APPENDIX M
FLOODPLAIN AND WETLAND ASSESSMENT

APPENDIX M
FLOODPLAIN AND WETLAND ASSESSMENT

M.1 Introduction

The U.S. Department of Energy (DOE) proposes to decontaminate and decommission the waste storage tanks and other facilities of the Western New York Nuclear Service Center (WNYNSC) in which the high-level radioactive waste solidified under the West Valley Demonstration Project (WVDP) was stored, the facilities used in the solidification of the waste, and any material and hardware used in connection with the WVDP, in accordance with the requirements of the WVDP Act. DOE is preparing the *Revised Draft Environmental Impact Statement for Decommissioning and/or Long-Term Stewardship at the West Valley Demonstration Project and Western New York Nuclear Service Center (Decommissioning and/or Long-Term Stewardship EIS*) (DOE/EIS-0226-D [Revised]) to present the environmental impacts associated with the range of reasonable alternatives to meet the DOE and New York State Energy Research and Development Authority (NYSERDA) National Environmental Policy Act (NEPA) and New York State Environmental Quality Review Act (SEQR) requirements, respectively.

Executive Order 11988, "Floodplain Management," directs Federal agencies to evaluate the potential effects of any actions that may be taken in a floodplain. When conducting activities in a floodplain, Federal agencies are required to take actions to reduce the risk of flood damage; minimize the impact of floods on human safety, health, and welfare; and restore and preserve the natural and beneficial values served by floodplains. Executive Order 11990, "Protection of Wetlands," directs Federal agencies to ensure consideration of wetlands protection in decisionmaking and to evaluate the potential impacts of any new construction proposed in a wetland. Federal agencies shall avoid the destruction or modification of wetlands, and avoid direct or indirect support of new construction in wetlands if a practicable alternative exists.

DOE requirements for compliance with Executive Orders 11988 and 11990 are set forth in 10 *Code of Federal Regulations* (CFR) Part 1022, "Compliance with Floodplain and Wetland Environmental Review Requirements." The Executive Orders direct Federal agencies to implement floodplain and wetland requirements through existing procedures such as those established to implement NEPA, to the extent practicable. Pursuant to 10 CFR Part 1022, this appendix addresses actions that would affect floodplains or wetlands for each of the environmental impact statement (EIS) alternatives.

M.2 Alternatives and Affected Environment

A detailed description of the alternatives is found in Chapter 2 of the EIS. The alternatives include the Sitewide Removal Alternative that would allow unrestricted release of the entire WNYNSC; the Sitewide Close-In-Place Alternative, under which all existing facilities and contamination would be managed at their current locations, and engineered barriers would be used to control contamination in areas with higher levels of long-lived contamination; the Phased Decisionmaking Alternative, under which there would be initial (Phase 1) decommissioning actions for some facilities and a variety of activities intended to expand the information available to support later, additional decommissioning decisionmaking (Phase 2) for those facilities/areas not addressed in Phase 1; and the No Action Alternative. This assessment addresses potential floodplain and wetland impacts for each of these alternatives.

WNYNSC, shown in **Figure M–1**, occupies 1,352 hectares (3,340 acres) of land in Cattaraugus County, New York, and approximately 5.7 hectares (14 acres) in southern Erie County, New York. WNYNSC is drained by Buttermilk Creek, which joins Cattaraugus Creek at the northern end of the property. Cattaraugus Creek flows northwest into Lake Erie approximately 50 kilometers (30 miles) southwest of Buffalo, New York.

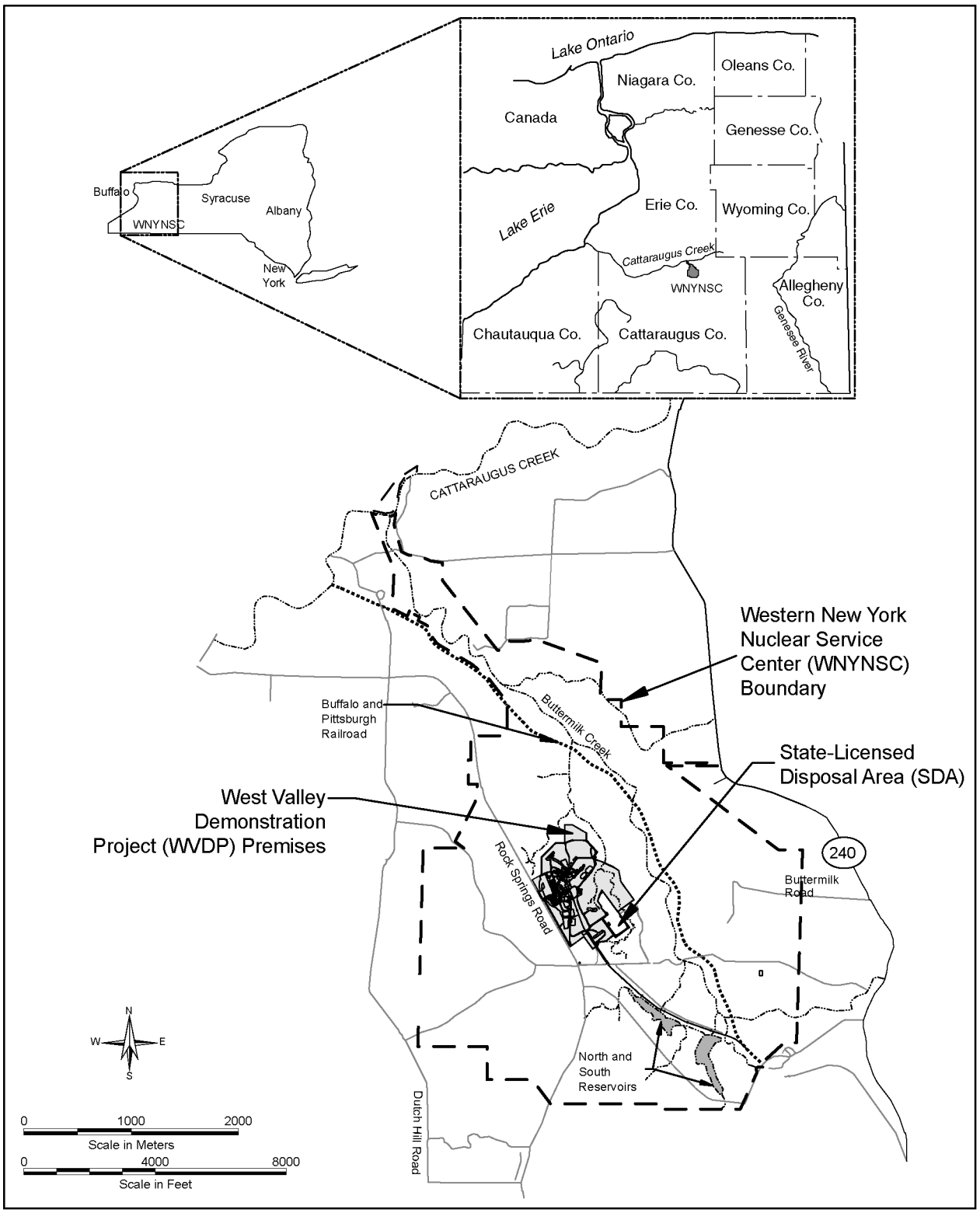


Figure M–1 The Western New York Nuclear Service Center

WNYNSC is divided into 12 Waste Management Areas (WMAs). WMA 1 through WMA 10 are shown in **Figure M–2** and WMA 11 and WMA 12 are shown in **Figure M–3**. The Region of Influence addressed in this Floodplain and Wetland Assessment includes the WNYNSC and nearby offsite areas.

M.2.1 Floodplains

A floodplain is the area of land adjacent to a river, stream, or creek that may become inundated by floodwaters, often following heavy rainfall events that cause the channel to exceed bankfull discharge. Floodplains retain excess water following flood events, allowing water to be slowly released into the river system and seep into groundwater aquifers. Likewise, floodplains are natural recharge areas that help replenish the baseflow of the river system, as well as supply recharge to underlying groundwater aquifers. Vegetation and woody debris in floodplains slow surface flow and floodwaters and act like a sediment trap by causing sediment to settle out of floodwaters, thereby preventing alteration of the downstream channel geography due to sedimentation. This is a benefit because sedimentation can have ecological impacts, as well as impacts on the channel hydraulics and geomorphology. Floodplains often support important wildlife habitat and are frequently used by humans as recreational areas.

A 100-year flood is a flood that has a one percent probability of being equaled or exceeded in any given year. The area inundated by the 100-year flood is called the 100-year floodplain. A 500-year flood is a flood that has a 0.2 percent probability of being equaled or exceeded in any given year, inundating the flood area known as the 500-year floodplain. Probable maximum precipitation is defined as the greatest depth (amount) of precipitation, for a given storm duration, that is theoretically possible for a particular area and geographic location. The probable maximum flood is the flood that may be expected from the most severe combination of critical meteorological and hydrologic conditions that are reasonably possible in a particular drainage area (i.e., the worst theoretical flood that could be expected to occur).

A critical action floodplain means, at a minimum, the 500-year floodplain (10 CFR 1022.4). Critical action means any DOE action for which even a slight chance of flooding would be too great. Such actions may include, but are not limited to, the storage of highly volatile, toxic, or water reactive materials. In a case where an action is determined to be a critical action, a flood less frequent than a 500-year flood may be appropriate for determining the floodplain.

As described in the *Final Environmental Assessment for Decontamination, Demolition, and Removal of Certain Facilities at the West Valley Demonstration Project* (DOE/EA-1552) the WNYNSC's topographic setting renders major flooding unlikely; local runoff and flooding is adequately accommodated by natural and manmade drainage systems in and around the WVDP (DOE 2006). The flood inundation area for the 100-year storm (see **Figure M–4**) show that no existing facilities are in the 100-year floodplain. This is primarily attributable to the fact that Cattaraugus and Buttermilk Creeks, as well as Franks Creek, Quarry Creek, and Erdman Brook, are located in deep valleys such that floodwaters would not overtop their banks flooding the plateau areas where WVDP facilities are located. The floodplains depicted on Figure M–4 are those that would be affected by implementation of alternatives for decommissioning activities as described in this appendix. None of the proposed activities would affect the Buttermilk Creek floodplain in the southern part of the WNYNSC (FEMA 1984).

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps for the town of Ashford, New York, delineate areas of the 100-year floodplain and areas above the 500-year floodplain (FEMA 1984). However, the FEMA maps do not show the floodplains on streams near the developed portion of the site. An analysis of the probable maximum flood (PMF) based on probable maximum precipitation has been performed for this EIS (**Figure M–5**). The probable maximum flood is generally more conservative than the

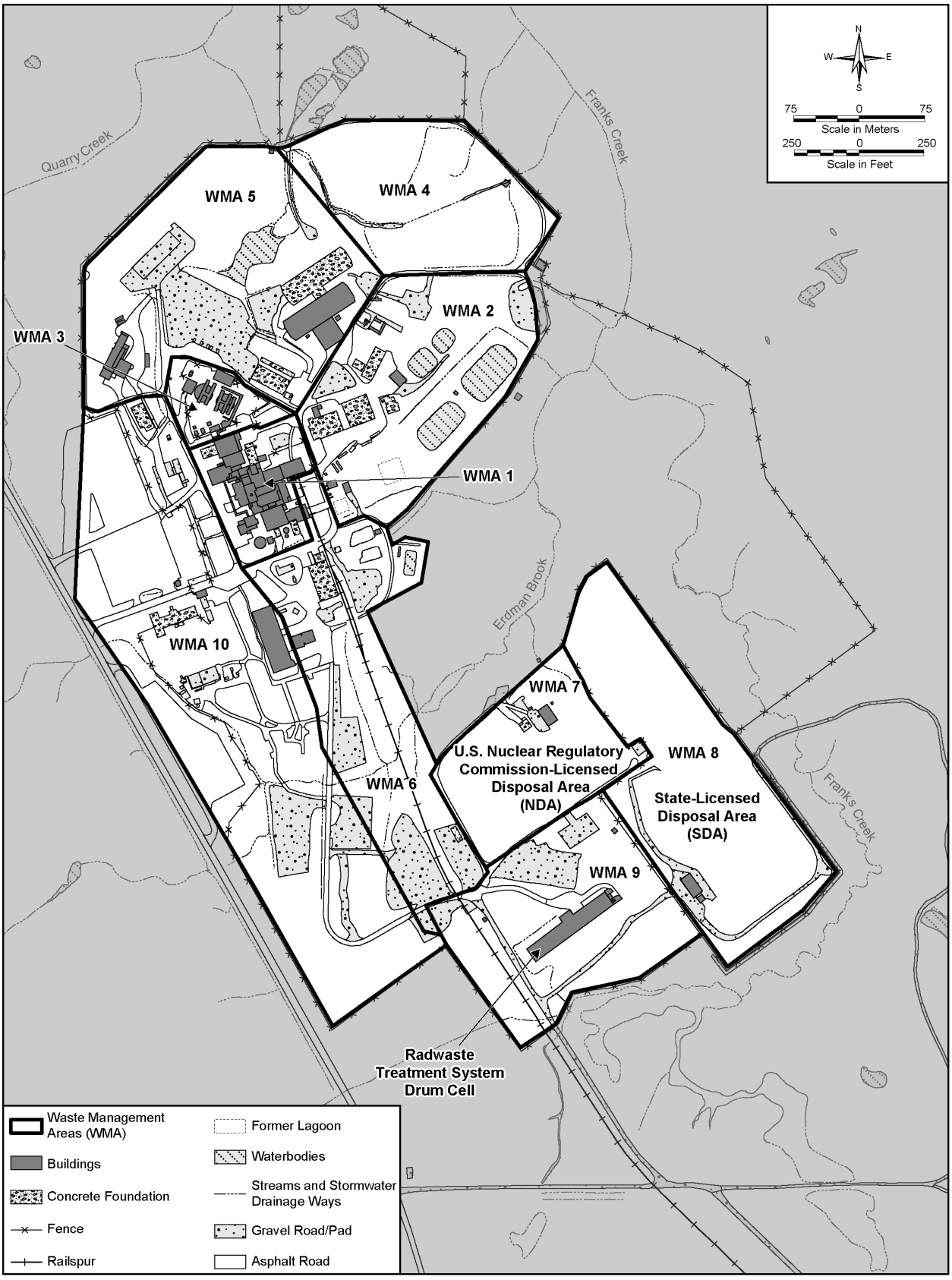


Figure M–2 Location of Waste Management Areas 1 through 10

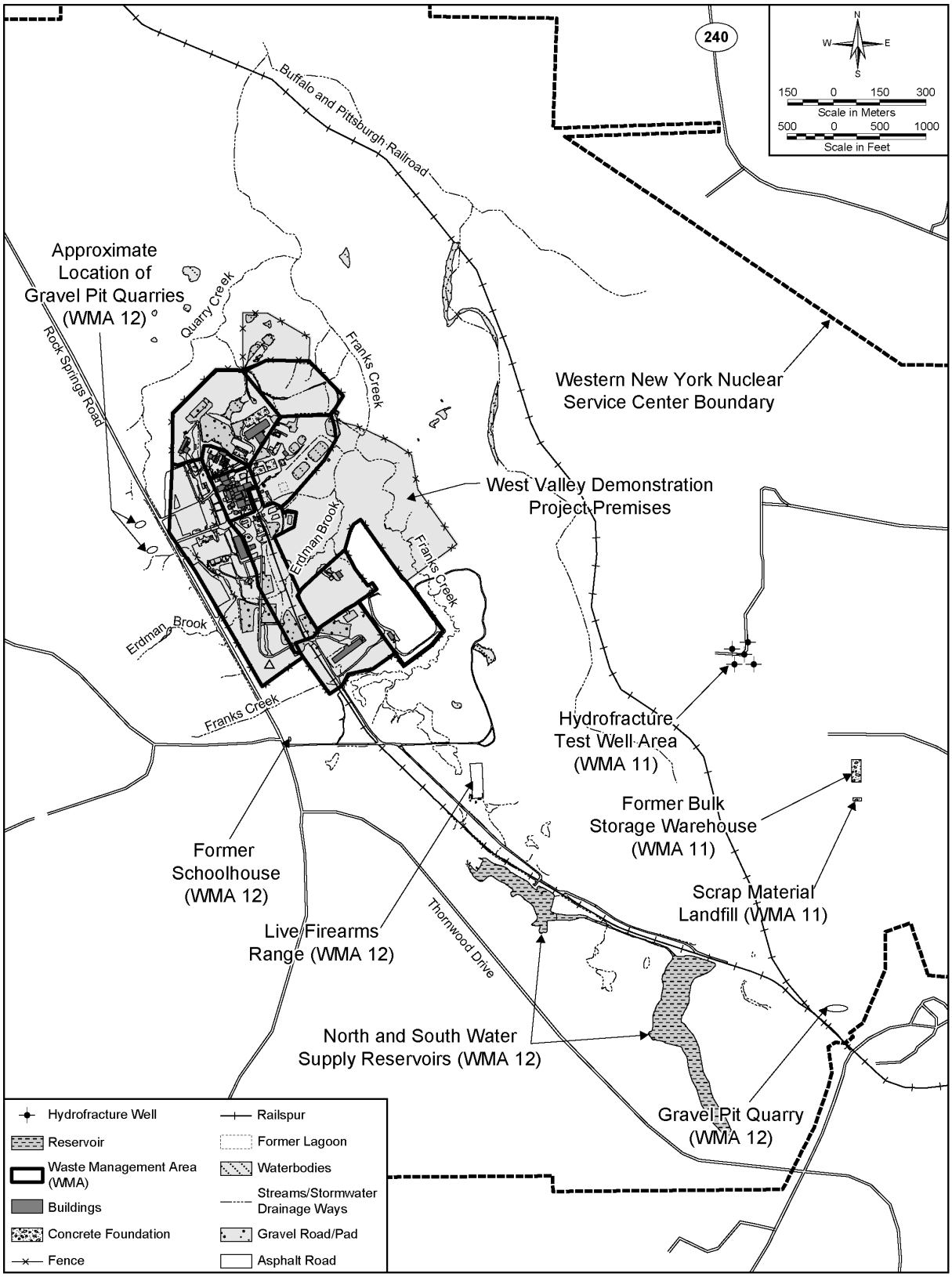


Figure M–3 Waste Management Areas 11 and 12 – Bulk Storage Warehouse Area and Balance of the Western New York Nuclear Service Center

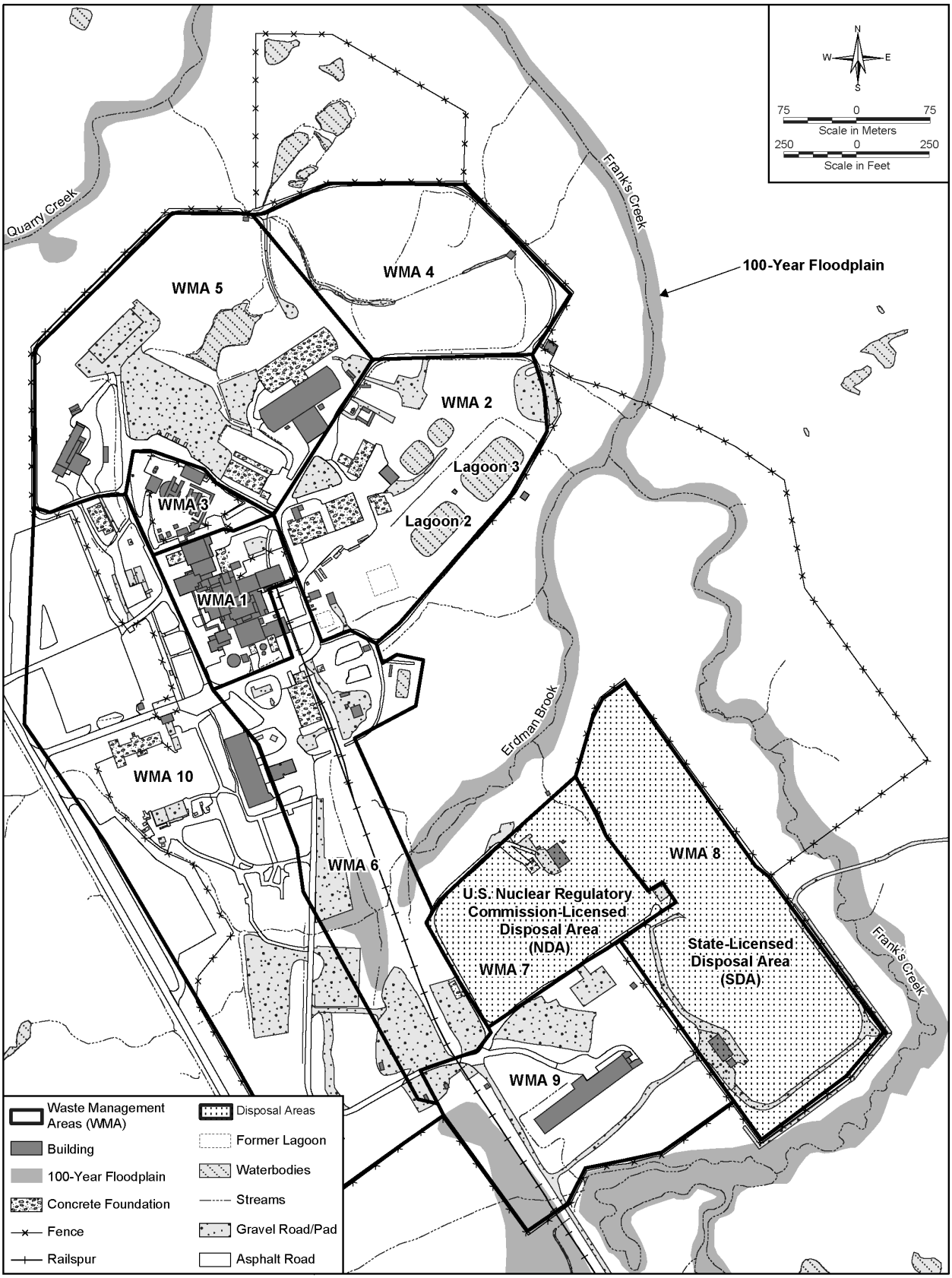


Figure M–4 100-Year Floodplain Near the West Valley Demonstration Project

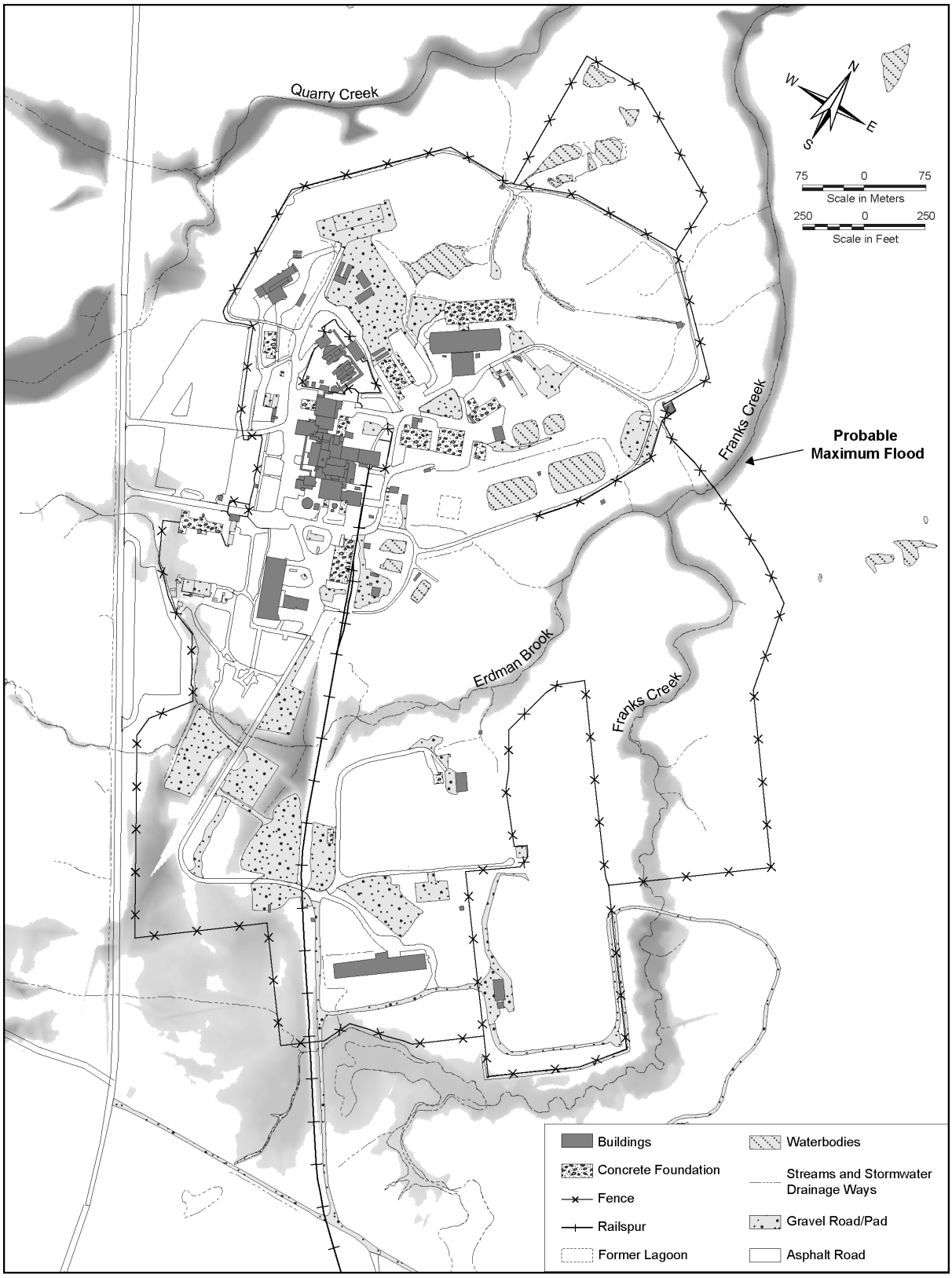


Figure M–5 Probable Maximum Flood

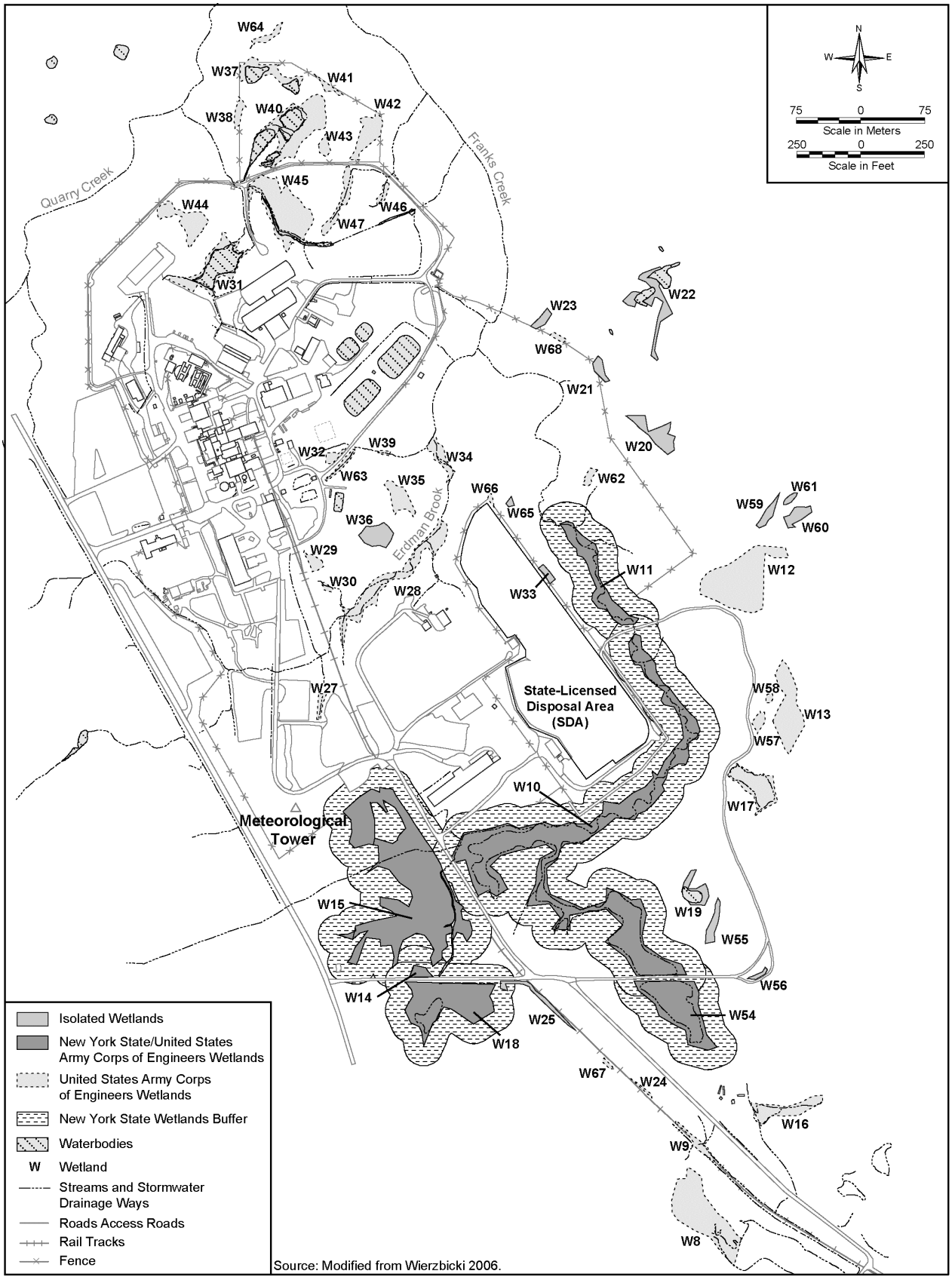
500-year flood because it is defined as the flood resulting from the most severe combination of meteorological and hydrologic conditions that are reasonably possible in a particular area (DOE 2002). The results of this analysis indicate that the PMF floodplain is very similar to the 100-year floodplain, particularly in areas adjacent to the industrialized or developed portions of the site including areas where waste is stored or buried (URS 2008). Most of the stream channels near the industrialized area have relatively steep sides and the PMF flow remains in these channels. The PMF floodplain is wider than the 100-year floodplain in areas where the topography is relatively flat such as the extreme upper reaches of Erdman Brook and Franks Creek. Indirect short-term impacts, including streambank failure and gully head advancement in the event of high streamflows, could impact Lagoon 2 and Lagoon 3 in WMA 2, the U.S. Nuclear Regulatory Commission (NRC)-licensed Disposal Area (NDA), and site access roads in several locations. Under probable maximum flood conditions, it is possible that the integrity of the northern slope of the State-licensed Disposal Area (SDA) could be compromised (WVNS 2007). See Appendix F of the EIS for results of predictive erosion modeling including the effects of sheet and rill erosion, stream valley rim widening, and gully advance over the longer term.

M.2.2 Wetlands

Wetlands include "those areas that are inundated or saturated by surface- or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (EPA 2002). Wetlands perform numerous environmental functions that benefit ecosystems as well as society, such as removing excess nutrients from the water that flows through them. The benefit derived from nutrient removal is improved or maintained water quality. This in turn promotes clean drinking water, safe recreation, and secure fish and wildlife habitat. Further, wetlands absorb, store, and slowly release rain and snowmelt water, which minimizes flooding, stabilizes water flow, retards runoff erosion, and controls sedimentation. Wetlands filter natural and manufactured pollutants by acting as natural biological and chemical oxidation basins. Water leaving a wetland is frequently cleaner than the water entering. Wetlands can also be helpful in recharging groundwater and serve as groundwater discharge sites, thereby maintaining the quality and quantity of surface water supplies. Wetlands are one of the most productive and valuable habitats for feeding, nesting, breeding, spawning, resting, and cover for fish and wildlife (NYSDEC 2005).

The most recent wetland delineation was conducted in July and August of 2003 on approximately 152 hectares (375 acres) of the WNYNSC, including the WVDP Premises and adjacent parcels to the south and east of the WVDP Premises (WVNS and URS 2004, Wierzbicki 2006). Wetland plant communities identified within the limits of the assessment area included wet meadow, emergent marsh, scrub shrub, and forested wetland. The investigation identified 68 areas comprising 14.78 hectares (36.52 acres) as jurisdictional wetlands, with each area ranging from 0.004 to 2.95 hectares (0.01 to 7.30 acres) as shown in **Figures M–6** and **M–7**).

A field investigation conducted on November 2, 2005, by the U.S. Army Corps of Engineers in conjunction with review of relevant reports and maps confirmed the 2003 wetlands delineation results that there are wetlands totaling 14.78 hectares (36.52 acres). Twelve distinct wetlands, totaling 0.98 hectares (2.43 acres), were observed to exhibit no surface water connection to waters of the United States; they are considered isolated, intrastate, and non-navigable wetlands and are not under U.S. Army Corps of Engineers jurisdiction. It was concluded that remaining 13.80 hectares (34.09 acres) of wetlands are waters of the United States subject to regulation under Section 404 of the Clean Water Act. These waters were determined to be part of an ecological continuum constituting a surface water tributary system of Buttermilk Creek, Cattaraugus Creek, and Lake Erie. The U.S. Army Corps of Engineers approved DOE's wetland determination application on January 26, 2006, which will remain valid for a period of 5 years unless new information warrants revision prior to the expiration date (Senus 2006).



Source: Modified from Wierzbicki 2006.

Figure M–6 Wetlands in the Vicinity of the West Valley Demonstration Project Premises

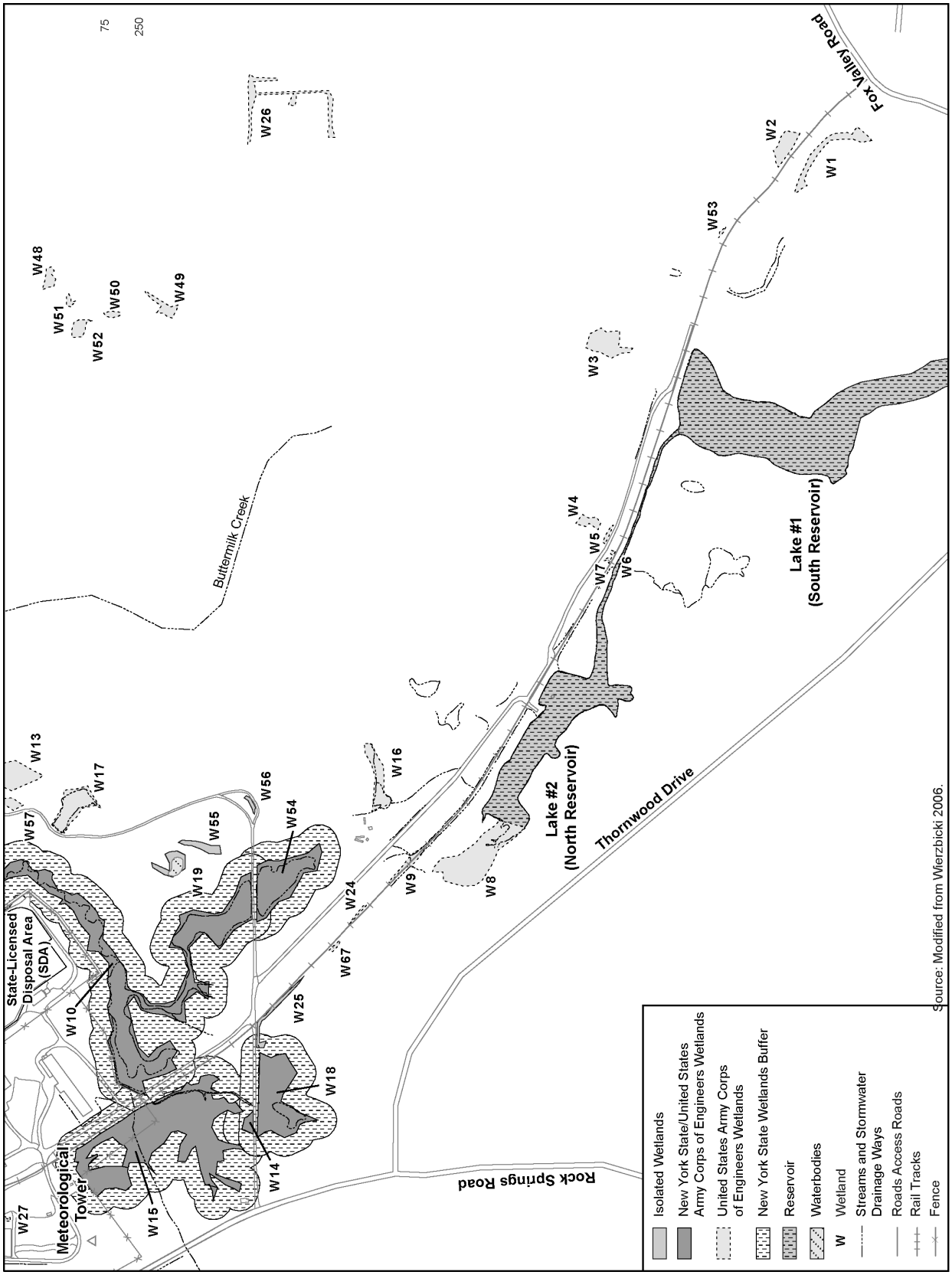


Figure M–7 Wetlands in the Southern Vicinity of the West Valley Demonstration Project Premises

Certain wetlands are also regulated by New York as freshwater wetlands. Article 24 of New York State's Freshwater Wetlands Act regulates draining, filling, construction, pollution or any activity that substantially impairs any of the functions and values provided by wetlands 5.0 hectares (12.4 acres) or larger. The State also regulates work within a 100-foot (30.5-meter) buffer zone around designated freshwater wetlands. Although there are no wetlands currently mapped on the New York State Department of Environmental Conservation (NYSDEC) Map, six wetland areas (W10, W11, W14, W15, W18, and W54) encompassing 7.0 hectares (17.3 acres) and delineated in the 2003 field investigation appear to be hydrologically connected (see Figure M–7). The majority of these wetlands are located just south of the south WVDP Premises fence (WVNS and URS 2004). On December 28, 2005, NYSDEC-Region 9 concurred with the wetland delineation conducted in 2003 and concluded that the six wetland areas are hydrologically connected, exceed 5.0 hectares (12.4 acres) in aggregate and therefore constitute an Article 24 state jurisdictional wetland (Ermer 2005). These wetland areas are dominated by wet meadow plant communities but also include emergent marsh, scrub shrub (shrub swamp), and forested wetland (deciduous swamp) plant communities (WVNS and URS 2004). Because wet meadow plant communities dominate the state wetlands, under the New York State Freshwater Wetlands classification system, these wetlands would be considered Class IV; of the four classes, Class I has the highest value (NYSDEC 1980). The classification system recognizes that different wetland types have different values and applies different standards for permit issuance.

M.3 Floodplain and Wetland Impacts

M.3.1 Sitewide Removal Alternative

M.3.1.1 Floodplains

Short-term impacts to the 100-year floodplain would be expected for the delineated floodplain zone in the proximity of Cesium Prong remediation work, the North and South Reservoirs and dam removal, and streambed sediment remediation in Erdman Brook and Franks Creek. Although major flooding is unlikely, these activities could result in near-term floodway or floodplain alteration impeding or redirecting flows or surface flow impacts to the 100-year floodplain. Changes in floodplain erosion and sedimentation rates are not expected to create adverse unmitigatible impacts as appropriate mitigation measures to control erosion and sediment during decommissioning and closure activities would decrease impacts (see Section M.4.1).

Results of the PMF analysis indicate that the delineation of the PMF floodplain is close to that of the 100-year floodplain (URS 2008). New facilities proposed for construction under the Sitewide Removal Alternative would not be located in the 100-year floodplain. Preliminary analysis using current topography indicates the only facility near the PMF floodplain would be the planned Interim Storage Facility. A more detailed analysis would be required as part of detailed design of the Interim Storage Facility to minimize potential impacts, if any, to the floodplain.

No permanent losses to the 100-year or PMF floodplain areas in the WNYNSC vicinity would result from implementation of the Sitewide Removal Alternative and loss of flood storage volume would not occur.

M.3.1.2 Wetlands

Under the Sitewide Removal Alternative no wetlands would be affected during construction of temporary facilities, because none are present on the proposed building sites. However, wetlands would be directly and indirectly impacted by demolition and remediation activities, particularly during remediation of the Cesium Prong. Indirect impacts include the alteration or destruction of wetlands resulting from sedimentation following earthmoving activities and the removal of contaminated sediments from streams. Noise and human presence may also impact wildlife present within wetland areas.

Direct impacts on wetlands would occur in connection with remediation of the Cesium Prong where six delineated wetland areas (W31, W37, W38, W40, W44, and W45) totaling 2.1 hectares (5.1 acres) are located in and around WMAs 3, 4, and 5. Removal of the SDA would directly impact one jurisdictional wetland (W66) totaling 0.01 hectare (0.02 acre) and two isolated wetlands (W33 and W65) measuring 0.04 hectare (0.1 acre). Work on removal of the SDA also has the potential to impact the 100-foot (30.5-meter) buffer zone around two New York State Freshwater Wetlands (W10 and W11) that border the SDA to the east and south (see Figure M–6). Any work within the buffer zone would require a permit from the State. Additionally, five other wetland areas (W4, W5, W6, W7, and W8) measuring a total of 0.7 hectare (1.8 acres) would be indirectly affected as a result of altered water levels and siltation during closure of the dams and reservoirs in WMA 12 (see Figure M–7). The largest of these wetlands is located at the head end of the North Reservoir, while the other four smaller wetlands are located just downstream from the discharge point from the North Reservoir. Noise and human presence may impact wildlife within the wetland areas. Wetlands not disturbed by activities associated with the Sitewide Removal Alternative would continue to perform water quality functions such as sediment retention and stabilization, nutrient transformation, and flood flow attenuation.

M.3.2 Sitewide Close-In-Place Alternative

M.3.2.1 Floodplains

New facilities proposed for construction under the Sitewide Close-In-Place Alternative (e.g., the Interim Storage Facility and the Leachate Treatment Facility) would not impact the 100-year floodplain because these facilities would not be constructed in the 100-year floodplain. However, replacement of existing geomembrane covers with robust multi-layer caps (i.e., engineered barriers) on the south plateau in WMAs 7 and 8 (on the upgradient side of the NDA and SDA, respectively) would intrude into the 100-year floodplain delineated for Erdman Brook and Franks Creek (see **Figure M–8**). The erosion control structures planned under the Sitewide Close-In Place Alternative would increase water flow around two sides of WMA 8 in the proximity of the 100-year floodplain. This redirection of water to Franks Creek on the floodplain would increase the potential for erosion from the increased flow.

Constructing permanent structures in the 100-floodplain could directly impact channel hydraulics and the extents of downstream flood inundation areas as a result of increasing the floodplain elevation in the vicinity of the south plateau. If elevations are significantly increased in the 100-year floodplain of the south plateau, it is likely that flood events extending into the 100-year floodplain delineated for Erdman Brook and Franks Creek shown on Figure M–8 would occur less frequently because it would require a larger volume of water to reach these extents at a higher elevation. An increased elevation in the floodplain could also result in an increase in flooding downstream of the south plateau because a larger volume of water would be traveling downstream instead of inundating the floodplain in the south plateau. As a result of a larger volume of water flowing in the downstream direction, the frequency and intensity of flood events occurring downstream of the south plateau could increase.

The PMF floodplain is very similar to the 100-year floodplain, and most of the impacts to the PMF floodplain for implementation of the Sitewide Close-In-Place Alternative are expected to be similar to those identified in this section for the 100-year floodplain. Preliminary analysis using current topography indicates the only facility in or near the PMF floodplain would be the planned Interim Storage Facility. A more detailed analysis would be required as part of detailed design of the Interim Storage Facility to minimize potential impacts, if any, to the floodplain.

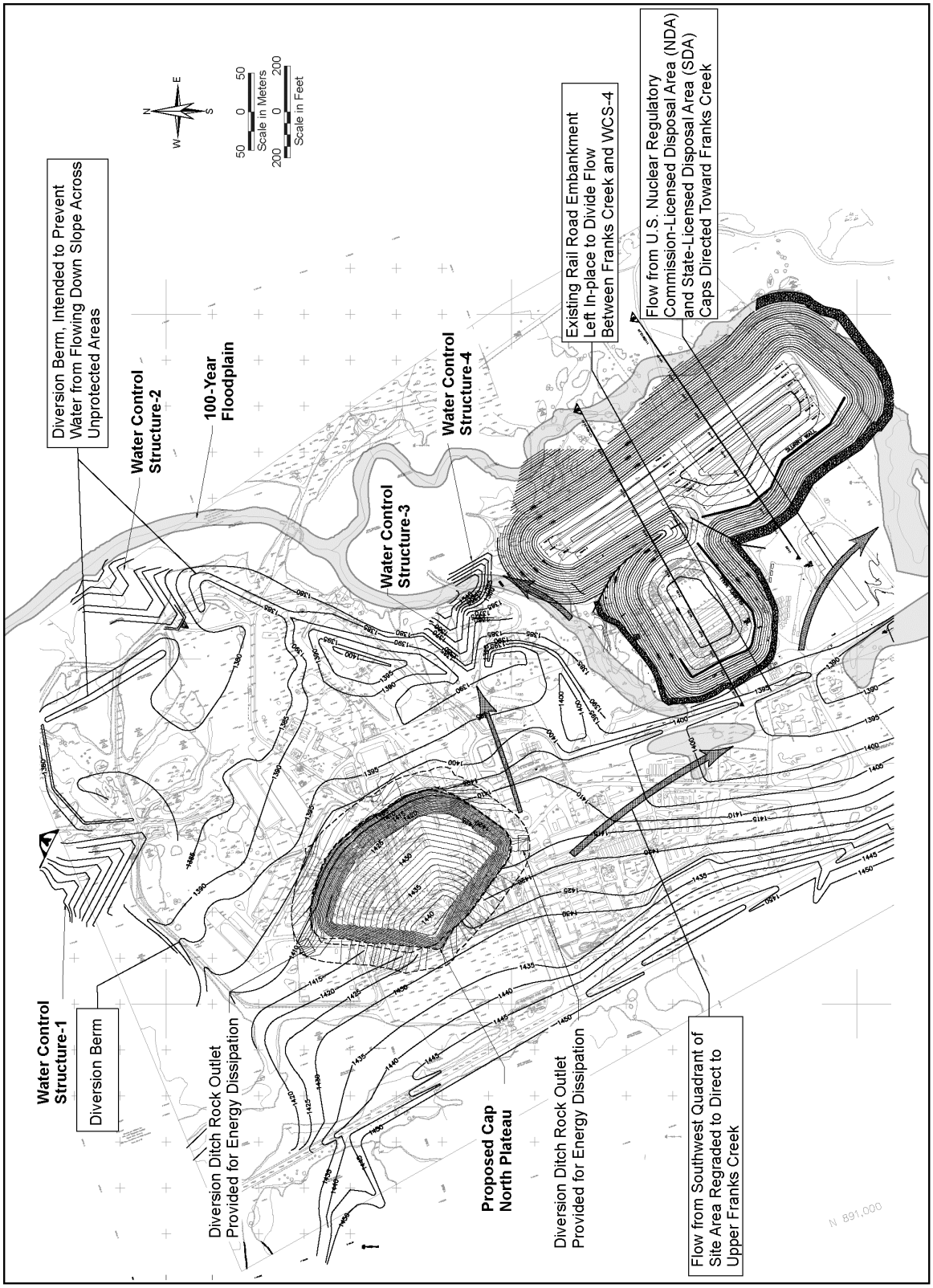


Figure M–8 Floodplain Encroachment by Multi-layer Covers for Waste Management Area 7 and Waste Management Area 8

Potential long-term impacts may occur from repeated flooding events (i.e., 100 year floods or greater) affecting the integrity of the engineered barriers causing potential releases if they are breached, particularly when institutional controls can no longer be assumed. Long-term impacts for the Sitewide Close-In-Place Alternative are presented in Section H.2.2 of Appendix H, Long-term Performance Assessment Results. Section H.2.2 discusses an indefinite continuation of institutional controls including impacts following releases to the local groundwater, discharges to onsite streams (Erdman Brook, Franks Creek, and Buttermilk Creek), and flow into Cattaraugus Creek. Additionally, the loss of institutional controls leading to unmitigated erosion of the NDA and SDA (i.e., no credit is taken for monitoring and maintenance of erosion control structures) is analyzed in Appendix H.

M.3.2.2 Wetlands

No wetlands would be affected during construction of new facilities for the Sitewide Close-In-Place Alternative, because none are present on the proposed building sites. However, construction of erosion control measures under this alternative would directly impact two jurisdictional wetlands (W34 and W39) totaling approximately 0.1 hectare (0.3 acre), while placement of the multi-layer cap over the NDA and SDA would directly impact three jurisdictional wetlands (W10, W11, [both also New York State Freshwater Wetlands] and W66) totaling 3.3 hectares (8.3 acres), and two isolated wetlands (W33 and W65) measuring 0.04 hectare (0.1 acre). The actual disturbance to the jurisdictional wetlands would be less than half of their total area. Impacts to these wetlands would be similar to those addressed in Section M.3.1.2. Additionally, placement of the multi-layer cap has the potential to cause indirect impacts (e.g., sedimentation) to those portions of the New York State wetlands not directly impacted. Placement of the multi-layer cap would impact the 100-foot (30.5-meter) buffer zone around the New York State wetlands. Any work within the State wetlands (and buffer zone) would require a permit from the State, as well as the U.S. Army Corps of Engineers. Mitigation measures such as those addressed in Section M.4.2 and Chapter 6 of the EIS would be implemented to address direct and indirect impacts.

Similar to the Sitewide Removal Alternative, five wetland areas measuring 0.7 hectare (1.8 acres) could be affected during closure activities associated with the dams and reservoirs. Direct and indirect impacts resulting from remediation and closure activities are similar to those addressed for the Sitewide Removal Alternative. For wetland mitigation measures, see Section M.4.2 and Chapter 6 of the EIS. There would be no removal of soil in the nonsource areas of the North Plateau Groundwater Plume and Cesium Prong for the Sitewide Close-In-Place Alternative; therefore, no associated impacts on wetlands would result. Wetlands not disturbed by activities associated with the Sitewide Close-In-Place Alternative would continue to perform water quality functions such as sediment retention and stabilization, nutrient transformation, and flood flow attenuation.

M.3.3 Phased Decisionmaking Alternative

Phase 1 of the Phased Decisionmaking Alternative would involve some decommissioning actions, but would also include additional characterization of site contamination and studies to provide information to support additional evaluations to determine the technical approach to be used to complete the decommissioning. Phase 2 would complete the decommissioning or long-term management decisionmaking, following the approach determined through the additional evaluations to be the most appropriate.

M.3.3.1 Floodplains

Construction proposed for Phase 1 of this alternative (the Interim Storage Facility) would not be located in the 100-year floodplain. The Cesium Prong would be managed in place, dams and reservoirs would be monitored and maintained, and contaminated sediment would not be removed from Erdman Brook and Franks Creek. Similar to the Sitewide Removal Alternative, indirect short-term impacts, including streambank failure and gully head advancement in the event of high streamflows, could impact Lagoon 2 and Lagoon 3 in WMA 2.

No additional impacts to the 100-year floodplain are expected. Most of the impacts to the PMF floodplain for implementation of Phase 1 would be similar to those identified for the 100-year floodplain; preliminary analysis using current topography indicates the only facility in or near the PMF floodplain would be the planned Interim Storage Facility. A more detailed analysis would be required as part of detailed design of the Interim Storage Facility to minimize potential impacts, if any, to the floodplain.

If Phase 2 actions under the Phased Decisionmaking Alternative include removal activities, short-term impacts could be expected for the delineated floodplain zone in the proximity of activities, resulting in near-term floodway or floodplain alteration impeding or redirecting flows or surface flow impacts to the 100-year floodplain. Changes in floodplain erosion and sedimentation rates are not expected to create adverse, unmitigatible impacts, as appropriate mitigation measures to control erosion and sediment during decommissioning and closure activities would be utilized to decrease impacts. If the future Phase 2 decision is to proceed with in-place closure, direct impacts to the floodplains would not exceed those identified for the Sitewide Close-In-Place Alternative and would mainly be attributed to the construction of permanent structures (i.e., engineered barriers for the NDA and SDA in WMAs 7 and 8) that intrude into the 100-year floodplain.

M.3.3.2 Wetlands

No wetlands would be affected during construction of temporary facilities for Phase 1 of the Phased Decisionmaking Alternative, because none are present on the proposed building sites. Proposed remediation and closure activities would not directly impact wetlands, because none are present in the associated WMAs. The removal of existing facilities during Phase 1 could lead to indirect impacts to nearby wetlands as described for the Sitewide Removal Alternative. Since the nonsource area of the North Plateau Groundwater Plume and Cesium Prong would not be remediated for Phase 1 of the Phased Decisionmaking Alternative but allowed to decay in place, there would be no impacts to wetlands associated with these locations. If during Phase 2 closure activities reflect those of the Sitewide Removal Alternative, impacts to wetlands would be similar to those addressed for that alternative in Section M.3.1.2. Thus, direct (2.8 hectares [7.0 acres]) and indirect impacts are possible and would result largely from the remediation of the North Plateau Groundwater Plume and Cesium Prong and removal of the North and South Reservoirs. If activities associated with Phase 2 follow the pattern of the Sitewide Close-In-Place Alternative direct (1.8 hectares [4.4 acres]) and indirect impacts to wetlands would be similar to those addressed for that alternative in Section M.3.2.2. In this case impacts would largely result from the installation of a number of erosion control measures and the placement of a multi-layer cap over the SDA.

M.3.4 No Action Alternative

M.3.4.1 Floodplains

No decommissioning activities would take place under the No Action Alternative; therefore, no floodplain impacts (or changes from the baseline condition) would occur. Floodplains in the vicinity of the WVDP would continue natural recharge functions such as replenishing the base flow of the nearby creek system, as well as supplying recharge to underlying groundwater aquifers. Additionally, vegetation and woody debris in the floodplains would continue to slow surface flow (i.e., floodwaters) and act like a sediment trap, thereby preventing alteration of the downstream channel geography due to sedimentation.

M.3.4.2 Wetlands

No decommissioning actions would be taken for the No Action Alternative; therefore, no impacts to wetlands (or changes from the baseline condition) would occur. Wetlands would continue to perform water quality functions such as sediment retention and stabilization, nutrient transformation, and flood flow attenuation.

M.4 Mitigation Measures

This section discusses the floodplain and wetland mitigation measures considered for the alternatives, and where necessary and feasible, implemented during construction, operation, and decommissioning activities (see also Chapter 6, Potential Mitigation Measures). Applicable regulatory requirements (e.g., Clean Water Act and the New York Freshwater Wetlands Act) are identified in Chapter 5 of the EIS.

In accordance with 10 CFR 1022.12(a)(3), DOE must address measures to mitigate the adverse impacts of actions in a floodplain or wetlands, including but not limited to, minimum grading requirements, runoff controls, design and construction constraints, and protection of ecologically sensitive areas. Wherever possible, DOE would avoid disturbing floodplains and wetlands and would minimize impacts to the extent practicable, if avoidance is not possible.

M.4.1 Floodplains

In accordance with Executive Order 11988, Floodplain Management, if activities directly impacting the floodplain are implemented for the Sitewide Removal Alternative or the Sitewide Close-In-Place Alternative, actions within the floodplain would be taken to reduce the risk of flood damage; minimize the impact of floods on human safety, health, and welfare; and restore and preserve the natural and beneficial values served by the floodplain. Erosion controls for the engineered barriers, depicted in Figure C–28 in Appendix C of the EIS, would be designed to accommodate the probable maximum flood consistent with guidance in NUREG-1623, Design of Erosion Protection for Long-Term Stabilization (NRC 2002).

NYSDEC is the state's National Flood Insurance Program coordinating agency. Coordination with NYSDEC for technical assistance and guidance would occur prior to Cesium Prong remediation work, North and South Reservoir decommissioning and associated dam removal, and contaminated sediment removal from Erdman Brook and Franks Creek (for the Sitewide Removal Alternative), or installation of engineered multi-layer covers in the South Plateau (for the Sitewide Close-In-Place Alternative). This coordination relative to affected floodplains would assure that requirements of NYSDEC's Floodplain Development and Floodway Guidance are met (NYSDEC 2008).

The potential effects of flood hazards are expected to be minimal for Phase 1 of the Phased Decisionmaking Alternative and the No Action Alternative. Where activities would affect the 100-year floodplain and PMF floodplain (Sitewide Removal Alternative, Close-In-Place Alternative, and possibly Phase 2 of the Phased Decisionmaking Alternative), appropriate mitigation measures would be taken to minimize construction in the floodplain, establish vegetated buffer zones, and avoid soil disturbing activities during wet seasons. Stormwater runoff and erosion control measures identified below would be employed to reduce impacts to the floodplain.

Potential short-term impacts to the existing stormwater drainage infrastructure with the potential to impact floodplains would be mitigated by using appropriate stormwater runoff management during construction and operational phases. These measures include adherence to the State Pollutant Discharge Elimination System (SPDES) General Permit for construction activities occurring in an area of five acres or greater. The SPDES General Permit requires the implementation of best management practices to reduce nonsource pollutant loadings into waters of the State. For the Proposed Action and alternatives, stormwater runoff and erosion can be minimized during construction through the use of best management practices including, but not limited to, the following:

- Diversion structures designed to channel runoff away from disturbed surfaces
- Structures designed to collect, retain and/or treat any water that contacts disturbed surfaces

- Permanent stabilization of exposed surfaces once construction is complete
- Locating roads and access where the effect on water quality will be the least
- Implementing good housekeeping practices such as proper storage and spill prevention measures to prevent runoff from fuels, solvents, etc.
- Properly designing, constructing, and maintaining the affected property in a manner that will minimize contribution of pollutants to the water

Specific requirements for a Sitewide Stormwater Pollution Prevention Plan are listed in Section M.4.2 below.

M.4.2 Wetlands

Wetland mitigation measures for impacts associated with implementation of the Proposed Action and alternatives are as follows:

Activities affecting wetlands would be coordinated with the U.S. Army Corps of Engineers and NYSDEC, and through the project planning the sequence of avoidance to the extent practicable, minimization, and mitigation would be applied. Section 402 of the Clean Water Act requires permits for stormwater discharges from construction activities that disturb one or more acres of land. A Sitewide Stormwater Pollution Prevention Plan for controlling runoff and pollutants from the site during and after construction activities would be required to obtain permit coverage under NYSDEC's General Permit (GP-02-01) for Stormwater Discharges from Construction Activities. The Sitewide Stormwater Pollution Prevention Plan would address the following mitigating measures: (1) reduction or elimination of erosion and sediment loading, (2) controlling the impact of runoff on the water quality of the receiving water, (3) control of the increased volume and peak rate of runoff, and (4) maintenance of stormwater controls during and after completion of construction.

Prior to the disturbance of any wetland, a Section 404 permit would be acquired from the U.S. Army Corps of Engineers along with a Section 401 Water Quality Certificate from the State of New York. Additionally, a mitigation plan would be developed which would fully address the compensation mechanism selected (i.e., compensatory mitigation, mitigation bank, or in-lieu fee mitigation) to mitigate wetland impacts (73 FR 19594). Best management practices, including erosion and sediment controls and stormwater runoff control measures, would be implemented during all remediation work potentially affecting wetlands. These control measures would be inspected and maintained to prevent indirect impacts to wetlands. Proper maintenance of equipment and keeping workers within the work zone would help mitigate the impacts of wildlife (disturbed by noise and increased human presence in affected wetlands) temporarily moving from the area during work activities.

Filling of wetlands during construction and operations would be minimized to the extent practicable. Short-term surface water quality impacts would be mitigated through the use of administrative controls (e.g., delineating work area restrictions and erecting exclusion fencing) and physical controls (e.g., best management practices to decrease erosion, sedimentation, and stormwater runoff) (DOE 2006). Best management practices, as applicable, would include erosion and sediment control structures, runoff interceptor trenches or swales, filter or silt berms/fences, sediment barriers or basins, rock-lined ditches/swales, slope shaping and retaining fences, surface water runoff management, stormwater drainage structures, and waste management systems.

M.5 References

DOE (U.S. Department of Energy), 2002, *DOE Standard, Natural Phenomena Hazards Site Characterization Criteria*, DOE-STD-1022-94, Washington, DC, reaffirmed with errata April.

DOE (U.S. Department of Energy), 2006, *Environmental Assessment for the Decontamination, Demolition, and Removal of Certain Facilities at the West Valley Demonstration Project, Final*, DOE/EA-1552, West Valley Demonstration Project, West Valley, New York, September 14.

EPA (U.S. Environmental Protection Agency), 2002, *Definition of Waters of the United States*, 33 CFR Part 328, Washington, DC, July.

Ermer, M., 2005, Wildlife Biologist I, New York State Department of Environmental Conservation, Division of Fish, Wildlife and Marine Resources, Region 9, Allegany, New York, Personal communication (letter) to M. Maloney, U.S. Department of Energy, West Valley, New York, December 28.

FEMA (Federal Emergency Management Agency), 1984, Flood Insurance Rate Maps for the Town of Ashford, New York.

NRC (U.S. Nuclear Regulatory Commission), 2002, *Design of Erosion Protection for Long-Term Stabilization*, Final Report, NUREG-1623, Office of Nuclear Material Safety and Safeguards, Washington, DC, September.

NYSDEC (New York State Department of Environmental Conservation), 1980, Rules and Regulations, "Part 664 Freshwater, Wetlands Maps and Classification."

NYSDEC (New York State Department of Environmental Conservation), 2005, Wetland Functions and Values, revised on April 3, 2003 (accessed February 9, 2005, www.dec.state.ny.us/website/dfwmr/habitat/fwwprog2.htm), February 9.

NYSDEC (New York State Department of Environmental Conservation), 2008, *Floodplain Development and Floodway Guidance* (accessed July 31, http://www.dec.state.ny.gov/lands/24281.html).

Senus, M., 2006, Hydrologist, U.S. Department of the Army, Buffalo District, Corps of Engineers, Buffalo, New York, Personal communication (memorandum with attachments) to J. H. Swailes, Director, West Valley Demonstration Project, U.S. Department of Energy, West Valley, New York, Acceptance of Wetland Delineation, Application No, 98-973-0092(2), New York State Department of Environmental Conservation No. 9-0422-00005/00100, March 21.

URS (URS Corporation), 2008, Memorandum to Science Applications International Corporation, Subject: Probable Maximum Flood Inundation Study, West Valley, New York, August 28.

Wierzbicki, W. M., 2006, West Valley Nuclear Services Company, West Valley, New York, Personal communication (letter) to J. A. Swailes, U.S. Department of Energy, West Valley, New York, "Wetland Delineation – Corps of Engineers (COE) Request for Additional Information," January 12.

WVNS (West Valley Nuclear Services Company), 2007, *West Valley Demonstration Project, Safety Analysis Report for Waste Processing and Support Activities*, WVNS-SAR-001, Rev. 11, West Valley, New York, June 28.

WVNS and URS (West Valley Nuclear Services Company, Inc. and URS Group, Inc.), 2004, *2003 Wetland Delineation, West Valley Nuclear Site Assessment Area, Rock Springs Road, Town of Ashford, Cattaraugus County, New York*, Rev. 1, West Valley, New York, October.