

# Chapter 1 – General Information

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## 1.0 GENERAL INFORMATION

This section contains a general description and purpose of the Orano Enrichment USA LLC (OE) uranium enrichment facility, hereafter referred to as the “Facility”. The Facility enriches uranium for the production of nuclear fuel for use in commercial power plants. This License Application follows the format recommended by NUREG-1520 (NRC 2015). The level of detail provided in this chapter is appropriate for general familiarization and understanding of the facility and processes. The information is to be used as background for the more detailed descriptions provided in other chapters of the license application, the Environmental Report (ER), or the Integrated Safety Analysis Summary (ISAS). This chapter also provides information on the corporate structure and economic qualifications of OE.

This License Application is pursuant to 10 CFR Parts 30, 40 and 70, authorizing OE to receive, acquire, possess, and transfer byproduct, source, and special nuclear material.

### 1.1 FACILITY AND PROCESS OVERVIEW

The design of the Facility incorporates the latest safety improvements and design enhancements from the enrichment facilities currently operating and under construction in Europe.

The primary function of the Facility is to enrich natural uranium hexafluoride (UF<sub>6</sub>) by separating a feed stream containing the naturally occurring proportions of uranium isotopes into a product stream enriched in <sup>235</sup>U and a tails stream depleted in the <sup>235</sup>U isotope. The feed material for the enrichment process is UF<sub>6</sub> with a natural composition of isotopes <sup>234</sup>U, <sup>235</sup>U, and <sup>238</sup>U. The enrichment process is a mechanical separation of isotopes using a fast-rotating cylinder (centrifuge) based on a difference in centrifugal forces due to differences in molecular weight of the uranic isotopes. No chemical changes or nuclear reactions take place. The feed, product, and tails streams are all in the form of UF<sub>6</sub>.

The risks associated with the OE Facility are fundamentally more aligned with those of a chemical processing facility rather than a nuclear reactor. The facility performs isotopic separation of natural uranium (no reprocessed uranium) in the gas phase. The process does not involve a nuclear chain reaction, fissile heat generation, reactivity effects, or decay-heat removal. Accordingly, the accident mechanisms and safety functions differ substantially from those of reactor facilities regulated under 10 CFR Parts 50 and 52.

The dominant hazards at the enrichment facility are:

1. Chemical hazards, primarily those associated with UF<sub>6</sub> reactions with moisture and the formation of HF. Additional information described in Chapter 6.
2. Industrial hazards, including high-speed rotating equipment, pressure systems, and mechanical handling of cylinders.
3. Radiological considerations limited to the specific activity of low-enriched UF<sub>6</sub>, which is orders of magnitude lower than reactor-grade materials and does not generate significant decay heat.

These hazards align with the fuel-cycle framework of 10 CFR Part 70, which addresses chemical and industrial accident sequences through the Integrated Safety Analysis (ISA) and Items Relied on For Safety (IROFS). This regulatory structure is designed specifically for facilities where chemical toxicity, process upsets, and UF<sub>6</sub> handling—rather than reactivity excursions—govern safety.

The “nuclear” aspects of the facility are limited to material control and accounting (MC&A), criticality prevention via mass and moderation controls, and physical protection, all of which are already explicitly addressed within Part 70 and associated regulatory guidance.

Therefore, the safety basis for this enrichment facility is properly and fully addressed within the existing fuel-cycle regulatory framework and does not require reactor-based analytical methods or design-basis assumptions that are only applicable to facilities with an operating nuclear chain reaction.

### **1.1.1 Facility Layout Description**

Site features are well suited for the location of a uranium enrichment facility as evidenced by its favorable conditions of hydrology, geology, seismology, and meteorology as well as good transportation routes for transporting feed and product by truck.

The Facility is located on approximately 200 acres of approximately 600 acres of the SSP-2 Parcel on the Oak Ridge Reservation (ORR) in Oak Ridge, Tennessee. The Separations Building Modules, Administration Building, Security and Secure Administration Building, Cylinder Receipt and Shipping Building, Centrifuge Assembly Building, Electrical Services Building, Mechanical Services Buildings, Technical Support Building, Operation Support Building, and Cylinder Storage Pads are located in the western portion of the Site on about 100 acres of developed area.

A layout of the facility on SSP-2 is shown in Figure 1-1.

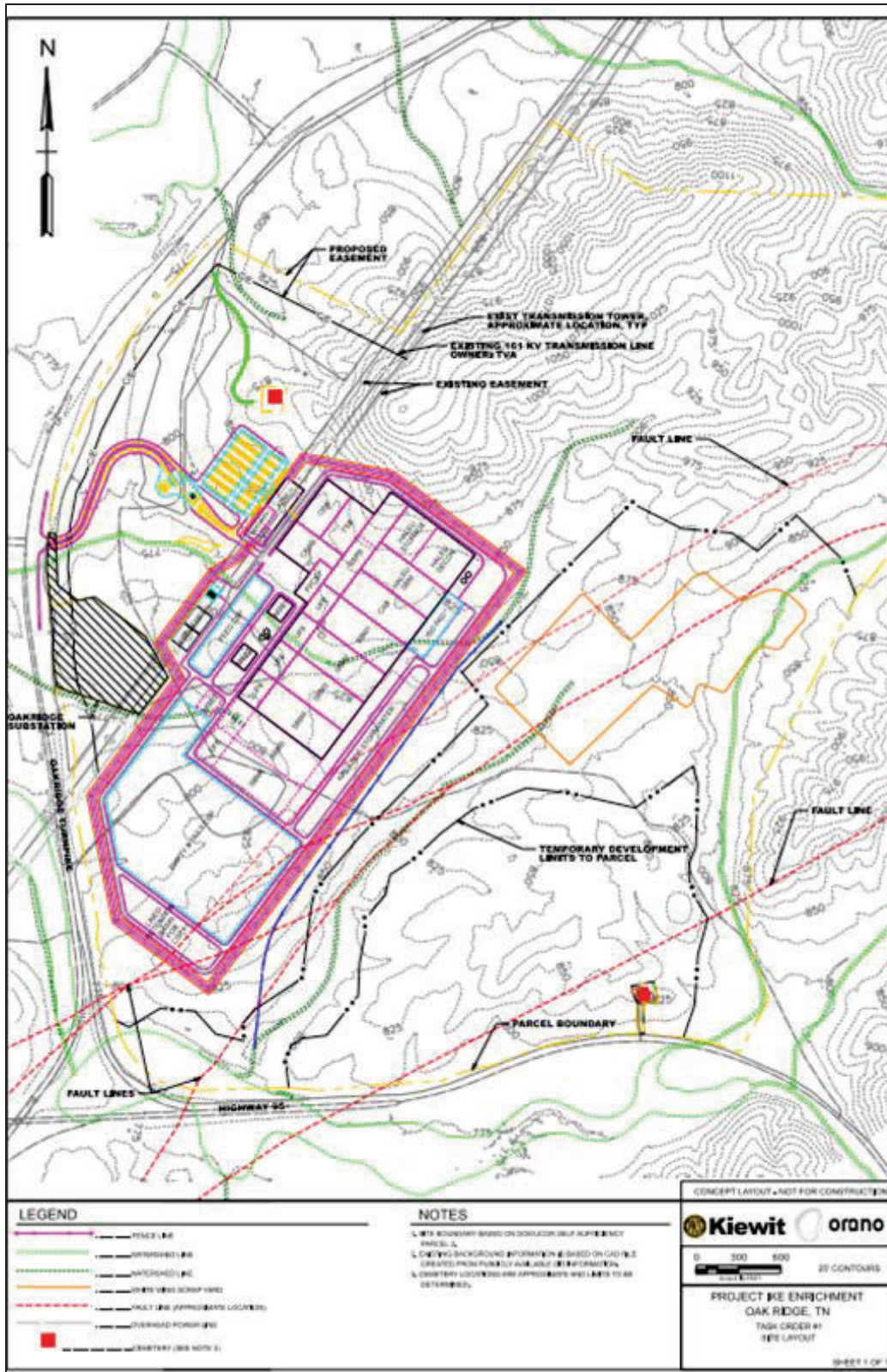


Figure 1-1 Facility Layout on SSP-2

#### **1.1.1.1 Guard House**

The main Facility Guard House is located at the entrance to the Facility. It functions as needed as a security checkpoint for all incoming and outgoing traffic. Employees, visitors and trucks that have access approval will be screened at the main Guard House. A smaller Vehicle Inspection Guard House, an extension of the Security and Secure Administration Area is also located the vehicle access point into the Controlled Access Area of the facility.

#### **1.1.1.2 Administration Building**

The Administration Building (AB) is on the northwest side of the site. It contains general office areas and a cafeteria. The AB is adjacent to the main parking lot. Vehicular traffic passes through a security checkpoint before being allowed to park. Parking is located outside of the Controlled Access Area security fence. Personnel enter the AB and general office areas via the main lobby and interior security checkpoint.

##### **1.1.1.2.1 Security and Secure Administration Area**

The Security and Secure Administration Area is in the AB and contains secure office areas and the Facility's Entry Exit Control Point (EECP). The EECP is designed to facilitate and control the passage of authorized facility personnel and visitors.

#### **1.1.1.3 Centrifuge Assembly Building**

This building is used to assemble centrifuges before they are moved into the Separations Building and installed in the cascades. Source material and SNM are used and produced in this area.

The major functional areas of the Centrifuge Assembly Building are:

- Centrifuge Component Storage Areas
- Centrifuge Assembly Areas
- Assembled Centrifuge Storage Areas
- Building Office Area
- Centrifuge Test Facility
- Post-Mortem Centrifuge Facility

#### **1.1.1.4 Cylinder Receipt and Shipping Building**

The Cylinder Receipt and Shipping Building (CRSB) is located near the Cylinder Storage Pads. This building contains equipment to receive, inspect, weigh and temporarily store cylinders of feed  $UF_6$  sent to the Facility; temporarily store, inspect, weigh, and ship cylinders of enriched  $UF_6$  to facility customers; receive, inspect, weigh, and temporarily store empty product and  $DUF_6$  cylinders prior to being filled in the Separations Building Module (SBM); and inspect, weigh, and transfer filled  $DUF_6$  cylinders to the Empty / Tails Cylinder Storage Pad (ETCSP). Source material and SNM are used in this area.

The functions of the CRSB are:

- Loading and unloading of cylinders
- Weighing and inspecting arriving feed cylinders
- Preparation of cylinder overpack protective packaging, as required

Source material and SNM are used in this area.

#### **1.1.1.5 Technical Support Building**

The Technical Support Building (TSB) contains radiological support areas for the Facility. It also acts as a secure point of entry to the SBMs and the Blending, Sampling and Preparation Building (BSPB). Source material and SNM are found in this area. The TSB and the Operation Support Building (OSB) are separate, adjacent areas of the same physical structure.

The major functional areas of the TSB are:

- Solid Waste Collection Room
- Decontamination Workshop
- Liquid Effluent Collection and Treatment Room
- TSB/BSPB Gaseous Effluent Ventilation System
- Laboratory Areas
- Radiation Monitoring Room
- Maintenance Facility for contaminated facility equipment
- Ancillary Areas

#### **1.1.1.6 Operation Support Building**

The OSB is an area within the same physical building as the TSB and is adjacent to the CRSB. The OSB contains non-radiological support areas for the Facility. The OSB forms the entrance to the TSB and is directly across the street from the AB.

The OSB contains the following functional areas:

- Control Room
- Medical Room
- Locker Rooms
- Break Area
- Security Lobby
- Security Alarm System Room
- Ancillary Areas

#### **1.1.1.7 Blending, Sampling and Preparation Building**

The BSPB is adjacent to the UF<sub>6</sub> Annexes, the CRSB, and the TSB.

The primary function of the BSPB is to provide means to:

- Blend cylinders with different enrichment level at the required <sup>235</sup>U enrichment level - Product Blending and Transfer System
- Liquefy, homogenize and sample cylinders prior to shipment to the customer - Product Liquid Sampling System

- Testing, weighing, conditioning, defrosting, inspection, and preparation of cylinders

Source material and SNM are used in this area.

#### **1.1.1.8 Separation Building Modules**

The Facility includes four identical SBMs. Each SBM consists of two Modules. Each Module has twelve cascades with each cascade having hundreds of centrifuges. Each Module is capable of producing approximately 925,000 SWU per year. Source material and special nuclear material (SNM) are used or produced in this area.

The major functional areas of the SBM are:

- Modules (2)
- Process Service Corridor
- UF<sub>6</sub> Annexes providing:
  - Feed and purification stations
  - Product and tails take off stations
  - Gaseous effluent treatment
  - Mass spectrometry sampling of feed, product, and tails flows
  - Centrifuge power conditioning

#### **1.1.1.9 Cylinder Storage Pads**

The Facility uses several outside areas for the storage of full cylinders containing UF<sub>6</sub> and for storage of empty cylinders. Cylinders containing UF<sub>6</sub> that is depleted in <sup>235</sup>U are stored on the ETCSP. Full feed cylinders containing natural UF<sub>6</sub> are stored on the Feed Cylinder Storage Pad (FCSP). Empty cylinders are stored on the ETCSP. The ETCSP is at the southern end of the Facility and consists of multiple adjacent pads where cylinder types are arranged to provide the maximum flexibility from an operations perspective while still minimizing dose to operators from recently emptied cylinders. Full product cylinders containing enriched UF<sub>6</sub> are stored on the Full Product Cylinder Storage Pad (FPCSP). Empty product cylinders containing UF<sub>6</sub> heels are stored on the FPCSP. The FPCSP is located near the BSPB adjacent to the CRSB.

#### **1.1.1.10 Electrical Services Buildings**

The Electrical Services Buildings are located immediately west of the SBMs. They house standby diesel generators, which provide the site with standby power.

#### **1.1.1.11 Gasoline and Diesel Fueling Station**

A Gasoline and Diesel Fueling Station (GDFS) is located to the west of the SBM. The GDFS supports vehicle fueling from an adjacent fuel pump island and on-site vehicle minor repair and maintenance conducted inside the building.

#### **1.1.1.12 Mechanical Services Buildings**

The two Mechanical Service Buildings are located west of the SBMs. They house air compressors, the demineralized water system, the centrifuge cooling water system pumps, heat exchangers, and expansion tanks.

### **1.1.2 Process Overview**

This section provides a description of the various processes analyzed as part of the Integrated Safety Analysis (ISA). A brief overview of the entire enrichment process is provided followed by an overview of each major process system. A detailed description of these processes and the systems that provide them is found in the ISAS.

#### **1.1.2.1 Process Overview**

The Facility is based on a highly reliable gas centrifuge process. The Facility is designed to separate a feed stream containing the naturally occurring proportions of uranium isotopes into a product stream - enriched in the uranium-235 ( $^{235}\text{U}$ ) isotope and a tails stream - depleted in the  $^{235}\text{U}$  isotope ( $\text{DUF}_6$ ). The process, entirely physical in nature, takes advantage of the tendency of materials of differing density to segregate in the force field produced by a centrifuge. The chemical form of the working material of the plant,  $\text{UF}_6$ , does not require chemical transformations at any stage of the process. This process enriches natural  $\text{UF}_6$ , containing 0.711%  $^{235}\text{U}$  to a  $\text{UF}_6$  product, containing up to 10% of  $^{235}\text{U}$ .

Separation operations are divided among four SBMs. Each SBM is divided into two Modules, each containing 12 centrifuge cascades that produce enriched  $\text{UF}_6$  at a specified enrichment level, so up to eight different enrichment levels can be produced at one time. Enrichment support systems are dispatched in the BSPB and in the TSB.

#### **1.1.2.2 Process System Descriptions**

An overview of the enrichment process systems and the enrichment support systems is discussed below.

Numerous substances associated with the enrichment process could pose hazards if they were released into the environment. Chapter 6 contains a discussion of the criteria and identification of the chemicals of concern at the Facility and concludes that  $\text{UF}_6$  is the only chemical of concern that will be used at the Facility.

For additional information on all Process System descriptions, refer to Section 2 of the ISAS.

##### **1.1.2.2.1 $\text{UF}_6$ Feed System**

The first step in the process is the receipt, inspection and weighing of the 48-inch feed cylinders in the CRSB before transfer to the  $\text{UF}_6$  Feed System located in the  $\text{UF}_6$  Annex of the SBM.

The function of the  $\text{UF}_6$  Feed System is to provide a continuous supply of gaseous  $\text{UF}_6$  from the feed cylinders to the cascades.

Feed cylinders are loaded into Feed Donor Stations and heated to sublime the  $\text{UF}_6$ . Before  $\text{UF}_6$  transfer to the cascades, light gases, primarily air and hydrogen fluoride (HF) present in the  $\text{UF}_6$

feed are routed to the Feed Purification Subsystem. Purification cylinder will be reused as feed cylinder after light gas purging and analysis.

#### 1.1.2.2.2 Cascade System

Multiple gas centrifuges make up arrays called cascades. The Cascade System separates gaseous  $\text{UF}_6$  feed with a natural uranium isotopic concentration into two process flow streams - product and tails. The product stream is  $^{235}\text{U}$  enriched up to 10%. The tails stream is  $\text{UF}_6$  that has been depleted of  $^{235}\text{U}$  isotope below 0.4 %  $^{235}\text{U}$ .

#### 1.1.2.2.3 Product Take-off System

The function of the Product Take-off System is to provide continuous withdrawal of the enriched gaseous  $\text{UF}_6$  product from the cascades and to purge and dispose of light gas impurities from the enrichment process.

The product stream leaving the cascades is transported at subatmospheric pressure via a train of vacuum pumps to Product Receiver Stations in the  $\text{UF}_6$  Annex into a 30-inch cylinder under chilled air to effect the  $\text{UF}_6$  desublimation.

The Product Take-off System also contains a system to purge light gases (typically air and HF) that may have passed through the centrifuges. This system consists of  $\text{UF}_6$  Cold Traps which capture  $\text{UF}_6$  while leaving the light gas in a gaseous state. The cold trap is followed by product vent Vacuum Pump/Trap Sets, each consisting of a sodium fluoride trap, an alumina trap, and a vacuum pump. The sodium fluoride trap removes small traces of  $\text{UF}_6$  and the alumina trap removes any HF from the product gas.

Any  $\text{UF}_6$  captured in the cold trap is periodically transferred to another product cylinder for use as product or blending stock. Filling of the product cylinders is monitored with a load cell system, and filled cylinders are transferred to the Product Liquid Sampling System for sampling.

#### 1.1.2.2.4 Tails Take-off System

The primary function of the Tails Take-off System is to provide continuous withdrawal of the gaseous  $\text{UF}_6$  tails from the cascades. A secondary function of this system is to provide a means for removal of  $\text{UF}_6$  from the centrifuge cascades under abnormal conditions.

The tails stream exits each Module via a primary header, goes through a pumping train, and then to Tails Receiver Stations in the  $\text{UF}_6$  Annex. Chilled air flows over cylinders in the Tails Receiver Stations to effect the desublimation. Filling of the cylinders is monitored with a load cell system, and filled cylinders are transferred outdoors to the ETCSP.

#### 1.1.2.2.5 Product Blending and Transfer System

The primary function of the Product Blending and Transfer System is to provide a means to fill 30-inch cylinders with  $\text{UF}_6$  at a specific enrichment of  $^{235}\text{U}$  to meet customer requirements. This is accomplished by blending (mixing)  $\text{UF}_6$  at two different enrichment levels to one specific enrichment level. The system can also be used to transfer product from a 30-inch or 48-inch cylinder to another 30-inch cylinder without blending. Additionally, the Product Blending and

Transfer System can be used to evacuate light gas in full, partially full, and empty cylinders and reduce the heel quantities in cylinders.

This system consists of Blending Donor Stations (which are similar to the Feed Donor Stations) and Blending Receiver Stations (which are similar to the Product Receiver Stations) described under the primary systems.

#### 1.1.2.2.6 Product Liquid Sampling System

The function of the Product Liquid Sampling System is to obtain an assay sample from all product 30-inch cylinders. The samples are used to measure whether the enriched UF<sub>6</sub> meets the chemical, physical, and isotopic composition requirements specified in ASTM C996 for customer acceptance (ASTM 2025). Sampling of 48-inch cylinders filled for internal use (feed, purification or product) is also conducted through this system.

#### 1.1.2.2.7 Cylinder Preparation System

The Cylinder Preparation process includes the performance of certain tests and inspections on full or partially full cylinders and cylinders containing heels, and testing and replacing cylinder valves.

#### 1.1.2.2.8 Support Systems

Support functions, including chemistry analysis, equipment decontamination and maintenance, liquid effluent treatment are conducted in the TSB. Decontamination, primarily of pumps and valves, uses solutions of citric acid. Liquid effluent is collected and treated using the Liquid Effluent Treatment System. There are no liquid discharges to the environment from this system.

#### 1.1.2.2.9 Waste Management

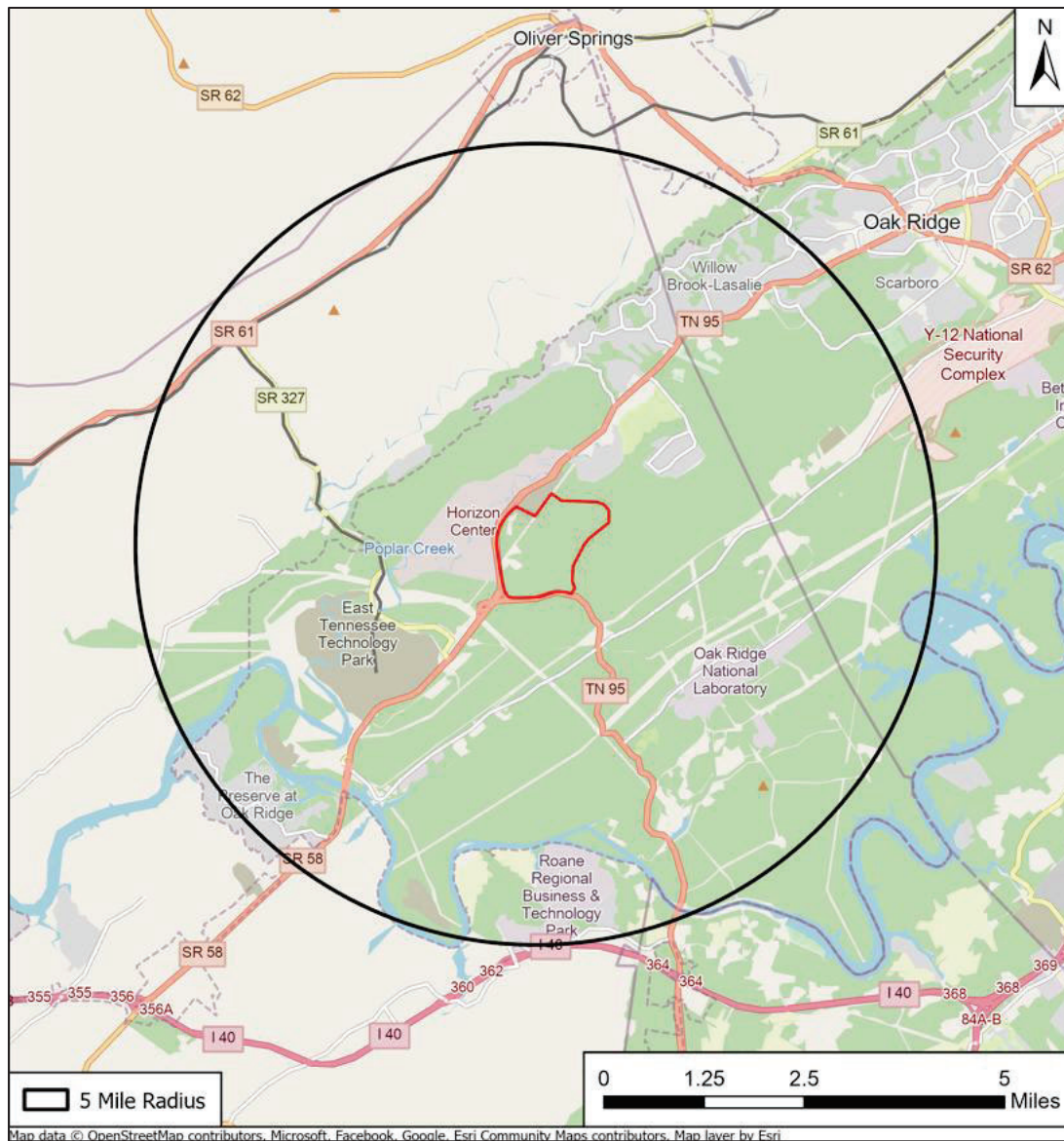
Waste generated by the Facility is collected, packaged, stored, and shipped off site for treatment/disposal in a safe and environmentally acceptable manner in accordance with applicable state and federal regulations, and Facility procedures. Waste accumulation areas are established throughout the Facility as necessary to meet these regulatory requirements.

Refer to Chapter 9, Section 9.2.3 for additional information.

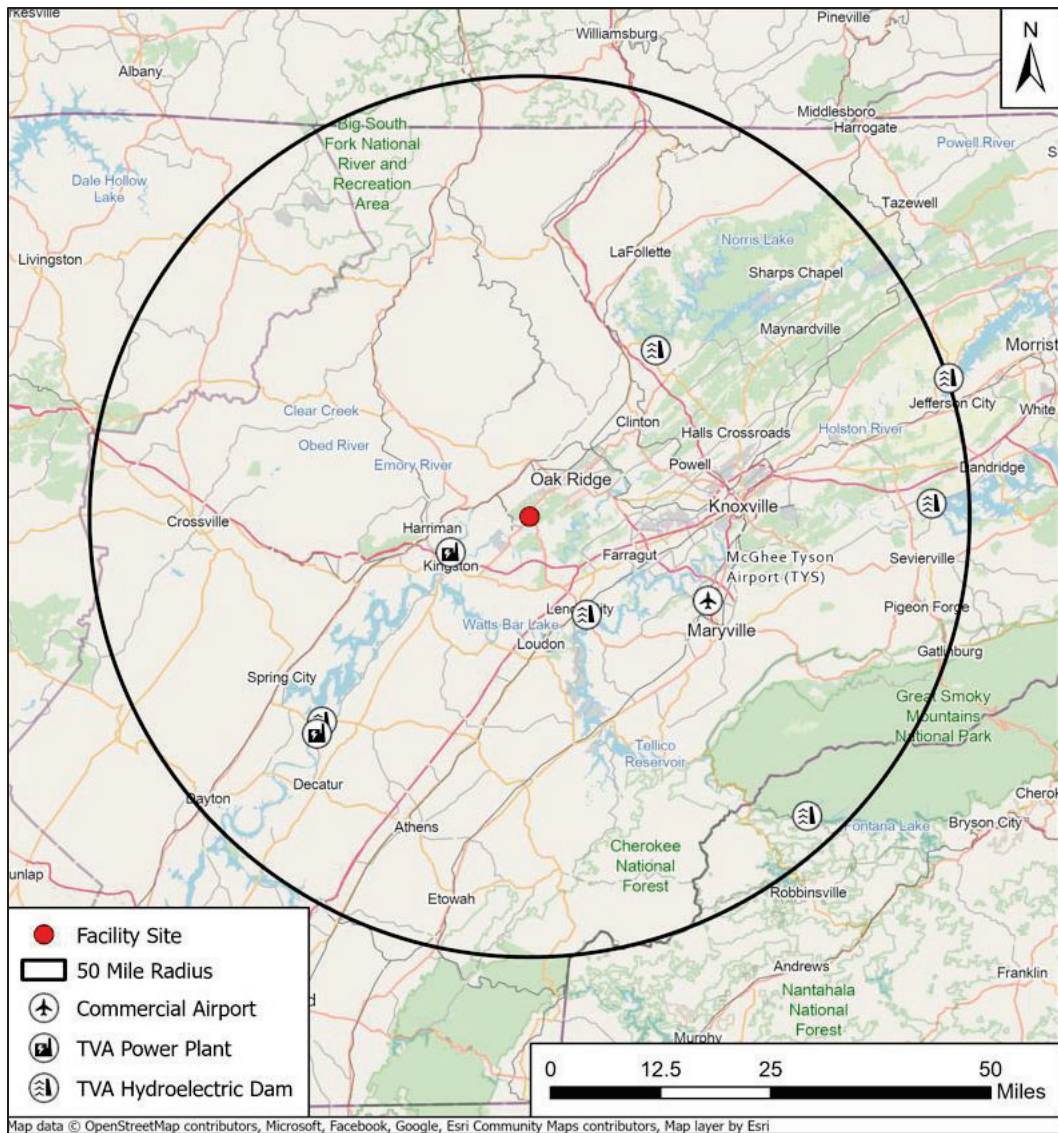
### 1.1.3 Site Overview

The Facility is located near the city of Oak Ridge, Tennessee. The Facility will be located on an approximate 600-acre site which will be acquired from the Industrial Development Board of Oak Ridge (the Site).

The geographic location of the facility is shown on Figure 1-2 and Figure 1-3.



**Figure 1-2 Aerial View of the Facility Site Region within 5mi**



**Figure 1-3 Major Population Centers near the Facility within 50mi**

Site features are well suited for the location of a uranium enrichment facility as evidenced by its favorable conditions of hydrology, geology, seismology, and meteorology as well as good transportation routes for transporting feed and product by truck.

The Facility is located in the western portion of the Site on about 100 acres of undeveloped area.

The Site lies along the east side of Tennessee State Highway 95, the Oak Ridge Turnpike. A newly constructed main access road provides access to the Facility. The Site is comprised mostly of relatively flat and gently sloping forested surfaces with a dominant ridge extending from the northeastern part of the site to the northeast. Elevations at the Site range from 1,500 ft to 775 ft above mean sea level (AMSL). The overall slope direction is to the southwest.

The nearest community is the city of Oak Ridge, approximately 6.7 miles northeast of the Site, with a population of 31,402 (USCB 2020). There are no residences, schools, stores or other population centers within a 1-mile radius of the site.

Additional details of proximity to nearby populations are provided in Section 3.1 of the ER.

#### 1.1.4 Descriptive Summary of Licensed Material

The Facility handles SNM of  $^{235}\text{U}$  contained in uranium enriched above natural but less than or equal to 10.0% in the  $^{235}\text{U}$  isotope. The  $^{235}\text{U}$  is in the form of  $\text{UF}_6$ .

Total quantities of licensed materials to be held at the Facility is described in Table 1-1. A breakdown of maximum SNM by major building and process area is listed in Table 1-2, with additional information in Ch. 6.

**Table 1-1 Type, Quantity and Form of Licensed Material**

| Source and/or Special Nuclear Material                                                         | Chemical and/or Physical Form                                                                                                      | Maximum amount that licensee may possess at any one time                                                                            |
|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Uranium (natural and depleted) and daughter products                                           | Physical: Solid, Liquid and Gas<br>Chemical: $\text{UF}_6$ , $\text{UF}_4$ , $\text{UO}_2\text{F}_2$ , oxides and other compounds  | 750,000,000 kg                                                                                                                      |
| Uranium enriched in isotope $^{235}\text{U}$ up to 10% by weight and Uranium daughter products | Physical: Solid, Liquid, and Gas<br>Chemical: $\text{UF}_6$ , $\text{UF}_4$ , $\text{UO}_2\text{F}_2$ , oxides and other compounds | [ ]                                                                                                                                 |
| $^{99}\text{Tc}$ , transuranic isotopes and other contamination                                | Any                                                                                                                                | Amount that exists as contamination as a consequence of the historical feed of reprocessed Uranium at other facilities <sup>1</sup> |

Notes:

1. To minimize potential sources of contamination of  $\text{UF}_6$ , such as  $^{99}\text{Tc}$ , OE will require  $\text{UF}_6$  suppliers to provide Commercial Natural  $\text{UF}_6$  in accordance with ASTM C787 (ASTM 2025). In addition, cylinder suppliers will be required to preclude use of cylinders that, in the past, contained reprocessed  $\text{UF}_6$ , unless they have been decontaminated. Periodic audits of suppliers will be performed to provide assurance that these requirements are satisfied.

**Table 1-2 Maximum SNM per Major Building and Process Area**

### **1.1.5 Structural Design Basis Overview**

As depicted in Figure 1-1, the Facility comprises multiple buildings described in Section 1.1.1 of this Chapter, with detailed building descriptions provided in ISAS Section 1.2. All structures are designed for a 60-year service life. This section establishes the structural design basis applicable to all Facility buildings.

#### **1.1.5.1 Safety Function of Buildings**

The Facility includes several major structures and functional areas, including process buildings, administrative and support facilities, and storage pads. These buildings do not perform containment or confinement functions for unmitigated releases during hazard events. Instead, the Facility relies on Items Relied on for Safety (IROFS), as identified in the Integrated Safety Analysis Summary (ISAS), to prevent or mitigate hazardous material releases during accident sequences.

Although the buildings are not credited as IROFS, they house equipment, systems, and components that are credited as IROFS. Therefore, the building structure must protect the IROFS from NPH events as well as to prevent the structural collapse on IROFS in order maintain their safety functions. Failure of IROFS could result in significant chemical, radiological, or criticality releases with potential intermediate or high consequences to workers or the public.

#### **1.1.5.2 Structural Role During Natural Phenomena Hazards (NPH)**

While buildings are not credited to directly mitigate hazardous material releases, they must maintain structural stability during extreme natural phenomena hazards (NPH), including:

- Maximum Considered Earthquake ( $MCE_R$ )
- Snow and Rain
- Extreme wind and tornado events
- Tornado-borne missile impacts
- Other applicable external hazards

The primary safety function of Essential buildings during NPH events is to avoid collapse or structural failure that could damage IROFS or prevent them from performing their credited safety functions. Buildings must also protect IROFS from external missile hazards generated during tornado events.

#### **1.1.5.3 Building Classification**

Buildings are classified based on the presence and significance of Materials at Risk (MAR) and the safety importance of housed equipment:

##### Essential Buildings

Essential buildings are those that contain significant quantities of fissile, radiological, or process-related chemical materials, or house IROFS necessary to prevent or mitigate hazardous material releases. These buildings must:

- Maintain structural integrity and avoid collapse during the  $MCE_R$ .
- Protect internal equipment from extreme NPH and external events.
- Provide tornado missile protection for housed IROFS.

Chemical release events bound radiological release consequences for this Facility. Thus, Essential building can be treated primarily as chemical hazard building and to a second degree as radiation hazard building.

#### Ordinary Buildings

Ordinary buildings do not contain significant MAR and are not required to support workers or public safety. Some Ordinary buildings may receive enhanced design treatment for investment protection purposes; however, such measures are not safety related.

#### **1.1.5.4 Safety Analysis Determination**

The ISAS evaluation concludes that no unmitigated NPH scenarios require buildings to be credited to achieve acceptable risk levels for workers or the public. Risk reduction is achieved through credited IROFS, as documented in ISAS §2.5 and associated attachments.

The safety function of Essential buildings is therefore limited to:

- Maintaining structural stability such that IROFS remain functional or fail into a safe configuration.
- Providing protection from NPH listed in Section 1.1.6.2.

#### **1.1.5.5 Codes, Standards, and Design Requirements**

The 2024 International Building Code (IBC) is the building code of record for the Facility. Structural design complies with ASCE 7-22 (ASCE, 2022). [

]

Table 1-3 (derived from ASCE 7-22 Commentary Figure C11.51) illustrates the performance distinctions between Risk Categories III and IV. It is concluded, from Table 1-3, that designing Essential buildings [ ] using ASCE 7-22 code satisfies the intended performance goal of the buildings during a seismic event.

All buildings are classified as noncombustible construction.

**Table 1-3 Expected Performance as Related to Risk Category**

| Building Risk Category | Ground Motion Intensity |                     |             |
|------------------------|-------------------------|---------------------|-------------|
|                        | Frequent                | Design              | MCE         |
| III                    | Immediate Occupancy     | Life Safety         | Life Safety |
| IV                     | Operational             | Immediate Occupancy | Life Safety |

#### **1.1.6 Natural Hazards Phenomena and Loading**

##### **1.1.6.1 Seismic Load**

The design of the structures and facilities complies with seismic loadings based on the 2024 Edition of the *International Building Code* and ASCE 7-22 (ASCE, 2022), as appropriate for the geographic location of the site.

The Seismic Design Category (SDC) is determined in accordance with Section 11.6 of ASCE 7-22 (ASCE, 2022) as a function of the structure's Risk Category and the magnitude of the design spectral response acceleration parameters stated above.

#### **1.1.6.2 Wind Load**

The basic (general) wind speed of 117 MPH is based upon a 3,000-yr return period for Risk Category IV structures per Figure 26.5-1D of ASCE 7-22 (ASCE, 2022) and verified using ASCE Hazard Tool (Ref: <https://ascehazardtool.org/>). For tornado wind loads, the essential buildings are evaluated for the tornado load cases in ASCE 7-22 Chapter 32 Figure 32.5-2G & H for a tornado wind speed of 110 mph based upon 3000-yr return period and effective plan area of 1,000,000 ft<sup>2</sup> and 124 mph for effective plan area of 4,000,000 ft<sup>2</sup> (See also ASCE Hazard Tool). The wind & tornado data is maintained by ASCE itself with collaboration with National Oceanic and Atmospheric Administration (NOAA) and the National Institute of Standards and Technology (NIST).

#### **1.1.6.3 Snow Load**

The ground snow load of 32 psf is provided in Figure 7.2-1D and used in conjunction with equations in Ch. 7 of ASCE 7-22 to determine the loads on the structure. The Ground Snow Geodatabase is based on mapped elevation of 865.8 ft. ASCE 7-22 implicitly includes an importance factor in the ground snow load for the Risk Category for the buildings structure. The ASCE commentary in Section C7.2, states that this ground snow is based on reliability-targeted approach and thus the load factor in the load combination for snow is revised from 1.6 to 1.0.

#### **1.1.6.4 Rain Load**

##### Design Rain Load

The design rain load for the Facility is 7.51 in/hr (15-min duration) and 4.29 in/hr (60-min duration). The Design Storm Return Period depends on the Risk Category and is shown on Table 8.2-1 of ASCE 7-22. For Risk Category IV, the return period is 500-years. Section 8.2 of ASCE 7-22 requires that each portion of a roof shall be designed to sustain the rain loads based on the summation of the static head, hydraulic head, and ponding head. The rain database is maintained by the NOAA Hydrometeorological Design Studies Center. See ASCE 7-22 section C8.2.

##### Local Intense Precipitation Event

The Design Basis Flood (DBF) Event is discussed in Section 3.2 of NUREG-7046 (NRC 2011), which defines a DBF according to the local intense precipitation (LIP) and local storm runoff. The LIP is defined as the Probable Maximum Precipitation (PMP) for a 1-hour duration and 1 mi<sup>2</sup> area. Section B.1.3, Table B.1 of NUREG-7046 (NRC, 2011) cites data sources from the National Oceanic and Atmospheric Administration (NOAA) Hydrometeorological Reports. The design basis precipitation event and resulting flooding event for herein considers the LIP and PMP values from NOAA Hydrometeorological Report No. 52, *Application of Probable Maximum Precipitation Estimates - United States East of the 105th Meridian*, and also considers the contributions of No. 56, *Probable Maximum and TVA Precipitation Estimates With Areal Distribution for Tennessee River Drainages Less Than 3,000 Mi<sup>2</sup> in Area*. Figure 24 of NOAA Report No. 52 provides the LIP value based on the PMP of 18.7-inches for 1-hr, 1-mi<sup>2</sup> area (NOAA, 1982). Figure 23 of NOAA Report No. 56 provides a 36.30-inches PMP for 6-hr, 1-mi<sup>2</sup> area (NOAA, 1986).

#### **1.1.6.5 Ice Load**

All Essential Buildings do not meet the definition of an “ice-sensitive structure” as given in Section 10.2 of ASCE 7-22. Thus, atmospheric icing loads and wind-on-ice loads are not credible and are not explicitly evaluated as a load case.

#### **1.1.6.6 Hydrological and/or Geological Load**

There are no additional hydrological loads that apply to the structure design other than snow, ice, and rain. There are no flooding loads on the structures, and the foundations are above the groundwater table.

#### **1.1.6.7 Extreme Temperature Load**

Temperature change can decrease the acceptable loading and pressurization of structural and non-structural components within a Facility. Orano-internal information from the France-based enrichment plant at the George Besse II (GBII) Site provides the annual temperature variation

experienced within the GBII Facility's interior areas. The Oak Ridge Facility is a replication of the GB II Enrichment Plant, which has been operating since 2011. This GBII interior temperature variation equates to a temperature differential of 25°F within these conditioned (heated or cooled) interior areas. The maximum temperature within non-air-conditioned process areas within the building interior can approach 122°F, which is much warmer than the maximum ambient temperatures recorded for Oak Ridge, TN.

Additional discussion on extreme ambient temperature is provided in ISAS Section 2, Appendix 2, Accident Sequence: EE-TEMPERATURE.

### Temperature Effects on Systems and Components

The nuclear safety aspects of the GBII enrichment plant are not impacted by ambient temperature extremes due to any system failures that provide conditioned air (heated or cooled) to the internal areas of the building. No loss of containment would occur at the maximum extremes possible from ambient temperature changes. Significant abnormalities in ambient temperature extremes result in process upset scenarios that provide time for the Facility and personnel to both prepare, respond, and even shut down the Facility if needed.

It is important to note that much of the material at risk (MAR) is not in the gas-phase within the Facility's enrichment process equipment, but in a solid-phase within the cylinder storage, staging, and online station areas. These UF<sub>6</sub> cylinders have an 800°C fire rating, based on IAEA's *TS-R-1 Thermal Environment* (Park 2004) and are routinely inspected and recertified for continued use.

### Temperature Effects on IROFS

The bounding external, ambient temperature changes do become part of the Facility's Safety Basis through the determination of the setpoints for active engineering IROFS controls. The bounding temperature differential is an input for this setpoint calculation methodology from Report No. WCAP-17504-NP, *Westinghouse Generic Setpoint Methodology* (Westinghouse 2016). Uncertainties due to recalibration and maintenance activities are also inputs for these setpoint calculations to ensure that active IROFS systems will perform their functions before reaching hazardous process conditions.

## **1.2 INSTITUTIONAL INFORMATION**

This section provides the applicant's corporate identity and location, applicant's ownership organization and financial information. Also, the type, quantity, and form of licensed material to be used at the facility, and the type(s) of license(s) being applied for are discussed.

### **1.2.1 Corporate Identity and Ownership**

#### **1.2.1.1 Applicant**

The Applicant's name, address, and principal office are as follows:

Orano Enrichment USA LLC  
4747 Bethesda Avenue Suite 1001  
Bethesda, Maryland 20814

### 1.2.1.2 Organization and Management of Applicant

Orano (SA) is a corporation founded under the laws of France and governed by an Executive Board. Orano SA offers products and services covering the whole nuclear fuel cycle including uranium mining, chemistry and enrichment, as well as waste management, recycling, decommissioning, radiological protection, maintenance, logistics services, and medical nuclear isotopes.

Since its latest capital increase on October 24, 2024, ownership of Orano SA's share capital is as follows:

- French State: 90.33%
- Mitsubishi Heavy Industries: 4.83%
- Japan Nuclear Fuel Limited: 4.83%

Orano Chimie Enrichissement (SAS) is a 100% subsidiary of Orano (SA) and is headquartered in Châtillon, France. Orano Chimie Enrichissement (SAS) is responsible for uranium chemistry and enrichment activities worldwide.

Orano Chimie-Enrichissement USA Holding (SAS) is a 100% subsidiary of Orano Chimie Enrichissement (SAS) and is headquartered in Châtillon, France.

Orano Enrichment USA Holding LLC is a 100% subsidiary of Orano Chimie-Enrichissement USA Holding (SAS) and is headquartered in the US.

Orano Enrichment USA LLC (OE) is a 100% subsidiary of Orano Enrichment USA Holding LLC and is headquartered in Bethesda, MD, USA. OE will be operating the Facility once licensed and constructed.

The President and Chief Executive Officer of Orano Enrichment USA LLC is a naturalized citizen of the United States of America and a citizen of France.

NRC notified OE's Facility Security Officer by a letter dated January 13, 2026 that Foreign Ownership, Control and Influence (FOCI) requirements had been waived by NRC after a FOCI review, in conformity with previous decisions regarding users of the ETC technology: March 20, 2012 for AREVA Enrichment Services, LLC.

### 1.2.1.3 Legal Site Description

SSP-2 was transferred from the U.S. DOE to the Industrial Development Board of the City of Oak Ridge. There is a portion of this parcel that is designed as the White Wing Scrapyard which will still fall under U.S. DOE responsibility as noted in [DOE/OR/01-2970 & D1](#) (DOE 2024b).

The legal description is subject to the final deed with the Industrial Development Board of Oak Ridge and contains the Tract 1A and 1B of SSP-2 (DOE 2025a).

## 1.2.2 Financial Qualifications

OE estimates the total cost of the Facility to be approximately \$5 billion (in 2025 dollars), excluding escalation, contingency, interest, tails disposition, decommissioning, and any replacement equipment required during the life of the Facility.

Pursuant to 10 CFR 70.23(a)(5), OE is required to demonstrate that it is financially qualified to carry out the activities proposed in its application. That approach is as follows:

- Construction of each incremental phase of the Facility shall not commence before funding for that increment is available or committed. Of this funding, prior to constructing such increments, OE must have in place commitments for one or more of the following:
  - Equity contributions from OE or its parents,
  - Commitment from the parent company to provide the necessary funds for the project,
  - Lending arrangements that solely or cumulatively are sufficient to ensure funding for the particular increment's construction costs.

OE shall make available for NRC inspection documentation of both the budgeted costs for each incremental phase and the source of funds available or committed to pay those costs.

- Operation of the Facility shall not commence until OE has in place either: (1) long term contracts lasting five years or more that provide sufficient funding for the estimated cost of operating the Facility for the five year period; (2) documentation of the availability of one or more alternative sources of funds that provide sufficient funding for the estimated cost of operating the Facility for five years; or (3) some combination of (1) and (2).

OE shall in accordance with 10 CFR 140.13b, prior to and throughout operation, have and maintain nuclear liability insurance in the type and amount to cover liability claims arising out of any occurrence within the United States, causing, within or outside the United States, bodily injury, sickness, disease, or death, or loss of or damage to property, or loss of use of property, arising out of or resulting from the radioactive, toxic, explosive, or other hazardous properties of chemical compounds containing source or special nuclear material. Orano has initiated conceptual discussion with ANI but does not have any indication to provide regarding the expected coverage or insurance details at this time

The effective date of this insurance will be no later than 45 days prior to the date that OE takes possession of licensed nuclear material.

Information indicating how assurance will be provided that funds will be available to decommission the Facility as required by 10 CFR 70.22(a)(9), 10 CFR 70.25, 10 CFR 30.25 and 10 CFR 40.36 is described in detail in Chapter 10, Decommissioning.

### **1.2.3 Characteristics of the Material**

OE proposes to acquire, deliver, receive, possess, produce, use, transfer, or store byproduct material as described in 10 CFR 30.4, source material as described in 10 CFR 40.4, and special nuclear material (SNM) meeting the criteria of low strategic significance as described in 10 CFR 70.4 are provided in Table 1-1.

Source material will be natural or depleted uranium in the chemical form of UF<sub>6</sub>. To minimize potential sources of contamination of UF<sub>6</sub>, such as 99Tc, OE will require UF<sub>6</sub> suppliers to provide Commercial Natural UF<sub>6</sub> in accordance with ASTM C787 (ASTM 2025). Byproduct material will consist of discrete sources used for instrument calibration. OE will submit a request to amend the Materials License to add the proposed quantities and types of sealed and unsealed instrument calibration sources to the possession limits. Subsequently, the License Application maybe revised to incorporate additional byproduct material.

OE does not propose possession of any reflectors or moderators with special characteristics.

#### **1.2.4 Authorized Uses**

This license application is for a material license issued under 10 CFR Parts 30 , 40, and 70, to construct, own, use and operate a uranium enrichment Facility with enrichment level up to 10.0 w/o <sup>235</sup>U.

#### **1.2.5 Protection of Safeguard Information**

This license application includes Safeguards Information (SGI) that is submitted separately. Specifically, the Physical Security Plan required as part of Chapter 13 is SGI. SGI is protected in accordance with 10 CFR 73.21-23. The Facility will handle SGI, specifically, the Physical Security Plan and the Safeguards Contingency Plan for Transport of Special Nuclear Material for transportation of radioactive materials.

#### **1.2.6 Protection of Classified Information**

This license application includes classified information that is submitted separately. Classified information is protected in accordance with 10 CFR 95 and 32 CFR 117. The Facility will handle classified matter, specifically, Uranium centrifuge technology in the form of SECRET-Restricted Data (RD) and CONFIDENTIAL-RD. OE will generate, store and possess NSI. Facility threat assessments may be provided by the NRC or the FBI.

#### **1.2.7 Period of Time for Which the License Is Requested**

OE is requesting a License for 40 years per NRC policy and practice SRM-SECY-06-0186 [ML062700110] (NRC/SECY 2006).

### **1.3 SITE DESCRIPTION**

The site OE selected for the new facility is in eastern Tennessee, located in Roane County on the eastern side of Tennessee State Highway 95, and about 6.7 miles southwest of the city of Oak Ridge. The Site is currently situated on land owned by the Industrial Development Board of the City of Oak Ridge and is specifically identified as the Oak Ridge SSP-2. SSP-2 is approximately 2.9 mi southwest of the DOE's Oak Ridge National Laboratory (ORNL). The surrounding area is part of the DOE's ORR and can be characterized as industrial, with a large portion of the area being greenfield sites.

The following sections provide a high level summary of the extensive site description detail found in Chapter 3 of the ER (OE 2026).

#### **1.3.1 Site Geography**

Site features are well suited for the location of a uranium enrichment facility as evidenced by the favorable conditions of hydrology, geology, seismology and meteorology as well as good transportation routes for transporting feed, product, and tails by truck.

##### **1.3.1.1 Site Location Specifics**

The approximate center of the Facility is located at latitude 35 degrees, 57 minutes, 4 seconds North and longitude 84 degrees, 21 minutes, 26 seconds West. The Facility will occupy about 100 acres of the western side of the Site.

More information on the site location can be found in the ER.

##### **1.3.1.2 Major Nearby Highways**

The Site is located east of Tennessee State Route 95 (SR-95), which is a multi-lane State highway. West of the Facility at an interchange, SR-95 turns south toward Lenoir City and connects to Interstate 40, continuing south the route turns into Highway 321 which connects to Interstate 75. From the SR-95 interchange, continuing southwest, it connects to State Route 58. SR 58 is a north-south state highway that serves as a major route for many communities in Roane, Meigs, and Hamilton counties. State Route 58 joins Interstate 40 for part of its route in Roane County, from Kingston (exit 352) east to Oak Ridge (exit 356) west of Oak Ridge. East of the Facility SR-95 turns into Highway 61 and connects to Interstate 75 after passing through the cities of Oak Ridge and Clinton, Tennessee. Interstates 40 and 75 interchange in two locations: in Knoxville, Tennessee, for Interstate 75 northbound into Kentucky, and north of Lenoir City for Interstate 75 southbound toward Chattanooga, approximately 8 mi southeast of the Facility.

The primary access to the site would be from SR-95 at Novus Drive north of the SR-95 intersection with SR 58.

For more detailed information, refer to the Section 3.2 of the ER.

##### **1.3.1.3 Nearby Bodies of Water**

The Facility site is located within the Valley and Ridge physiographic province. The Facility is located within the East Fork Valley, a valley between two parallel ridges, Black Oak Ridge on the north and East Fork Ridge to the south. East Fork Poplar Creek flows southwesterly through this valley and just west of the Facility site and just east of the TRISO-X facility. The Facility and the East Fork Poplar Creek (EFPC) channel are separated by Highway 95. The EFPC watershed

extends to the northeast and encompasses much of the western portion of the City of Oak Ridge. EFPC is a tributary to Poplar Creek, which flows southwesterly in the valley north of East Fork Valley and Black Oak Ridge. The EFPC confluence with Poplar Creek, a tributary to the Clinch River, is located southwest of Facility. Numerous small tributaries drain to EFPC from the ridges along the East Fork Valley. Bear Creek is downstream of the Facility and flows southwesterly in the valley south of the East Fork Valley and cuts through Pine Ridge to flow into EFPC.

For more detailed information, refer to the Section 3.4 of the ER.

### **1.3.2 Demographics**

The City of Oak Ridge is the nearest large population center and is located approximately 6 mi northeast of the site. Alcoa Tennessee has the closest commercial airport, McGhee Tyson, at approximately 19 miles from the site.

Demographics are further discussed in the Section 3.10 of the ER.

#### **1.3.2.1 Census Data**

The Facility is located within the City of Oak Ridge in Roane County, Tennessee. According to the 2020 Census the population of Oak Ridge was 31,402 and the population of Roane County was 53,404. The populations for the surrounding counties within the Region of Influence (ROI) are as follows: Knox County 478,971; Anderson County 77,123; Loudon County 54,886; and Morgan County 21,305. The cumulative population for the five counties within the ROI accounts for 9.92% of the population of Tennessee.

This is further discussed in the Section 3.10 of the ER.

#### **1.3.2.2 Nearby Populated Areas**

The ROI consists of Roane, Morgan, Anderson, Knox, and Loudon counties. The site is located in the City of Oak Ridge in Roane County, Tennessee. Other population centers are located in the approximate driving distance from the site:

- Lenoir City, Loudon County: 8.3 miles south
- Kingston, Roane County: 12.2 miles southwest
- Harriman, Roane County: 17.5 miles west
- Farragut, Knox County: 18.9 miles southeast
- Knoxville, Knox County: 32.8 miles east

This is further discussed in the Section 3.10 of the ER.

#### **1.3.2.3 Proximity to Nearby Public Facilities**

There are no nearby (within 1 mile) public facilities that need to be considered. Further information is discussed in the Section 3.1 of the ER.

### **1.3.2.4 Nearby Industrial Facilities (Includes Nuclear Facilities)**

#### Nuclear Facilities

NAC Philotechnics is located approximately 0.9 mi northwest of the Facility and X-Energy's TRISO-X facility will be located approximately 1.0 mi northwest of the Facility.

#### Non-Nuclear Facilities

The city of Oak Ridge is located approximately 6.7 mi northeast of the site. The nearest residence is 1.2 mi northeast of the Facility. Public use areas include a hiking trail north and west of Facility.

The nearest offsite agricultural farm is approximately 3.9 mi to the south-southwest of the Facility. The nearest feedlot and dairy operations are about 18.4 mi south-southwest of the Facility.

The Oak Ridge Enhanced Technology and Training Center and the Enhanced Emergency Response Facility are located approximately 0.8 mi north of the Facility. The ORNL Carbon Fiber Technology Facility is located approximately 0.5 mi west of the Facility.

Refer to ER Chapter 2 for additional information.

### **1.3.2.5 Land Use Within Five Mile Radius, Uses of Nearby Bodies of Water**

The dominant land uses in the region are forest lands, developed lands agriculture, and waters or wetlands. Refer to ER Section 3.1 for additional information.

The Facility will obtain water for fire, potable, and industrial process uses from the City of Oak Ridge public water distribution system. All wastewater is discharged to the City of Oak Ridge municipal sanitary sewer collection system.

Refer to ER Section 3.4 for additional information.

### **1.3.3 Meteorology**

The meteorological conditions at the Facility have been evaluated and summarized in order to characterize the site climatology and to provide a basis for predicting the dispersion of gaseous effluents.

In support of the Facility, meteorological towers with instrumentation set at various heights are located on the reservation of the ORNL and give a detailed estimate of meteorological conditions that would exist at the site. The first set of meteorological tower data was obtained from towers surrounding the Site and a second set was obtained from nearby airports. By obtaining data from each of these towers, a detailed pattern for the climate is obtained and this data is then used for release / dispersion calculations.

Refer to ER Section 3.6 and ISAS Section 1.1.5 for additional information.

#### **1.3.3.1 Primary Wind Direction and Average Wind Speeds**

The eleven meteorological towers located on the ORNL property were used to gather wind data for the Site. Wind data was obtained from the ORR Meteorology web page for these towers (ORNL 2021). Table 1-4 lists data from the highest and lowest Met towers AMSL used to gather wind data. All other towers lie at elevations between these towers, so a correlation can be drawn with regards to the wind speed. The trend for the monthly/annual wind speed for all towers is thus very consistent, as shown in Figure 3-45 of the OE ER. Data is compiled from Table 3-9 and Table 3-13 of the ER.

**Table 1-4 ORNL Met Tower Wind Data**

| Tower   | Elevation (AMSL) | Instrument Level (m AGL) | Distance to Site (mi) | Period of Record (years) | Max Wind Gust (mph) | Annual Average (mph) | Primary Wind Direction |
|---------|------------------|--------------------------|-----------------------|--------------------------|---------------------|----------------------|------------------------|
| Tower F | ~1147 ft         | 10                       | 3.03                  | 2017-2021                | 66.7                | 4.58                 | WSW, NE, ENE, W        |
| Tower K | ~795 ft          | 60                       | 2.49                  | 2014-2016                | 79.2                | 5.78                 | SW, ENE, WSW           |
| Tower M | ~770 ft          | 10/15                    | 3.36                  | 2014-2020                | 62.3                | 1.98                 | NNE, SW, N, NE         |
| Tower S | ~1153 ft         | 10/15                    | 6.11                  | 2014-2021                | Not measured        | 6.57                 | NE, SW, WSW            |
| Tower Y | ~954 ft          | 15                       | 6.32                  | 2014-2021                | Not measured        | 4.23                 | ENE, SW, WSW, NE       |

These data sets are discussed and analyzed in more detail within Section 3.6 of the ER (OE 2026).

### 1.3.3.2 Annual Precipitation – Amounts and Forms

The type of precipitation that occurs at the Site varies with the seasons. Convective showers and thunder showers occur in the summer. Precipitation during the spring and fall can be characterized as showery or as steadier rainfall. Winter precipitation is typically in the form of snow.

Precipitation averages about 55.8 inches annually based on 30 years of data (Oak Ridge 30 Year Climate Average) (ORNL 2021). Snowfall in the Oak Ridge area, though normally light, usually occurs from November through March with an average of about 5.70 inches of snow annually based on 30 years of data (Oak Ridge 30 Year Climate Average) (ORNL 2021). Severe storms are relatively infrequent as the region is east of maximum tornado activity, south of the most significant snowstorms, and inland from hurricane and tropical storm tracks.

Heavy rains and significant snow melting from the nearby ridge could result in localized flooding of streams coming off the mountain. These streams have been identified, and appropriate terracing of the site and redirection of streams is planned.

Over the 74-year period of record, Roane County has had six ice storms recorded: one in 1998, one in 2005, one in 2010 and three in 2015 that occurred within one month (Feb to Mar) (NOAA 2025).

Refer to ER Section 3.6 for additional information.

### 1.3.3.3 Severe Weather

#### Tornadoes

The annual frequency of tornadoes in Roane County Tennessee and the surrounding nine-county area – encompassing Anderson, Cumberland, Knox, Loudon, McMinn, Meigs, Morgan, Monroe, and Rhea – is limited. The annual frequency of occurrence of a tornado in the region is 1.47 (109 tornadoes/74-years). The probability of a tornado developing at the Facility site is very small, due to the mountainous terrain that starts west and south-west of the Facility site.

The largest tornado that occurred in the aforementioned counties was an EF-4 that occurred in Meigs/McMinn on May 2, 1953. Four deaths and eight injuries were reported in Meigs County. Roane County has had three EF-0 and two EF-1 tornadoes in Oct 1977, Jun 2011, Jun 2014, Feb 1993, and Aug 2023, respectively. No reported injuries or fatalities occurred from these tornadoes (NOAA 2025).

Refer to ER Section 3.6 for additional information.

### Hurricanes

Hurricanes, or tropical cyclones, are low-pressure weather systems that develop over the tropical oceans. Hurricanes are fueled by the relatively warm tropical ocean water and lose their intensity quickly once they make landfall. The Facility is not in the vicinity of any ocean and is protected by mountains; therefore, hurricanes are not considered a credible threat.

### Thunderstorms and Lightning Strikes

Thunderstorms are most prevalent during the months of March through August, peaking during the month of July for the site. Numerous thunderstorm days were identified in the vicinity of the site queried from the *NCDC Storm Event Database* (NOAA 2025). The output from the query contained 2,484 thunderstorm days during the 74-year period of record or 33.6 thunderstorm days per year. Several individual thunderstorms may occur during each of the thunderstorm days.

Over the 74-year period of record, Roane County has had two major lightning storms occur with thunderstorms: one in 1996, and another in 2018. The 1996 lightning strike destroyed one house by initiating a house fire. The second storm occurred on July 7, 2018, with an event at 1500 local time and again at 1600 local time (NOAA 2025).

Refer to ER Section 3.6 for additional historical information on lightning.

Lightning Protection Systems are mentioned in Section 7.4.3.3 of NUREG-1520, which recognizes NFPA 801 for acceptable design criteria for lightning protection systems and other facility design features that affect fire safety. In conjunction with NFPA 801, the International Building Code (IBC) 2024 provides guidance on lightning protection systems in Sections 1511.76 and 2703 (IBC 2024). Both IBC and NFPA 801 cite NFPA 780 for lightning protection requirements that govern structures exceeding 75-feet in height, housing explosive or hazardous materials, and/or providing essential functions within onsite supporting structures (e.g., hospitals and fire stations, etc.).

Annex L of NFPA 780 gives the risk assessment criteria to determine the need for lightning protection systems to be warranted. [

]

Added requirements for structural grounding of all electrical-related systems, which also entails the dissipation of high-voltage electricity disseminating from a lightning protection system, are detailed in the NFPA 70, *National Electric Code (NEC)*.

Additional discussion on the site-specific tornado, and lightning events are provided in ISAS Section 2, Appendix 2, Accident Sequences EE-TORNADO & TORNADO MISSILE and EE-LIGHTNING, respectively.

### **1.3.4 Hydrology**

The Facility site is located within the Valley and Ridge physiographic province. The Facility is located within the East Fork Valley, a valley between two parallel ridges, Black Oak Ridge on the north and East Fork Ridge to the south. The East Fork Poplar Creek (EFPC) flows southwesterly through this valley and just west of the Facility site, and is a tributary to Poplar Creek, which flows southwesterly in the valley north of East Fork Valley and Black Oak Ridge. The EFPC watershed extends to the northeast and encompasses much of the western portion of the City of Oak Ridge. The EFPC headwaters are located west of the Facility and in the City of Oak Ridge.

The Facility is located adjacent to East Fork Ridge to the northeast. Topographically, the East Fork Ridge oriented northeast to southwest rises from approximately 770 feet above mean sea level (AMSL) to over 1,100 feet AMSL immediately northeast of the Facility. A smaller unnamed ridge parallel to the East Fork Ridge provides a boundary between the Facility site and the Whitewing Scrap Yard which separates the two main watersheds in the area – the East Fork Poplar Creek Watershed and the Bear Creek Watershed. Surface water discharge within the Facility falls within the East Fork Poplar Creek Watershed with all drainage to the East Fork Poplar Creek. East Fork Poplar Creek flows southwesterly through a valley along the eastern side of the Facility. This watershed divide separates surface drainage the Facility site from that of the Whitewing Scrap Yard, which limits the potential for any potential contamination from the Whitewing Scrap Yard entering the Facility site.

Refer to ER Section 3.4 for additional information.

#### **1.3.4.1 Characteristics of Nearby Rivers, Streams, and Other Bodies of Water**

A jurisdictional waters assessment was conducted at the Site.

Twenty-eight streams/relatively permanent waterways and 42 wet weather conveyances/non-relatively permanent waterways were identified at the site. Except for Bear Creek, which is a perennial stream that traverses the southwestern corner of the site, the onsite streams are Fork Poplar Creek

The wet weather conveyances/non-relatively permanent waterways are typically headwater ephemeral channels located within the forested valleys through the site.

Seventeen wetlands were identified on the site. All but three wetlands are palustrine forested features, with the remaining three being palustrine emergent wetlands.

Refer to ER Section 3.4 for additional information.

#### **1.3.4.2 Depth to Groundwater Table**

Groundwater monitoring wells have not been installed at the Site. Observations during geotechnical drilling indicated that groundwater was absent during the time of drilling (Kiewit Engineering Group, Inc. 2025). Geotechnical borings completed at the Facility site ranged in depth from approximately 15 feet to 90 feet below ground surface during three phases of drilling. Groundwater was not encountered in any of the Phase 2 and Phase 3 borings. The elevation of the bottom of the borings ranged from approximately 735 to 793 feet AMSL, indicating that groundwater, if present, is well below the planned building grade of 825 feet AMSL.

The lack of onsite monitoring wells precludes the use of dye tracing and calculation of groundwater velocities.

The lack of groundwater encountered during the geotechnical investigation indicates that groundwater was not present at the site in the shallow subsurface during drilling (Kiewit Engineering Group, Inc. 2025). It is anticipated that water during construction is perched water associated with rainfall events. The stable groundwater table will not be encountered during grading. Excavations into bedrock along the northeast portion of the Facility site may encounter water especially after rainfall events, given the amount of bedrock proposed to be removed in this area. Dewatering using sumps and pump, and ditches is the most productive method to manage construction water.

Refer to ER Section 3.4 for additional information.

#### **1.3.4.3 Groundwater Hydrology**

Two broad hydrologic units have been identified on the ORR: (1) the Knox Aquifer, which includes the Maynardville Limestone and is highly permeable, and (2) the ORR aquitards, which consist of less permeable geologic units.

Groundwater flow in the area of the Facility site is controlled by the East Fork Ridge and the associated surface water drainages, and an unnamed ridge located between the Facility site and the White Wing Scrap Yard.

Flow paths in the active-flow zones (particularly in the aquitards) are relatively short, and nearly all groundwater discharges to local surface water drainages on the ORR.

Refer to ER Section 3.4 for additional information.

#### **1.3.4.4 Design Basis Flood Events Used for Accident Analysis**

The Facility site lies on the Site, at the base of the White Oak Mountain which is one of a series of paralleling ridges running approximately north-northeast in the Tennessee Valley between the Cumberland Plateau/Mountains to the west and the Blue Ridge and Smoky Mountains to the east. The ridge averages 1,368 feet AMSL, the highest point being 1,495 feet AMSL. The Facility site is approximately 800 to 825 feet AMSL. The Clinch River lies approximately 3.3 miles south-west of the Facility site, which is approximately 750 feet AMSL. This location, on the Clinch River, is approximately 24 miles southwest of the Norris Dam and Norris Reservoir. While a breach of the dam (retaining  $1.11 \times 10^{11}$  ft<sup>3</sup> of water) would not cause a flooding problem for the Facility site due to the elevation difference between the site and the Clinch River, heavy rains and significant snow melt from the nearby ridge could result in localized flooding of streams coming off the mountain. These streams have been identified, and appropriate terracing of the site and redirection of streams is planned.

The design basis flood events used for accident analysis is described in the ER Section 3.4. The Facility and the area surrounding the site are defined as “areas determined to be outside of the 0.2 percent annual chance floodplain”, also known as the 500-year floodplain, as defined by the National Flood Insurance Program (Figure 3-26 of the ER). In addition, FEMA floodplain hazard classifies the Site as an Area of Minimal Flood Hazard (Figure 3-28 of the ER) (FEMA 2007).

A floodplain study for EFPC was completed by the Tennessee Valley Authority (TVA) in 1991. The TVA floodplain study demonstrates that the maximum 100-year flood elevation along EFPC in the vicinity of the Facility is 764.9 ft. mean sea level at Mile 2.94 upstream of the Facility, and 759.9 ft. at Mile 2.14 (Figure 3-27 of the ER). The EFPC did not show the 100-year and 500-year floodplain extending onto the Facility.

Refer to ER Section 3.4.2 and 3.6 for additional information.

Specific elevations of the site will be dependent on factors determined from the implementation of the Site's Grading Plan (Kiewit 2025). The following are inputs to the hydrogeological model to determine the Design Basis Flooding (DBF) criteria for the Site.

- Kiewit's grading plan provides the design elevation for the Site's *Essential* Buildings at 830-feet above sea level (Kiewit 2025).
- Based on Topographic maps from the USGS, the closest co-located waterway (nearby creek) is Bear Creek to the South that is less than 775-feet above sea level. The other wet-weather creeks are to the North and are wet-weather tributaries that feed into East Fork Poplar Creek, which extend from an elevation of more than 800-feet down to less than 760-feet while transporting runoff waters through the Site to East Fork Poplar Creek.
- [ ]
- FEMA Flood Map No. 47145C0130F provides data that the Site is located within Flood *Zone X* for having minimal flood risk. The Site is located 1.7 miles from the nearest 100- or 500-year flooding areas (Flood *Zone AE*) to the Northeast (FEMA 2025).
- Bear Creek (i.e., tributary of East Fork Poplar Creek) is near the OE Site and this creek is also not classified as a flooding area (i.e., located within Flood *Zone X*, as opposed to *Zone A* or *AE* for being a flooding area).

Several inputs for the design and analysis of the Site in relation to the design basis flooding (DBF) Event have been determined for the methodology to ascertain if the Site elevation provides an acceptable level of risk in correlation to the flooding elevation due to the DBF Event.

#### Co-located Waterways (Mean Monthly Base Flow)

Significant rivers or waterways are not within the immediate vicinity (1-mile radius) of the Site. The USGS does provide 7.5-minute topographical quadrangle (topo) maps for the Site location that shows small creeks and secondary or tertiary tributaries of the major waterways in the Oak Ridge, TN area (NOAA 2026). Between 81° to 82°N and 37° to 39°E, this USGS topo map shows a branch of Bear Creek that exists along the southern side of the Site at an elevation of less than 775-feet above sea level. Bear Creek's elevation is a minimum of 45-feet below the final design grade of the Site. Other temporary creeks are to the North that are wet-weather tributaries feeding into East Fork Poplar Creek and extend from an elevation of over 800-feet down to less than 760-feet. This significant difference in elevation between the Site and these tertiary waterways that feed into East Fork Poplar Creek, which feed the Watts Bar Lake portion of the Clinch River, have potential effects for analyzing the flooding elevation due to the DBF.

#### Local Intense Precipitation Events

The design rain load for the Facility is 7.51 in/hr (15-min duration) and 4.29 in/hr (60-min duration). The Design Storm Return Period depends on the Risk Category and is shown on Table 8.2-1 of ASCE 7-22. [ ] the return period is 500-years.

The Design Basis Flood (DBF) Event is discussed in Section 3.2 of NUREG-7046 (NRC 2011), which defines a DBF according to the local intense precipitation (LIP) and local storm runoff. [ ]

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### FEMA Flood Zones

The site is classified as “Zone X” according to Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), Map Number 47145C0130F, dated September 28, 2007. Zone X is classified as being a minimal flood insurance risk area.

Section 3.4.3.2, Subsection (1).c. of NUREG-1520 (NRC 2015) requires the minimum 100-year flood to be analyzed for the site in question. The FEMA maps and data sets are readily available and the following FEMA Flood Map Numbers are given below based on their vicinity to the Site (FEMA 2025). The closest 100-year (1% annual probability of Green-Blue Shaded Areas) and 500-year (0.2% Annual Probability of Orange Shaded Areas) flood plains are provided in ISAS Section 2, Appendix 2, Figure 2-6 through 2-11. The informational maps are listed in the summary of **Error! Reference source not found.** below:

**Table 1-5 FEMA Flood Map List for OE Site and Surrounding Area (FEMA 2025)**

| Flood Map No.                                         | Panel No.  | Description                                                                                                     |
|-------------------------------------------------------|------------|-----------------------------------------------------------------------------------------------------------------|
| 47145C0110F <b>Error! Reference source not found.</b> | 110 of 330 | Flood Areas Northwest of OE Site with North Section of ETTP (former K-25 Facility)                              |
| 47145C0120F                                           | 120 of 330 | Flood Areas Southwest of the OE Site with South Section of ETTP (former K-25 Facility)                          |
| 47145C0130F<br>(Both B&W and Color Maps Provided)     | 130 of 330 | OE Site Location<br>Flood Areas Northeast of OE Site with nearby City of Oak Ridge Subdivisions                 |
| 47145C0140G                                           | 140 of 330 | Flood Areas SE of OE Site with section of Watts Bar Lake (closest lake to OE Facility) and west portion of ORNL |

FEMA Flood Map No. 47145C0120F is provided in Figure 1-4 below. This map contains the Site Location with the 100-year (1% annual probability, 1E-2/year) and 500-year (0.2% annual probability, or 2E-3/year) flood plain areas co-located to the Site (FEMA 2007). The 100- and 500-year floods are identified as a tool for assessing the Design Basis Floods (DBF) event by NUREG-1520, §3.4.3.2(1)c, Appendix B – *Initiating Events and Initial Conditions*, and Appendix B – *Flooding Hazards*.

The Site is within Flood Zone X, which provides ample time for onsite safety measures to be implemented to put the facility into a safe configuration and for personnel to evacuate. The FEMA website provides a National Flood Hazard Layer Viewer for the immediate area surrounding the Site (FEMA 2007). This map layer states the OE Site is an “Area of Minimal Flood Hazard” (i.e., Zone X) and does not display any nearby flood zones of interest that are in proximity to the Site. Thereby, the Site will have ample time to respond to a flood hazard and place the facility into a safe configuration.

Response to recent 2024 flooding following Hurricane Helene affected a similar Nuclear Fuel Cycle Facility within the East TN area, Nuclear Fuel Services (NFS) located in Erwin, TN. This

flooding incident had been reported by several news services, such as WCYB Chanel 5 News Report, *Nuclear Fuel Services in Erwin says nuclear materials are safe following flooding* (WCYB Channel 5 News 2024). Local news stated this flooding following Hurricane Helene resulted in this part of East Tennessee experiencing a 1,000- to 2,000-year flooding event in some areas (WKRN Channel 2 News 2024). The Oak Ridge, TN area did not realize the same levels of flooding as the areas surrounding Erwin, TN; but the NFS flooding emergency protocols provide an example of the applicability to use administrative methods to mitigate a DBF event at a Fuel Cycle Facility.

#### Design Basis Flood Event vs. Site Elevation Analysis

The OE Site is a Flood *Zone X* area (i.e., not a Zone A or AE, etc.) with a non-credible contribution from local dam failures (Refer to ISAS, Section 2, Appendix 2, Accident Sequence EE-Flooding). Additional methods using the LIP and topographical elevation data are available, according to the NRC guidance. Appendix B of NUREG-7046 cites the methodology to analyze a Design Basis Flood event using the site-specific LIP and topography data as inputs for hydrological modeling of the Site area. [

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#### **1.3.4.5 Characteristics of Soil Types and Bedrock**

The Natural Resources Conservation Service (NRCS) soil survey database identified 34 soil map units digitally within the 1.9-mi radius of the Facility. Of these, only the Armuchee silt loam and the Townley silt loam are present in the immediate vicinity of the Facility assessment area (USDA 2025a) (USDA 2025b).

The NRCS soil survey database depicts nine soil types within the Facility (USDA 2025a) (USDA 2025b). Five are Ridge/Upland Soils and four are Terrace/Floodplain Soils. In general, soils at the site are well to moderately well drained and non-hydric, except for the Capshaw silt loam, Colbert-Lyerly-Rock outcrop, and Hamblen silt loam which are well drained and predominately non-hydric having hydric components less than six percent (CEC 2025).

Refer to ER Section 3.3.3 for additional information.

#### **1.3.4.6 Earthquake Magnitudes and Return Periods**

Although major thrust faults are numerous in the vicinity of the study area, these faults are associated with mountain building episodes that ended more than 200 million years ago. These faults are no longer active, but stress stored up at depth in these rocks is periodically released as minor earthquakes. Since 1973, 139 earthquakes have been recorded within 62 miles of the Site with the highest magnitude of 4.7 occurring on November 30, 1973, 0.62 miles northeast of Alcoa, Tennessee, which is 24.6 miles southeast from the Facility.

The USGS rates ground motions using peak ground acceleration, which is the maximum acceleration experienced during the course of an earthquake and is measured in units of acceleration due to gravity (g). The seismic map for 2018 indicates that the study area is located in an area with a moderate seismic hazard class rating: 0.34 g peak horizontal ground acceleration with a 2 percent probability of exceedance in 50 years; and 0.10 g peak horizontal ground acceleration with a 10 percent probability of exceedance in 50 years (USGS 2025b).

Refer to ER Section 3.3 and ISAS Section 1.1 for additional information.

#### **1.3.4.7 Other Geologic Hazards**

##### Landslide Hazard

The USGS has identified zones of varying landslide susceptibility within the conterminous United States. Erosion has produced steep slopes including the development of canyons throughout the site region. Persistent rainfall followed by more intense precipitation has resulted in damaging debris slides and avalanches. Many landslides have occurred on soils derived from weathered Pennsylvanian and Permian sedimentary rocks. Common forms of mass wasting in the site region consist of rockslides originating from detached rock slabs and translational landslides involving soils containing elevated groundwater under a hydrostatic head. Numerous slow-moving debris slides occur in the Valley and Ridge and Blue Ridge provinces. The Interior Low Plateaus and the Cumberland Plateau are underlain by relatively flat-lying Devonian and Mississippian shales, sandstones and limestones. The shale becomes susceptible to landsliding when weathered into clayey soils.

Slope stability analyses were completed during the geotechnical investigation for approximately 50 feet tall, 3H:1V fill slope proposed on the south side of the project where the existing valley will be filled (Kiewit 2025a). Based on the established correlation between friction angle and soil plasticity index, the friction angle for the onsite clay is estimated to range between 25 and 30 degrees. To maintain a conservative approach in the slope stability analysis, the lower bound

values of the friction angle were adopted. Groundwater was assumed at the soil and bedrock interface. Based on these analyses, the proposed embankment outslope of 3H:1V has a calculated factor of safety greater than 1.5. No other slope stability concerns were identified based on existing site conditions and proposed site grading. Based on the geotechnical analyses, multiple recommendations were made to OE to incorporate into the ongoing design, and are listed in Section 3.3.7 of the ER.

Refer to ER Section 3.3 for additional information.

## **1.4 EXEMPTIONS OR SPECIAL AUTHORIZATIONS**

### **1.4.1 Financial Exemption**

In accordance with 10 CFR 40.14 and 10 CFR 70.17, OE requests exemptions from certain provisions of 10 CFR 40.36 paragraph (d), and 10 CFR 70.25 paragraph (e). Specifically, 10 CFR 40.36(d) and 10 CFR 70.25(e) both state in part that the decommissioning funding plan contains:

*"...a certification by the licensee that financial assurance for decommissioning has been provided in the amount of the cost estimate for decommissioning...."*

As stated in Chapter 10 of the License Application, OE intends to sequentially install and operate modules of the enrichment equipment over time and provide financial assurance for decommissioning during the operating life of the Facility at a rate that is in proportion to the decommissioning liability for these facilities as they are phased in. This satisfies the requirements of this regulation without imposing the financial burden of maintaining the entire financial coverage for facilities and material that are not yet in existence. The same reasoning supports OE's request for an exemption with regard to the decommissioning funding assurance for DUF<sub>6</sub>. As also stated in Chapter 10 of the License Application, OE proposes to provide financial assurance for the disposition of DUF<sub>6</sub> at a rate in proportion to the amount of accumulated DUF<sub>6</sub> onsite up to the maximum amount of the DUF<sub>6</sub> produced by the Facility.

The justification for this proposal to provide decommissioning funding assurance on a forward looking incremental basis is OE's commitment to update the decommissioning cost estimates and to provide to the NRC a revised funding instrument for facility decommissioning at a minimum prior to the operation of each facility module. With respect to the DUF<sub>6</sub>, OE commits to updating the decommissioning cost estimates on an annual forward-looking incremental basis and to providing the NRC revised funding instruments that reflect these projections of DUF<sub>6</sub> production.

The long-term nature of enrichment contracts allows OE to accurately predict the production of DUF<sub>6</sub>. If any adjustments to the funding assurance were determined to be needed during the annual period due to production variations, they would be made promptly and a revised funding instrument would be provided to the NRC.

OE requests that exemptions from the provisions of 10 CFR 40.36(d) and 10 CFR 70.25(e) described above be granted.

In support of this request, OE provides the following information relative to the criteria in 10 CFR 40.14 and 10 CFR 70.17. This exemption is justified for the following reasons:

- It is authorized by law because there is no statutory prohibition on incremental funding of decommissioning costs.
- The requested exemption will not endanger life or property or the common defense and security for the following reasons: the modular aspects of the Facility allow enrichment operations to begin well before the full capacity of the Facility is reached. Thus, the

decommissioning liability is incurred incrementally as more centrifuge machines are added to the process, until full capacity of the facility is reached; at which point the DUF<sub>6</sub> are generated at a relatively constant rate throughout the life of the Facility. As such, requiring full funding for decommissioning liability, to include DUF<sub>6</sub> disposition, incurred over the lifetime of the Facility, at the time of initial license issuance, produces an unnecessary financial burden on the licensee.

- Furthermore, incremental funding of decommissioning costs, to include DUF<sub>6</sub> disposition, is justified based upon OE's commitments to update the cost estimates and provide a revised funding instrument for decommissioning and DUF<sub>6</sub> disposition prior to operation of each additional increment of capacity on process gas, and after full capacity has been reached to annually adjust the cost estimate for DUF<sub>6</sub> disposition and to adjust all other decommissioning costs periodically, and no less frequently than every three years. In addition, the relative stability of the factors which are utilized to generate the DUF<sub>6</sub> volumes allows actual inventory values to be provided for prior periods of operation and reliable estimates for the upcoming periods of operation. The NRC has previously accepted an incremental approach to decommissioning funding costs for other Uranium Enrichment Facilities in the United States.
- Finally, granting this exemption is in the public interest for the same reasons as stated above and will facilitate deployment of gas centrifuge enrichment technology by eliminating an unnecessary financial burden on the licensee.

#### 1.4.2 Facility Building Structural Exemption

OE requests an exemption from 10 CFR 70.61(e) under the authority of 10 CFR 70.17, specifically regarding the requirement to designate certain structures as IROFS.

10 CFR 70.61(e) requires that each engineered or administrative control or control system necessary to meet the performance requirements of 70.61(b)–(d) be designated as an IROFS and maintained through the management measures of 10 CFR 70.62.

The Facility process buildings do not perform a containment or confinement safety function in the context of 10 CFR 70.61. They are not required to prevent or mitigate high or intermediate consequence events as defined in the regulation.

These functions support IROFS but are not themselves IROFS functions under 70.61.

Even though the buildings are not designated as IROFS, OE applies robust management measures consistent with Chapter 11. [

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These management measures ensure that each building is designed and constructed in accordance with applicable codes so that the risk of any credible high consequence event identified in the Integrated Safety Analysis (ISA), as required by 10 CFR § 70.62, is acceptably

limited. The OE credits compliance with ASCE 7 22 as an IROFS to meet the baseline design criteria in 10 CFR § 70.64(a)(2) for new facilities and new processes at existing facilities, thereby providing protection against natural phenomena hazards consistent with the most severe historically documented events for the site.

OE credits the building code when determining the unmitigated consequences in its ISA, and does not designate an IROFS for meeting the building code. The Facility building structural integrity and protective role are already ensured through established management measures and adherence to ASCE 7 22. Therefore, OE requests an exemption under 10 CFR 70.17 to clarify that these buildings are not subject to the IROFS designation requirement of 70.61(e).

### **1.4.3 ISSP Deferral**

Pursuant to 10 CFR 70.17, Orano Enrichment (OE) requests an exemption from the requirement in 10 CFR 70.22(m) to submit the Information Systems Security Plan (ISSP) as part of the current license application package.

This exemption is necessary because detailed design work for the enrichment facility is still in progress, and OE cannot complete the ISSP with the level of specificity required for NRC review at this stage. Granting the exemption will allow the NRC to begin its review of the safety related portions of the license application as scheduled, while OE completes the ISSP in parallel. OE commits to submitting the ISSP no later than four months after NRC acceptance of the license application. Justification for the exemption is as follows:

#### **1.4.3.1 Authorized by Law**

Under 10 CFR 70.17(a), the NRC may grant exemptions from Part 70 requirements when such exemptions are authorized by law, will not endanger life or property or the common defense and security, and are otherwise in the public interest.

The requested exemption concerns only the timing of the ISSP submission—not the requirement to submit the ISSP itself. Granting the exemption does not alter or violate any requirement of the Atomic Energy Act or NRC regulations. The ISSP will still be submitted and reviewed prior to any request for an Authority to Operate (ATO) under 10 CFR 95.49 and 32 CFR Part 117. Therefore, the exemption is fully authorized by law.

#### **1.4.3.2 Impact on Life, Property, or the Common Defense and Security**

Deferring the ISSP does not change the design, operation, or safety basis of the facility. The exemption affects only the sequencing of submittals and does not:

- Change the probability or consequences of any evaluated accident
- Reduce safety margins
- Affect the effectiveness of any safety program or licensing basis document
- Increase effluents or occupational exposures
- Affect operations or decommissioning activities

The exemption **does not circumvent** the requirement to submit the ISSP as part of the ATO request under **10 CFR 95.49** and **32 CFR Part 117**. All classified information system requirements remain fully applicable.

Allowing the NRC to begin its safety review earlier enhances the common defense and security by supporting the timely establishment of additional U.S. based uranium enrichment capacity.

#### **1.4.3.3 Public Interest**

- a) Supports timely deployment of domestic enrichment capacity

Granting the exemption allows OE to submit the license application on schedule, avoiding delays associated with completing the ISSP during early design phases. This accelerates the deployment of domestic enrichment infrastructure, which is essential to U.S. energy security and national security objectives.

- b) Aligns with national policy priorities

The Administration has emphasized strengthening domestic nuclear fuel cycle capabilities to reduce reliance on foreign enrichment services. Facilitating timely licensing of U.S. enrichment capacity directly supports these policy goals and enhances supply chain resilience.

- c) Reduces the likelihood of unnecessary RAIs

Submitting an ISSP before the facility design is sufficiently mature would likely result in multiple Requests for Additional Information (RAIs), prolonging the review process for both OE and the NRC. Allowing OE to submit a complete and accurate ISSP at a later stage improves review efficiency and predictability.

- d) Reduces regulatory burden and optimizes resource allocation

Both OE and the NRC must manage finite technical resources during a period of rapid industry growth. Allowing the ISSP to be submitted later enables both parties to focus near term efforts on higher risk safety reviews. This approach supports regulatory efficiency without compromising security or compliance.

## 1.5 REFERENCES

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