



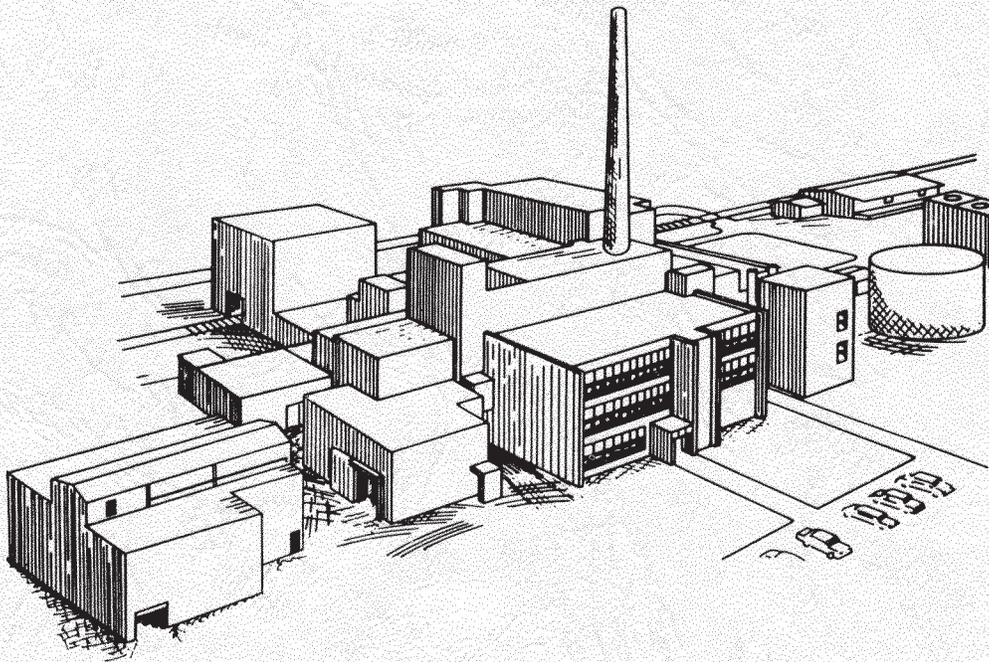
WVDP-040

1987

ENVIRONMENTAL MONITORING REPORT

WEST VALLEY DEMONSTRATION PROJECT

March 1988



West Valley Nuclear Services Company, Inc.
Rock Springs Road
West Valley, New York 14171-0191

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**Operated for the U.S. Department of Energy
by
West Valley Nuclear Services Company, Inc.**

**Rock Springs Road
West Valley, New York 14171-0191**

WVDP-040, 1988 Edition

SUMMARY

This Environmental Monitoring Report for the West Valley Demonstration Project gives a description of the monitoring program and a summary of the analytical results of this program for the 1987 calendar year.

The West Valley Demonstration Project (WVDP) is located in Western New York about 50 km south of Buffalo near Lakes Erie and Ontario. The Project was created by public law in 1980 to solidify liquid wastes remaining from the fuel reprocessing activities of Nuclear Fuel Services, Inc. In addition, the Project is responsible for managing both radioactive wastes disposed at the site in the past and any additional wastes produced while transforming the plant into a solidification process facility.

Based on natural features and weather patterns, samples are collected throughout the year on a regular schedule from air, water, sediment from stream beds, plants, and animals. The network of sampling points ranges from the site itself to distant points over 50 km away, outside the possible influence of the Project activities. These remote points provide background readings for comparison with near-site samples.

The small amounts of radioactivity in air and water leaving the facility during routine Project activities in 1987 were well below the regulated levels or concentration guides provided by the U.S. Department of Energy (DOE). A total of 0.00056 curies (0.021 gigabecquerel) of particulate radioactivity was discharged to the air and a total of 0.042 curies (1.5 gigabecquerels) of radioactivity plus 0.72 curies (27 gigabecquerels) of tritium were released to Buttermilk Creek in 1987.

The environmental samples collected near the Project indicate that any additional radioactivity levels which might have resulted from WVDP activities were too low to be distinguished from

radioactivity which occurs naturally or was deposited by global fallout.

The natural background for particulate gross alpha activity was slightly elevated for the Route 240 station. Other airborne radioactive particles collected from the air at the site boundaries were statistically no different from background samples collected 10 to 60 km away. The highest monthly airborne gross beta levels were only 11 percent of the most restrictive DOE standard even before subtracting background. The actual measurement of strontium-90 in air around the site was less than 0.002 percent of the DOE derived concentration guide. Subtracting background levels recorded at remote stations from this measurement yields half that percentage.

Water from Cattaraugus and Buttermilk Creeks downstream of the site drainage contained two detectable man-made isotopes: tritium (H-3) and strontium-90 (Sr-90). However, the average level of radioactivity in Cattaraugus Creek downstream, including seasonal variations, was not measurably higher than that in Buttermilk Creek above the site. Buttermilk Creek is not used for drinking water, but is accessible to dairy cattle at one location downstream of the site. Radioactivity levels in milk samples from this herd were at or below background levels for all radionuclides which might originate at the Project site.

Radioactivity measured in water at this location averaged 6.5 percent of the DOE concentration guide for cesium-137 (Cs-137) and 2.2 percent for Sr-90 in 1987. Although sediments from this sample point contained some measurable radioactivity, the trend is downward since the Project start.

Radioactivity levels in fish caught directly downstream of the Project are very much the same as levels found in recent years and before the Project started up. Venison samples taken

from a deer collected near the plant (inside the restricted area) showed the same levels of radioactivity found in samples from the past several years. Radioactivity above the control (background) sample levels for beef, corn, or apples raised near the site was not measurable. Some hay taken from near the site showed Sr-90 above the control sample level, but there was no indication of radioactivity above controls in the milk collected from near-site dairy herds.

Over 90 percent of the calculated dose to a person living near the site (less than 0.16 percent of the regulatory standard) is based on the assumption that fish from Cattaraugus Creek, beef and venison from near-site land, and milk from a nearby farm are the only source of these foods for this person.

The thermoluminescent dosimeters (TLDs) placed around the restricted area fence measured direct external radiation levels near natural background for this region. The 80-mrem (0.80-mSv) yearly average was essentially the same as the 77 mrem (0.77 mSv) measured by the four background TLDs placed at locations 7 to 29 km from the site.

In general, groundwater monitoring wells on site and shallow wells more than a kilometre away from the facility indicated no measurable difference in levels of radioactivity from previous years. Continued surface and groundwater monitoring of several wells inside an area contaminated prior to Project activities assured that identified radioactivity remained confined to that immediate area and did not appear in surface water. Monitoring in 1987 confirmed that both the source of this groundwater contamination and effluent from activities designed to eliminate the source remained within the controlled area and were not identified in adjacent wells or surface runoff water.

The calculated exposure from Project activities to a person living very near the site is several hundred times less than the exposure received from normal background. On the average, persons living within 80 km received from the Project about two billionths of the normal dose they would have received from normal background in this area during 1987. The present regulatory limits restrict continuous exposure of any member of the public to 100 mrem (1 mSv) per year from facility operations such as the WVDP. The highest calculated dose to any person living near the Project was 0.16 percent of this level for the year 1987.

Measurements of compounds and elements normally found in public water treatment plants indicated no discharges which would harm the water quality downstream. During 1987 several nonradiological water quality measurements exceeded the New York State SPDES permit limits at the discharge point. Because these conditions lasted for such a short time and at relatively low levels above the limits, no environmental effects would be expected. Improved wastewater treatment equipment has been adjusted to markedly reduce the constituents for which limits were exceeded. The few recurring problems are being solved by improved operating methods and minor changes to the treatment systems.

The quality and accuracy of monitoring and laboratory measurements done on site are checked periodically by comparison with outside agencies such as the U.S. Environmental Protection Agency (EPA), the U.S. Nuclear Regulatory Commission (NRC), and several DOE laboratories. The environmental program demonstrated acceptable results in all areas and improved the accuracy of gamma isotope measurements by identifying and correcting some calibration procedure deficiencies.

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