9.0 ENVIRONMENTAL PROTECTION

The American Centrifuge Plant (ACP) is located in Piketon, Ohio on the U.S. Department of Energy (DOE) reservation, adjacent to the Portsmouth Gaseous Diffusion Plant (GDP), an existing facility with a similar mission. The Portsmouth GDP has radioactive effluent controls and as low as reasonably achievable (ALARA) programs that meet U.S. Nuclear Regulatory Commission (NRC) requirements. The ACP Environmental Protection Program is modeled on the existing GDP environmental protection program. The ACP program thus takes advantage of the well-established programmatic elements and experience and many years of existing environmental data. This approach will provide maximum protection to the public and the environment. The ACP Regulatory Manager is responsible for the ACP Environmental Protection Program. Details of the minimum requirements for the managers and staff supporting the Environmental Protection Program are provided in Chapters 2.0 and 11.0 of this license application.

9.1 Environmental Report

The regulatory requirements for an Environmental Report are contained in 10 *Code of Federal Regulations* (CFR) Part 51. The NRC promulgated these regulations to implement the *National Environmental Policy Act* of 1969, which requires an assessment of the environmental impacts associated with all major Federal actions. For licensing actions that are not categorically excluded, the NRC conducts an independent assessment on the basis of the information submitted in the Environmental Report.

An Environmental Report for the American Centrifuge Plant meeting the requirements of 10 CFR 51.45 was prepared and is submitted for review as part of this license application as document LA-3605-0002, Environmental Report for the American Centrifuge Plant.

9.2 Environmental Protection Measures

9.2.1 Radiation Protection Program

The ACP Environmental Radiation Protection Program is based on the following policies:

- The dose to members of the public resulting from gaseous emissions and liquid effluents shall be maintained in accordance with the ALARA principle and below legal limits.
- It is the responsibility of each employee to conduct their activities in such a manner so as to prevent or minimize the discharge of radioactive materials to the environment, and to report any unusual or excessive discharge of such material.

9.2.1.1 Radiological (As Low As Reasonably Achievable) Goals for Effluent Control

The ACP maintains and uses gaseous and liquid effluent treatment systems, as appropriate, to maintain releases of radioactive material to unrestricted areas below the limits specified in 10 CFR 20.1301 and 40 CFR Part 190, and in accordance with the ALARA policy described below. Gaseous effluent control systems are also used to maintain releases of radioactive material to unrestricted areas below the dose constraint in 10 CFR 20.1101 and the dose limit in 40 CFR 61.92. Unrestricted areas are those areas beyond the DOE reservation boundary and to which any member of the public has unrestricted access.

The ALARA goal for airborne radioactive releases from the ACP is five percent of the NRC constraint (10 CFR 20.1101) and Environmental Protection Agency (EPA) limit (40 CFR 61.92), or an annual Total Effective Dose Equivalent (TEDE) of 0.5 millirem (mrem) to the most exposed member of the public, calculated as described in Section 9.2.2.1.2. This is also less than 15 percent of the most restrictive limit under 40 CFR Part 190, based on site experience.

The ALARA goal for waterborne radioactive releases from the ACP is ten percent of the airborne ALARA goal, or an annual TEDE of 0.05 mrem to the most exposed member of the public. This is equivalent to 0.05 percent of the 10 CFR 20.1301 limit on annual public dose. This goal is based on the assumption that: 1) the effluent limits in 10 CFR Part 20, Appendix B, Table 2 are equivalent to an annual public dose of 50 mrem; and 2) maximum public exposure occurs in the Scioto River with a dilution factor of at least 100:1. The principal liquid effluent stream from the ACP discharges directly to the river via a buried pipeline and the actual dilution factor between site effluents and the Scioto River is on the order of 5,000:1. Consequently, the second assumption should be very conservative.

The ACP also establishes Baseline Effluent Quantities (BEQs) for each monitored vent and monitored outfall and compares measured weekly effluents to these BEQs. Weekly effluents that are less than the BEQs cannot approach the dose limit in 10 CFR 20.1301 or the dose constraint in 10 CFR 20.1101. Weekly effluents that are not less than the applicable BEQs are evaluated as described in Sections 9.2.2.1.3 and 9.2.2.2.3 of this chapter, to determine whether they may cause the ACP to exceed regulatory limits or the ALARA goals. Notifications and corrective actions are implemented as described in those sections and Table 9.2-1.

9.2.1.2 Effluent Controls

9.2.1.2.1 Control of Airborne Effluents

<u>X-3346 Feed and Customer Services Building</u>

The Feed Area of this building sublimes uranium hexafluoride (UF_6) for feed to the enrichment process as described in Section 1.1 of this license application and contains a variety of potential sources for radioactive effluents, both as gaseous UF_6 and particulate uranyl fluoride (UO_2F_2). These sources are vented to the atmosphere through an evacuation system, which has separate subsystems to control gaseous and airborne particulate effluents. Both sub-systems exhaust to a continuously monitored combined vent.

The Customer Services area of this building liquefies UF_6 for quality control sampling and transfer of UF_6 material to customer cylinders for shipment as described in Section 1.1 of this license application and also contains multiple potential sources for radioactive effluents, both as gaseous UF_6 and particulate UO_2F_2. These sources are vented through a similar evacuation system with another continuously monitored combined vent.

The cylinder burping/heeling system, feed ovens, autoclaves, sampling system, and process piping in both areas are manifolded to the gaseous effluent side of their respective evacuation systems. Gases evacuated from process systems, which can contain high concentrations of UF_6, are processed through cold traps to desublime the UF_6 and separate it from the non-UF_6 gases. Residual gases leaving the cold trap have a very low concentration of UF_6, which is further reduced by passing the gas through an alumina trap. When an evacuation system cold trap becomes full, it is valved off from the vent and its contents sublimed to a drum so the material can be fed to the enrichment plant. The cold traps can be bypassed to allow rapid evacuation of a volume that does not contain radioactive material. The alumina traps cannot be bypassed.

Cylinder connections and disconnections have the greatest potential for small releases of UF_6 to the workspace. UF_6 released in this manner reacts quickly with ambient humidity to form UO_2F_2. Gulper systems are used to collect any small release of material during these operations. Gulper systems utilize a flexible hose or hood to evacuate the air in the immediate area where the connection is being made or broken. The captured gases are passed through a roughing filter followed by a High Efficiency Particulate Air (HEPA) filter to collect the UO_2F_2 particulate.

The effluents from both sub-systems are combined and vented to the atmosphere through a common vent after each subsystem has removed the uranium. Each vent is equipped with continuous gas flow monitoring instrumentation with local readout as well as the analytical instrumentation required to continuously sample, monitor and to alarm UF_6 breakthrough in the effluent gas stream. The continuous vent monitor/sampler is described in Section 9.2.2.1 of this chapter.

Ventilation air in the X-3346 is monitored under the Radiation Protection Program as described in Section 4.7 of this license application. Environmental Compliance personnel review summaries of the monitoring data at least quarterly to verify that ventilation exhausts are insignificant as defined in NUREG-1520, *Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility* (SRP) (i.e., less than 3×10^{-13} microcuries per milliliter [µCi/mL] uranium).

X-3001 and X-3002 Process Buildings

The process buildings house the operating centrifuge machines that separate the UF_6 into enriched product and depleted tails as described in Section 1.1 of this license application and contain a limited variety of potential sources for radioactive effluents, primarily as gaseous UF_6. These sources are vented to atmosphere through either the Purge Vacuum (PV) or Evacuation Vacuum (EV) Systems. Both systems exhaust to a common continuously monitored vent.

Enrichment equipment operates at sub-atmospheric pressures. Equipment operation requires the removal of any air that leaks into the process. The PV/EV Systems are used to remove air in the enrichment equipment. Since the air may contain traces of UF_6 the gas removed by these systems is passed through a shared set of alumina traps prior to venting. The PV/EV systems in each half (north and south) of each process building are manifolded to one process building vent. Each process building vent is equipped with continuous gas flow monitoring instrumentation with local readout, as well as analytical instrumentation to continuously sample, monitor, and alarm UF_6 breakthrough in the effluent gas stream. The continuous vent monitors/samplers are described in Section 9.2.2.1 of this chapter.

Valving and piping allow the EV systems to bypass the chemical traps during the initial pump down of machines that have not been previously exposed to UF_6. This reduces the chances of desorbing previously trapped UF_6 from the traps. Otherwise, the EV systems throughput will pass through the chemical traps along with PV system throughput.

Ventilation air in the process buildings is monitored under the Radiation Protection Program as described in Section 4.7 of this license application. Environmental Compliance personnel review summaries of the monitoring data quarterly to verify that ventilation exhausts are insignificant as defined in the SRP (i.e., less than 3×10^{-13} µCi/mL uranium).

X-3356 Product and Tails Withdrawal Building

The X-3356 building withdraws and desublimes both the product and tail streams from the enrichment process as described in Section 1.1 of this license application and contains a variety of potential sources for radioactive effluents, both as gaseous UF_6 and particulate UO_2F_2. These sources are vented to atmosphere through evacuation systems similar to the X-3346 building. There are separate evacuation systems, with separate monitored vents, for the tails withdrawal and the product withdrawal areas.

The tails burping system, cold boxes, sampling system, and process piping are manifolded to the gaseous effluent side of the appropriate evacuation system. Gases evacuated from process systems, which can contain high concentrations of UF_6, are processed through cold traps to desublime the UF_6 and separate it from the non-UF_6 gases. Residual gases leaving the cold trap have a very low concentration of UF_6, which is further reduced by passing the gas through an alumina trap. When an evacuation cold trap becomes full, it is valved off from the vent and its contents sublimed to a cylinder. The evacuation cold traps can also be bypassed to allow rapid evacuation of a volume that does not contain significant amounts of radioactive material. The alumina traps cannot be bypassed.

Cylinder connections and disconnections have the greatest potential for small releases of UF_6 to the workspace. UF_6 released in this manner reacts quickly with ambient humidity to form UO_2F_2. Gulper systems are used to collect any small release of material during these operations. Gulper systems utilize a flexible hose or hood to evacuate the air in the immediate area where the connection is being made or broken. The captured gases are passed through a roughing filter followed by a HEPA filter to collect the UO_2F_2 particulate.

The effluents from both sub-systems are combined and vented to the atmosphere through a common vent after each sub-system has removed the uranium. Each vent is equipped with continuous gas flow monitoring instrumentation with local readout as well as the analytical instrumentation required to continuously sample, monitor and to alarm UF_6 breakthrough in the effluent gas stream. The continuous vent monitor/sampler is described in Section 9.2.2.1 of this chapter.

Ventilation air in the X-3356 building is monitored under the Radiation Protection Program as described in Section 4.7 of this license application. Environmental Compliance personnel review summaries of the monitoring data at least quarterly to verify that ventilation exhausts are insignificant as defined in the SRP (i.e., less than 3×10^{-13} μCi/mL uranium).

X-3012 Process Support Building

The X-3012 building provides process control functions and maintenance support as described in Section 1.1 of this license application. From time to time, contaminated components may be serviced in the maintenance shops in the X-3012 building. Components requiring repair or examination that have been in service will be opened using appropriate personnel protective equipment (PPE), and may also include engineered local ventilation systems to capture any residual uranium.

Ventilation air in the X-3012 building is monitored under the Radiation Protection Program as described in Section 4.7 of this license application. Environmental Compliance personnel review summaries of the monitoring data quarterly to verify that ventilation exhausts are insignificant as defined in the SRP (i.e., less than 3×10^{-13} μCi/mL uranium).

X-7725 Recycle/Assembly Facility; X-7726 Centrifuge Training and Test Facility; and X-7727H Interplant Transfer Corridor

Centrifuges are assembled and may be disassembled for repair or inspection as described in Section 1.1 of this license application in either the X-7725 or X-7726 facilities. The extent to which a centrifuge is disassembled depends upon the nature of the fault. Centrifuges requiring repair or examination that have been in service will be opened using appropriate PPE, and may also include engineered local ventilation systems to capture any residual uranium.

As described in Section 1.1 of this license application, some completely assembled centrifuge machines are tested with UF_6 in the Gas Test Stands. This is a separate room within X-7725 facility with its own ventilation and emission control system. UF_6 for the test stands is supplied from a small cylinder within this room. Exhaust from the test stands passes through alumina traps to a continuously monitored vent. The vent is equipped with continuous gas flow monitoring instrumentation with local readout, as well as the analytical instrumentation required to continuously sample, monitor, and to alarm UF_6 breakthrough in the effluent gas stream. The continuous vent monitor/sampler is described in Section 9.2.2.1 of this chapter.

Ventilation air in both the X-7725 and X-7726 facilities is monitored under the Radiation Protection Program as described in Section 4.7 of this license application. Environmental Compliance personnel review summaries of the monitoring data quarterly to verify that ventilation exhausts are insignificant as defined in SRP (i.e., less than 3 x 10^{-13} μCi/mL uranium).

The X-7727H corridor is never exposed to open centrifuges or components, but does have some air transfer from the process buildings and X-7725 facility. At worst, the airborne uranium concentration in the X-7727H corridor will not exceed that in the process buildings or X-7725 facility. This is insignificant as defined in the SRP (i.e., less than 3 x 10^{-13} μCi/mL uranium).

Waste Management

The ACP obtains waste management services for various radiological and non-radiological materials. The radiological waste management services are obtained from a qualified provider licensed/certified by the NRC or an agreement state.

Laboratory Services

The ACP obtains analytical services for various radiological and non-radiological materials. The radiological analytical services are obtained from a qualified laboratory licensed/certified by the NRC or an agreement state.

9.2.1.2.2 Control of Liquid Effluents

The centrifuges and PV/EV vacuum pumps are cooled by a closed-loop Machine Cooling Water (MCW) system to minimize the amount of water potentially contaminated by uranium. There is no routine blowdown from the MCW system. Waste heat from the MCW system is discharged via heat exchangers to the Tower Water Cooling (TWC) system, which is cooled by a single cooling tower. Waste heat from the cold trap refrigeration systems in X-3346 and X-3356 buildings is also discharged to the TWC system. Currently, the TWC discharges its blowdown to the GDP Recirculating Cooling Water (RCW) system under a service agreement, which in turn discharges its blowdown directly to the Scioto River via an underground pipeline (National Pollutant Discharge Elimination System [NPDES] Outfall 004). The RCW system does not provide any treatment of the TWC blowdown; it simply provides a convenient pathway to a suitable permitted discharge point. At some point in the future, the TWC blowdown will likely be modified to bypass the RCW system and discharge directly to the RCW discharge pipeline. There should be no licensed material in the TWC blowdown.

In the interim, the GDP RCW system has ample capacity to accept the TWC effluent without either physical modification or adjustment to its discharge limits. Discharges from the RCW System are monitored by an automated sampler, which collects a weekly composite sample of the liquid effluent for radiological analysis as well as sample(s) for NPDES-mandated analyses. This data is available to the ACP as assurance that no unanticipated discharge of licensed material has occurred.

Sanitary wastewater from the ACP is discharged to the reservation sanitary sewer system. There should be no licensed material in the sanitary wastewater. The sewer system discharges to a sewage treatment plant located on the DOE reservation in accordance with a service agreement. The discharge from this plant is also monitored by an automated sampler, which collects a weekly composite sample of the liquid effluent for radiological analysis, as well as sample(s) for NPDES-mandated analyses. This data is also available to the ACP as assurance that no unanticipated discharge of licensed material occurred.

Leakage from the MCW system and incidental spills of water elsewhere in the ACP, are collected by the Liquid Effluent Collection (LEC) system. The LEC system consists of a set of drains and underground collection tanks for the collection and containment of leaks and spills of chemically treated water. The drains are located throughout the ACP. The tanks have a capacity of 550 gallons (gal) each and are monitored by liquid level gauges mounted above grade on pipe stands. Water accumulated in the LEC tanks is sampled and analyzed prior to disposal. If the contents meet the requirements of 10 CFR 20.2003, they may be pumped to the reservation sanitary sewer system. Otherwise the tank contents will be containerized for off-site disposal. An integrity assurance plan developed by Engineering assures that the tanks are not leaking as the ACP take possession of them. Following completion of this integrity assurance plan, inventory monitoring of the tank contents is used to detect leaks from the LEC System.

Storm water runoff from the ACP area, along with some once-through cooling water (sanitary water), drains to a pair of holding ponds.

- The X-2230N West Holding Pond (NPDES Outfall 012) provides a quiescent zone for settling suspended solids, dissipation of chlorine, and oil diversion and containment. The pond discharges to the same unnamed tributary of the Scioto River as X-230J-5. An automated sampler collects a weekly composite sample of the liquid effluent for radiological analysis as well as sample(s) for NPDES-mandated analyses.

- The X-2230M Southwest Holding Pond (NPDES Outfall 013) provides a quiescent zone for settling suspended solids, dissipation of chlorine, and oil diversion and containment. The pond discharges to an unnamed tributary of the Scioto River. An automated sampler collects a weekly composite sample of the liquid effluent for radiological analysis as well as sample(s) for NPDES-mandated analyses.

Most of the ACP cylinder storage pads are within the drainage of the X-2230M and X-2230N Holding Ponds. The ACP also uses cylinder storage pads on the north end of the reservation (X-745G-2 and X-745H). The ACP conducts an inspection and maintenance program for its UF_6 cylinders to ensure that no licensed material is released to the storage pads. Stormwater runoff from the north pads drains to holding ponds in accordance with a service agreement and continuously monitored with automated samplers. This data is available to ACP environmental personnel as assurance that no unanticipated discharge occurred.

9.2.1.3 As Low As Reasonably Achievable Reviews and Reports to Management

Action levels for control of both gaseous and liquid radioactive effluents from the ACP have been established based on the ALARA philosophy. The action levels described in Table 9.2-1 ensure operational control system deficiencies are documented and acted upon in a responsible manner and in a timeframe to remain well within the regulatory limits and below ALARA goals. The required actions described in Table 9.2-1 include the analyses of trends in release data, evaluations of the probable impact of the releases and an assessment of the need for additional effluent controls to meet the ALARA goals. The Operations Supervisor is responsible for assuring that action levels are acted upon.

The BEQs used in Table 9.2-1 is the maximum effluent expected under normal operation. BEQs have been established by the ACP environmental personnel and the responsible building management for every continuously monitored radiological vent and liquid discharge point to unrestricted areas. These BEQs are reviewed annually, at a minimum, by environmental personnel, the responsible building management and the ACP ALARA Committee to ensure the principles described in the ACP's ALARA policy are followed. This review also includes analyses of trends in radioactive effluents and environmental monitoring data. The results of this review are reported to the ACP Regulatory Manager and other senior management as described in Chapter 4.0 of this license application.

The specific values of the BEQs are listed in Table 9.2-2. The liquid release points are existing discharges and, while the ACP does not increase releases beyond historic levels, it does not decrease them either. Therefore, the liquid BEQs in Table 9.2-2 are based on GDP historic release rates.

9.2.1.4 Waste Minimization

Radioactive waste minimization and pollution prevention activities are coordinated by ACP environmental compliance and waste management personnel with the support of USEC senior management.

Individual waste streams are identified and characterized based on process knowledge, routine radiation surveys as described in Chapter 4.0 and laboratory analysis, as needed. Generation of individual waste streams and waste management costs are tracked through a formal Request-for-Disposal database system administered by waste management personnel and the annual budgeting process.

Waste generating activities are evaluated for waste minimization opportunities with emphasis on those that generate hazardous wastes, low-level mixed wastes (LLMW), and low-level radioactive wastes (LLRW). Both LLMW and LLRW waste generation is inherently reduced in the ACP by the fact that the process operates under a high vacuum, which prevents radioactive material from escaping. Equipment that must be removed for maintenance is evacuated to the rest of the process first. The routine radiation surveys described in Chapter 4.0 of this license application verify that there is no spread of contamination within or out of the ACP. Hazardous waste generation is minimized by minimizing the procurement and use of

hazardous substances. Waste that is generated is treated to the extent practical to reduce the volume, toxicity, or mobility before storage or disposal. USEC provides annual employee training that includes waste minimization information and encourages employee suggestions.

USEC provides environmental and waste management professionals with opportunities to attend offsite training and conferences for the purpose of seeking and exchanging technical information on waste minimization.

Waste minimization recommendations are evaluated by waste management and environmental compliance personnel and implemented, as appropriate, by waste management, materials procurement (for hazardous materials), and operations personnel.

This applies to ACP operations, associated support operations, and ACP subcontractors that generate waste.

9.2.2 Effluent and Environmental Monitoring

Based on historic GDP experience and operating plans, the radionuclides anticipated to be present in ACP gaseous effluents are ^{234}U, ^{235}U, and ^{238}U. The intention is to not introduce feedstock contaminated with significant concentrations of other nuclides into the process. Feed material that meets the American Standards for Testing and Materials (ASTM) specification for recycled feed may be used in the ACP, which may contain radionuclides such as ^{236}U and Technetium (^{99}Tc). Based on historic GDP experience ^{99}Tc may eventually appear in some ACP gaseous effluents. The radionuclides anticipated to be present in ACP liquid effluents are ^{234}U, ^{235}U, ^{238}U, and ^{99}Tc, due to historic contamination of the reservation. Consequently, ACP effluents will be analyzed for these four nuclides routinely.

9.2.2.1 Airborne Effluent Monitoring

9.2.2.1.1 Anticipated Effluent Levels

The maximum anticipated gaseous effluents from the ACP have been modeled using the EPA-approved and distributed dispersion model, CAP88-PC, and reservation meteorological data from calendar years 1998-2002. The results are summarized in Table 9.2-3. The maximum gaseous effluent anticipated under normal operations is 1.1 millicuries (mCi) of uranium over a week, or up to 0.057 curie (Ci) per year. The maximum exposed individual (MEI) for the ACP is located in the south-southwest sector of the reservation boundary. The projected maximum airborne concentration of total uranium due to ACP operations is only 3.2×10^{-15} µCi/mL, with an associated TEDE of 0.33 mrem. The uranium concentration is roughly three orders of magnitude lower than the applicable values in 10 CFR Part 20, Appendix B, Table 2. The projected TEDE due to ACP operations contributes roughly 66 percent to the ALARA goal given in Section 9.2.1.1 of this chapter, even assuming the average annual emission rates are equal to the maximum weekly emission rates. Average emission rates are expected to be much lower.

9.2.2.1.2 Demonstration of Compliance

Characterization of the radiological consequences of radionuclides released to the atmosphere from the ACP is accomplished by annually calculating the TEDEs to the maximally exposed person and to the entire population residing within 80 kilometers (km) (50 miles) of the plant. This approach is mandatory under the EPA regulations at 40 CFR Part 61 and has been accepted by the NRC for previous uranium enrichment operations at the reservation. The annual National Emission Standards for Hazardous Air Pollutants (NESHAP) Report includes the reservation identification, a description of plant operations (whether included under this license or not) during the previous year, the amount of radionuclides released to the atmosphere during the previous year, and the calculated TEDE to the most exposed member of the public.

Annual radionuclide releases to air are measured by the continuous vent samplers, as described in Section 9.2.2.1.3 of this license application, or estimated in accordance with guidance in 40 CFR Part 61, Appendices D and E. Atmospheric dispersion of the releases is modeled and the consequent public radiation dose is estimated using the EPA approved computer models in accordance with EPA guidance. An annual report summarizing the atmospheric releases and the dose assessment results is submitted in accordance with 40 CFR Part 61, Subpart H and EPA guidance, with a copy provided to the NRC. In accordance with EPA requirements, the reported public dose includes gaseous radioactive effluents from the DOE reservation.

The dose calculations are made using either the original CAP88 package of computer codes or the CAP88-PC package distributed by the EPA. The CAP88/CAP88-PC packages contain an EPA approved version of the AIRDOS-EPA and DARTAB computer codes and the ALLRAD88 radionuclide data file. The AIRDOS-EPA computer code implements a steady-state, Gaussian plume, atmospheric dispersion model to calculate concentrations of radionuclides in the air and on the ground based on radionuclide releases to the atmosphere and annualized meteorological data. It then uses Regulatory Guide 1.109, *Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50,* Appendix I (October 1977), food-chain models to calculate radionuclide concentrations in foodstuffs (e.g., vegetables, meat, milk) and subsequent intakes by individuals. The DARTAB computer code then uses these calculated uptakes and radionuclide data from the ALLRAD88 data file to calculate annual radiation doses to members of the public.

The annualized meteorological data used in the calculations consist of joint frequency stability array distributions of wind direction, wind speed, and atmospheric stability that are prepared from data collected from the reservation meteorological tower. Data from the National Weather Service may be used in lieu of or to supplement reservation meteorological data. The reservation has a consistent annual pattern of low-level southwesterly winds predominating over the year. During the winter season, northeasterly winds are common though. This is largely attributable to the channeling effect of the hills and ridges on either side of the reservation, which runs roughly southwest to northeast.

Distances to the nearest residences are taken from U.S Geological Survey maps and population distributions are from the 2000 census data. EPA published default values for other off-site parameters (such as local crop productivity) are used in the AIRDOS-EPA model and, in accordance with EPA recommendations; rural patterns for food sources (i.e., home grown versus local production versus national supermarket chains) are assumed.

9.2.2.1.3 Monitoring of Gaseous Release Points

Each process vent in the X-3001, X-3002, X-3346, X-3356, and X-7725 has gas flow monitoring instrumentation with local readout as well as analytical instrumentation to continuously sample, monitor and to alarm UF_6 breakthrough in the effluent gas stream. The locations of these vents are shown in Figure 9.2-1. The continuous vent sampler draws a flow proportional sample of the vent stream through two alumina traps in series by way of an isokinetic probe. Both vent and sampler flows are monitored by the sampler's electronic controller. The controller adjusts a control valve in the sample line to maintain a constant ratio between the vent and sample flows. The flow instruments are calibrated at least annually. The primary sample trap is equipped with an automated radiation monitor to continuously monitor the accumulation of uranium in the sampler. This radiation monitor provides the real-time indicator of effluent levels for operational control of the gaseous effluent control systems.

Detailed effluent calculations are based on laboratory analysis of the collected samples. Each vent sampler has two traps permanently dedicated to each trap position, with one in-service and the other either being processed or standing by to replace the in-service trap. Normally, the primary sample traps are replaced weekly and the secondary traps are replaced quarterly. In the event of an unplanned or seriously elevated release, the involved sampler traps are collected for immediate analysis as soon as the situation has stabilized. Alternatively, the sampling period may be extended, provided the sampler is operating continuously while the vent is operating. A hydrated alumina is used in the vent samplers to convert absorbed UF_6 to UO_2F_2. The UO_2F_2 does not easily separate from the alumina, so no special handling is necessary to avoid loss of uranium between sample collection and analysis. Annually, the sampler tubing and traps are also replaced and rinsed, and the rinsates analyzed for the same parameters as the alumina.

Vent samples are analyzed for ^{234}U, ^{235}U, ^{238}U, and ^{99}Tc as described in Section 9.2.2.5 of this chapter. GDP experience in uranium enrichment has shown that these three uranium isotopes account for more than 99 percent of the public dose due to uranium emissions. ^{99}Tc is a fission product that has contaminated much of the fuel cycle. Feed material that meets the ASTM specification for recycled feed may be used in the ACP, which may contain additional radionuclides (i.e., ^{236}U and ^{99}Tc). Based on GDP historic experience ^{99}Tc may eventually appear in some ACP gaseous effluents. The ACP therefore monitors process vent samples for technetium as a precautionary measure.

Weekly gaseous effluents are calculated based on the primary trap analytical results and measured flows. These are compared to the action levels in Table 9.2-1 to determine whether gaseous effluents are threatening to exceed regulatory limits or ALARA goals. The weekly effluents are also accumulated to provide source terms for the annual public dose assessment required under 40 CFR Part 61. Quarterly and annual corrections to the accumulated weekly

effluents are calculated based on the secondary trap and rinsate analyses, respectively, to complete the source terms.

Anticipated radionuclide concentrations in ventilation exhausts from occupied areas are insignificant as defined in the SRP. Radionuclide concentrations in room air are monitored as described in Section 4.7 of this license application. The results are reviewed by environmental engineers at least quarterly to verify that airborne concentrations are less than ten percent of the applicable values in 10 CFR Part 20, Appendix B, Table 2.

In the event of a radionuclide release outside the effluent monitoring system, the activity of the release will be estimated based on available data and engineering calculations (i.e., inventory data and mass balances).

9.2.2.1.4 Action Levels

Action levels for control of gaseous radioactive effluents from ACP operations have been established based on the ALARA philosophy. The action levels described in Table 9.2-1 ensure operational control system deficiencies are documented and acted upon in a responsible manner and in a timeframe to remain well within the regulatory limits and below ALARA goals. The BEQs used in Table 9.2-1 are the maximum effluents expected under normal operating conditions. BEQs have been established for every continuously monitored radiological vent. The specific BEQ values established for the monitored ACP vents are listed in Table 9.2-2.

9.2.2.1.5 Other Permits and Licenses

New air pollutant sources or modifications of existing sources in the State of Ohio are required to have a Permit-to-Install (PTI) from the Ohio EPA prior to installation of the source. The ACP therefore needs PTIs for its process vents. Within one year of the PTI being issued, the ACP also needs to apply to the Ohio EPA for a modification to its Title V permit to incorporate the entire ACP into the existing permit. The Title V permit supersedes the PTI once it is modified.

Sources of airborne radionuclides at DOE-owned plants are covered by an EPA Permit-By-Rule issued under 40 CFR Part 61, (NESHAP) Subpart H. This rule imposes a limit on airborne effluents of 10 mrem/year to the MEI, which applies to the entire reservation regardless of who “owns” any individual source within the reservation. The rule also requires an annual report, submitted by June 30 of the following year, detailing the processes at the reservation, the airborne effluents from each source, and annual TEDE to the MEI as calculated by a method approved by the EPA. A copy of this report is provided to NRC as described in Section 9.3.2 of this chapter.

Also, under the NESHAP rule, new or modified sources of airborne radionuclides at DOE-owned plants are required to have prior Permission to Construct from EPA unless the change has a projected maximum public TEDE of less than 0.1 mrem/year. This will be necessary for the ACP since it has the potential to exceed this threshold.

9.2.2.2 Liquid Effluent Monitoring

9.2.2.2.1 Anticipated Effluent Levels

Anticipated routine radioactive effluents from the ACP are expected to be minimal. The bulk of liquid radioactive effluents from a uranium enrichment plant are decontamination and cleaning solutions. Centrifuges will not be routinely changed out, but routine maintenance such as instrument repair or repair to the PV/EV systems occurs. There are also maintenance activities that require cleaning and/or decontamination. The ACP uses dry decontamination methods to the extent practical to minimize liquid releases.

Spills are accumulated in the LEC system. The LEC collection tanks are sampled and analyzed for radioactive constituents prior to being emptied. If analysis indicates that LEC tank contents meet the criteria of 10 CFR 20.2003, the contents may be discharged to the reservation sanitary sewer. Otherwise, LEC tank contents will be containerized for disposal off-site. These are the only anticipated liquid discharges of licensed material from the ACP.

Actual sanitary wastewater (i.e., excluding LEC discharges) from the ACP is not anticipated to contain licensed radioactive material. Any licensed material that may be discharged will be released in accordance with the requirements of 10 CFR 20.2003. Consequently, anticipated radionuclide concentrations in the sanitary wastewater itself are anticipated to be insignificant as defined in the SRP.

There are no anticipated radioactive effluents from the MCW system, since it is a closed-loop system with no routine blowdown. The TWC system is a standard industrial recirculating water system with a routine blowdown stream to control the accumulation of solids within the cooling water. The TWC does not come in contact with licensed material unless there is leakage from the process to the MCW and then from the MCW to the TWC. This is unlikely since the MCW lines are on the outside of the centrifuge casings. Consequently, radionuclide concentrations in the TWC blowdown are also anticipated to be insignificant as defined in the SRP.

Storm water runoff and some once-through cooling water (sanitary water) flows through two holding ponds as described in Section 9.2.1.2.2 of this chapter, then discharges to the Scioto River in accordance with 10 CFR 20.1301. Radioactive materials in these streams are dominated either by naturally occurring radioactive materials or existing contamination from previous reservation operations. ACP effluents are not expected to cause any significant difference from historic release levels, which are insignificant as defined in the SRP.

The ACP will use cylinder storage pads on the north end of the plant (X-745G-2 and X-745H). A cylinder inspection and maintenance program ensures that no licensed material is released to the storage pad. Nevertheless, runoff from the pads may drain to the existing X-230L North Holding Pond. This pond is maintained and monitored in accordance with 10 CFR 20.1301 and the monitoring data is available to the ACP. ACP operations are not expected to have any measurable impact on these ponds.

Anticipated radioactive releases from these points are summarized in Table 9.2-4, along with the limits from 10 CFR Part 20, Appendix B, Table 2 for comparison. The anticipated discharge levels are at least one order of magnitude below the Table 2 limits even before they mix with the Scioto River. Activity concentrations in the table are based on monthly grab samples from 1995 through 2000 for the X-2230M and X-2230N holding ponds. Activity concentrations for the other ACP-influenced continuous discharges are based on weekly composite samples from 1998 through 2002. Activity concentrations for the LEC system are based on the effluent being characterized prior to discharge.

No other ponds or impoundments at the ACP manage special nuclear material (SNM) and since the concentrations involved are well below the 10 CFR Part 20, Appendix B discharge limits, leakage to the soil is not a concern. The only underground tanks that potentially manage SNM are the LEC System described in Section 9.2.1.2.2 of this chapter. Inventory monitoring will be used to detect leakage from these tanks.

9.2.2.2.2 Demonstration of Compliance

Characterization of the radiological consequences of radionuclides released in liquid effluents from the ACP is accomplished by comparing measured concentrations to the values in 10 CFR Part 20, Appendix B, Tables 2 and 3 and the requirements of 10 CFR 20.1301 and 10 CFR 20.2003, as applicable. The results are incorporated into semiannual reports submitted to the NRC in accordance with 10 CFR 70.59.

Accumulated liquids in the LEC tanks are sampled for uranium and technetium prior to being removed from the tanks. ACP environmental personnel track the analytical results, volumes and disposition of the liquids. LEC liquids that do not meet the requirements of 10 CFR 20.2003 and 10 CFR Part 20, Appendix B, Table 3 are containerized for disposal at a suitable NRC-licensed site. LEC liquids that do meet the requirements of 10 CFR 20.2003 and 10 CFR Part 20, Appendix B, Table 3 may be either containerized for disposal off-site or discharged to the reservation sanitary sewer.

Sanitary wastewater from the ACP (exclusive of LEC effluents) is not expected to be contaminated with licensed material. Therefore, the ACP does not sample or analyze the untreated sewage. The sanitary sewer discharges to a sewage treatment plant located on the reservation that is regulated by both the NRC and the OEPA for radionuclides and which does sample and analyze it's effluent for uranium and technetium. This data is available to the ACP and is tracked by ACP environmental personnel against the applicable values 10 CFR Part 20, Appendix B, Table 2.

The other liquid effluent streams from the ACP are monitored as described in Section 9.2.2.2.3 of this chapter and compared to the applicable values in 10 CFR Part 20, Appendix B, Table 2 to demonstrate compliance with 10 CFR 20.1301. These streams are the TWC blowdown, X-2230M Southwest Holding Pond discharge, and X-2230N West Holding Pond discharge.

The ACP will use existing cylinder storage pads at the north end of the plant (X-745G-2 and X-745H). Runoff from the pads drain to the X-230J-5 Northwest Holding Pond and X-230L North Holding Pond, both of which are sampled and analyzed for uranium and technetium. This data is available to the ACP and these discharges will be tracked against the applicable values in 10 CFR Part 20, Appendix B, Table 2.

9.2.2.2.3 Monitoring of Liquid Release Points

There are only two ACP outfalls that discharge directly to publicly accessible areas, the X-2230M and X-2230N holding ponds. The locations of these outfalls are shown in Figure 9.2-2. The TWC blowdown discharges to a utility system (the RCW system) that provides a pathway to the Scioto River but does not provide any radiological treatment. These three discharges are equipped with automated samplers and continuous flow measurement. The flow monitors are calibrated at least annually. The combined discharge of the RCW system, the DOE reservation sewage treatment plant discharge and other reservation holding ponds are also equipped with automated samplers and continuous flow measurement. The data from these outfalls are available to the ACP as a defense in depth.

Outfall samples are analyzed for Gross Alpha and Gross Beta Activities, ^{99}Tc Activity and Total Uranium concentration as described in Section 9.2.2.5 of this chapter. Measurable Gross Alpha Activity is presumed to be due to uranium discharges from uranium enrichment operations, while Gross Alpha Activities below the Minimum Detectable Activity (MDA) are presumed to be due to naturally occurring radioactive materials. The isotopic distribution of enriched uranium discharges (i.e., ^{234}U, ^{235}U, and ^{238}U) is estimated to match the measured Gross Alpha Activity based on process knowledge. ^{99}Tc is a fission product that has contaminated much of the national fuel cycle and is present on the reservation. Measured technetium concentrations in reservation outfalls have been falling for several years, but are detected occasionally. The ACP therefore routinely monitors radioactive effluents for technetium.

The only underground tanks in the ACP used to collect material that might contain radionuclides are the tanks of the LEC system. The LEC system consists of a set of drains and collection tanks primarily for collecting leaks and spills of chemically treated water. The drains are located throughout the process buildings. The tanks have a capacity of 550 gal each. Liquid level gauges mounted above grade on pipe stands monitor the tanks. Routine monitoring of the tanks' contents is based on observing and tracking the levels indicated on the gauges. Inventory tracking is relied on to indicate any leaks from the tanks. The contents of the LEC system will be sampled and analyzed for the same parameters as the continuous outfalls prior to disposal.

If analytical results indicate that LEC contents meet the requirements of 10 CFR 20.2003, they may be released to the reservation sanitary sewer system. Otherwise they will be containerized for disposal off-site.

9.2.2.2.4 Action Levels

Action levels for control of liquid radioactive effluents from the ACP have been established based on the ALARA philosophy. The action levels described in Table 9.2-1 ensure

operational control system deficiencies are documented and acted upon in a responsible manner and in a timeframe to remain well within the regulatory limits and below ALARA goals. The BEQs used in Table 9.2-1 are the maximum effluents expected under normal operating conditions. BEQs have been established for every ACP liquid discharge point to unrestricted areas (i.e., X-2230M and X-2230N holding ponds) and for the TWC blowdown to the GDP area. BEQs have also been established for the LEC discharges, which are characterized before they are discharged, based on ten percent of the 10 CFR 20.2003 requirements. The specific BEQ values established for the ACP outfalls are listed in Table 9.2-2.

The ACP sanitary sewers, TWC blowdown, and runoff from the north cylinder storage pads discharge to NRC regulated units operated a service provider. The service provider has established and administers BEQ-based action levels for these discharges as documented in USEC-02, *United States Nuclear Regulatory Commission Certification of Compliance for the Portsmouth Gaseous Diffusion Plant*.

9.2.2.2.5 Other Permits and Licenses

Point discharges to waters of the State of Ohio are required to be authorized under a NPDES Permit issued by the Ohio EPA. There are two NPDES Permits currently issued to the site. Between them, these permits already cover all liquid discharges from the ACP. The ACP is required to submit a permit modification to collect all its discharge points into one or the other of the permits.

9.2.2.3 Waste Management

9.2.2.3.1 Waste Segregation and Collection

ACP generated wastes are collected and packaged, where feasible, by the waste generator. Wastes known to be suitable for release to unrestricted areas based on the point and process of generation are segregated at the source, when possible, from wastes not suitable for release to unrestricted areas. Wastes from areas controlled for loose radioactive contamination are considered to be potentially contaminated until characterized. Wastes requiring characterization to determine whether they may be released to unrestricted areas are segregated upon completion of such characterization.

9.2.2.3.2 Waste Packaging and Labeling

Containers known to contain radioactive waste, including packaging, are labeled in accordance with procedural requirements.

Waste is packaged in appropriate containers to meet U. S. Department of Transportation (DOT) and 10 CFR Part 71 requirements. Some general types of waste packaging include, but are not limited to:

- Solid Waste (5-, 30-, 55-, or 110-gal drums)
- Liquid Wastes (5-, 30-, or 55-gal drums)
- Corrosives, Acids (Polybottles or polydrums)
- Scrap Metal (B-25 boxes or other similar boxes, and various drums)

In addition, 85- and 110-gal overpacks may be used for appropriate wastes and damaged containers.

9.2.2.3.3 Radioactive Waste Storage

Those ACP wastes that are regulated for radiological content only are removed from the generating building and stored at an on-site radioactive waste storage area prior to final disposal. Those ACP wastes that are regulated for both radiological content and hazardous constituents and/or characteristics are stored at an on-site radioactive waste storage area under a conditional exemption for mixed waste (40 CFR Part 266, Subpart N [Federal] and Ohio Administrative Code-3745-266 [State]) prior to final disposal.

Other areas may be utilized as waste storage areas as required by plant operations. If outdoor storage is necessary, radioactive wastes with removable contamination are packaged in containers, and wrapped or covered to prevent the release of radioactivity. Storage areas are posted in accordance with procedural requirements.

Access to waste storage containers is restricted to trained personnel in accordance with 10 CFR 20.1905. Containers are inspected quarterly, at a minimum, to ensure container integrity and to identify and correct any leaks or other problems.

9.2.2.3.4 Radioactive Waste Treatment

Mixed aqueous wastes that cannot be processed on-site are stored until treatment is available at commercial treatment plants that are licensed in accordance with 10 CFR Part 61, or applicable NRC Agreement State requirements.

9.2.2.3.5 Off-site Waste Shipments

Off-site shipments of radioactive wastes are manifested in accordance with 10 CFR 20.2006. Waste shipments are packaged, labeled, and manifested in accordance with applicable State, DOT, NRC, and EPA requirements.

9.2.2.3.6 Waste Disposal

ACP generated radioactive wastes are disposed of at commercial disposal facilities that are licensed in accordance with 10 CFR Part 61 or applicable NRC Agreement State requirements. Packages are inspected prior to shipment, as appropriate, to verify compliance with applicable packaging and transportation requirements. Copies of the disposal site license are retained in accordance with procedural requirements.

Waste disposals are in compliance with 10 CFR Part 20, Subpart K. Waste disposal records are retained in accordance with 10 CFR 20.2108. Classified waste is disposed of in accordance with 10 CFR Part 95 and Security Program requirements.

9.2.2.3.7 Waste Tracking and Documentation

LLRW and LLMW generated at the ACP are tracked through a Request for Disposal system. Each waste container is given a unique identification number. The identification numbers are entered and maintained in a computer-based database. The database is updated to reflect location, characterization, treatment data, and waste disposal information.

9.2.2.3.8 Other Permits and Licenses

The ACP is classified as a large-volume generator of *Resource Conservation and Recovery Act* of 1976 hazardous wastes, which transfers solid wastes to appropriately permitted Treatment, Storage, and Disposal Facilities within 90 days.

9.2.2.4 Environmental Monitoring

The ACP is located contiguous to an existing uranium enrichment plant (the GDP) with approximately 50 years of accumulated experience in managing uranium and UF_6. The GDP was operated by the United States Enrichment Corporation, a subsidiary of USEC, from 1993 until it was placed in standby, and by predecessor organizations of the United States Enrichment Corporation prior to 1993. The environmental monitoring system for the ACP is based on the experience and data accumulated at the GDP.

9.2.2.4.1 Air Monitoring

Between 1980 and 1999, annual gaseous uranium effluents from the GDP ranged between 0.97 and 0.010 Ci/yr. Ambient air samples collected over this period by the GDP operators showed that these levels of effluents do not produce a quantifiable difference in ambient air concentrations in unrestricted areas. ACP operations are not expected to exceed these levels of effluents. Consequently, ambient air monitoring is not useful in detecting or evaluating a public impact due to routine gaseous effluents from the ACP.

In addition, experience at the GDP has shown that any release large enough to produce high or intermediate consequences will first produce a large and very visible cloud of white smoke at the point of release. The ACP has a written procedure for dealing with unplanned

releases ("See and Flee") that includes the immediate reporting of observed releases to the Operations Supervisor and evaluation by environmental professionals based on available credible information. Therefore, atmospheric impacts of ACP operations, including action levels, will be based on gaseous effluent monitoring or other credible effluent information and atmospheric dispersion modeling as described in Section 9.2.2.1 of this chapter.

The United States Enrichment Corporation ceased sampling ambient air and returned the reservation's network of permanent air samplers to DOE in 1999, which upgraded the samplers for its own purposes. Based on the DOE Annual Environmental Reports published since 1999, average airborne uranium concentrations have been 1.1×10^{-15} micrograms per milliliter (µg/mL) on-site (i.e., within the DOE reservation), 7.4×10^{-16} µg/mL in unrestricted areas, and 5.5×10^{-16} µg/mL at the DOE background station. These results are consistent with the gross activity monitoring conducted prior to the turnover/upgrade. They are also a minimum of three orders of magnitude less than the applicable discharge limits for uranium isotopes in 10 CFR Part 20, Appendix B.

The reservation maintains a meteorological tower that is located on the southern section of the reservation. The tower is equipped with instruments at the ground, 10-, 30-, and 60-meter levels. Among the parameters measured are air temperature, wind speed, wind direction, relative humidity, solar radiation, barometric pressure, precipitation, and soil temperature. Data from the National Weather Service or other local sources may be used in lieu of or to supplement reservation data.

The effluent monitoring and meteorological data are used to calculate the environmental impacts of airborne effluents from the ACP using EPA-approved dispersion models as described in Section 9.2.2.1 of this chapter.

9.2.2.4.2 Soil and Vegetation

Between 1980 and 2002, annual gaseous uranium effluents from the GDP have ranged between 0.97 and 0.005 Ci/yr. Soil and vegetation samples collected over this period by the GPD operators show that these levels of effluents do not produce a statistically significant difference in soil and vegetation concentrations in unrestricted areas. (Liquid effluents do not have a direct impact on soil and terrestrial vegetation around the reservation.) ACP operations are not expected to exceed these levels of effluents. Consequently, soil and vegetation monitoring is not useful in detecting a public impact due to gaseous effluents from the ACP. Therefore, atmospheric impacts of ACP operation, including action levels, will be based on gaseous effluent monitoring or other effluent information and atmospheric dispersion modeling as described in Section 9.2.2.1 of this chapter.

Soil and vegetation monitoring may be useful in assessing the long-term impacts of effluents from ACP operations or DOE environmental remediation projects or in assessing the impact of a high or intermediate consequence release that has already been detected and controlled. Therefore, the ACP maintains a soil and vegetation monitoring program for these purposes.

Soil and vegetation (wide-blade grass, typical of local cattle forage) samples are collected semiannually. The sampling networks completely surround the reservation, including the predominant downwind directions, and are administratively divided into on-site, off-site (up to 5 kilometers) and remote (5 to 16 kilometers off-site). A map of sampling locations in each group is provided in Figure 9.2-3. Soil samples are analyzed for gross alpha activity, gross beta activity, technetium beta activity, and total uranium concentration. Vegetation samples are analyzed for technetium beta activity and total uranium concentration. Specific details of the analytical methods are presented in Section 9.2.2.5 of this chapter. See Table 9.2-5 for a summary of the last five calendar years of soil and vegetation results (1998-2002).

In addition to the semiannual vegetation samples, the ACP also collects annual crop samples from local gardeners and farmers on a voluntary basis. Because of the voluntary nature of these samples, the sampling locations change from year to year. Crop samples are normally analyzed for technetium beta activity and total uranium concentration only. The analytical methods are the same as for the vegetation samples. No contamination has been found in crop samples.

9.2.2.4.3 Surface Water

Between 1980 and 2002, annual waterborne uranium effluents from the GDP have ranged between 0.71 and 0.026 Ci/yr. Surface water samples collected over this period by the GDP operators show that these levels of effluents do not produce a statistically significant difference in the Scioto River. ACP operations are not expected to exceed these levels of effluents. Consequently, surface water monitoring is not useful in detecting or evaluating a public impact due to liquid effluents from the ACP. Therefore, impacts of ACP operation on local receiving waters, including action levels, will be based on effluent monitoring and pathways modeling as described in Section 9.2.2.2 of this chapter.

Surface water monitoring may be useful in assessing impacts of effluents from DOE environmental remediation projects or historical contamination. The ACP maintains a surface water monitoring program for this purpose.

Radiological analyses are performed on grab samples from upstream and downstream locations in Little Beaver Creek, Big Beaver Creek, Big Run Creek, and the Scioto River. A map of the sampling locations is found in Figure 9.2-4. Samples are collected weekly from the Scioto River and one location (RW8) in Little Beaver Creek. Other locations are sampled monthly. Specific details of the analytical methods are presented in Section 9.2.2.5 of this chapter. See Table 9.2-6 for a summary of the last five calendar years of surface water results (1998-2002).

9.2.2.4.4 Sediment Monitoring

Between 1980 and 2002, annual waterborne uranium effluents from the GDP have ranged between 0.71 and 0.026 Ci/yr. Sediment samples collected over this period by the GDP operators show that these levels of effluents do not produce a statistically significant difference in the Scioto River. ACP operations are not expected to exceed these levels of effluents.

Consequently, sediment monitoring is not useful in detecting a public impact due to liquid effluents from the ACP. Therefore, impacts of ACP operation on local receiving waters, including action levels, will be based on effluent monitoring and pathways modeling as described in Section 9.2.2.2 of this chapter.

Sediment monitoring may be useful in assessing the long-term impacts of effluents from DOE environmental remediation projects or historical contamination. The ACP maintains a sediment monitoring program for this purpose.

Sediment sampling around the reservation is conducted semiannually to assess potential radionuclide accumulation in the surrounding receiving streams. The sampling locations include both upstream and downstream locations. A map of the sample locations is provided in Figure 9.2-5. Sediment sample analyses include gross alpha activity, gross beta activity, and technetium beta activity and total uranium concentration. Specific details of the analytical methods are presented in Section 9.2.2.5 of this chapter. See Table 9.2-7 for a summary of the last five calendar years of sediment results (1998-2002).

9.2.2.4.5 Groundwater

Due to historical operations, the reservation has multiple plumes of groundwater contamination. The primary contaminate in the plumes is the halogenated solvent trichloroethylene, but limited areas of technetium contamination also exist.

DOE is conducting a site-wide environmental remediation program under an Agreed Order with the State of Ohio. As part of this program, reservation groundwater monitoring is under the control of DOE and the data is reported as part of DOE's Annual Environmental Report for the reservation. The ACP does not conduct a separate groundwater monitoring program.

9.2.2.4.6 Direct Gamma Radiation Monitoring

The only significant sources of environmental gamma radiation introduced to the reservation by man are the uranium isotope ^{235}U and the short-lived ^{238}U daughters. There are small amounts of other gamma emitters present on site as sealed sources and laboratory standards, but these are not detectable at any large distance. Gamma radiation levels in unrestricted areas around the ACP are dominated by naturally occurring radioactive materials.

The reservation conducts external gamma radiation monitoring consisting of lithium fluoride thermoluminescence dosimeters (TLDs) positioned at various site locations and at locations off-site. There are nine dosimeters spaced within Perimeter Road on the reservation; eight dosimeters spaced around the reservation boundary; and two dosimeters located off-site. Maps of the TLD locations are presented in Figures 9.2-6 and 9.2-7. These dosimeters are collected and analyzed quarterly. Processing and evaluation are performed by a processor holding current accreditation from the National Voluntary Laboratory Accreditation Program of the National Institute of Standards and Technology (NIST). See Table 9.2-8 for a summary of the last five calendar years of TLD results (1998-2002).

9.2.2.5 Laboratory Standards

A National Voluntary Laboratory Accreditation Program-certified service provider processes the site's environmental TLDs as described in Section 9.2.2.4.6. A laboratory licensed/certified by the NRC or an Agreement State provides other radiological and chemical analyses. The following description is based on current services provided by the on-site X-710 building laboratory, which is licensed by the State of Ohio and certified by the NRC, but is not part of the ACP. Off-site vendors providing analytical services for the ACP will be required to meet the equivalent standards as part of the contract.

Vent samples (i.e., activated alumina) are analyzed for uranium isotopes (^{234}U, ^{235}U, and ^{238}U) and ^{99}Tc. Uranium isotope concentrations are determined using either alpha spectrometry or Inductively Coupled Plasma/Mass Spectrometry (ICP/MS). Technetium concentrations are determined using liquid scintillation counting. Analytical results are reported in micrograms of analyte per gram of alumina. These results are converted to grams released using recorded flow data and the measured weight of alumina in the sampler and to activity using published specific activities for individual isotopes. Gaseous effluents equivalent to an annual public dose of less than 0.1 mrem are routinely quantified. Since the airborne concentrations in 10 CFR Part 20, Appendix B, Table 2 are equivalent to an annual dose of 50 mrem, the MDA of these methods are equivalent to less than 0.2 percent of the 10 CFR Part 20, Appendix B, Table 2 values.

Water samples from NPDES outfalls are analyzed for gross alpha and gross beta activity, technetium beta activity, and total uranium concentration. The gross activities are determined by proportional counter and the technetium activity by liquid scintillation. The MDAs are 5×10^{-9} µCi/mL for gross alpha, 1.5×10^{-8} µCi/mL for gross beta, 2×10^{-8} µCi/mL for technetium beta. The total uranium concentration is determined by ICP/MS, with a minimum detectable concentration of 0.001 µg/mL. The isotopic distribution of the total uranium is estimated to match the calculated uranium alpha activity to the measured gross alpha activity. The Table 2 values for liquid releases are 3×10^{-7} µCi/mL for each of the uranium isotopes and 6×10^{-5} µCi/mL for technetium. Consequently, the MDAs for liquid effluents are less than two percent of the applicable 10 CFR Part 20, Appendix B, Table 2 values.

Environmental samples are analyzed for gross activities by proportional counter and technetium activity by liquid scintillation. To accommodate a data sharing agreement with DOE, uranium concentrations in environmental samples are determined by alpha spectrometry. The minimum detectable activities/concentrations are comparable to those for effluent samples.

Laboratory quality control (QC) includes the use of a dedicated Chain of Custody system, formal written procedures, NIST-traceable standards, matrix spikes, duplicate, and replicate samples, check samples, and blind and double-blind QC samples.

Any laboratory providing analytical services to the ACP will be required to participate in at least one laboratory intercomparison program covering each type of analysis contracted for. Intercomparision programs that the United State Enrichment Corporation's X-710 building laboratory currently participates in include: the EPA Discharge Monitoring Report Study;

National Institute of Occupational Safety and Health (NIOSH) Proficiency Analytical Testing Program; EPA Water Pollution Performance Evaluation Study; EPA Water Supply Study; NIOSH Environmental Lead Proficiency Analytical Testing Program; Proficiency Environmental Testing program, a commercial program sponsored by the Analytical Products Department of Belpre, Ohio; DOE Environmental Measurements Laboratory Radionuclide Quality Assessment Program; and DOE's Mixed Analyte Performance Evaluation Program.

9.2.2.6 Description of Status of Federal/State/Local Permits/Licenses

The ACP must comply with the applicable regulations under the *Atomic Energy Act* of 1954, as amended; 10 CFR Part 40; and 10 CFR Part 70 to hold a license to possess and use source and SNM. In addition, the ACP must comply with pertinent NRC regulations in 10 CFR Part 20 related to radiation dose limits to individual workers and members of the public. USEC is submitting an Environmental Report to the NRC in accordance with 10 CFR Part 51.

As described in previous sections, the ACP will require PTIs from the State of Ohio to install all new air emission sources followed by a modification to the existing Title V air permit for the operation of those sources. The ACP will also be subject to the Radionuclide NESHAP administered by the EPA Region V. An additional PTI from the State of Ohio will be needed if the ACP installs any new wastewater lines. A modification to the existing NPDES permit will be needed to allow construction and operation of the ACP by USEC. These are the only Federal, State and local permits or other authorizations that USEC expects will be necessary for the ACP. Table 9.2-9 gives a full listing of the Federal, State and local permits and other authorizations and consultations that potentially could be required and the current status of each.

The ACP permit and reporting requirements will be incorporated and administered in the United States Enrichment Corporation permits and reporting requirements until a like USEC compliance organization is established. The Lead Cascade Demonstration Facility, X-3001 purge vacuum and evacuation vacuum system, is currently incorporated in the United States Enrichment Corporation Title V air permit (PTI number 06-07470).

Informal consultations have been made with the responsible agencies in compliance with the following:

- Section 7 of the *Endangered Species Act*
- *Fish and Wildlife Coordination Act*
- *National Historic Preservation Act* (NHPA), Section 106
- *Farmland Protection Policy Act* (FPPA)/Farmland Conservation Impact Rating

Consultation letters and responses are included in Appendix B of the accompanying Environmental Report.

9.2.3 Integrated Safety Analysis Summary

An Integrated Safety Analysis (ISA) Summary, meeting the requirements of 10 CFR 70.65(b), was prepared in accordance with the guidance contained in Chapter 3.0 of the SRP and NUREG-1513, *Integrated Safety Analysis Guidance Document*. The ISA Summary for the American Centrifuge Plant is submitted for review (separate from this license application) as document LA-3605-0003, Integrated Safety Analysis Summary for the American Centrifuge Plant.

9.3 Reports to the Nuclear Regulatory Commission

9.3.1 10 *Code of Federal Regulations* 70.59 Reports

The ACP submits a written report to the NRC Regional Office and the Office of Nuclear Material Safety and Safeguards by March 1 and August 30 of the each year detailing: uranium and technetium (if any) amounts and concentrations in gaseous and liquid effluents during the previous reporting period (July through December and January through June, respectively) in accordance with 10 CFR 70.59. These reports also include an estimate of the public dose due to gaseous effluents over the previous year.

9.3.2 National Emission Standards for Hazardous Air Pollutants Reports

The ACP submits a written report to the EPA, OEPA, NRC Regional Office and Office of Nuclear Material Safety and Safeguards by June 30 of each year detailing: plant operations and gaseous effluent monitoring during the previous calendar year, gaseous radioactive effluents over the previous year, an assessment of the public TEDE caused by those effluents, and an explicit comparison of the calculated TEDE to the EPA public dose limit (10 mrem annually). This report would become monthly if the maximum public TEDE exceeds 10 mrem annually.

This report is required under 40 CFR 61.94 and by the conditions of the Title V Permit issued by the State of Ohio. It also fulfills the requirement to demonstrate of compliance with 10 CFR 20.1301 and 10 CFR 20.1101 as described in Section 9.2.2.1.2 of this chapter.

9.3.3 Baseline Effluent Quantity Reports

The ACP assesses any weekly effluent that exceeds any of the action levels as described in Table 9.2-1. Many years of experience by the GDP operators have shown that radioactive effluents less than the action levels in Table 9.2-1 cannot produce a public radiation dose that is within an order of magnitude of the dose restriction in 10 CFR 20.1101, let alone the dose limit of 10 CFR 20.1301. Any weekly effluent that exceeds the action levels in Table 9.2-1 requires a written estimate of the probable impact of the effluent, in conjunction with other monitored effluents from ACP operations, on the annual public radiation dose.

These reports are available on request by the NRC. They are not routinely submitted to outside authorities because they are considered interim assessments that are superceded by the

semiannual reports and annual public dose assessment described in Sections 9.3.1 and 9.3.2 of this chapter.

In the event that evaluated releases threaten to exceed the public dose constraint in 10 CFR 20.1101, the NRC will be notified according to written procedures.

9.4 References

1. LA-3605-0002, Environmental Report for the American Centrifuge Plant

2. NUREG-1520*, Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility*

3. U.S. Department of Energy, Portsmouth Annual Environmental Report for 2000, DOE/OR/11-3077&D1, December 2001

4. U.S. Department of Energy, Portsmouth Annual Environmental Report for 2001, DOE/OR/11-3106&D1, November 2002

5. Regulatory Guide 1.109, *Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I*, October 1977

6. USEC-02, United States Nuclear Regulatory Commission Certification of Compliance for the Portsmouth Gaseous Diffusion Plant

7. LA-3605-0003, Integrated Safety Analysis Summary for the American Centrifuge Plant

Table 9.2-1 American Centrifuge Plant Action Levels for Radionuclide Effluents

Weekly Sample Results Uranium [a]	Weekly Sample Results Technetium [a]	Required Actions [b]
BEQ	BEQ	Review release data for previous six months for trends, and estimate probable impact over calendar year. Evaluate whether additional controls would significantly reduce public exposure.
10 x BEQ or 2 x BEQ averaged over 6 months	80 x BEQ or 16 x BEQ averaged over 6 months	Determine whether increased releases are ongoing or a single spike. Initiate investigation into cause(s) of increased releases. Evaluate whether mitigative and/or corrective measures are necessary to reduce public dose. Implement mitigative and/or corrective measures as needed.
EPA Reportable Quantity[c] (RQ) (0.1 Ci in 24 hours)	EPA RQ[c] (10 Ci in 24 hours)	Notify Operations Supervisor Trace source of abnormal releases and establish control or shutdown as needed. If releases cannot be mitigated within 24 hours, elevate to next level.
1 Ci[d]	8 Ci[d]	Close affected discharge points until control of releases is re-established.

[a] Uranium has an approximately 8-fold greater dose rate response than ^{99}Tc over air dominated exposure pathways. Uranium dose response completely dominates ^{99}Tc over water dominated exposure pathways.

[b] Required actions for any level include required actions listed under lower emission levels.

[c] RQ does not include permitted emissions. The ACP is regulated under 40 CFR Part 61, Subpart H for release of airborne radionuclides from the entire reservation up to the equivalent of 10 mrem/year TEDE to the most exposed member of the public.

[d] 1 Ci or 8 Ci in one weekly sample analysis.

Note: The Operations Supervisor has the authority to allow a restart.

Table 9.2-2 Baseline Effluent Quantities for American Centrifuge Plant Discharges

<table>
<tr><th>Release Point</th><th>Total Uranium</th><th>Technetium</th></tr>
<tr><td colspan="3">Vents</td></tr>
<tr><td>X-3001 North Vent</td><td>0.2 mCi/week</td><td>0.1 mCi/week [a]</td></tr>
<tr><td>X-3001 South Vent</td><td>0.2 mCi/week</td><td>0.1 mCi/week [a]</td></tr>
<tr><td>X-3002 North Vent</td><td>0.2 mCi/week</td><td>0.1 mCi/week [a]</td></tr>
<tr><td>X-3002 South Vent</td><td>0.2 mCi/week</td><td>0.1 mCi/week [a]</td></tr>
<tr><td>X-3346 Feed Area Vent</td><td>0.02 mCi/week</td><td>0.1 mCi/week [a]</td></tr>
<tr><td>X-3346 Customer Services Area Vent</td><td>0.02 mCi/week</td><td>0.1 mCi/week [a]</td></tr>
<tr><td>X-3356 Tails Area Vent</td><td>0.02 mCi/week</td><td>0.1 mCi/week [a]</td></tr>
<tr><td>X-3356 Product Area Vent</td><td>0.02 mCi/week</td><td>0.1 mCi/week [a]</td></tr>
<tr><td>X-7725 Gas Test Stands Vent</td><td>0.01 mCi/week</td><td>0.1 mCi/week [a]</td></tr>
<tr><td colspan="3">Outfalls</td></tr>
<tr><td rowspan="2">LEC Effluents [b]</td><td>3×10^{-7} FCi/ mL or</td><td>6×10^{-5} FCi/ mL or</td></tr>
<tr><td colspan="2">0.1 Ci/year</td></tr>
<tr><td>X-2230N West Holding Pond (NPDES 012)</td><td>2.5×10^{-8} FCi/ mL</td><td>1.0×10^{-7}FCi/ mL</td></tr>
<tr><td>X-2230M Southwest Holding Pond (NPDES 013)</td><td>2.5×10^{-8} FCi/ mL</td><td>1.0×10^{-7}FCi/ mL</td></tr>
<tr><td>TWC System Blowdown</td><td>5.9×10^{-8} FCi/ mL</td><td>1.0×10^{-7}FCi/ mL</td></tr>
<tr><td colspan="3">[a] Technetium BEQs for vents are based on five times the MDA.</td></tr>
<tr><td colspan="3">[b] LEC effluents are characterized <u>before</u> being discharged to the site sanitary sewer. The 100 mCi/yr standard includes uranium and technetium isotopes discharged to the site sanitary sewer during a calendar year.</td></tr>
</table>

Table 9.2-3 Anticipated Gaseous Effluents

Discharge Point	Total Uranium [a]		Technetium	
	FCi/ mL [b]	mCi/wk [c]	FCi/ mL [b]	mCi/wk [c]
X-3346 Feed and Customer Services Building (2 vents)		<0.04		0
X-3001 and X-3002 Process Buildings (4 vents)		<0.8		0
X-3356 Product and Tails Withdrawal Building Vent (2 vents)	$<3.2 \times 10^{-15}$	<0.04	1.2×10^{-16}	0
X-7725 Gas Test Stands Vent		<0.01		0
XT-847 Glovebox Vent		0.0004		0.005
Laboratory Hoods [d]		0.17		0.035
10 CFR Part 20, App. B, Table 2	3×10^{-12}	------	8×10^{-9}	------

[a] Since uranium isotopes present at the ACP have the same discharge limit, uranium isotope activities are combined into a Total Uranium activity for simplify comparison to the Table 2 limits.

[b] Anticipated concentrations are maximum ambient concentrations at the DOE reservation boundary due to emission sources and are based on emission estimates and atmospheric dispersion modeling. Anticipated technetium concentration is based on no detectable releases from the X-7725 facility and X-3000 series buildings.

[c] Anticipated discharges are measured at the vent and, by definition, are less than the Baseline Effluent Quantities. Anticipated technetium discharges from the X-7725 facility and X-3000 series buildings are zero.

[d] Bounding case for associated analytical services.

Table 9.2-4 Anticipated Liquid Effluents [a]

Discharge Point	**Total Uranium [b]** FCi/ mL	**Technetium** FCi/ mL
LEC Effluents	$<3 \times 10^{-7}$ and <0.1 Ci/yr	$<2 \times 10^{-8}$ (<MDA)
TWC System Blowdown	$<3 \times 10^{-8}$	$<2 \times 10^{-8}$ (<MDA)
X-2230N West Holding Pond (NPDES Outfall 012) [e]	$<1 \times 10^{-8}$	$<2 \times 10^{-8}$ (<MDA)
X-2230M Southwest Holding Pond (NPDES Outfall 013) [e]	$<1 \times 10^{-8}$	$<2 \times 10^{-8}$ (<MDA)
Sanitary wastewater (excluding LEC effluents)	$<3 \times 10^{-8}$	$<2 \times 10^{-8}$ (<MDA)
North Cylinder Pad Runoff	$<1 \times 10^{-8}$	$<2 \times 10^{-8}$ (<MDA)
10 CFR Part 20, App. B, Table 2	3×10^{-7}	6×10^{-5}
10 CFR Part 20, App. B, Table 3	3×10^{-6}	6×10^{-4}

[a] ACP contributions only. Combined effluents from other site operations remain the responsibility of the individual operator.

[b] Since uranium isotopes present at the ACP have the same discharge limit, uranium isotope activities are combined into a Total Uranium activity to simplify comparison to the Table 2 limits.

[c] By definition, anticipated activity discharges are less than the BEQ.

[d] LEC effluents are characterized prior to discharge. One Ci/yr limit applies to combined uranium and technetium activities.

[e] Anticipated concentrations are annual averages based on monthly grab samples from 1995 through 2000.

Table 9.2-5 Environmental Baseline Activities/Concentrations 1998-2002

	Total Uranium µg/g	**Technetium** pCi/g	**Gross Alpha** pCi/g	**Gross Beta** pCi/g
Reservation (9 Sampling Locations) Soil				
Num. of Samples	117 (0)	117 (93)	117 (59)	117 (64)
Average	2.8	<0.2	<8	<14
Minimum	0.6	<0.1	<2	8
Maximum	4.4	1.5	21	36
Vegetation				
Num. of Samples	116 (113)	116 (103)	-----	-----
Average	<0.25	<0.3	-----	-----
Minimum	<0.04	<0.1	-----	-----
Maximum	0.9	7.3	-----	-----
Off Reservation (6 Sampling Locations) Soil				
Num. of Samples	74 (0)	74 (32)	74 (38)	74 (41)
Average	2.9	<0.2	<7	<14
Minimum	0.7	<0.1	<2	<8
Maximum	4.6	3.8	14	47
Vegetation				
Num. of Samples	73 (73)	73 (61)	-----	-----
Average	<0.24	<0.3	-----	-----
Minimum	<0.05	<0.1	-----	-----
Maximum	<0.34	3.3	-----	-----

The “number of samples” shows the total number of samples collected, including replicate and duplicate samples collected for quality assurance (QA) purposes, followed by the number of samples that were lower than the Minimum Detectable Concentration in parentheses. QA sample locations for soil and vegetation are assigned independently, so the number of samples in each group does not necessarily match.

Table 9.2-5 Environmental Baseline Activities/Concentrations 1998-2002

	Total Uranium µg/g	**Technetium** pCi/g	**Gross Alpha** pCi/g	**Gross Beta** pCi/g
Remote (12 Sampling Locations) Soil				
Num. of Samples	139 (0)	139 (133)	139 (73)	139 (77)
Average	3.0	<0.2	<7	<14
Minimum	0.7	<0.1	<3	<7
Maximum	5.9	0.8	16	22
Vegetation				
Num. of Samples	137 (80)	137 (128)	-----	-----
Average	<0.23	<0.2	-----	-----
Minimum	0.08	<0.1	-----	-----
Maximum	<0.28	<0.5	-----	-----
Background (4 Sampling Locations) Soil				
Num. of Samples	40 (0)	40 (36)	40 (17)	40 (26)
Average	3.5	<0.2	<8	<14
Minimum	1.7	<0.1	<5	<8
Maximum	6.8	0.5	16	25
Vegetation				
Num. of Samples	40 (23)	40 (37)	-----	-----
Average	<0.24	<0.2	-----	-----
Minimum	<0.14	<0.1	-----	-----
Maximum	0.28	0.5	-----	-----

The "number of samples" shows the total number of samples collected, including replicate and duplicate samples collected for QA purposes, followed by the number of samples that were lower than the Minimum Detectable Concentration in parentheses. QA sample locations for soil and vegetation are assigned independently, so the number of samples in each group does not necessarily match.

Table 9.2-6 Environmental Baseline Activities/Concentrations 1998 - 2002

	Total Uranium µg/L	**Technetium** pCi/L	**Gross Alpha** pCi/L	**Gross Beta** pCi/L
Surface Water/Upstream Big Run Creek				
Num. of Samples	60 (56)	60 (60)	60 (57)	60 (39)
Average	<1.3	<15	<5	<13
Minimum	<0.1	<6	<1	<6
Maximum	23.5	<28	<8	30
Surface Water/Downstream Big Run Creek				
Num. of Samples	118 (68)	118 (116)	118 (106)	118 (82)
Average	<1.5	<15	<6	<13
Minimum	0.2	<6	1	6
Maximum	23.2	<28	<140	33
Surface Water/Upstream Little Beaver Creek				
Num. of Samples	60 (59)	60 (60)	60 (56)	60 (41)
Average	<0.9	<15	<5	<11
Minimum	<0.1	<6	<1	<6
Maximum	1.3	<28	<12	<22
Surface Water/Downstream Little Beaver Creek				
Num. of Samples	321 (34)	322 (246)	322 (182)	322 (101)
Average	<1.7	<16	<6	<15
Minimum	<0.6	<8	2	<7
Maximum	9.4	43	44	78
Surface Water/Upstream Big Beaver Creek				
Num. of Samples	60 (36)	60 (58)	60 (48)	60 (25)
Average	<1.2	<16	<5	<14
Minimum	0.3	<8	2	<7
Maximum	5.8	<28	37	62

The "number of samples" shows the total number of samples collected, including replicate and duplicate samples collected for QA purposes, followed by the number of samples that were lower than the Minimum Detectable Concentration in parentheses.

Table 9.2-6 Environmental Baseline Activities/Concentrations 1998 - 2002

	Total Uranium µg/L	**Technetium** pCi/L	**Gross Alpha** pCi/L	**Gross Beta** pCi/L
Surface Water/Downstream Big Beaver Creek				
Num. of Samples	60 (50)	60 (58)	60 (51)	60 (36)
Average	<1.1	<16	<6	<14
Minimum	<0.1	<6	<1	<6
Maximum	5.2	<28	72	108
Surface Water/Upstream Scioto River				
Num. of Samples	261 (8)	261 (251)	261 (213)	261 (151)
Average	<1.9	<15	<6	<13
Minimum	<1.0	<6	2	<6
Maximum	32.6	<28	<13	40
Surface Water/Downstream Scioto River				
Num. of Samples	261 (6)	261 (254)	261 (206)	261 (156)
Average	<1.8	<16	<6	<13
Minimum	<1.0	<6	2	<7
Maximum	9.5	<29	86	34
Surface Water/Background Creeks				
Num. of Samples	240 (214)	240 (237)	240 (223)	240 (179)
Average	<1.0	<16	<4	<11
Minimum	<0.1	<6	<1	<6
Maximum	6.9	114[a]	11	46

The "number of samples" shows the total number of samples collected, including replicate and duplicate samples collected for QA purposes, followed by the number of samples that were lower than the Minimum Detectable Concentration in parentheses.

[a] One sample from a background location was analyzed at 114 picocuries per liter (pCi/L) of technetium, a beta emitter, but only 12 pCi/L of gross beta activity. The technetium activity is believed to be a case of cross contamination. The next highest technetium activity at the background locations was 28 pCi/L.

Table 9.2-7 Environmental Baseline Activities/Concentrations 1998 - 2002

	Total Uranium µg/g	**Technetium** pCi/g	**Gross Alpha** pCi/g	**Gross Beta** pCi/g
Sediment/X-2230M Southwest Holding Pond Discharge				
Num. of Samples	10 (0)	10 (6)	10 (4)	10 (4)
Average	3.8	<0.2	<9	<16
Minimum	1.8	<0.1	<4	<7
Maximum	6.2	0.3	18	<36
Sediment/X-2230N West Holding Pond Discharge				
Num. of Samples	13 (0)	13 (4)	13 (4)	13 (11)
Average	3.2	<0.3	<7	<11
Minimum	2.3	<0.1	<3	<7
Maximum	4.9	0.6	10	<17
Sediment/Upstream Little Beaver Creek				
Num. of Samples	15 (0)	15 (13)	15 (6)	15 (11)
Average	2.8	<0.1	<7	<13
Minimum	1.5	<0.1	<4	<7
Maximum	5.7	0.2	11	18
Sediment/X-230J-7 Discharge				
Num. of Samples	17 (0)	17 (0)	17 (7)	17 (4)
Average	5.9	7.1	<16	<32
Minimum	2.7	0.7	<5	<7
Maximum	21.2	31.3	83	170
Sediment/Downstream Little Beaver Creek				
Num. of Samples	28 (0)	28 (6)	28 (3)	28 (9)
Average	7.0	<64.5	<17	<85
Minimum	1.8	<0.1	<5	<10
Maximum	35.1	801[a]	61	924

The "number of samples" shows the total number of samples collected, including replicate and duplicate samples collected for QA purposes, followed by the number of samples that were lower than the Minimum Detectable Concentration in parentheses.

Table 9.2-7 Environmental Baseline Activities/Concentrations 1998 - 2002

	Total Uranium µg/g	**Technetium** pCi/g	**Gross Alpha** pCi/g	**Gross Beta** pCi/g
Sediment/Upstream Big Beaver Creek				
Num. of Samples	10 (0)	10 (2)	10 (4)	10 (6)
Average	2.1	<0.3	<7	<13
Minimum	0.9	<0.1	<5	<7
Maximum	4.6	0.7	9	25
Sediment/Downstream Big Beaver Creek				
Num. of Samples	10 (0)	10 (0)	10 (1)	10 (2)
Average	4.0	4.7	<11	<18
Minimum	2.8	1.1	<6	<12
Maximum	5.5	14.6	33	24
Sediment/Upstream Big Run Creek				
Num. of Samples	11 (0)	11 (8)	11 (3)	11 (8)
Average	3.8	<0.2	<7	<13
Minimum	2.3	<0.1	4	9
Maximum	4.8	<0.2	13	<17
Sediment/Downstream Big Run Creek				
Num. of Samples	29 (0)	29 (6)	29 (6)	29 (18)
Average	4.1	<0.8	<9	<14
Minimum	1.1	<0.1	<4	<7
Maximum	5.9	2.7	33	28
Sediment/Upstream Scioto River				
Num. of Samples	11 (0)	11 (11)	11 (7)	11 (8)
Average	2.1	<0.1	<7	<12
Minimum	0.9	<0.1	3	<7
Maximum	4.6	<0.2	<9	<17

The "number of samples" shows the total number of samples collected, including replicate and duplicate samples collected for QA purposes, followed by the number of samples that were lower than the Minimum Detectable Concentration in parentheses.

Table 9.2-7 Environmental Baseline Activities/Concentrations 1998 - 2002

	Total Uranium µg/g	**Technetium** pCi/g	**Gross Alpha** pCi/g	**Gross Beta** pCi/g
Sediment/Downstream Scioto River				
Num. of Samples	10 (0)	10 (8)	10 (5)	10 (6)
Average	2.1	<0.2	<9	<14
Minimum	1.4	<0.1	5	<8
Maximum	4.4	0.4	17	19
Sediment/Background Creeks				
Num. of Samples	40 (0)	40 (37)	40 (22)	40 (25)
Average	3.2	<0.2	<6	<13
Minimum	1.3	<0.1	<3	<7
Maximum	6.8	2.7	13	24

The "number of samples" shows the total number of samples collected, including replicate and duplicate samples collected for QA purposes, followed by the number of samples that were lower than the Minimum Detectable Concentration in parentheses.

[a] In Fall 2002, duplicate samples taken at the RM8 sample point contained 689 and 801 pCi/g of technetium. A replicate sample taken at the same time and a few yards away contained only 13 pCi/g of technetium. The RM8 sample taken the following spring contained only 13 pCi/g, which is consistent with previous samples.

Table 9.2-8 Environmental Baseline Radiation Levels 1998-2002

Area of Readings	Average	Minimum	Maximum
Reservation	10.6 µRad/hr	6.2 µRad/hr	17.9 µRad/hr
X-746 Cylinder Yard	70.8 µRad/hr	60.1 µRad/hr	85.3 µRad/hr
Boundary	10.6 µRad/hr	6.2 µRad/hr	25.3 µRad/hr
Piketon	8.8 µRad/hr	6.1 µRad/hr	13.9 µRad/hr
Camp Creek	9.4 µRad/hr	6.0 µRad/hr	14.9 µRad/hr

Table 9.2-9 Potentially Applicable Consents for the Construction and Operation of the American Centrifuge Plant

License, Permit, or Other Consent	Responsible Agency	Authority	Relevance and Status
Air Quality Protection			
Title V Operating Permit: Required for sources that are not exempt and are major sources, affected sources subject to the Acid Rain Program, sources subject to new source performance standards (NSPS), or sources subject to National Emission Standards for Hazardous Air Pollutants (NESHAPs).	Ohio Environmental Protection Agency (OEPA); U.S. Environmental Protection Agency (EPA)	*Clean Air Act* (CAA), Title V, Sections 501-507 (*U.S. Code*, Title 42, Sections 7661-7661f [42 USC 7661-7661f]); *Ohio Administrative Code* (OAC) 3745-77-02	United States Enrichment Corporation is the holder of a final Title V Operating Permit (Facility ID 0666000000) with an issue date of July 31, 2003 and effective date of August 21, 2003. The plant is subject to *Code of Federal Regulations*, Title 40, Part 61, Subpart H (40 CFR Part 61, Subpart H), "National Emissions Standards for Emissions of Radionuclides which is included in the terms and conditions of the Title V Operating Permit.
Ohio Permit to Install (PTI): Required for (1) any source to which one or more of the following CAA programs would apply: prevention of significant deterioration (PSD), nonattainment area, NSPS, and/or NESHAPs; and (2) any source to which one or more of the following state air quality programs would apply; Gasoline Dispensing Facility Permit, Direct Final Permit, and/or Small Maximum Uncontrolled Emissions Unit Registration.	OEPA	CAA, Title I, Sections 160-169 (42 USC 7470-7479); OAC 3745-31-02	USEC has determined that the PSD, nonattainment area, and NSPS programs do not apply to the ACP. However, air emission sources requiring an Ohio PTI would apply to the ACP and USEC will submit a timely PTI application to the OEPA.

Table 9.2-9 Potentially Applicable Consents for the Construction and Operation of the American Centrifuge Plant

License, Permit, or Other Consent	Responsible Agency	Authority	Relevance and Status
Air Quality Protection (Cont.)			
Ohio Permit to Operate: Required for (1) any source to which one or more of the following CAA programs would apply; PSD, nonattainment area, NSPS, NESHAPs; and (2) any source to which one or more of the following state air quality programs would apply: State Permit to Operate and/or registration of operating unit with potential air emissions of an amount and type considered minimal; this permit is not required, however, for any facility that must obtain a Title V Operating Permit.	OEPA	CAA, Title I, Sections 160-169 (42 USC 7470-7479); OAC 3745-35-02	United States Enrichment Corporation is the holder of a final Title V Operating Permit (Facility ID 0666000000) with an issue date of July 31, 2003 and effective date of August 21, 2003. Sources requiring a PTI will be incorporated in the Title V Operating Permit.
Risk Management Plan (RMP): Required for any stationary source that has regulated substance (e.g., chlorine, hydrogen fluoride, nitric acid) in any process (including storage) in a quantity that is over the threshold level.	EPA; OEPA	CAA, Title 1, Section 112(r)(7) (42 USC 7412); 40 CFR Part 68; OAC 3745-104	USEC has determined that no regulated substances would be stored at the ACP in quantities that exceed the threshold levels. Accordingly, an RMP will not be required.

Table 9.2-9 Potentially Applicable Consents for the Construction and Operation of the American Centrifuge Plant

License, Permit, or Other Consent	Responsible Agency	Authority	Relevance and Status
Air Quality Protection (Cont.)			
CAA Conformity Determination: Required for each criteria pollutant (i.e., sulfur dioxide, particulate matter, carbon monoxide, ozone, nitrogen dioxide, and lead) where the total of direct and indirect emissions in a nonattainment or maintenance area caused by a federal action would equal or exceed threshold rates.	OEPA	CAA, Title 1, Section 176 (c) (42 USEC 7506); 40 CFR 93; OAC 3745-102;	Pike County, Ohio has been designated as "Cannot be Classified or Better Than Standard" for criteria pollutants. Because the county is in attainment with National Ambient Air Quality Standards for criteria pollutants and contains no maintenance areas, no CAA conformity determination is required for any criteria pollutant that would be emitted as a result of the proposed action. Existing air quality on the site is in attainment with National Ambient Air Quality Standards (NAAQS) for the criteria pollutants.
Water Resources Protection			
National Pollutant Discharge Elimination System (NPDES) Permit – Construction Site Storm Water: Required before making point source discharges into waters of the state of storm water from a construction project that disturbs more than 5 acres (2 ha) of land.	OEPA	*Clean Water Act* (CWA) (33 USC 1251 et seq.); 40 CFR Part 122; OAC-3745-33-02, 3745-38-02, and 3745-38-06	USEC has determined that construction of the ACP and new cylinder storage yards would require an NPDES Permit for the construction site storm water discharges. United States Enrichment Corporation is the holder of NPDES Permit number 0IS00023AD. If requested, a Storm Water Pollution Prevention Plan (SWPP) will be submitted to the OEPA at the appropriate time. Storm water will discharge through existing outfalls covered by a NPDES Permit.

Table 9.2-9 Potentially Applicable Consents for the Construction and Operation of the American Centrifuge Plant

License, Permit, or Other Consent	Responsible Agency	Authority	Relevance and Status
Water Resources Protection (Cont.)			
National Pollutant Discharge Elimination System (NPDES) Permit – Industrial Facility Storm Water: Required before making point source discharges into waters of the state of storm water from an industrial site.	OEPA	CWA (33 USC 1251 et seq.); 40 CFR Part 122; OAC-3745-33-02, 3745-38-02, and 3745-38-06	USEC has determined that storm water would be discharged from the ACP site during operations. Storm water will discharge through existing outfalls covered by a NPDES Permit.
National Pollutant Discharge Elimination System (NPDES) Permit – Process Water Discharge: Required before making point source discharges into waters of the state of industrial process wastewater.	OEPA	CWA (33 USC 1251 et seq.); 40 CFR Part 122; OAC-3745-33-02, 3745-38-02, and 3745-38-06	The ACP will process industrial wastewater through an existing NPDES permitted facility and through existing outfalls covered by the NPDES Permit.
Ohio Surface Water PTI: Required before constructing sewers or pump stations.	OEPA	OAC-3745-31-02	If required, before construction of sewer lines and pump stations at the ACP a PTI to modify the existing NPDES permit would be submitted to the OEPA at the appropriate time.
Ohio Surface Water PTI: Required before constructing any wastewater treatment or collection system or disposal facility.	OEPA	OAC-3745-31-02	If required, a PTI to modify the existing NPDES permit would be submitted to the OEPA at the appropriate time.

Table 9.2-9 Potentially Applicable Consents for the Construction and Operation of the American Centrifuge Plant

License, Permit, or Other Consent	Responsible Agency	Authority	Relevance and Status
Water Resources Protection (Cont.)			
CWA Section 404 (Dredge and Fill) Permit: Required to place dredged or fill material into waters of the United States, including areas designated as wetlands, unless such placement is exempt or authorized by a nationwide permit or a regional permit; a notice must be filed if a nationwide or regional permit applies.	U.S. Army Corps of Engineers (USACE)	CWA (33 USC 1251 et seq.); 33 CFR Parts 323 and 330	USEC believes that construction of the ACP would not result in dredging or placement of fill material into wetlands within the jurisdiction of the USACE. If construction activities are subject to the CWA Section 404 Permit program, they may be covered under a USACE Nationwide CWA Section 404 Permit (i.e., No. 14 [Linear Transportation Projects], 18 [Minor Discharges], or 19 [Minor Dredging]). If necessary, USEC will consult with the USACE concerning the project and, if appropriate, submit either a pre-construction notification about activities covered by a nationwide permit or an application for an individual Section 404 Permit.
Ohio General Permit for Filling Category 1 and Category 2 Isolated Wetlands: Required where the proposed project involves the filling or discharge of dredged material into Category 1 and Category 2 isolated wetlands, causing impacts that total 0.5 acre (0.20 ha) or less.	OEPA	*Ohio Revised Code* (ORC) Sections 6111.021-6111.029	USEC believes that construction of the ACP would not result in dredging or placement of fill material into wetlands within the jurisdiction of the OEPA isolated wetlands program. However, if necessary, submit to the OEPA a Pre-Activity Notice of activities covered under the General Permit for Filling Isolated Wetlands.

Table 9.2-9 Potentially Applicable Consents for the Construction and Operation of the American Centrifuge Plant

License, Permit, or Other Consent	Responsible Agency	Authority	Relevance and Status
Water Resources Protection (Cont.)			
Ohio Individual Isolated Wetland Permit: Required where the proposed project involves the filling or discharge of dredged material into Category 1 and Category 2 isolated wetlands, causing impacts that total greater than 0.5 acre (0.20 ha) for Category 1 isolated wetlands and/or greater than 0.5 acre (0.20 ha) but not exceeding 3 acres (1.21 ha) for Category 2 isolated wetlands.	OEPA	ORC Sections 6111.021-6111.029	USEC believes that construction of the ACP would not result in dredging or placement of fill material into wetlands within the jurisdiction of the OEPA isolated wetlands program. Accordingly, USEC will consult, if necessary, with the OEPA concerning the project and, if appropriate, submit to the OEPA an application for an Individual Isolated Wetland Permit.
Spill Prevention Control and Countermeasures (SPCC) Plan: Required for any facility that could discharge oil in harmful quantities into navigable waters or onto adjoining shorelines.	EPA	CWA (33 USC 1251 et seq.); 40 CFR Part 112	A SPCC plan would be required. USEC will revise the existing SPCC plan to include ACP operations at the appropriate time (POEF-EW-17 current version).
CWA Section 401 Water Quality Certification: Required to be submitted to the agency responsible for issuing any federal license or permit to conduct an activity that may result in a discharge of pollutants into waters of a state.	OEPA	CWA, Section 401 (33 USC 1341); ORC Chapters 119 and 6111; OAC Chapters 3745-1, 3745-32, and 3745-47	USEC believes that it would not be required to obtain a CWA Section 401 Water Quality Certification for construction or operation of the ACP or new cylinder storage yards. If USEC determines that a federal license or permit is required (e.g., a CWA Section 404 Permit), a CWA Section 401 Water Quality Certification will be requested from the OEPA at the appropriate time.

Table 9.2-9 Potentially Applicable Consents for the Construction and Operation of the American Centrifuge Plant

License, Permit, or Other Consent	Responsible Agency	Authority	Relevance and Status
Water Resources Protection (Cont.)			
Public Water System: A completed application for an initial public water system license is required prior to the operation of the public water system.	OEPA	OAC-3745-84-01(B)(b)	USEC will procure services from a qualified vendor.
Underground Storage Tank (UST) Installation Permit: Required before beginning installation of a UST system (i.e., a tank and/or piping of which 10 percent or more of the volume is underground and that contains petroleum products or substances defined as hazardous by the Comprehensive Environmental Response, Compensation, and Liability Act [CERCLA], except those hazardous substances that are also defined as hazardous waste by the RCRA).	Ohio Department of Commerce, Ohio Bureau of Underground Storage Tank Regulations (BUSTR)	OAC 1301:7-9-06(D)	Two UST systems are installed at the ACP. Registration number: 66005107-R00010 Tank Number: T00007 T00016
New UST System Registration: Required within 30 days of bringing a new UST system into service.	EPA; Ohio BUSTR	RCRA, as amended, Subtitle I (42 USC 6991a-6991i); 40 CFR 280.22; OAC 1301:7-9-04	If new UST systems would be installed at the ACP the Registration would be filed at the appropriate time.

Table 9.2-9 Potentially Applicable Consents for the Construction and Operation of the American Centrifuge Plant

License, Permit, or Other Consent	Responsible Agency	Authority	Relevance and Status
Water Resources Protection (Cont.)			
Above Ground Storage Tank (AST): A PTI required to install, remove, repair or alter any stationary tank for the storage of flammable or combustible liquids.	Ohio Department of Commerce, State Fire Marshal	OAC 1301:7-7-28(A)(3) 40 CFR 112.8	AST fuel storage tanks will be required for the ACP. Permits to install will be filed at the appropriate time.
Waste Management and Pollution Prevention			
Submit Determination Results: Required when a person who generates waste in the State of Ohio or a person who generates waste outside the state that is managed inside the state determines that the waste he/she generates is hazardous waste.	OEPA	OAC 3745-52-11	Upon characterization of newly generated waste streams from the ACP, notification would be made to the OEPA.
Registration and Hazardous Waste Generator Identification Number: Required before a person who generates over 220 lb (100 kg) per calendar month of hazardous waste ships the hazardous waste off-site.	EPA; OEPA	*Resource Conservation and Recovery Act* (RCRA), as amended (42 USC 6901 et seq.), Subtitle C; OAC 3745-52-12	United States Enrichment Corporation Hazardous Waste Generator Identification Number OHD987054723.

Table 9.2-9 Potentially Applicable Consents for the Construction and Operation of the American Centrifuge Plant

License, Permit, or Other Consent	Responsible Agency	Authority	Relevance and Status
Waste Management and Pollution Prevention (Cont.)			
Construction and Demolition Debris Facility License: Required before establishing, modifying, operating, or maintaining a facility to dispose of debris from the alteration, construction, destruction, or repair of a man-made physical structure; however, the debris to be disposed of must not qualify as solid or hazardous waste; also, no license is required if debris from site clearing is used as fill material on the same site.	OEPA or Pike County Board of Health	OAC 3745-37-01	Construction debris would not be disposed of on site at the ACP. Therefore, no Construction and Demolition Debris Facility License would be required.
Low-Level Radioactive Waste Generator Report: Required within 60 days of commencing the generation of low-level waste in Ohio.	Ohio Department of Health	OAC 3701:1-54-02	USEC will file a Low-Level Radioactive Waste Generator Report with the Ohio Department of Health at the appropriate time. ODH ID Number 52-2109255.

Table 9.2-9 Potentially Applicable Consents for the Construction and Operation of the American Centrifuge Plant

License, Permit, or Other Consent	Responsible Agency	Authority	Relevance and Status
Waste Management and Pollution Prevention (Cont.)			
Hazardous Waste Facility Permit: Required if hazardous waste will undergo nonexempt treatment by the generator, be stored on site for longer than 90 days by the generator of 2,205 lb (1,000 kg) or more of hazardous waste per month, be stored on site for longer than 180 days by the generator of between 220 and 2,205 lb (100 and 1,000 kg) of hazardous waste per month, disposed of on site, or be received from off-site for treatment or disposal.	EPA; OEPA	RCRA, as amended (42 USC 6901 et seq.), Subtitle C; OAC 3745-50-40	Hazardous waste would not be disposed of on site at the ACP. Also, USEC does not plan to store any hazardous wastes that are generated on site for more than 90 days. However, should waste require storage on site for greater then 90 days for characterization, profiling, or scheduling for treatment or disposal a Hazardous Waste Facility Permit would be required and submitted at the appropriate time.
Low-Level Mixed Waste (LLMW): LLMW is a waste that contains both low-level radioactive waste and RCRA hazardous waste.	OEPA	OAC 3745-266; 40 CFR Part 266 Subpart N	USEC will manage LLMW in compliance with 40 CFR Part 266 Subpart N and Ohio Administrative Code Chapter 3745-266.
Industrial Solid Waste Landfill Permit to Install: Required before constructing or expanding a solid waste landfill facility in Ohio.	OEPA	OAC 3745-29-06	Industrial solid waste would not be disposed of on site at the ACP. Therefore, no Industrial Solid Waste Landfill Permit to Install would be required.

Table 9.2-9 Potentially Applicable Consents for the Construction and Operation of the American Centrifuge Plant

License, Permit, or Other Consent	Responsible Agency	Authority	Relevance and Status
Emergency Planning and Response			
List of Material Safety Data Sheets: Submission of a list of material Safety Data Sheets is required for hazardous chemicals (as defined in 29 CFR Part 1910) that are stored on site in excess of their threshold quantities.	Local Emergency Planning Commission (LEPC); Ohio State Emergency Response Commission (SERC)	*Emergency Planning and Community Right-to-Know Act* of 1986 (EPCRA), Section 311 (42 USC 11021); 40 CFR 370.20; OAC 3750-30-15	USEC will prepare and submit a List of Material Safety Data Sheets at the appropriate time.
Annual Hazardous Chemical Inventory Report: Submission of the report is required when hazardous chemicals have been stored at a facility during the preceding year in amounts that exceed threshold quantities.	LEPC; Ohio SERC; local fire department	EPCRA, Section 312 (42 USC 11022); 40 CFR 370.25; OAC 3750-30-01	United States Enrichment Corporation will prepare and submit an Annual Hazardous Chemical Inventory Report each year. United States Enrichment Corporation Facility ID Number 45661NTDST3930U

Table 9.2-9 Potentially Applicable Consents for the Construction and Operation of the American Centrifuge Plant

License, Permit, or Other Consent	Responsible Agency	Authority	Relevance and Status
Emergency Planning and Response (Cont.)			
Notification of On-Site Storage of an Extremely Hazardous Substance: Submission of the notification is required within 60 days after on-site storage begins of an extremely hazardous substance in a quantity greater than the threshold planning quantity.	Ohio SERC	EPCRA, Section 304 (42 USC 11004); 40 CFR 355.30; OAC 3750-20-05	United States Enrichment Corporation will prepare and submit the Notification of On-Site Storage of an Extremely Hazardous Substance at the appropriate time, if such substances are determined to be stored in a quantity greater than the threshold planning quantity at the ACP. Facility ID Number 45661NTDST3930U
Annual Toxic Release Inventory (TRI) Report: Required for facilities that have 10 or more full-time employees and are assigned certain Standard Industrial Classification (SIC) codes.	EPA:OEPA	EPCRA, Section 313 (42 USC 11023); 40 CFR Part 372; OAC 3745-100-07	United States Enrichment Corporation will prepare and submit a TRI Report to the EPA each year. Facility ID Number 45661NTDST3930U.

Table 9.2-9 Potentially Applicable Consents for the Construction and Operation of the American Centrifuge Plant

License, Permit, or Other Consent	Responsible Agency	Authority	Relevance and Status
Emergency Planning and Response (Cont.)			
Transportation of Radioactive Wastes and Conversion Products Certificate of Registration: Required to authorize the registrant to transport hazardous material or cause a hazardous material to be transported or shipped.	U.S. Department of Transportation (DOT)	*Hazardous Materials Transportation Act* (HMTA), as amended by the *Hazardous Materials Transportation Uniform Safety Act* of 1990 and other acts (49 USC 1501 et seq.); 49 CFR 107.608(b)	United States Enrichment Corporation Certificate of Registration Number 052803005022LN.

Table 9.2-9 Potentially Applicable Consents for the Construction and Operation of the American Centrifuge Plant

License, Permit, or Other Consent	Responsible Agency	Authority	Relevance and Status
Emergency Planning and Response (Cont.)			
Transportation of Radioactive Wastes and Conversion Products Packaging, Labeling, and Routing Requirements for Radioactive Materials: Required for packages containing radioactive materials that will be shipped by truck or rail.	DOT	HMTA (49 USC 1501 et seq.); *Atomic Energy Act* (AEA), as amended (42 USC 2011 et seq.); 49 CFR Parts 172, 173, 174, 177, and 397	When shipments of radioactive materials are made, USEC will comply with DOT packaging, labeling, and routing requirements.

Table 9.2-9 Potentially Applicable Consents for the Construction and Operation of the American Centrifuge Plant

License, Permit, or Other Consent	Responsible Agency	Authority	Relevance and Status
Other			
Land Resources			
Farmland Protection and Policy Act (FPPA): Prime farmland is land that has the best combination of physical and chemical characteristics for producing crops of statewide or local importance. Prime farmland is protected by the Farmland Protection and Policy Act (FPPA) of 1981 which seeks "… to minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmlands to nonagricultural uses…"	U.S. Department of Agriculture	Farmland Protection and Policy Act (FPPA) of 1981 Public Law 97-98; 7 USC 4201[b]; 7 CFR Part 7, paragraph 658	Consultation letters are included in Appendix B of this ER.
Biotic Resources			
Threatened and Endangered Species Consultation: Required between the responsible federal agencies and affected states to ensure that the project is not likely to (1) jeopardize the continued existence of any species listed at the federal or state level as endangered or threatened or (2) result in destruction of critical habitat of such species.	U.S. fish and Wildlife Service; Ohio Department of Natural Resources	*Endangered Species Act* of 1973, as amended (16 USC 1531 et seq.); ORC 1531.25-26 and 1531.99	Consultation letters are included in Appendix B of this ER.

Table 9.2-9 Potentially Applicable Consents for the Construction and Operation of the American Centrifuge Plant

License, Permit, or Other Consent	Responsible Agency	Authority	Relevance and Status
Cultural Resources			
Archaeological and Historical Resources Consultation: Required before a federal agency approves a project in an area where archaeological or historic resources might be located.	Ohio State Historic Preservation Officer (SHPO)	*National Historic Preservation Act* of 1966, as amended (16 USC 470 et seq.); *Archaeological and Historical Preservation Act* of 1974 (16 USC 469-469c-2); *Antiquities Act* of 1906 (16 USC 431 et seq.); *Archaeological Resources Protection Act* of 1979, as amended (16 USC 470aa-mm)	USEC has consulted with the Ohio SHPO regarding previous archeological and architectural surveys at the DOE reservation. Consultation letters are included in Appendix B.

Table 9.2-9 Potentially Applicable Consents for the Construction and Operation of the American Centrifuge Plant

License, Permit, or Other Consent	Responsible Agency	Authority	Relevance and Status
Other (cont.)			
Environmental Report (ER) Required by 10 CFR Part 51, this ER is being submitted to the U.S. Nuclear Regulatory Commission (NRC) by USEC to support licensing of the ACP.	NRC	*National Environmental Policy Act* of 1969, as amended (NEPA) (42 USC 4321 et seq.); 40 CFR Parts 1500-1508; 10 CFR Part 1021; 10 CFR Part 51 P.L. 91-190	This ER was prepared in accordance with the *U.S. Code of Federal Regulations*, 10 CFR Part 51, which implements the requirements of the National Environmental Policy Act (NEPA) of 1968, as amended (P.L.91-190).
Depleted UF_6 Management Measures: Establishes requirements for management, inspection, testing, and maintenance associated with the Depleted UF_6 storage yards and cylinders owned by USEC at the DOE reservation as stipulated in the ACP License Application.	OEPA	OAC 3745-266; 40 CFR Part 266 Subpart N	USEC will manage the Depleted UF_6 tails cylinders in accordance with 40 CFR Part 266 Subpart N and Ohio Administrative Code Chapter 3745-266 while in storage.

Table 9.2-9 Potentially Applicable Consents for the Construction and Operation of the American Centrifuge Plant

License, Permit, or Other Consent	Responsible Agency	Authority	Relevance and Status
Other (Cont.)			
Standard Industrial Classification (SIC): The SIC system serves as the structure for collection, aggregation, presentation, and analysis of the U.S. economy. An industry consists of a group of establishments primarily engaged in producing or handling the same product or group of products or in rendering the same services.	OSHA	SIC system	SIC 2819 Industrial Inorganic Chemicals, Not Elsewhere Classified

This figure is withheld pursuant to 10 CFR 2.390 and is located in
Appendix A of this license application

Figure 9.2-1 Locations of American Centrifuge Plant Monitored Vents

This figure is withheld pursuant to 10 CFR 2.390 and is located in
Appendix A of this license application

Figure 9.2-2 Locations of American Centrifuge Plant Outfalls Discharging to Waters of the United States

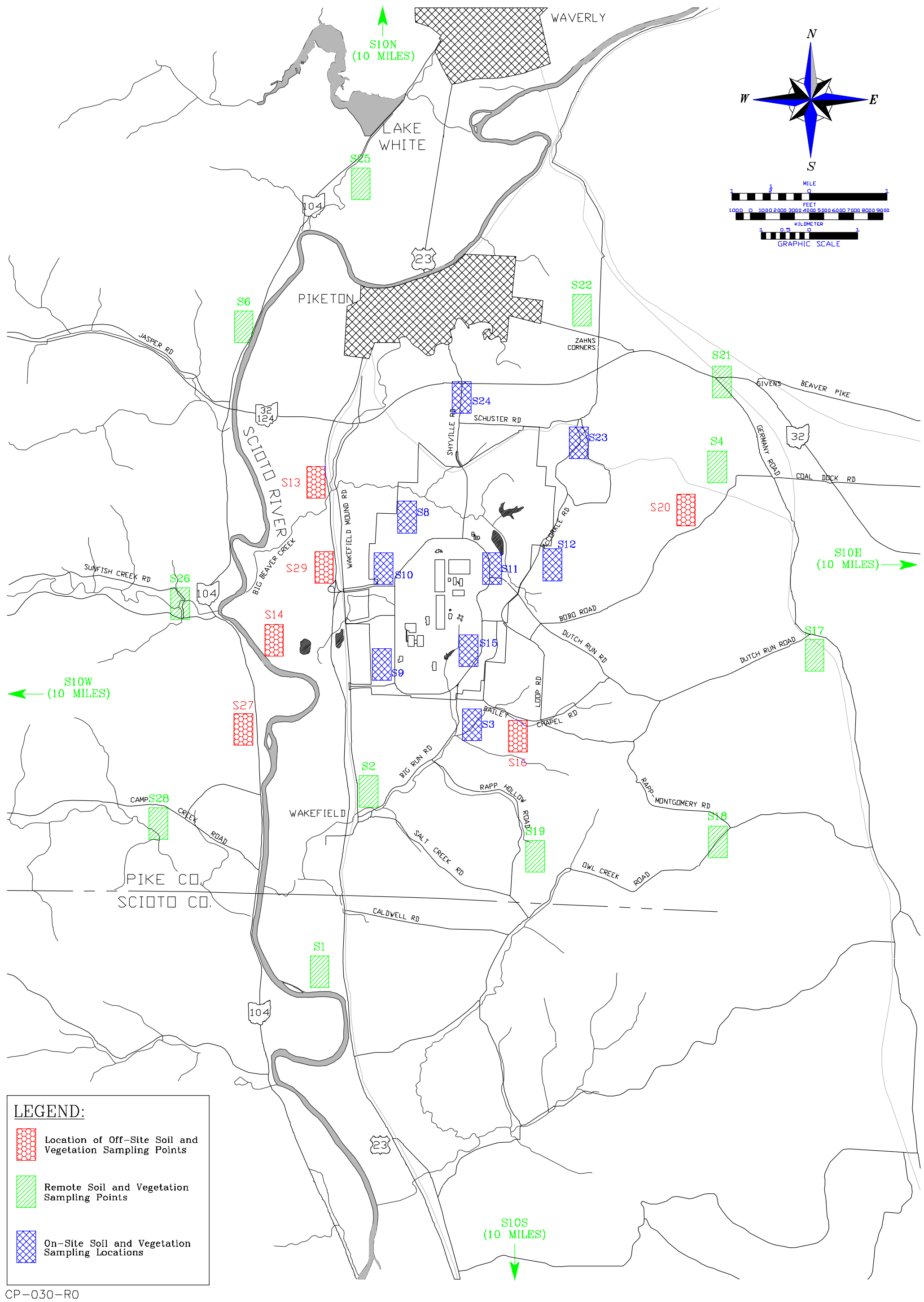

Figure 9.2-3 Locations of Soil and Vegetation Sampling Points

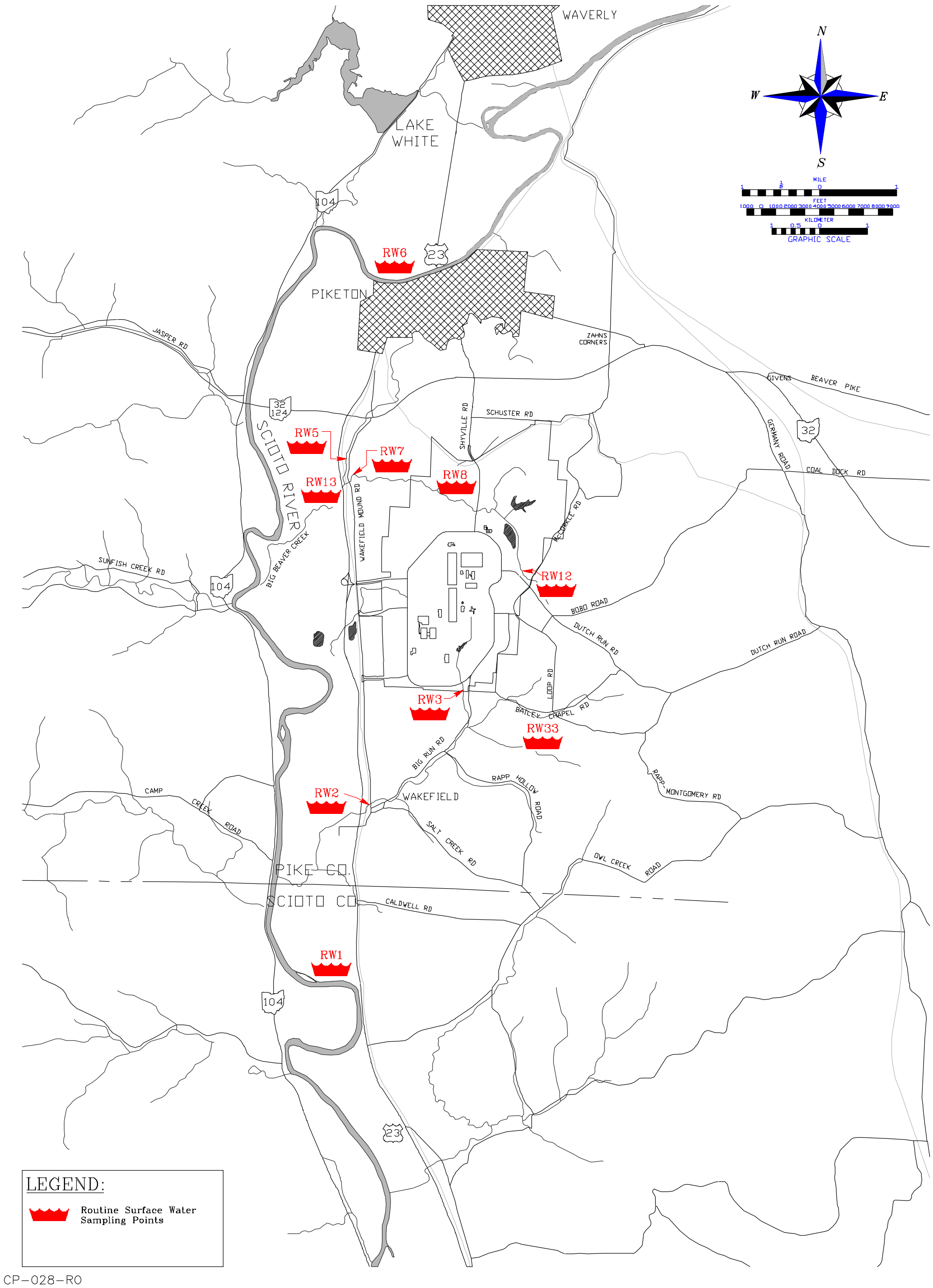

Figure 9.2-4 Locations of Surface Water Sampling Points

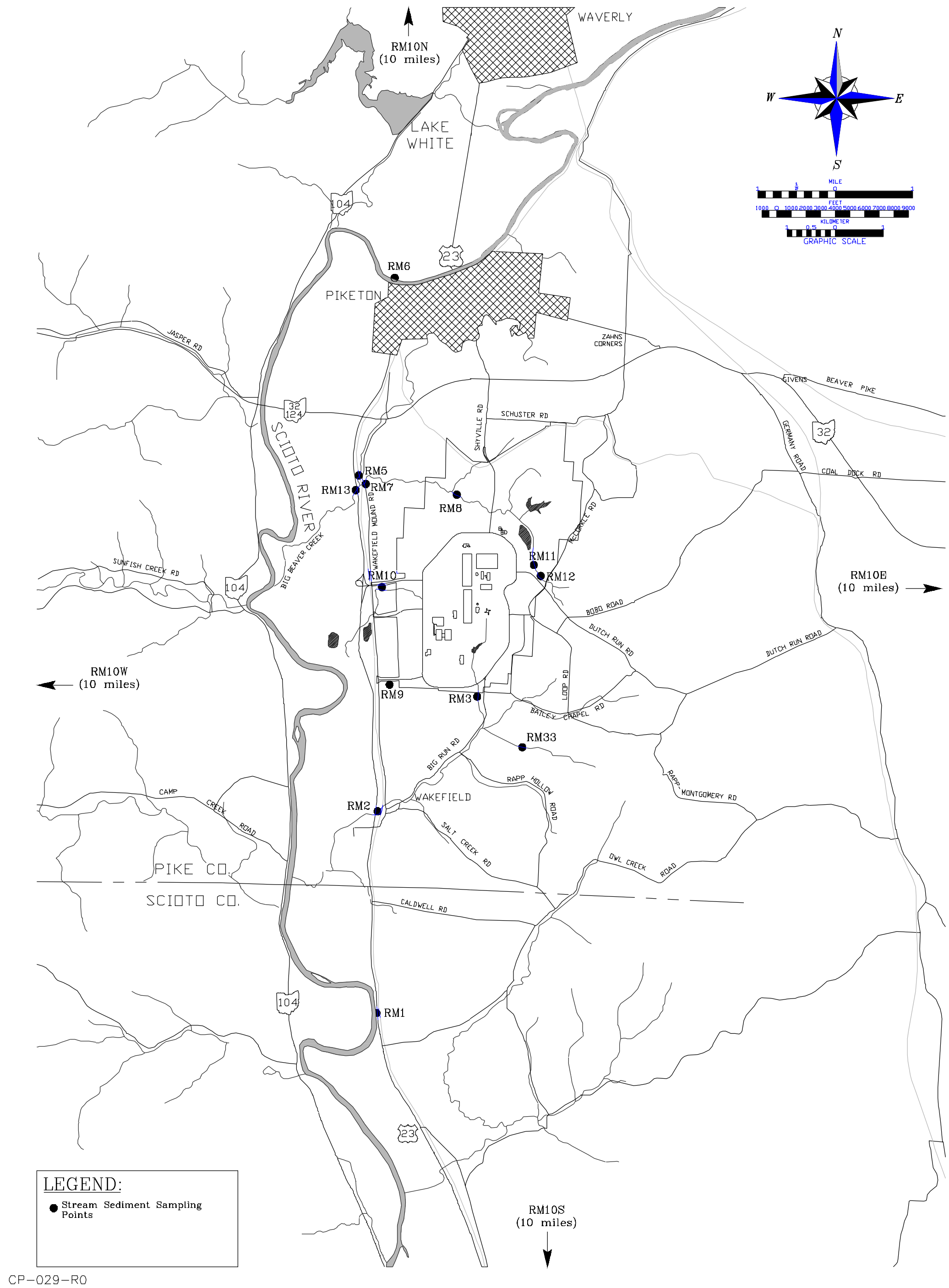

Figure 9.2-5 Locations of Stream Sediment Sampling Points

This figure is withheld pursuant to 10 CFR 2.390 and is located in
Appendix A of this license application

Figure 9.2-6 Locations of Environmental Thermoluminescence Dosimeters on the U.S. Department of Energy Reservation

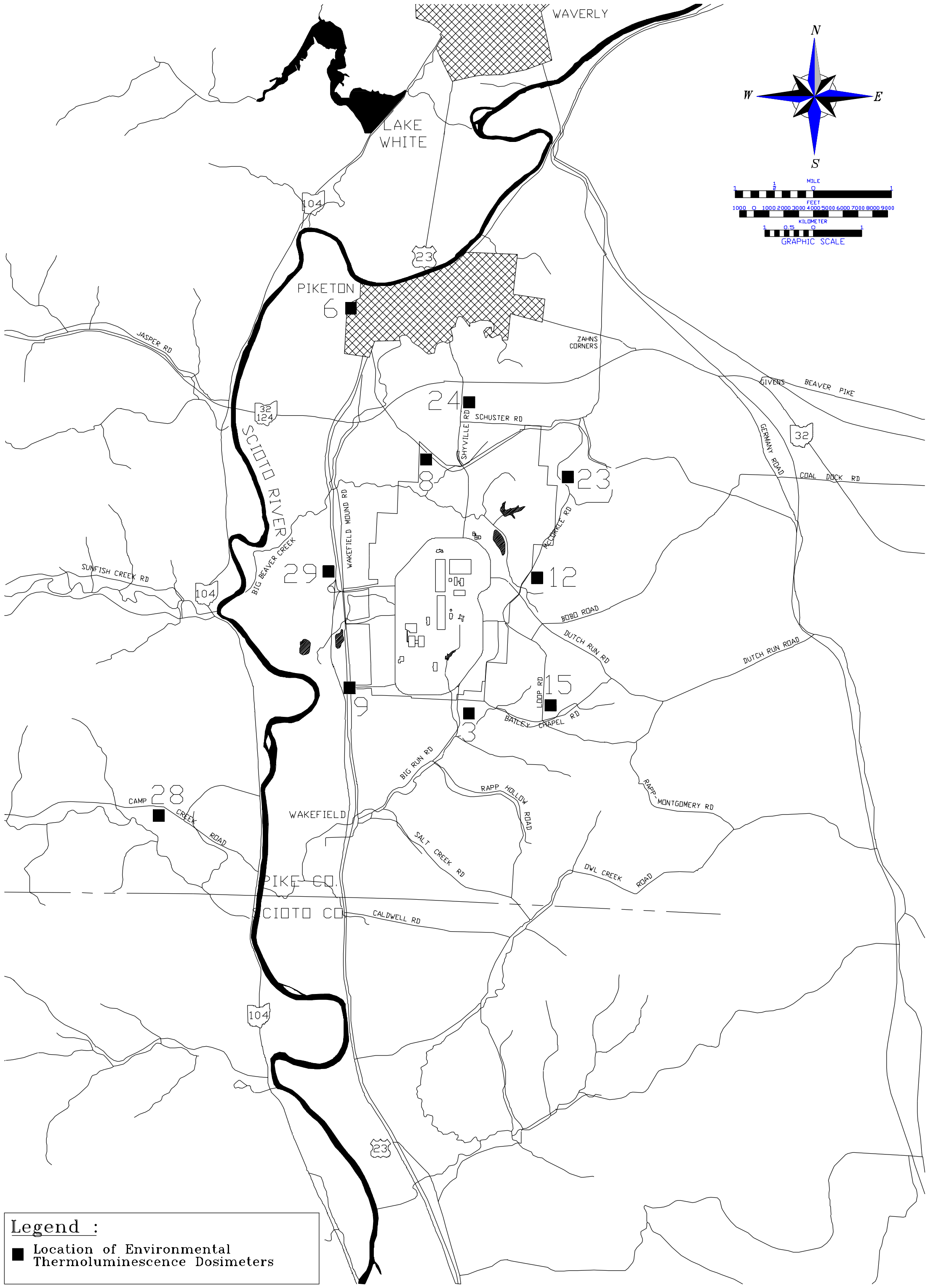

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Figure 9.2-7 Locations of Environmental Thermoluminescence Dosimeters Outside the U.S. Department of Energy Reservation Boundary

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