-63 Trench	(16) 216-U-12 Crib	
(3) 1325-N LWDF	(7) 216-B-3 Pond	(17) WMA S-SX	
(4) 183-H Solar Evaporation Basins	(8) LERF	(18) WMA T	
	(9) 216-A-10 Crib <sup>(a)</sup>	(19) WMA TX-TY	<u>600 AREA</u>
	(10) WMA A-AX	(20) WMA U	(24) NRDWL
	(11) WMA B-BX-BY	(21) LLWMA 3	
	(12) WMA C	(22) LLWMA 4	
	(13) LLWMA 1		
	(14) LLWMA 2		

(a) Combined into one RCRA Monitoring Unit

LERF	= Liquid Effluent Retention Facility
WMA	= Waste Management Area
LLWMA	= Low-Level Waste Management Area
LWDF	= Liquid Waste Disposal Facility
NRDWL	= Nonradioactive Dangerous Waste Landfill

RCRA groundwater monitoring requirements for TSD units fall under one of two categories: interim status or final status. A permitted or closed RCRA TSD unit requires groundwater monitoring meeting final facility standards as specified in 40 Code of Federal Regulations (CFR) 264. Interim status RCRA units (i.e., units not permitted to final facility standards) require interim status groundwater monitoring as specified in 40 CFR 265. Ecology was authorized by the EPA to implement its dangerous waste program in Washington State in lieu of the EPA's. Ecology's interim status TSD requirements, established in Washington Administrative Code (WAC) 173-303-400, invoke 40 CFR 265 governing RCRA groundwater monitoring activities. RCRA final status TSD facilities comply with WAC 173-303-645, which specifies the groundwater monitoring requirements.

Both interim and final status groundwater monitoring are conducted under one of three possible phases: 1) indicator parameter (interim status)/detection (final status), 2) assessment (interim status)/compliance (final status), and 3) corrective action (interim or final status). Initially, a detection-level program is developed to determine and monitor the impact of facility operations on the groundwater. If the detection monitoring results indicate a statistical increase in the concentrations of key indicator parameters or dangerous waste constituents in the groundwater, then an assessment (interim status) or compliance (final status) phase of monitoring and investigation is initiated. If the source of the contaminants is determined to be the TSD unit, and those concentrations exceed maximum contaminant levels as referenced in the monitoring program plan or defined in the permit, then Ecology may require corrective action to reduce the contaminant hazards to the public and the environment.

The apparent shape of contaminant plumes flowing from the tank farms, the potential geologic control on the lateral dispersion of the plumes, and the changing groundwater conditions at Hanford have necessitated upgrades to monitoring systems throughout the site. Changes to the groundwater flow regime have been most pronounced in the 200 East and West Areas, due primarily to the dissipation of large groundwater mounds. These areas also contain the single-shell tank (SST) farms, which have impacted the groundwater with mixed wastes and/or mixed waste constituents and will continue to impact groundwater for the foreseeable future. Tank waste releases pose significant risk to human health and the environment. Contaminants from unremediated tank waste releases have reached groundwater. No RCRA Corrective Action risk assessment has been performed. The USDOE Office of River Protection has taken action to reduce the potential for future SST tank waste releases to the vadose zone through interim stabilization of the SSTs and has provided support for groundwater monitoring around the SSTs. Due to the risk to human health and the environment posed by tank waste releases, Ecology has focused its attention for monitoring well installation on those facilities. Therefore, all of the identified Calendar Year (CY) 2001 monitoring well locations are sited upgradient and along the perimeters of the 200 East and West Area SST Waste Management Areas (WMAs). When Ecology has determined that the monitoring wells comprising the indicator parameter monitoring systems will be able to detect contamination emanating from the tank farms, the primary focus will shift from RCRA/HWMA interim status indicator parameter monitoring to RCRA/HWMA assessment monitoring.

## Description/Justification of Change (continued)

During October 2000, the U.S. Department of Energy, Richland Operations Office (RL), the U.S. Department of Energy, Office of River Protection (ORP), and Ecology conducted a well prioritization process to consider groundwater monitoring well installation needs for CY 2001. Ecology provided justification for the installation of 43 wells (36 SST wells and 7 non-SST wells) during CY2001. Upon completion of the process (October 2000), USDOE-RL, USDOE-ORP, and Ecology had agreed on the technical merit and ~~near-term need~~ <sup>long-term need</sup> for construction of 23 RCRA SST wells. In addition, it was agreed that 9 SST wells would be "deferred", as additional geochemical and flow direction data (to be obtained from a subset of the new wells) is required prior to making the final location and depth decisions. A table reflecting the agreements and describing the wells, their locations, and justifications is attached.

In December 2000, Ecology performed a RCRA Comprehensive Groundwater Monitoring Evaluation (CME) inspection. The purpose of the inspection was to assess the groundwater monitoring program at the Hanford Site's T and TX-TY SST WMAs with focus on 40 CFR, Subpart F groundwater monitoring requirements. The inspection represented the first such groundwater inspection performed at the Hanford Site. The CME consisted of a detailed technical and regulatory evaluation of the T and TX-TY SST WMA groundwater monitoring program. The technical CME report (which will be issued as an attachment to the RCRA inspection documentation) will document any deficiencies associated with the T and TX-TY WMA groundwater monitoring program. Due to the procedural and administrative aspects of finalizing Milestone M-24-00M and the increasing risk that all proposed 11 groundwater monitoring wells would not be installed during CY 2001 if this agreement were delayed further, Ecology concurred with deferring decision on installation of the majority of the agreed upon T and TX-TY WMA RCRA groundwater monitoring wells. Of the 5 T and TX-TY WMA wells proposed by USDOE-RL and USDOE-ORP for CY 2001 installation, 3 wells will be installed at the T and TX-TY WMAs. The other agreed upon well locations are deferred to a later date. However, Ecology continues to assert the significant need for additional wells at the T and TX-TY WMAs.

Agreement has been reached between the USDOE and Ecology to proceed with installation of 11 standard-design RCRA monitoring wells to be completed by December 2001, 3 wells at B-BX-BY Tank Farm, 3 wells at U Tank Farm, 2 wells at TX-TY Tank Farm, 1 well at T Tank Farm, and 2 wells at S-SX Tank Farm. Specific well locations are shown on the attached maps and are subject to minor changes due to site conditions. This agreement allows continuing momentum in the drilling program in CY 2001.

## M-24-00M Interim Milestones established on approval of this Agreement modification: \*

M-24-51	Install three (3) additional wells at SST WMA B-BX-BY	December 2001	Location: All wells installed downgradient at perimeter of WMA.
M-24-52	Install three (3) additional wells at SST WMA U	December 2001	Location: Two wells installed downgradient at perimeter of WMA and one well installed upgradient of WMA.
M-24-53	Install two (2) additional wells at SST WMA TX-TY	December 2001	Location: One well installed downgradient at perimeter of WMA and one well installed upgradient of WMA.
M-24-54	Install one (1) additional well at SST WMA T	December 2001	Location: One well installed upgradient of WMA.
M-24-55	Install two (2) additional wells at SST WMA S-SX	December 2001	Location: Two wells installed downgradient at perimeter of WMA.

\*In approving this Agreement modification the Parties also recognize that workshops will continue to occur to develop a process for the timely identification of wells to be installed in the future. These workshops will also enable USDOE to identify budget allocation needs for outyear TPA Milestone M-24-00 planning purposes. This effort will be completed by December 2001. During these workshops, efforts will focus on defining a long-term planning basis for improving monitoring capabilities along the perimeters of the SST WMAs and for establishing the wells needed for groundwater assessment purposes. The circumstances that drive the design of the groundwater monitoring networks have changed since the Tri-Party Agreement Major Milestone M-24-00 was emplaced. The issues of a declining water table, changing groundwater flowpaths, and distinguishing contaminant sources at the SST WMAs have complicated decisions on the number, design, and emplacement of monitoring wells. Therefore, the workshops will consist of Ecology and USDOE reviewing and evaluating technical data quality objectives and establishing outyear Tri-Party Agreement milestone needs for the installation of RCRA monitoring wells. The workshops will focus on early joint prioritization, planning, and scheduling to integrate the technical, regulatory, and fiscal issues into a mutually agreed-to path forward.

For ease of reference, the wells within Tank Farm WMA in this Table are in the same order as the Ecology Table provided in the Workshop on September 25, 2000. Wells are prioritized for installation by grouping all wells within specific Tank Farm WMAs together and prioritizing the WMAs.

Facility Name	Well ID	Keep on List?	Well Priority	Justification/Purpose	Deep Well	Location
B-BX-BY	A	See →	Defer*	Determine flow directions, proceed step-wise.		Downgradient (perimeter).
B-BX-BY	B	Y	3	Site in assessment. Contaminant detection/enhance downgradient coverage		Downgradient (perimeter), southeast corner of 241-BX Farm (well #11 on MEMO simulation).
B-BX-BY	C	See →	Defer*	Determine flow directions, proceed step-wise.		Downgradient (perimeter).
B-BX-BY	D	See →	Defer*	Determine flow directions, proceed step-wise.		Downgradient (perimeter).
B-BX-BY	E	Y	1	Site in assessment. Contaminant detection/enhance downgradient coverage		Downgradient (perimeter), southeast side of 241-B Farm (well #15 on MEMO simulation).
B-BX-BY	F	Y	2	Site in assessment. Contaminant detection/enhance downgradient coverage		Downgradient (perimeter), southeast corner of 241-B Farm (well #16 on MEMO simulation).
U	A	Y	5	Site in assessment. Contaminant detection/enhance downgradient coverage		Downgradient (perimeter), north end of the eastern side of the facility, (well #5 on MEMO simulation moved north).
U	B	Y	4	Site in assessment. Contaminant depth delineation downgradient	X	Downgradient assessment well near RCRA well 299-W19-41 on east side of facility.
U	C	Y	1	Site in assessment. Contaminant detection/enhance downgradient coverage		Downgradient (perimeter), north of existing well 299-W19-32 on east side of facility.
U	D	Y	3	Site in assessment. Contaminant detection/enhance downgradient coverage		Downgradient (perimeter), north of existing well 299-W19-12 on east side of facility.
U	E	Y	2	Site in assessment. Upgradient well		Upgradient, south end of the west side of the facility. Replaces drying well 299-W18-25.
U	F	See →	Remove	Not needed. Flow will resume west-to-east direction when well 299-W15-37 (ZP-1) is turned off.		Downgradient (perimeter), east end of northern side (well #7 on MEMO simulation).
U	G	See →	Remove	Not needed. Flow will resume west-to-east direction when well 299-W15-37 (ZP-1) is turned off.		Downgradient (perimeter), midsection of northern side (well #8 on MEMO simulation).
TX-TY	A	Y	1	Site in assessment. Contaminant detection/enhance downgradient coverage		Downgradient (perimeter), near non-RCRA well 299-W14-2.
TX-TY	B	Y	5	Site in assessment. Evaluate contaminant depth distribution, monitor at depth.	X	Downgradient assessment well, monitor at depth near well 299-W14-2.
TX-TY	C	Y	3	Site in assessment. Contaminant detection/enhance downgradient coverage		Downgradient (perimeter), located between wells 299-W14-6 and 299-W14-14.
TX-TY	D	Y	6	Site in assessment. Evaluate contaminant depth distribution, monitor at depth.	X	Downgradient assessment well, monitor at depth near well 299-W14-13.
TX-TY	E	Y	4	Site in assessment. Contaminant detection/enhance downgradient coverage		Downgradient (perimeter), located west of 299-W15-41.

CY 2001 RCRA Well Installations  
Pacific Northwest National Laboratory

10/19/01

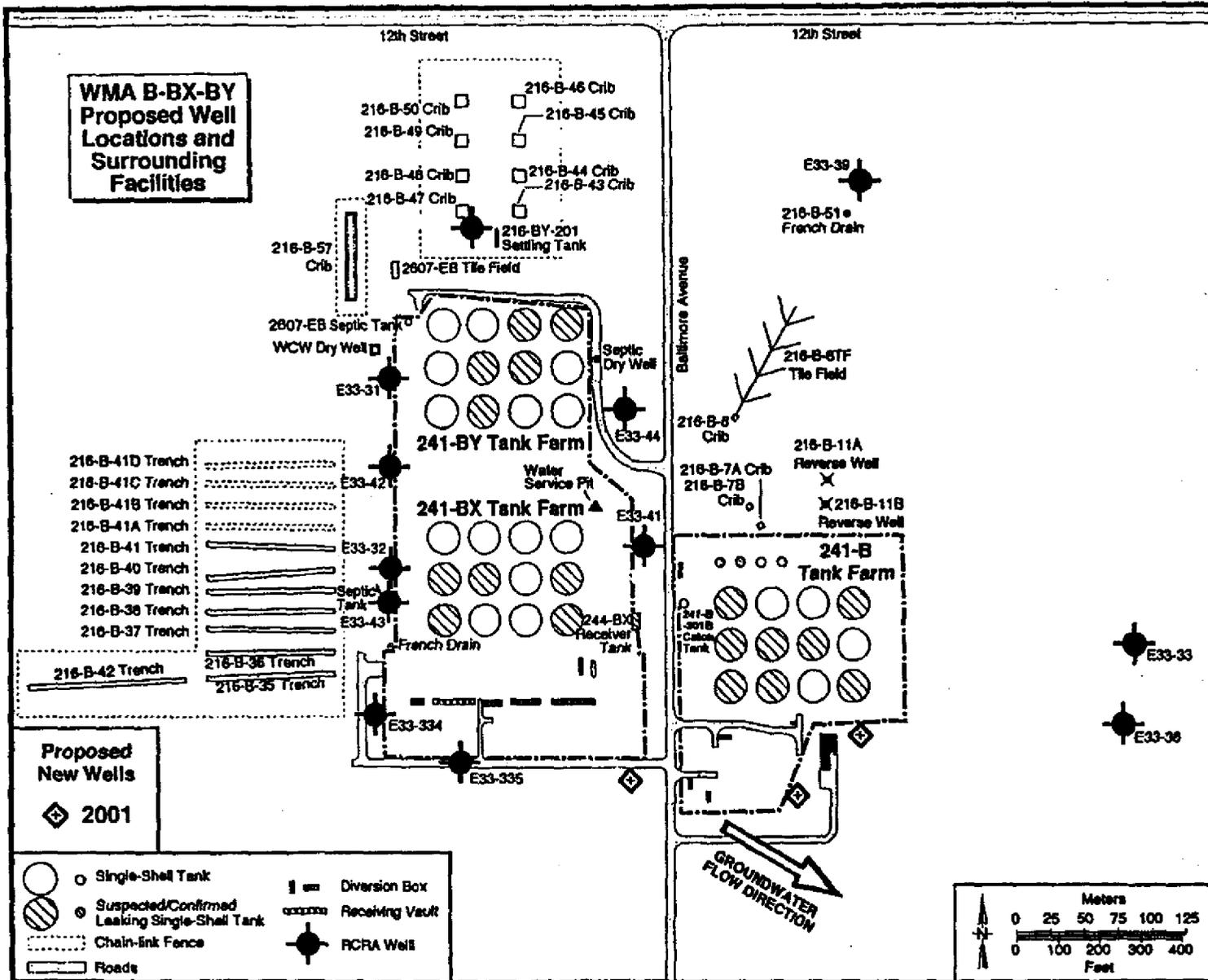
Facility Name	Well ID	Keep on List?	Well Priority	Justification/Purpose	Deep Well	Location
TX-TY	F	Y	7	Site in assessment. Evaluate contaminant depth distribution, monitor at depth.	X	Downgradient assessment well, located adjacent to 299-W15-41.
TX-TY	G	Y	2	Site in assessment. Upgradient well		Upgradient, north end of the west side of the facility. Replaces drying well 299-W15-12.
TX-TY	H	Y (Added)	0**	Proposed for current drilling campaign (priority i).	X	Downgradient assessment well, located adjacent to newly installed well 299-W14-15.
S-SX	A	Y	1	Site in assessment. Contaminant detection/enhance downgradient coverage		Downgradient (perimeter), toward southern end of east side (well #14 on MEMO simulation).
S-SX	B	Y	2	Site in assessment. Contaminant detection/enhance downgradient coverage		Downgradient (perimeter), on northern end of east side (well #13 on MEMO simulation).
S-SX	C	See →	Defer*	Site in assessment. Contaminant detection/enhance downgradient coverage		Downgradient (perimeter), if needed. Evaluate current year's findings before deciding need/location.
S-SX	D	Y	0**	Site in assessment. Evaluate contaminant depth distribution. Proposed for current year drilling campaign (priority ii).	X	Downgradient assessment well southeast of facility, adjacent to mid-field well being drilled this year east of 299-W23-3.
S-SX	E	See →	Defer*	Site in assessment. Evaluate contaminant depth distribution.	X	Downgradient (perimeter), if needed. Evaluate current year's findings before deciding need/location. Part of C well cluster.
T	A	Y	3	Site in assessment. Evaluate horizontal and vertical extent of contamination.	X	Downgradient assessment well, location will be decided after data from current year's wells have been evaluated. Currently located south of the 216-T-17 Trench as a placeholder.
T	B	Y	0**	Site in assessment. Monitor contamination with depth. Proposed for current drilling campaign (priority iii).	X	Downgradient assessment well located near well #C3117 of this year's drilling.
T	C	Y	2	Site in assessment. Evaluate contaminant depth distribution, monitor at depth.	X	Downgradient assessment well located near well #C3118 of this year's drilling.
T	D	Y	1	Site in assessment. Upgradient well		Upgradient. Replaces non-RCRA well 299-W10-1.
C	A	See →	Defer*	Determine flow directions, proceed step-wise.		Downgradient perimeter well.
C	B	See →	Defer*	Determine flow directions, proceed step-wise.		Downgradient perimeter well.
A-AX	A	See →	Defer*	Determine flow directions, proceed step-wise.		Downgradient perimeter well.
A-AX	B	See →	Defer*	Determine flow directions, proceed step-wise.		Downgradient perimeter well.
U-12 Crib	A	See →	Defer***	Site in assessment; non-Tank Farm site.		
U-12 Crib	B	See →	Defer***	Site in assessment; non-Tank Farm site.		
S-10 Pond	A	See →	Defer***	Site in detection; non-Tank Farm site.		
LLBG	A	See →	Defer***	Site in detection; non-Tank Farm site.		
LLBG	B	See →	Defer***	Site in detection; non-Tank Farm site.		

CY 2001 RCRA Well Installations  
Pacific Northwest National Laboratory

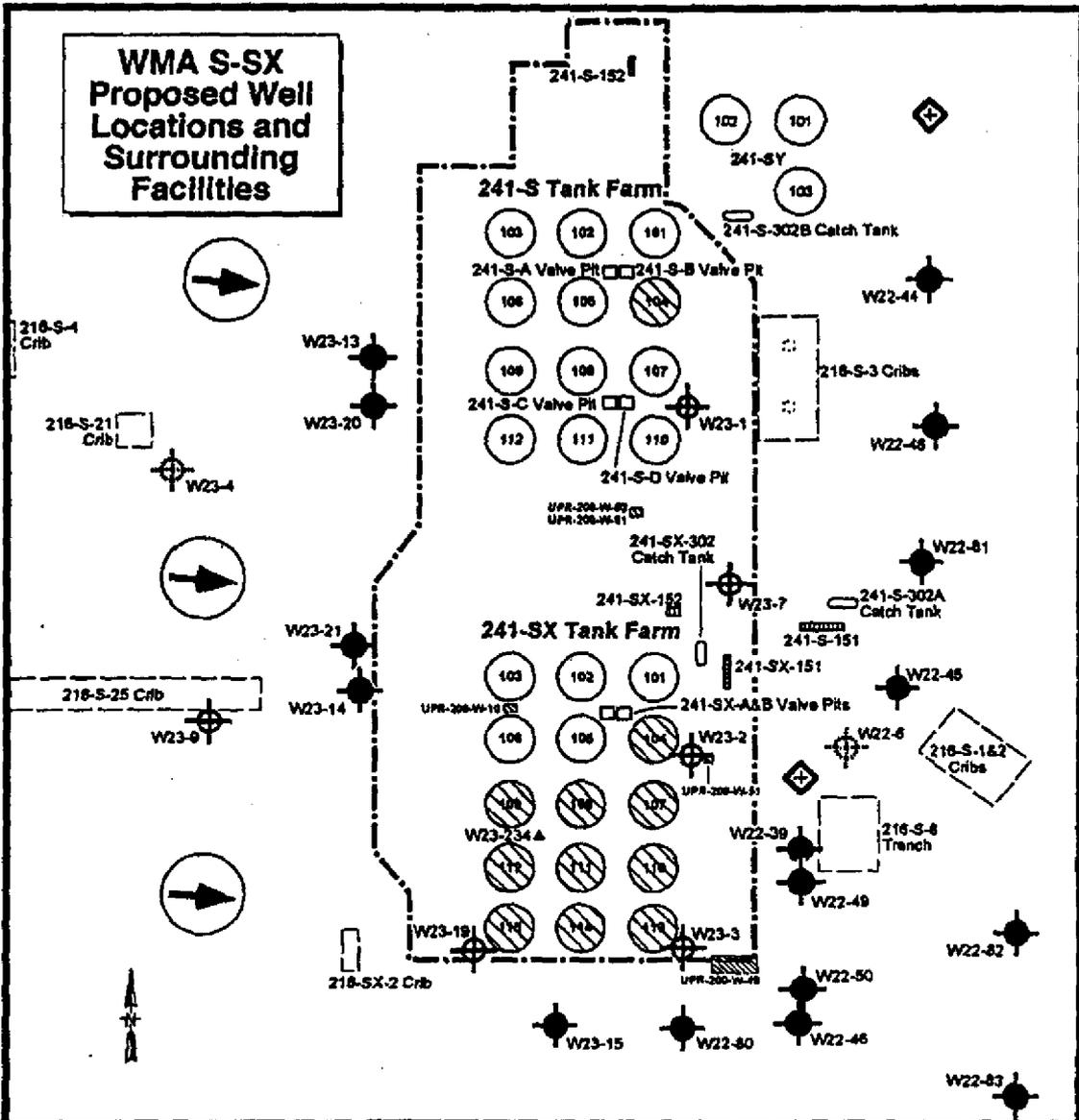
10/19/01

Facility Name	Well ID	Keep on List?	Well Priority	Justification/Purpose	Deep Well	Location
LERF	A	See →	Defer***	Site in final status; discussions underway to determine an alternate monitoring approach.		
A-29 Ditch	A	See →	Defer***	Site in detection; non-Tank Farm site.		
S-SX		See →	M-45 &/or M-24	If wells monitor prior to retrieval, M-45 wells. If wells monitor post-retrieval release, M-24 wells.****		Inside Tank Farm.
S-SX		See →	M-45 &/or M-24	If wells monitor prior to retrieval, M-45 wells. If wells monitor post-retrieval release, M-24 wells.****		Inside Tank Farm.
C		See →	M-45 &/or M-24	If wells monitor prior to retrieval, M-45 wells. If wells monitor post-retrieval release, M-24 wells.****		Inside Tank Farm.

- Defer\*      Defer plans to install wells to future years after flow directions are determined with more certainty.  
 0\*\*        Highest priority; proposed to install as part of the current year activities.  
 Defer\*\*\*    Delay plans to install wells at the cribs, ponds, and ditches until the tank farms monitoring well needs are met.  
 M-24/45\*\*\*\*    On near-term basis, M-45/24 wells may be considered in M-45 F&R decision document associated with M-45 retrieval demonstrations.



**WMA S-SX  
Proposed Well  
Locations and  
Surrounding  
Facilities**



- 100 Single-Shell Tank
- Shading Denotes Suspected/Confirmed Leaking Single-Shell Tank
- UPR Unplanned Release (UPR)
- Diversion Box

- Existing RCRA Wells
- Non-RCRA Wells in Use
- Non-RCRA Well That is Available, But Not Currently Monitored
- Exploratory Borehole/Well (1997)

Inferred Groundwater Flow Direction

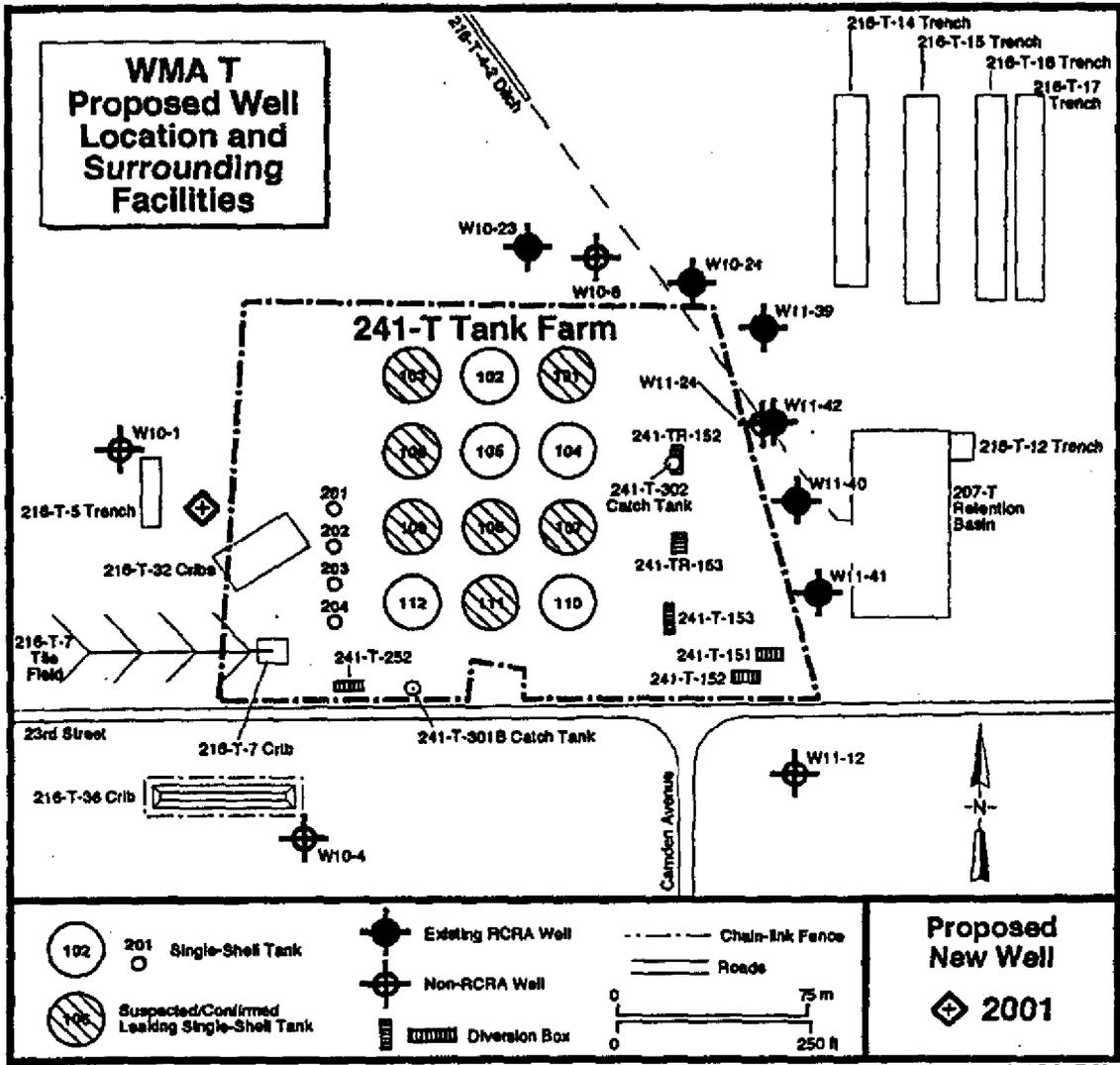
SCALE

0 50 100 Meters

**Proposed New Wells**

2001

All S Tank names prefixed by 241-S-  
All SX Tank names prefixed by 241-SX-



**WMA T  
Proposed Well  
Location and  
Surrounding  
Facilities**

**241-T Tank Farm**

**Proposed  
New Well**  
◆ 2001

- 192 201 Single-Shell Tank
- 102 Suspected/Confirmed Leaking Single-Shell Tank

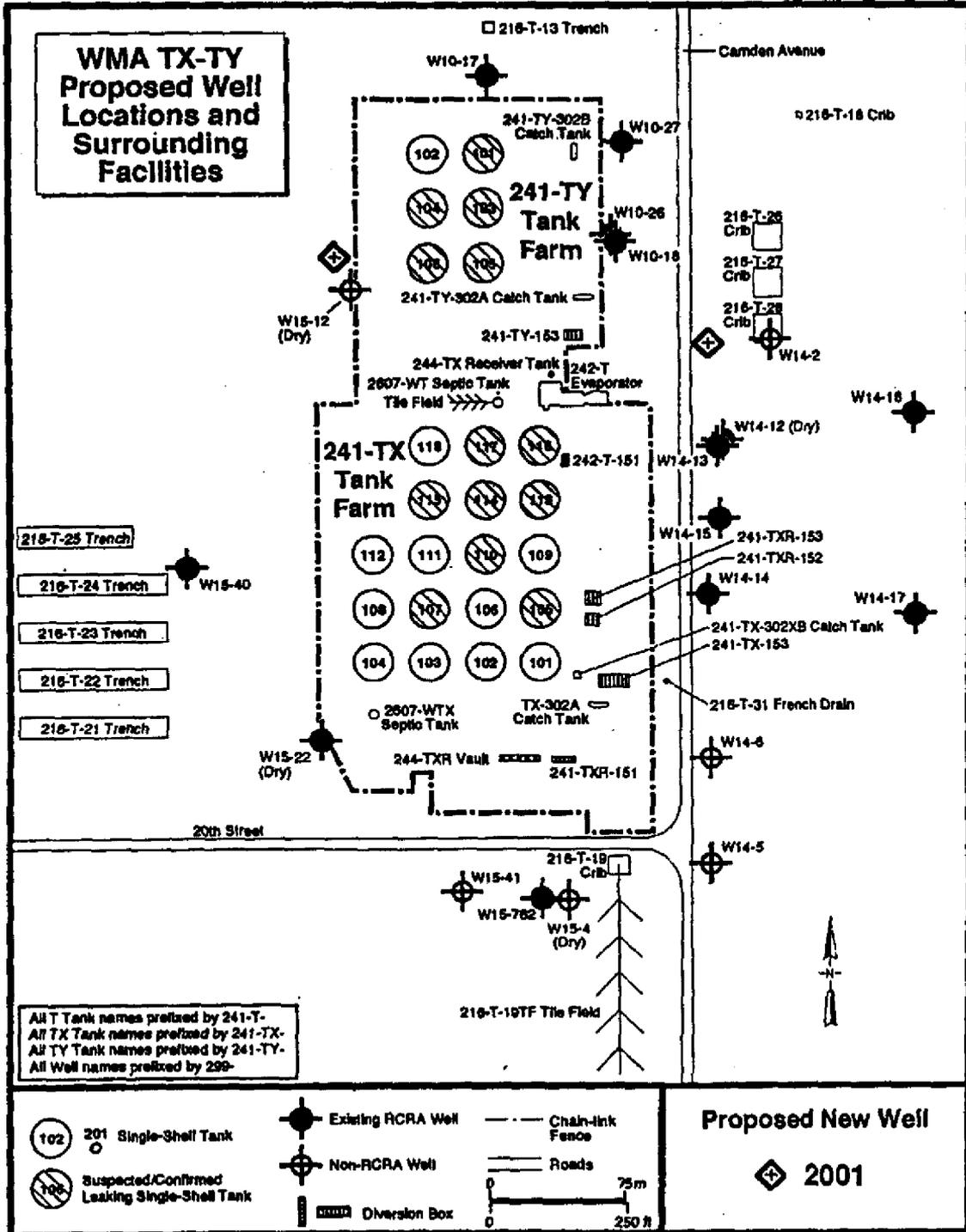
- Existing RCRA Well
- Non-RCRA Well
- ▭ Diversion Box

- Chain-link Fence
- == Roads



2001/DCL/T/003

**WMA TX-TY  
Proposed Well  
Locations and  
Surrounding  
Facilities**



216-T-25 Trench

216-T-24 Trench

216-T-23 Trench

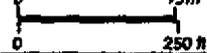
216-T-22 Trench

216-T-21 Trench

All T Tank names prefixed by 241-T.  
All TX Tank names prefixed by 241-TX.  
All TY Tank names prefixed by 241-TY.  
All Well names prefixed by 299-

-  201 Single-Shell Tank
-  Suspected/Confirmed Leaking Single-Shell Tank

-  Existing RCRA Well
-  Non-RCRA Well
-  Diversion Box

-  Chain-link Fence
-  Roads
-  0 75m 250ft

**Proposed New Well**

 2001

