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# INTRODUCTION

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## Site Location

The West Valley Demonstration Project (WVDP or Project) is located in western New York State, about 30 miles (50 kilometers [km]) south of Buffalo, New York (Fig. INT-1). The WVDP facilities occupy a security-fenced area of about 167 acres (68 hectares [ha]) within the 3,338-acre (1,351 ha) Western New York Nuclear Service Center (WNYNSC) located primarily in the town of Ashford in northern Cattaraugus County. The security-fenced area is referred to as the Project premises.

## General Environmental Setting

*Climate.* Although extremes of 98.6°F (37°C) and -43.6°F (-42°C) have been recorded in western New York, the climate is moderate, with an average annual temperature (1971–2000) of 48°F (8.9°C). Precipitation is markedly influenced by Lake Erie to the west and, to a lesser extent, by Lake Ontario to the north. Regional winds are generally from the west and south at about 9 miles per hour (4 meters/second).

*Ecology.* The WNYNSC lies within the northern deciduous forest biome, and the diversity of its vegetation is typical of the region. Equally divided

between forest and open land, the site provides a habitat especially attractive to white-tailed deer and various indigenous migratory birds, reptiles, and small mammals. No species on the federal endangered species list are known to reside on the WNYNSC.

*Geology and Hydrology.* The Project lies on New York State's Allegheny Plateau at an average elevation of about 1,300 feet (400 meters). The underlying geology includes a sequence of glacial sediments above shale bedrock. The Project is drained by three small streams (Frank's Creek, Quarry Creek, and Erdman Brook) and is divided by a stream valley (Erdman Brook) into two general areas: the north plateau and the south plateau.

Frank's Creek, which receives drainage from Erdman Brook and Quarry Creek, flows into Buttermilk Creek, which enters Cattaraugus Creek and leaves the WNYNSC. (See Figs. A-1 and A-5.) Cattaraugus Creek ultimately drains into Lake Erie, to the northwest.

## Site Mission

The facility that later became the WVDP was the site of a commercial nuclear fuel reprocessing plant run by Nuclear Fuel Services, Inc. (NFS) from



1966 until 1972. Uranium and plutonium were recovered from spent nuclear fuel for reuse. In 1972, the reprocessing facility closed for expansion, but in 1976 NFS notified the New York State Energy Research and Development Authority that it was no longer economically feasible to continue in the fuel-reprocessing business and the plant was shut down. In 1980, Public Law 96-368 (the West Valley Demonstration Project Act) was passed. This Act authorized the United States Department of Energy (DOE) to demonstrate a method for solidifying 600,000 gallons (2.3 million liters) of liquid high-level radioactive waste (HLW) that remained at the West Valley site. For a detailed history of the site, see the Introduction of the 2003 Annual Site Environmental Report. See Appendix K<sup>60</sup> for the complete text of the WVDP Act.

The purposes of the WVDP Act were to carry out the following activities: solidify the HLW that was left at the site from the original nuclear fuel reprocessing activities; develop suitable containers for holding and transporting the solidified waste; transport, in accordance with applicable provisions of law, the solidified waste to an appropriate Federal repository for permanent disposal; dispose of any low-level and transuranic radioactive waste resulting from the solidification of HLW; and decontaminate and decommission Project facilities used for solidification of radioactive waste.

Vitrification of the HLW began in 1996 and was completed in September 2002. Activities for decontaminating the vitrification and support facilities and for disposing of wastes were then initiated and continue through the present.

## Primary Operations and Activities

The following operations and activities were initiated or continued in 2006:

*The Decommissioning, Decontamination, Dismantlement, and Demolition (D4) Project.* As part of the D4 project, many obsolete systems and components in the main plant were packaged and shipped off site for disposal. Some of the components were part of the original NFS nuclear reprocessing facility and had not operated in years.

*Environmental Assessment (EA).* An EA evaluating the proposed decontamination, demolition, and removal of 36 facilities that are (or in the next four years, will be) no longer required to support site activities was issued in September 2006. The DOE issued a Finding Of No Significant Impact (FONSI) based on this EA. Subsequently, several facilities that had already been decontaminated (e.g., the 02 building, the lag storage building, the interim waste storage facility) were demolished and removed.

*Waste Management and Shipping.* In 2006, materials stored in a number of areas on site were sorted, consolidated, recycled, reused, or disposed. Demolition debris, excess items, and legacy radioactive and nonradioactive waste accounted for approximately 225,000 cubic feet (6,400 cubic meters) of industrial and low-level waste shipped from the WVDP. That amount, combined with the waste removed from the main plant and other D4 projects on site, brought the total quantity of waste dispositioned in 2006 to about 400,000 cubic feet (11,300 cubic meters).

*The Remote-Handled Waste Facility (RHWF).* The RHWF, although out of service for repairs much of the year, was used to process four mixed waste (radioactive and hazardous) containers in 2006.

*Treating Radioactively Contaminated Groundwater.* The north plateau groundwater recovery system (NPGRS) continued to operate in 2006. The NPGRS was installed in 1995 to mitigate a

portion of the strontium-90 groundwater plume and reduce groundwater seepage northeast of the process building. In 2006, two draft plans to further characterize and evaluate the plume area were submitted by the DOE to the New York State Department of Environmental Conservation.

*Environmental Monitoring.* Samples from environmental media on and near the site were collected and analyzed in accordance with the monitoring schedule described in Appendix B<sup>60</sup> of this report. Measurements from air, water, sediment, and food samples, environmental dosimeters, and meteorological instruments are presented in the data tables at the end of this report. Measurements were evaluated in comparison with background measurements of the same media and with applicable environmental standards. Results are discussed in Chapters 2, 3, and 4 of this report. As in past years, in 2006 the WVDP was found to be in compliance with applicable regulatory standards pertaining to environmental effluents.

The communities of West Valley, Riceville, Ashford Hollow, and the village of Springville are located within approximately 5 miles (8 km) of the Project. The nearby population, approximately 9,200 residents within 6.2 miles (10 km) of the Project, relies largely on an agricultural economy. No major industries are located within this area. The WVDP is one of the largest employers in Cattaraugus County.

## **Relevant Demographics**

Although several roads and a railway approach or pass through the WNYNSC, the public generally is prohibited from access to the WNYNSC for activities such as camping or fishing. Limited deer hunting in designated areas is allowed (a year-to-year decision). No public access is allowed on the Project premises.

Land near the WNYNSC is used primarily for agriculture and arboriculture. Downstream of the WNYNSC, Cattaraugus Creek is used locally for swimming, canoeing, and fishing. Although some water is taken from the creek to irrigate nearby golf course greens and tree farms, no public drinking water is drawn from the creek before it flows into Lake Erie. Water from Lake Erie is used as a public drinking water supply.