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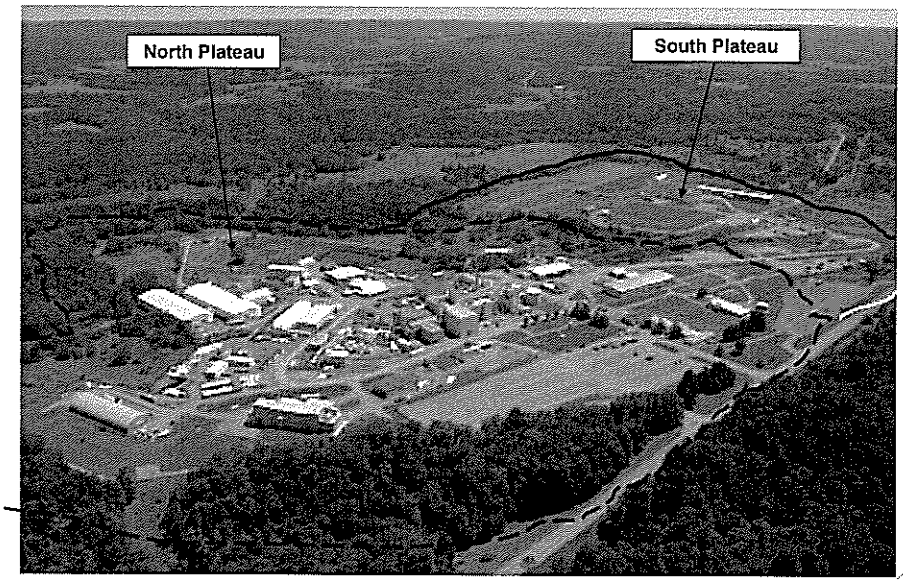
Western New York Nuclear Service Center

North Plateau Groundwater Plume
Data Summary

Paul J. Bembia

October 25, 2006

Central Area of the WNYNSC – "The 200 Acres"



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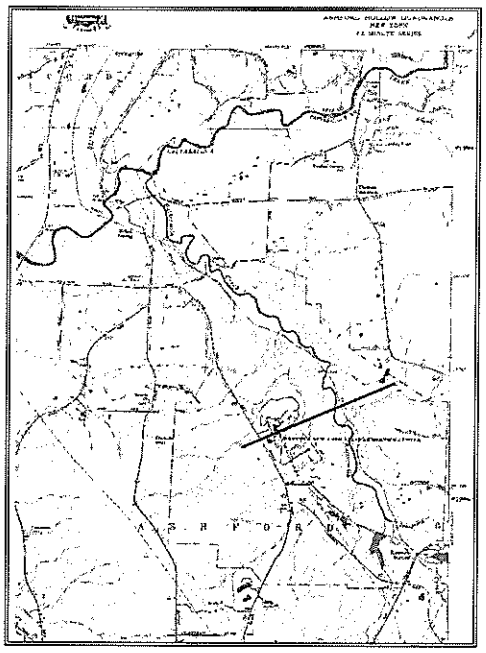

Northeast portion of Ashford Hollow, NY
7.5 Minute Quadrangle

NYS DOT, 1988

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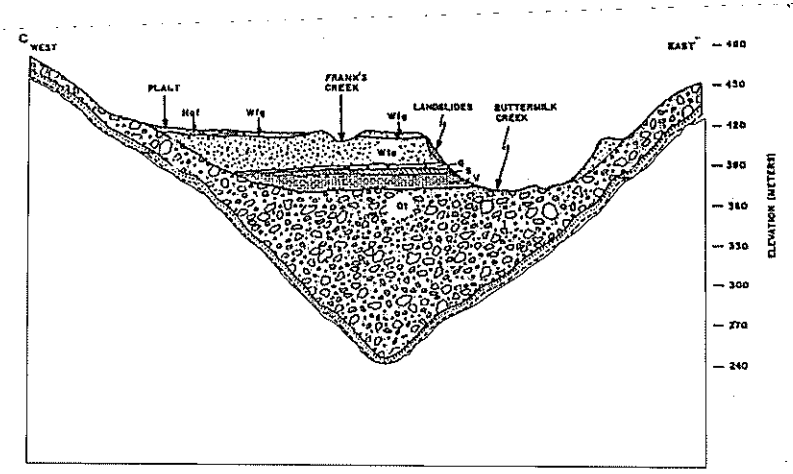
10/25/06
3 of 16

Geologic Cross Section of the Buried Central Valley at the Western New York Nuclear Service Center



NOTE: Vertical Scale = ¼ horizontal scale.
Adapted from Dana et al. (1979a)

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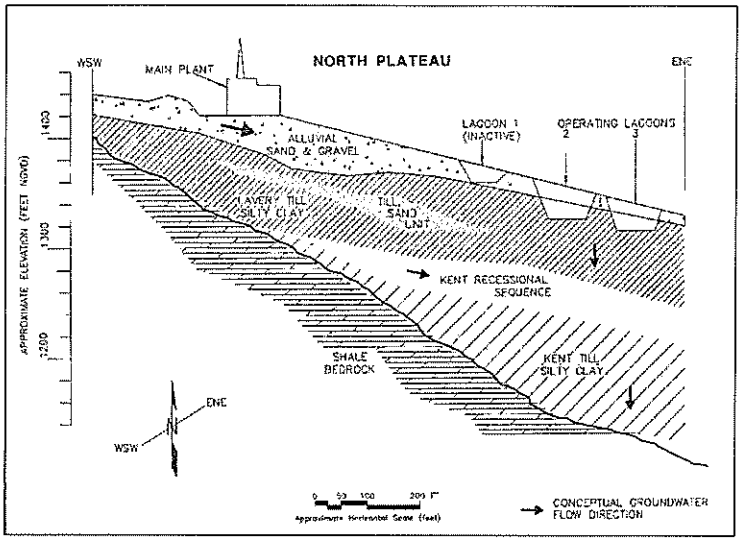
10/25/06
4 of 16

North Plateau Geologic Cross Section



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10/25/06
5 of 16

North Plateau Groundwater Plume

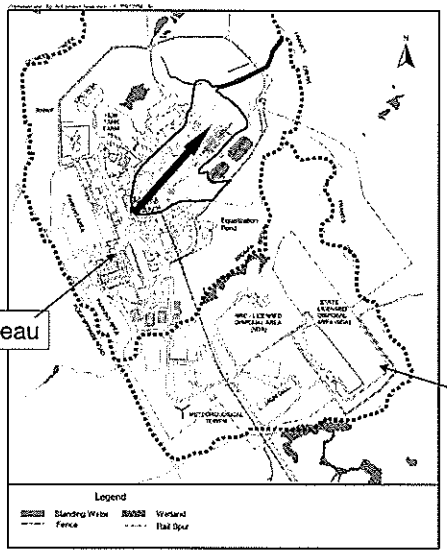

Figure A-1. West Valley Demonstration Project Base Map

North Plateau

South Plateau

- Contamination that leaked from the Process Building (primarily radioactive Strontium-90 and Yttrium-90) is being carried to the northeast by groundwater flowing through the upper sand and gravel deposit on the North Plateau.

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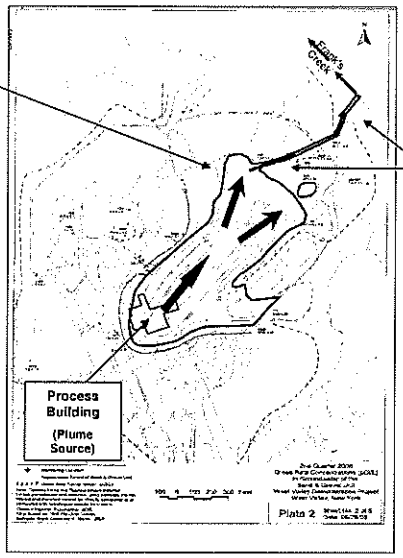
10/25/06
6 of 16

North Plateau Groundwater Plume – Transport Paths

- Some contaminated groundwater seeps from the sand and gravel deposit into surface water ditches and low-lying areas within the West Valley Demonstration Project portion of the WNYNSC.



- This contaminated surface water flows from ditches on the West Valley Demonstration Project Premises onto the Retained Premises buffer area and into Frank's Creek.

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North Plateau Groundwater Plume – Transport Paths

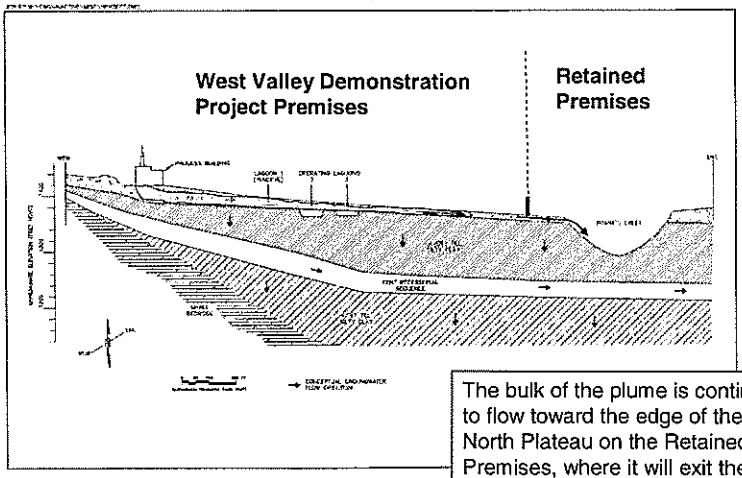

Figure 6 - Geologic Cross Section and Groundwater Flow Paths Through the North Plateau

The bulk of the plume is continuing to flow toward the edge of the North Plateau on the Retained Premises, where it will exit the sand and gravel deposit and flow into Frank's Creek.

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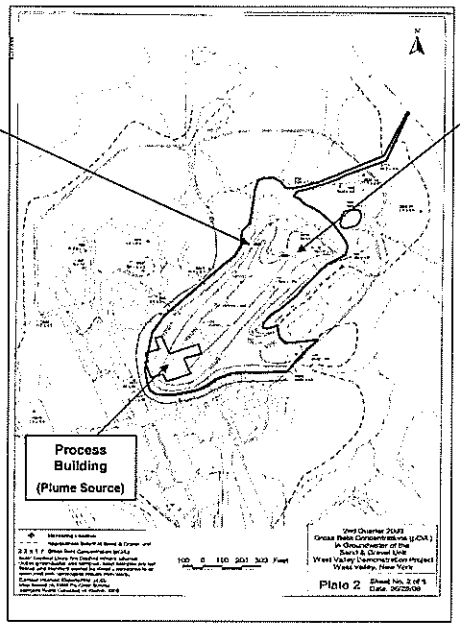
WVDP Plume Mitigation Measures

Groundwater Pumping and Treatment

- Two extraction wells installed in 1995, another added in 1996.
- Extracted and treated about 45 million gallons of water.
- ~6.5 curies of Sr-90 removed from extracted water.



Permeable Treatment Wall

- Treatment media placed in an excavation in the sand and gravel deposit in 1999.
- Groundwater does not flow through the filled excavation as intended.

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10/25/06
9 of 16

North Plateau Groundwater Data - Wells in "Core Area" of the Plume

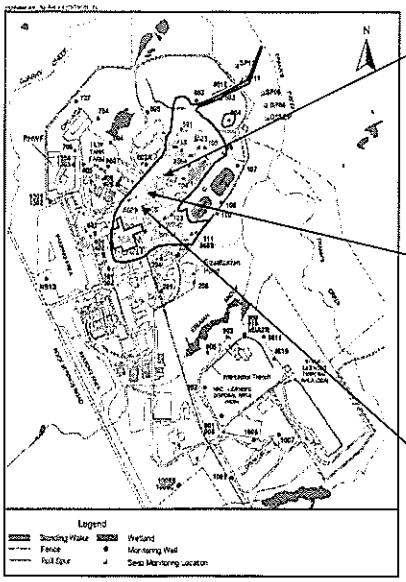
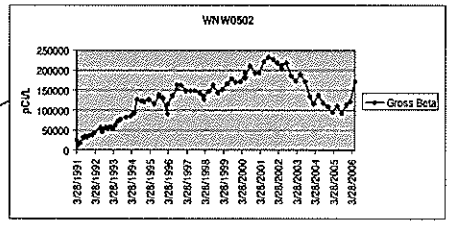
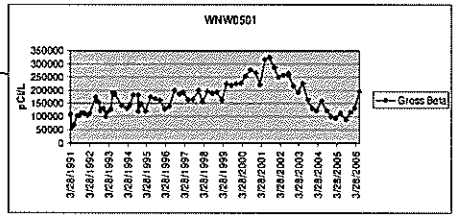
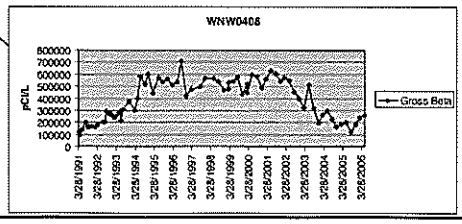


Figure 4-6. Active WVDP Groundwater Monitoring Locations

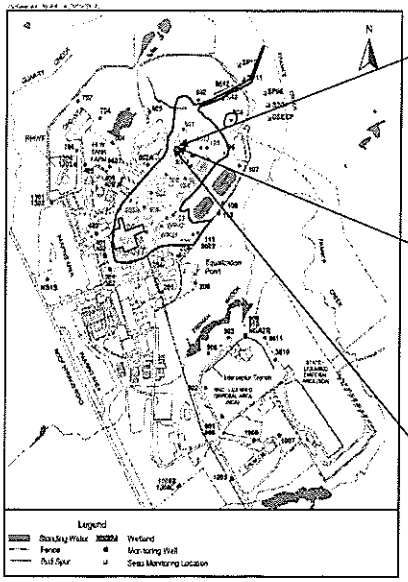


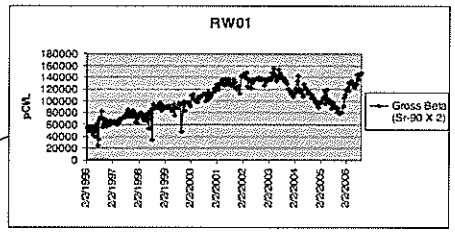


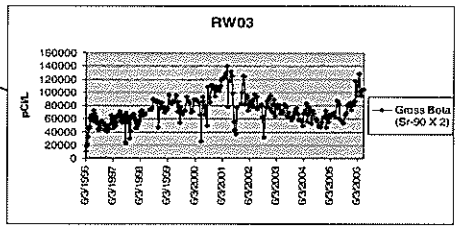


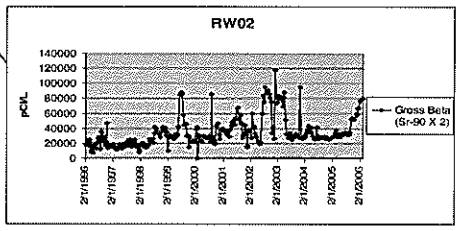
10/25/06
10 of 16

North Plateau Groundwater Data – Groundwater Extraction Wells





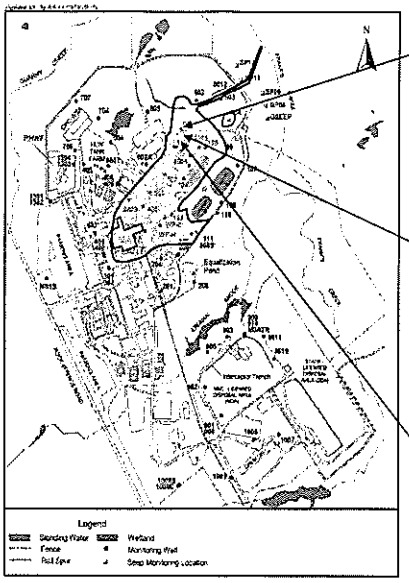


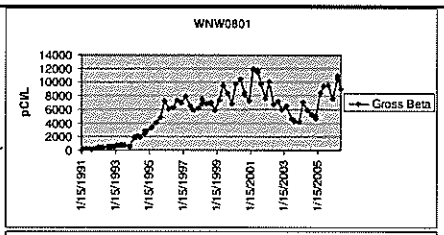


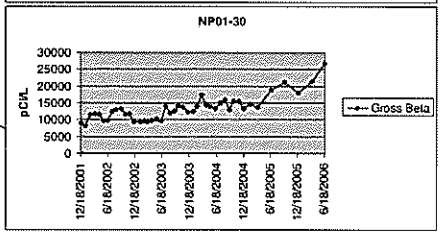
10/25/06
11 of 16

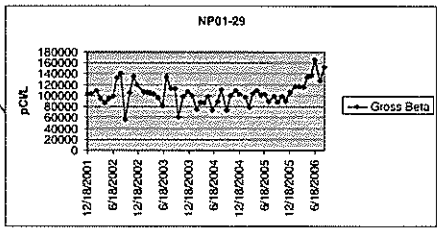
Figure 4-6. Active WTDP Groundwater Monitoring Locations

North Plateau Groundwater Data – Downgradient of the Groundwater Extraction Wells





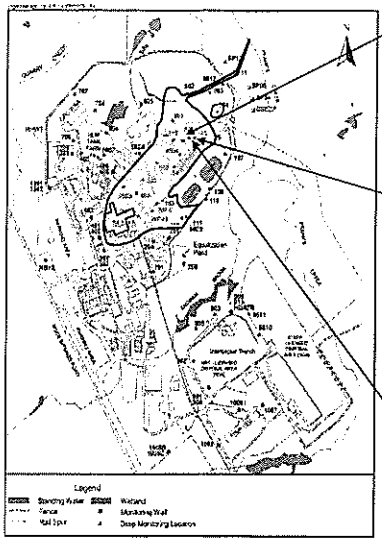


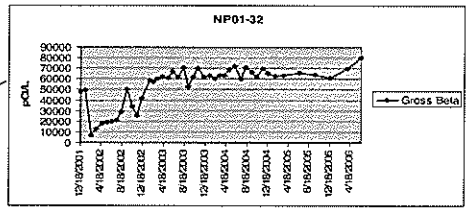


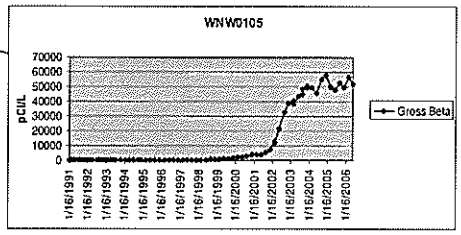
10/25/06
12 of 16

Figure 4-6. Active WTDP Groundwater Monitoring Locations

North Plateau Groundwater Data – Wells Downgradient of the PTW







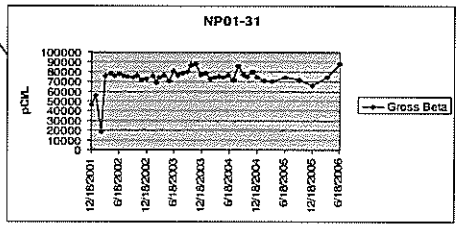


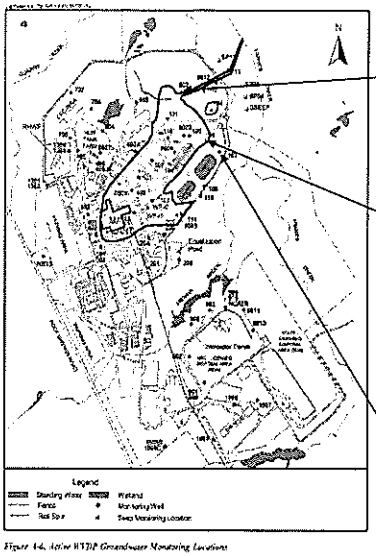
Figure 4-6. Active WTDF Groundwater Monitoring Locations

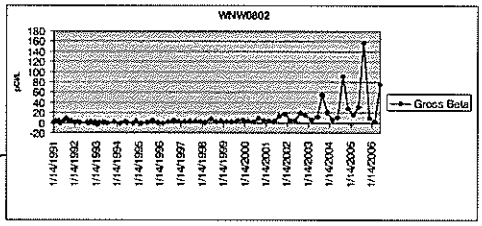
4 - 6

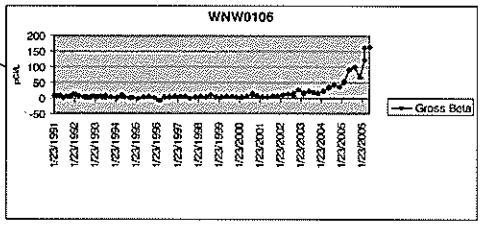
WTDF Annual Site Environmental Report *Calendar Year 2004*

10/25/06
13 of 16

North Plateau Groundwater Data – Wells at the Leading Edge of the Plume







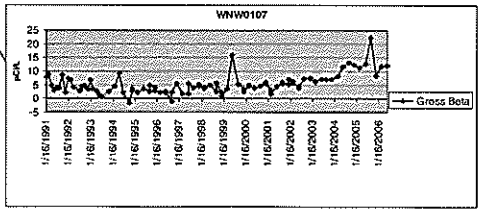


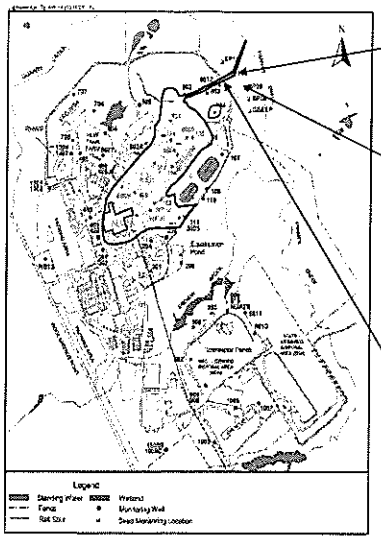
Figure 4-6. Active WTDF Groundwater Monitoring Locations

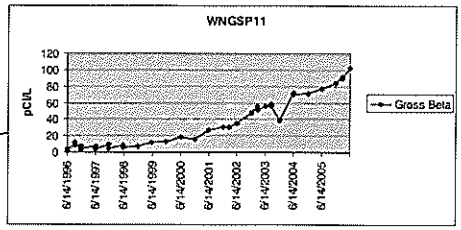
4 - 6

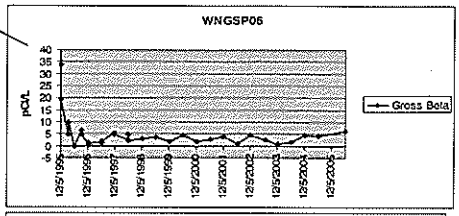
WTDF Annual Site Environmental Report *Calendar Year 2004*

10/25/06
14 of 16

North Plateau Seep and Surface Water Data







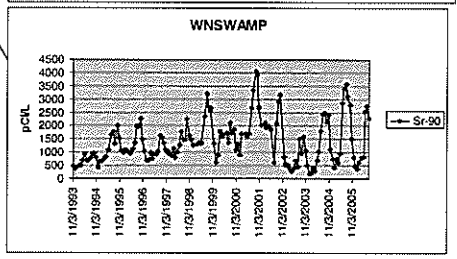
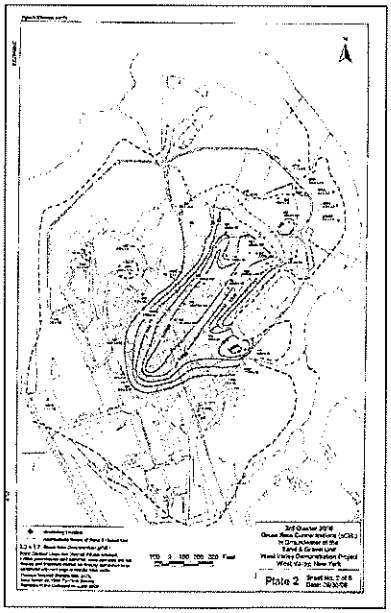


Figure 4-6. Active WVDP Groundwater Monitoring Locations

North Plateau Groundwater Plume Summary

- Plume is continuing to migrate into uncontaminated areas of the North Plateau.
- Plume is continuing to migrate toward the WVDP boundary and the edge of the North Plateau.



- The main body of the plume will eventually exit the sand and gravel deposit and seep down the bank into Frank's Creek.
- Plume surface water discharge at the WVDP boundary currently exceeds the NRC 10 CFR Part 20 limit, NYSDEC Part 380 Limit, and DOE DCG for Sr-90.

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