APPENDIX M
FLOODPLAIN AND WETLAND ASSESSMENT

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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 WVDP, in accordance with the requirements of the WVDP Act. DOE is preparing this *Final 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) 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." These Executive Orders direct Federal agencies to implement floodplain and wetland requirements through existing procedures and guidelines such as those established to implement NEPA or those developed by individual states, to the extent practicable. Pursuant to 10 CFR Part 1022, this appendix addresses actions that would affect floodplains or wetlands under each of the alternatives evaluated in this environmental impact statement (EIS).

M.2 Alternatives and Affected Environment

A detailed description of the alternatives is found in Chapter 2 of this EIS. The alternatives include the Sitewide Removal Alternative, which 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, in areas with higher levels of long-lived contamination, engineered barriers would be used to control 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 appendix addresses potential floodplain and wetland impacts under each of these alternatives.

WNYNSC, shown on **Figure M–1**, occupies 1,351 hectares (3,338 acres) of land primarily in Cattaraugus County, New York, with approximately 5.7 hectares (14 acres) of the site 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.

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

M.2.1 Floodplains

Floodplain is defined as "the lowlands adjoining inland and coastal waters and relatively flat areas and floodprone areas of offshore islands" (10 CFR 1022.4). 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 adverse 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 1 percent probability of being equaled or exceeded in any given year (10 CFR 1022.4). 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 (PMF) 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), WNYNSC's topographic setting renders major flooding unlikely; local runoff and flooding is adequately accommodated by natural and manmade drainage systems in and around WVDP (DOE 2006). The flood inundation area for the 100-year storm (see **Figure M–4**) shows 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 WNYNSC (FEMA 1984).

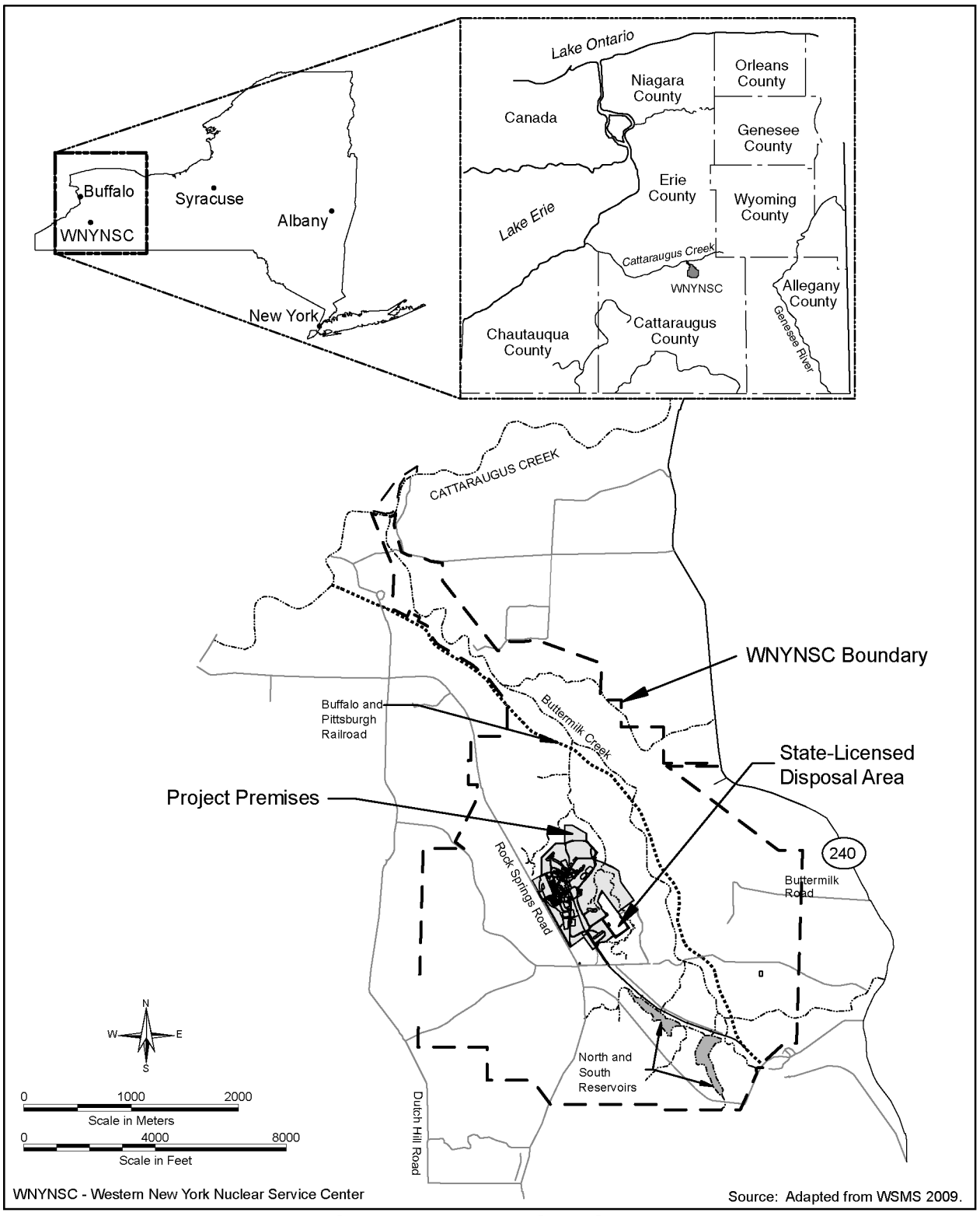

Figure M–1 The Western New York Nuclear Service Center

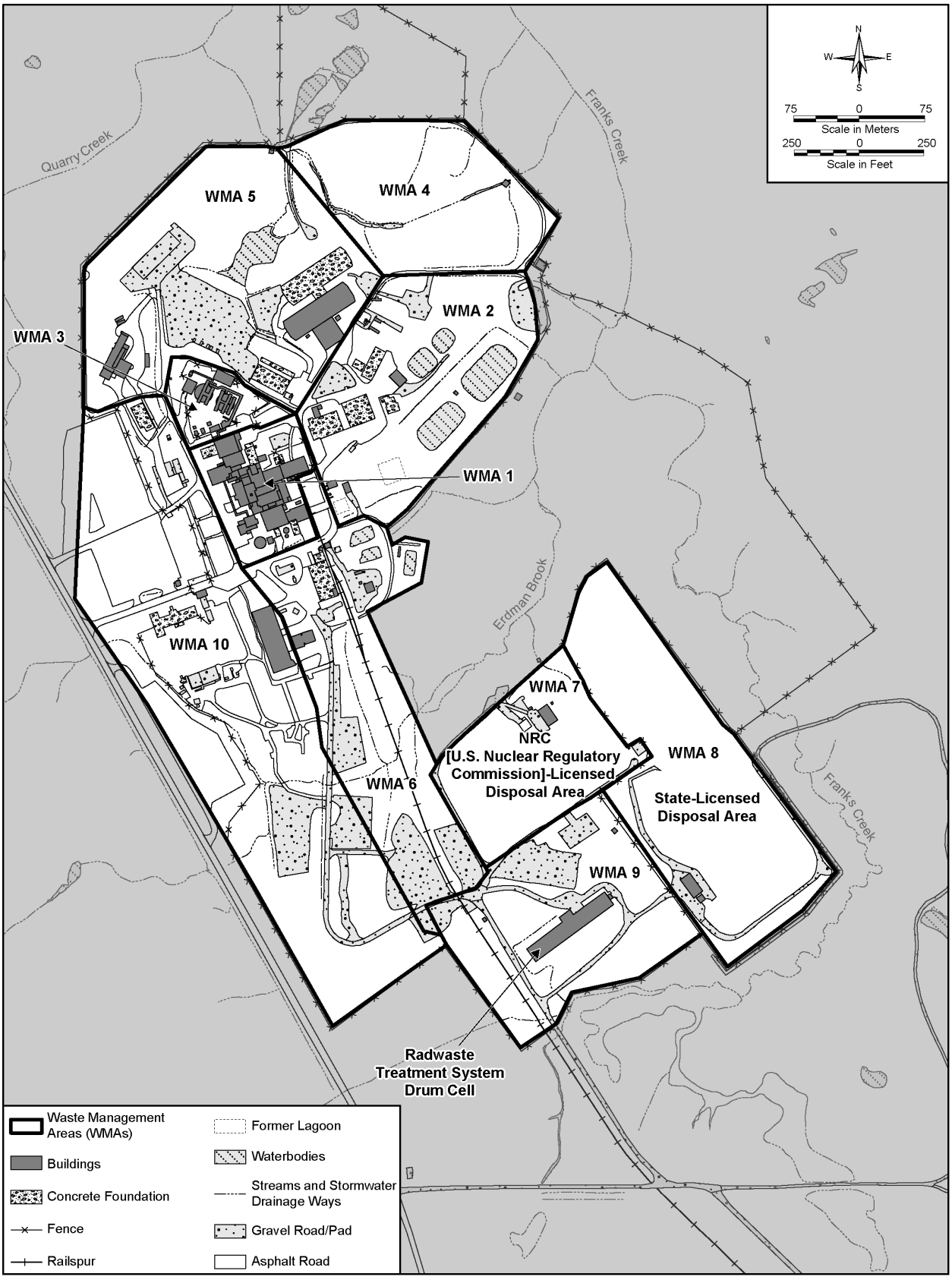

Figure M–2 Location of Waste Management Areas 1 Through 10

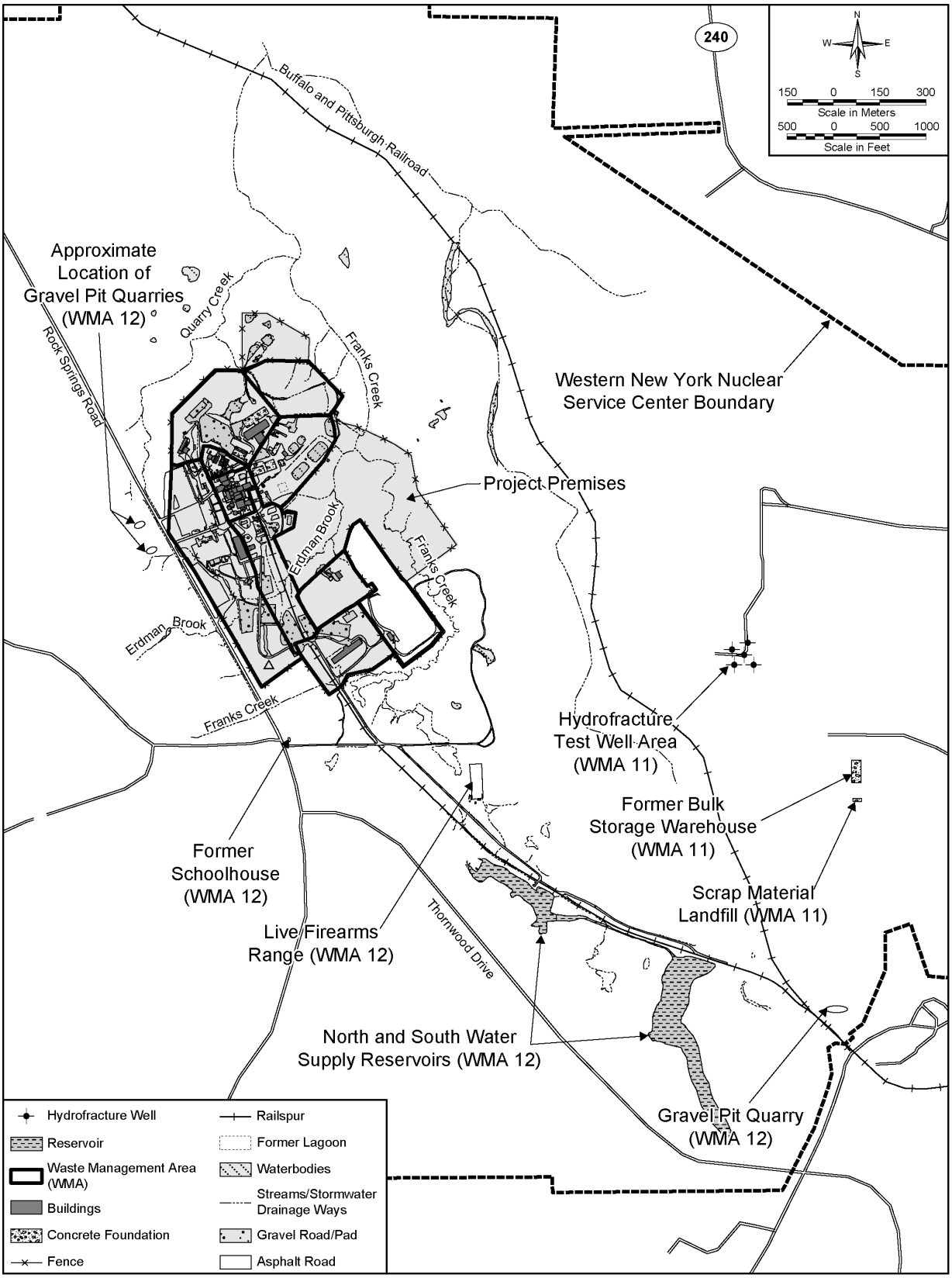

Figure M–3 Waste Management Areas 11 and 12 – Bulk Storage Warehouse Area and Balance of the Western New York Nuclear Service Center

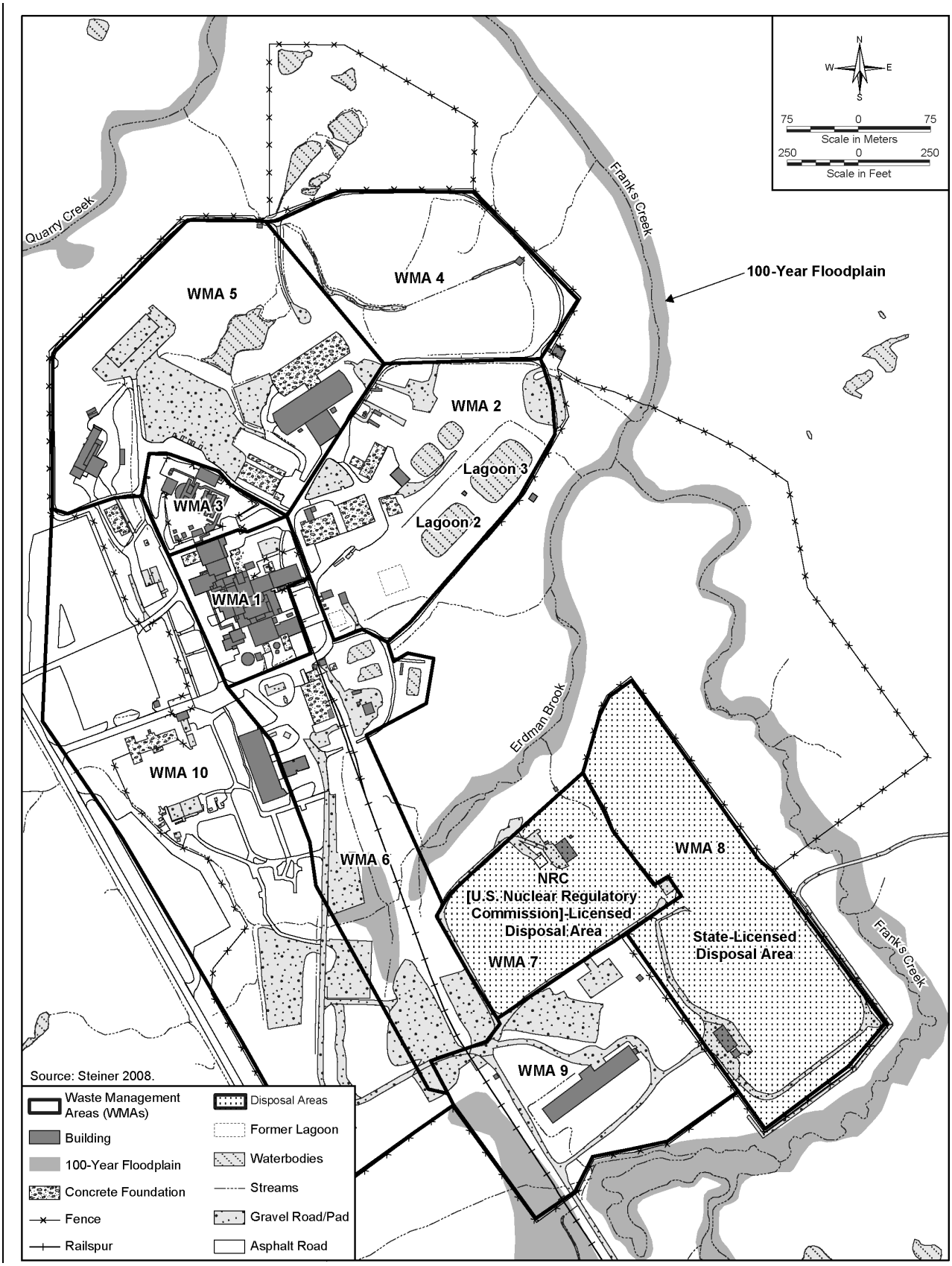

Figure M–4 100-Year Floodplain Near the West Valley Demonstration Project

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 PMF based on probable maximum precipitation has been performed for this EIS (see **Figure M–5**). The PMF is generally more conservative than the 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; the PMF flow would remain 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, in turn, impact Lagoons 2 and 3 in WMA 2, the NRC [U.S. Nuclear Regulatory Commission]-Licensed Disposal Area (NDA), and site access roads in several locations. Under PMF 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 this EIS for results of predictive erosion modeling, including the effects of sheet and rill erosion, stream valley rim widening, and gully advance over a 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 and verified in November 2005 on approximately 152 hectares (375 acres) of WNYNSC, including the Project Premises and adjacent parcels to the south and east of the Project Premises (Wierzbicki 2006, WVNS and URS 2004). Wetland plant communities identified within the limits of the assessment area included wet meadow, emergent marsh, scrub-shrub, and forested wetland.

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 wetland delineation results that there are wetlands totaling 68 areas comprising approximately 14.78 hectares (36.52 acres), with each area ranging from 0.004 to 2.95 hectares (0.01 to 7.3 acres), as shown on **Figures M–6** and **M–7**. Twelve distinct wetlands, totaling 0.98 hectares (2.43 acres), were observed to exhibit no surface-water connection to waters of the United States, and were at that time considered isolated, intrastate, and non-navigable wetlands. It was concluded that 13.8 hectares (34.09 acres) of wetlands were 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

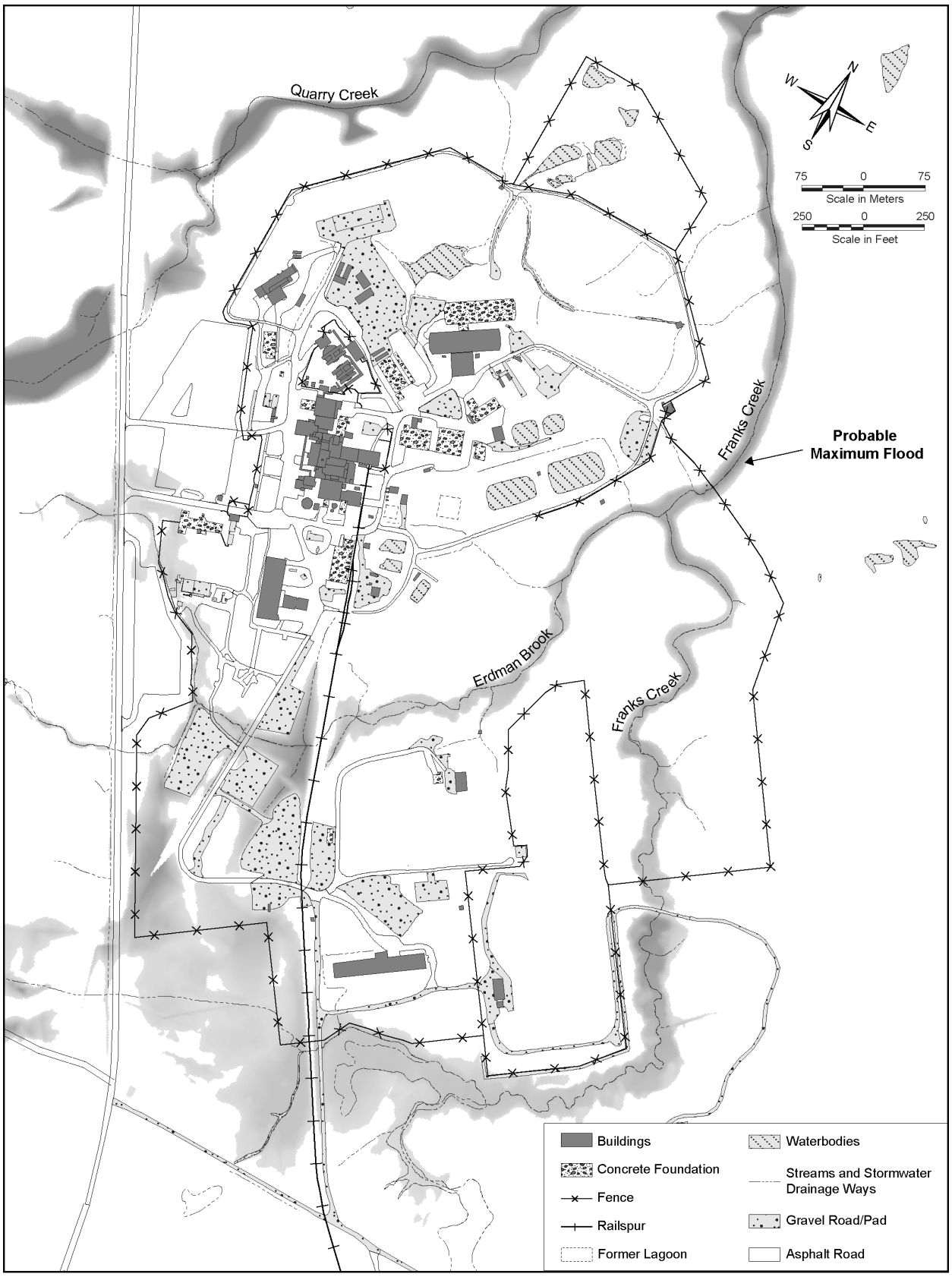

Figure M–5 Probable Maximum Flood

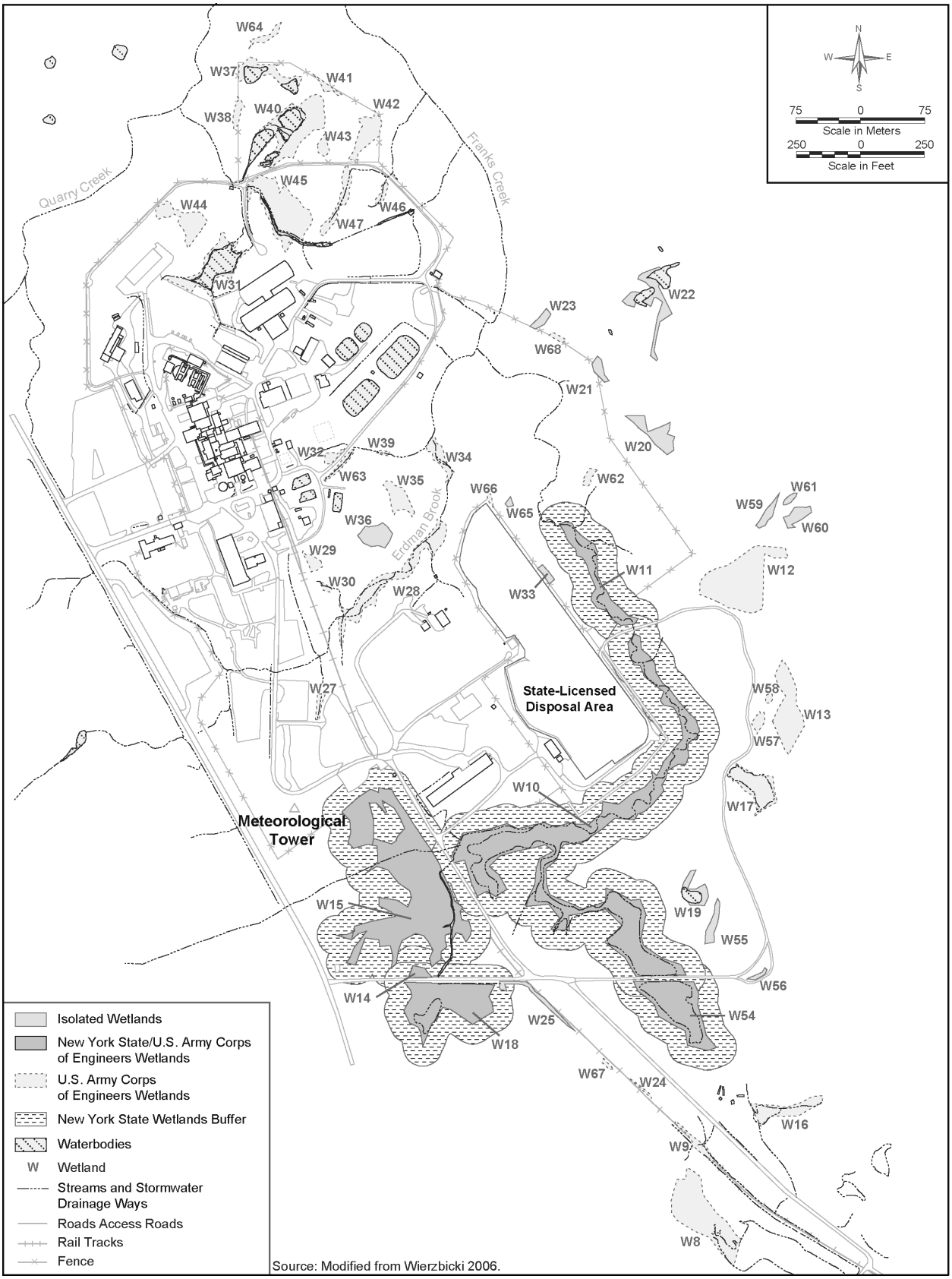

Figure M–6 Wetlands in the Vicinity of the Project Premises

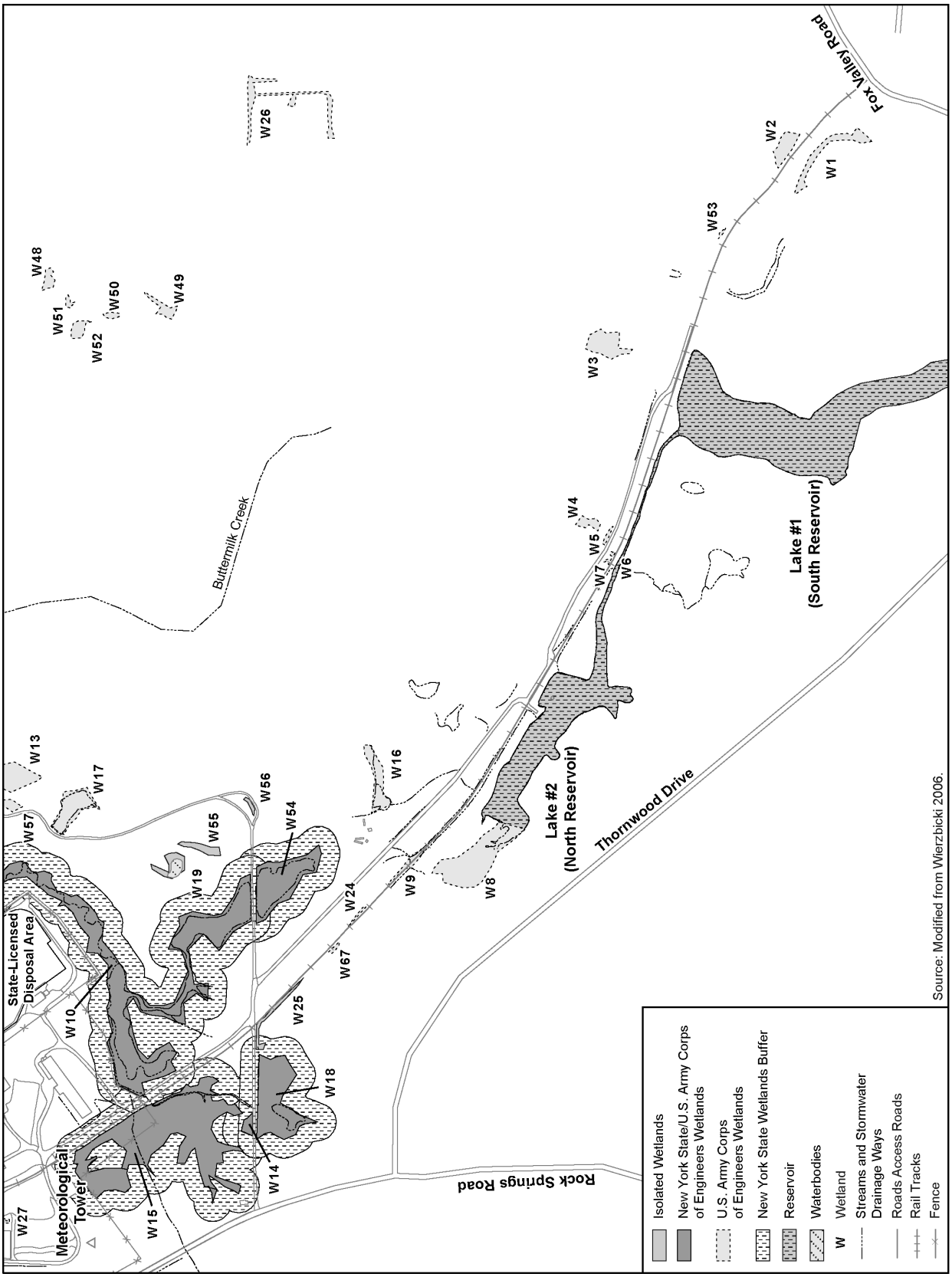

Figure M–7 Wetlands in the Southern Vicinity of the Project Premises

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, valid for a period of 5 years unless new information would warrant revision prior to the expiration date (Senus 2006).

Since the November 2005 wetland review, the U.S. Army Corps of Engineers, in conjunction with the U.S. Environmental Protection Agency, has provided new guidance regarding the agency's determination of jurisdiction over "wetlands adjacent to, but not directly abutting, a relatively permanent tributary" (i.e., isolated wetlands) (EPA and ACE 2007). This guidance states that the U.S. Army Corps of Engineers will decide jurisdiction of such a wetland "…based on a fact-specific analysis to determine whether they have a significant nexus with a traditional navigable water." The guidance goes on to state that the "…analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by all wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical and biological integrity of downstream traditional navigable waters." Although a specific analysis has not been conducted, the 12 isolated wetlands identified in 2003 are similarly situated to the site tributaries as are area wetlands under U.S. Army Corps of Engineers' jurisdiction. Further, these wetlands could be expected to function similarly since, like many jurisdictional wetlands, nearly all are wet meadows. For the purpose of this analysis and based on the new guidance, DOE has conservatively included the 12 isolated wetlands as part of the jurisdictional wetland total, thereby giving a total area of regulated wetlands of 14.78 hectares (36.52 acres). The analysis presented in Chapter 4 of this EIS has been revised to reflect the new total.

In addition to being considered jurisdictional by the U.S. Army Corps of Engineers, 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 30.5-meter (100-foot) adjacent area around designated freshwater wetlands. Although there are no wetlands currently mapped by the New York State Department of Environmental Conservation (NYSDEC), six wetlands (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 Project Premises fence (WVNS and URS 2004). On December 28, 2005, NYSDEC-Region 9 concurred with the wetland delineation conducted in 2003. NYSDEC concluded that the six wetland areas are hydrologically connected, exceed 5.0 hectares (12.4 acres), and therefore, in aggregate, 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). The character of this area is consistent with the New York State Freshwater Wetlands classification system definition of a Class IV wetland (of the four classes, Class I has the highest value) (WVNS and URS 2004). 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 on 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 short-term floodway or floodplain alteration, impeding or redirecting flows or surface-flow impacts on 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 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 three jurisdictional wetlands (W33, W65, and W66) totaling 0.04 hectares (0.1 acres). Removal of the SDA also has the potential to impact the 30.5-meter (100-foot) adjacent area around the 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 adjacent area would require a permit from the state. Additionally, five other wetland areas (W4, W5, W6, W7, and W8) measuring a total of 0.7 hectares (1.8 acres) would be 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.

If needed, prior to the disturbance of any jurisdictional wetland, a Section 404 permit would be acquired from the U.S. Army Corps of Engineers, and, in the case of a New York State freshwater wetland, a permit would be acquired from NYSDEC. Additionally, a mitigation plan would be developed that would fully address the compensation mechanism selected (i.e., compensatory mitigation, mitigation bank, or in-lieu fee mitigation) to mitigate wetland impacts (73 *Federal Register* [FR] 19594). Best management practices, including erosion and sediment controls, would be implemented during any remediation work potentially affecting wetlands.

M.3.2 Sitewide Close-In-Place Alternative

M.3.2.1 Floodplains

Construction of new facilities proposed 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 none of these facilities would 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 extent of downstream flood inundation areas as a result of increasing the floodplain elevation in the vicinity of the South Plateau. If there is a major increase in structures constructed in the 100-year floodplain of the South Plateau, flood events extending into the 100-year floodplain delineated for Erdman Brook and Franks Creek, shown on Figure M–8, could occur more often because there would be less area for the water to spread. This could also result in an increase in flooding downstream of the South Plateau because a larger volume of water would be traveling downstream rather than 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 on the PMF floodplain due to 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, on the floodplain.

Potential long-term impacts may occur from repeated flooding events (i.e., 100-year floods or greater) affecting the integrity of the engineered barriers. If the barriers were to be breached, releases could occur, particularly when institutional controls can no longer be assumed to be in place. Long-term impacts under 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

Construction of new facilities proposed under the Sitewide Close-In-Place Alternative would not affect wetlands because no wetlands 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 hectares (0.3 acres), while placement of the multi-layer cap over the NDA and SDA would directly impact five jurisdictional wetlands (W10 and W11 [both also New York State Freshwater Wetlands], and W33, W65, and W66) totaling 3.4 hectares (8.4 acres). The actual disturbance to the jurisdictional wetlands associated with the multi-layer cap would be less than half of their total area. Impacts on these wetlands would be similar to those identified in Section M.3.1.2. Additionally, placement of the multi-layer cap has the potential to cause indirect impacts (e.g., sedimentation) on those portions of the New York State wetlands not directly impacted. Placement of the multi-layer cap would impact the 30.5-meter (100-foot) adjacent area around the New York State wetlands. Any work within the state wetlands (and adjacent area) would require a permit from the state, as well as the U.S. Army Corps of Engineers. Mitigation measures identified in Section M.4.2 would be implemented to address direct and indirect impacts.

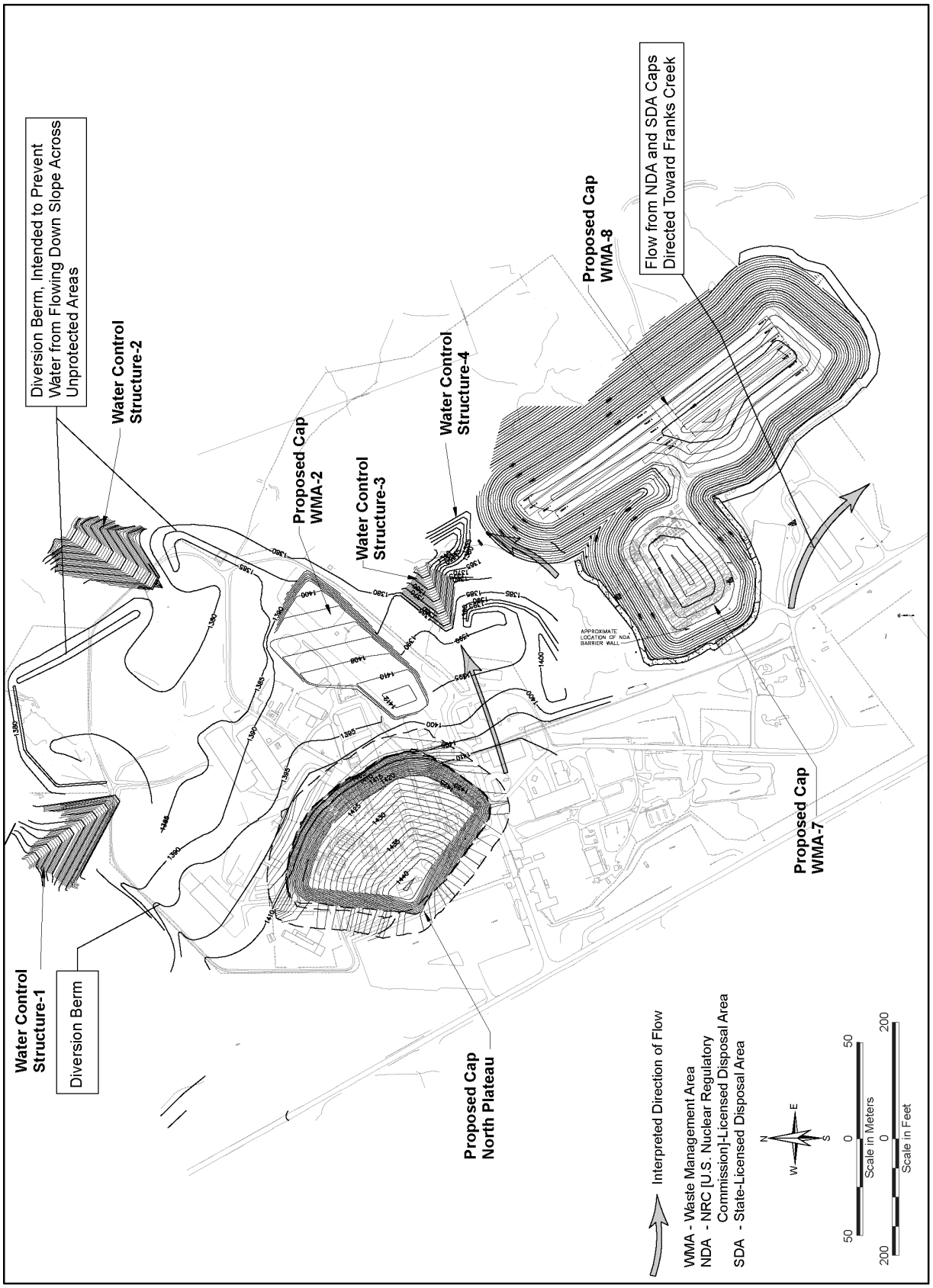

Figure M–8 Floodplain Encroachment by Multi-layer Covers for Waste Management Areas 7 and 8

Similar to the Sitewide Removal Alternative, five wetland areas comprising 0.7 hectares (1.8 acres) could be affected during activities associated with closure of the dams and reservoirs. Direct and indirect impacts resulting from remediation and closure activities, as well as mitigation measures, would be similar to those identified for the Sitewide Removal Alternative. Because the North Plateau Groundwater Plume and Cesium Prong would not involve removal of soils in nonsource areas, there would be no indirect impacts on wetlands in that area of the site.

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 consensus decommissioning decisionmaking. Phase 2 would complete the decommissioning activities.

M.3.3.1 Floodplains

No construction proposed under Phase 1 of this alternative (the Interim Storage Facility) would 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. Most of the impacts on the PMF floodplain due to 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, on the floodplain.

If Phase 2 actions under the Phased Decisionmaking Alternative include removal activities, short-term impacts could be expected on the delineated floodplain zone in the proximity of activities, resulting in short-term floodway or floodplain alteration, which could impede or redirect surface flows on 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. Similar impacts would result if the Phase 2 decision for the SDA is continued active management. If the Phase 2 decision is to proceed with in-place closure, direct impacts on the floodplains would not be expected to 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 would intrude into the 100-year floodplain. If the Phase 2 decision is continued active management of the SDA and in-place closure of the remaining waste and contamination, impacts would be less than those for the Sitewide Close-In-Place Alternative because there would be no multi-layer cap and erosion control features constructed at the SDA that could intrude into the 100-year floodplain.

M.3.3.2 Wetlands

During Phase 1 of this alternative, construction of temporary facilities would not affect wetlands because none are present on the proposed building sites. Further, with the exception of possible remediation of streambed sediment, remediation and closure activities planned under this alternative would not directly impact wetlands because none are present in the associated WMAs. The removal of existing facilities, however, could lead to indirect impacts on nearby wetlands as described for the Sitewide Removal Alternative in Section M.3.1.2. Because there would not be any remediation activities for the nonsource area of the North Plateau Groundwater Plume and Cesium Prong, there would be no impacts on wetlands in this area.

If Phase 2 closure activities are similar to those of the Sitewide Removal Alternative, impacts on wetlands would be similar to those addressed for that alternative in Section M.3.1.2. Thus, direct impacts on wetlands totaling 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 are similar to those of the Sitewide Close-In-Place Alternative, direct impacts on wetlands totaling 4.2 hectares (10.4 acres) and indirect impacts would be similar to those identified in Section M.3.2.2. In this case, impacts would largely result from the installation of erosion control measures and the placement of multi-layer caps over the SDA. If the Phase 2 decision for the SDA is continued active management while the remaining waste and contamination at the site is either removed or closed in place, there would be fewer wetlands disturbed (i.e., W10, W11, W33, W65, and W66), because the SDA and the immediately surrounding area would remain in their current condition.

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 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

Under the No Action Alternative, no decommissioning actions would be undertaken. Once deactivation activities were completed, a portion of WNYNSC (693 hectares [1,713 acres]) could be released, while remaining portions would continue to be monitored and maintained, as required by Federal and state regulations. Therefore, there would be no decommissioning impacts under this alternative.

M.4 Mitigation Measures

This section discusses the floodplain and wetland mitigation measures considered under the alternatives, which, where necessary and feasible, would be implemented during construction, operational, and decommissioning activities.

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 under the Sitewide Removal Alternative or the Sitewide Close-In-Place Alternative, flood protection measures would be implemented 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 on Figure C–28 in Appendix C of this EIS, would be designed to accommodate the PMF 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 (under the Sitewide Removal Alternative), or installation of engineered multi-layer covers in the South Plateau (under the Sitewide Close-In-Place Alternative). This coordination relative to affected floodplains would ensure 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 under Phase 1 of the Phased Decisionmaking Alternative and for 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 in the following paragraph would be employed to reduce impacts on the floodplain.

Potential short-term impacts on 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, which requires the implementation of best management practices during regulated construction activities to reduce nonsource pollutant loadings into waters of the state. For all of the proposed 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, 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, and other hazardous materials
- Properly designing, constructing, and maintaining 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.

M.4.2 Wetlands

Mitigation measures for impacts on wetlands associated with implementation of the proposed alternatives are described in the following paragraphs.

Activities affecting wetlands would be coordinated with the U.S. Army Corps of Engineers and NYSDEC, and through project planning, the graded 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 1 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 a permit under NYSDEC's General Permit (GP-0-08-001) for Stormwater Discharges from

Construction Activities. The Sitewide Stormwater Pollution Prevention Plan would address the following mitigating measures: (1) reducing or eliminating erosion and sediment loading, (2) controlling the impact of runoff on the water quality of the receiving water, (3) controlling of the increased volume and peak rate of runoff, and (4) maintaining stormwater controls during and after completion of construction.

If needed, prior to the disturbance of any jurisdictional 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 that would fully address the compensation mechanism selected (i.e., compensatory mitigation, mitigation bank, or in-lieu fee mitigation) to minimize 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 on wetlands. Properly maintained equipment and keeping workers within defined work zones would help mitigate the impacts on wildlife by minimizing noise and the extent of disturbed areas from which wildlife would tend to temporarily move during work activities. Should any land-clearing operations be required, the areas to be disturbed would be surveyed for nests of migratory birds in accordance with the Migratory Bird Treaty Act, and mitigation measures, such as undertaking clearing operations outside of the breeding season, might be required.

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.

EPA and ACE (U.S. Environmental Protection Agency and U.S. Army Corps of Engineers), 2007, *Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States & Carabell v. United States* (accessed June 28, 2009 at http://www.epa.gov/owow/wetlands/pdf/RapanosGuidance6507.pdf), June 5.

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), 2005, Wetland Functions and Values, 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.

Steiner, R., 2008, Washington Safety Management Solutions, Personal communication (email) to J. Hammelman and S. Crede, Science Applications International Corporation, Germantown, Maryland, "Probable Maximum Flood Modeling Results," August 7.

URS (URS Corporation), 2008, Memorandum to Science Applications International Corporation, Subject: Probable Maximum Flood Inundation Study, West Valley Demonstration Project, 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.

WSMS (Washington Safety Management Solutions LLC), 2009, *Sitewide Removal Alternative Technical Report*, WSMS-WV-08-0002, West Valley, New York, December.

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.