Site Safety Analysis Report
for Exelon Generation Company, LLC
Early Site Permit

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CHAPTER 1

Introduction and Description of Proposed Facility

Exelon Generation Company, LLC (EGC), hereinafter referred to as the Applicant, has developed this comprehensive Site Safety Analysis Report (SSAR) to address the safety issues associated with its Early Site Permit (ESP) application in compliance with the applicable portions of Title 10 of the Code of Federal Regulations (CFR) Part 52 (10 CFR 52), Subpart A - Early Site Permits.

The Applicant has selected a vacant parcel of land on the Clinton Power Station (CPS) Site (hereinafter generally referred to as the EGC ESP Site) located approximately 700 ft south of the existing CPS Facility as the location for a possible future facility (hereinafter generally referred to as the EGC ESP Facility). The CPS Facility is located in Harp Township, DeWitt County approximately 6 mi east of the city of Clinton, in central Illinois. It is a single unit nuclear generating facility licensed to operate at 3,473 MWt (approximately 1,138.5 MWe gross). The Boiling Water Reactor (BWR) designed by General Electric (GE) has been producing electricity for customers since 1987. The specific reactor type has not been identified for the EGC ESP Facility. Technical information from various designs has been used to develop and envelope the facility characterization necessary to evaluate the suitability of the site for the construction and operation of a nuclear power plant.

This co-location strategy proves beneficial because this existing nuclear site is already developed and dedicated to nuclear use. Considerable site data exists and has been submitted to and reviewed by the United States Nuclear Regulatory Commission (USNRC) for the present CPS Facility. Where applicable, data from the CPS Updated Safety Analysis Report (USAR) (CPS, 2002), CPS Environmental Report (ER) (CPS, 1982), and other CPS licensing basis documents have been utilized in the development of the Site Safety Analysis Report (SSAR).

The SSAR complies with the applicable portions of 10 CFR 52.17(a)(1), and consists of a general description of the proposed facility, and a description of the site characteristics.

The following briefly describes the sections of the SSAR:

Chapter 1, Introduction and Description of Proposed Facility - includes a general site description, overview of reactor types, and the Plant Parameters Envelope (PPE) approach to characterize the proposed development.

Chapter 2, Site Characteristics - includes geography and demography, nearby industrial, transportation, and military facilities, meteorology, hydrology, and geologic and seismic characteristics of the site.

Chapter 3, Site Safety Assessment - includes radiological effluents, thermal discharges, major accident doses, and conformance with 10 CFR 100 - Reactor Site Criteria requirements. This section provides the anticipated maximum levels of radiological and thermal effluents the proposed facility will produce. This data are used to verify that plant

effluents will meet applicable regulatory standards and serve as input for the development of the environmental impacts analyses presented in the ER.

1.1 Organization of Contents

1.1.1 Subdivisions

The SSAR is organized into three chapters each of which consists of a number of sections that are numerically identified by numerals separated by a decimal (for example, Section 2.3 is the third section of Chapter 2). The format and content of Regulatory Guide 1.70 (Revision 3) was used for Chapters 1 and 2 as appropriate for those sections applicable to an ESP application.

1.1.2 References

References to other sections in the SSAR are made by chapter or section number. References to another document are indicated by citation (e.g. USGS, 1964). A reference section is located at the end of each chapter and is paginated sequentially. Reference pagination begins with the chapter number, followed by a decimal, then a capital letter "R," followed by a hyphen, and then the page number. Therefore, page one of chapter one references reads 1.R-1, page two of chapter one references reads 1.R-2, and so on.

A list of the acronyms and abbreviations used in this report can be found in Appendix A of the Administrative Information.

1.1.3 Tables and Figures

Tabulations of data are designated as "tables." They are identified by the section number, followed by a number typically indicating their order of mention in the section (for example, Table 2.3-4 is the fourth table of Section 2.3). Tables are located at the end of the applicable chapter following the text. Drawings, sketches, curves, graphs, and engineering diagrams are identified as "figures" and are typically numbered according to the order of mention in the section, for example, Figure 1.2-3 is the third figure of Section 1.2). Figures are located at the end of the applicable chapter following the tables.

1.1.4 Page Numbering

Pages are numbered sequentially within each section. Two numerals separated by a decimal correspond to the chapter and section number and are followed by a hyphen and a number representing the page within the section (for example, the fifth page in Section 2.3 of Chapter 2 is numbered 2.3-5). When it becomes necessary during the revision of the SSAR to insert a page(s) within a section, letters may be used. For example, to insert two pages between 2.3-5 and 2.3-6, the following page sequence would appear: 2.3-5, 2.3-5a, 2.3-5b, 2.3-6.

The table of contents, introduction, the main body of the text, and references are printed double-sided. Page numbers appear on the right-hand side for odd pages and on the left-hand side for even pages. For the original document, the control number (namely, DEL-096-REV0) is located on the left-hand side for odd pages and on the right-hand side for even pages. Tables and figures are printed single-sided.

1.1.5 Revisions

The following instructions will be used for revisions:

- When a change is made to the SSAR text, those pages affected will be marked with the revision number in the footer opposite the page number. For Revision 1, the changed or revised portion on each page will be highlighted by a "change indicator" mark consisting of a bold vertical line drawn in the margin next to the material affected. Further revising will retain a single vertical change bar for all previous revisions. The changes made in the most recent revision will be highlighted by a "change indicator" mark consisting of a double bold vertical line drawn in the margin next to the material affected.
- Tables will be revised by indicating the revision number and date in the footer. Vertical bar change indicators will also be applied as indicated above for the text changes.
- Revised figures will be highlighted using the same bold vertical line drawn in the margin in the Table of Contents next to the affected figure listing. Following Revision 1, the figures revised in the most recent revision will be highlighted by double bold vertical lines drawn in the margin in the Table of Contents next to the affected figure listing.

1.2 General Site Description

1.2.1 Location and Use

The EGC ESP Facility will be co-located on the property of the existing CPS Facility. The CPS Site with its associated 4,895 acres (ac), man-made cooling reservoir (Clinton Lake) is an irregular U-shaped site in DeWitt County in east-central Illinois about 6 mi east of the city of Clinton. The site is located between the cities of Bloomington and Decatur to the north and south, respectively, and Lincoln and Champaign-Urbana to the west and east, respectively, as shown on Figure 2.1-1.

The total area of the existing CPS Site is about 13,730 ac. The site includes an area that extends approximately 14 mi along Salt Creek and 8 mi along the North Fork of Salt Creek. The site is about 3 mi northeast of the confluence of Salt Creek and the North Fork of Salt Creek. The site location is shown on Figure 1.2-1 and is discussed in more detail in Section 2.1.

1.2.2 Existing Development

CPS Unit 1 is a BWR-6 with a rated core thermal power level of 3,473 MWt and a gross electrical output of 1,138.5 MWe.

Initially, two identical units were planned for CPS. The CPS Preliminary Safety Analysis Report, which was submitted in 1973, described both Units 1 and 2 (CPS, 1973). Construction Permits were issued for both units on February 24, 1976. Construction on CPS Unit 2 was canceled in 1983.

The operating license for CPS Unit 1 was issued in September 1986 and commercial operation commenced in April 1987. The initial licensed power level was 2,894 MWt. An application to increase the power level approximately 20 percent (to 3,473 MWt) was submitted on June 18, 2001. This application was approved on April 4, 2002.

Figure 1.2-2 is an aerial view of the EGC ESP Site showing the existing development.

1.2.3 Proposed Development

The specific reactor type for the EGC ESP Site has not been selected; however, sufficient information from a range of possible facilities is available to characterize the proposed development to support the application for an ESP.

The EGC ESP Facility will be located approximately 700 ft south of the existing CPS Facility on the existing CPS property. Figure 1.2-3 shows the location of the EGC ESP Site footprint and the distance by sector from the outside boundary of the footprint to the CPS property line. Depending on the reactor type selected, the EGC ESP Facility could have a total core thermal power rating between approximately 2,400 and 6,800 MWt. The EGC ESP Facility may consist of a single reactor or multiple reactors (or modules) of the same reactor type. An overview of the reactor designs considered in developing the information necessary to support this application is provided in Section 1.3. The EGC ESP Facility may be any of the reactor designs described or a new design that falls within the range of the information developed to characterize the facility (Plant Parameters Envelope).

The EGC ESP Facility will be constructed as a large industrial facility similar in general appearance to the existing CPS Facility. However, unlike the existing plant that uses the Clinton Lake for normal cooling processes; cooling tower(s) will be used for the EGC ESP Facility. The Clinton Lake will be used as the source of make up for the EGC ESP Facility cooling water systems.

Raw water for cooling tower makeup and other plant services will be provided from a new intake structure located on Clinton Lake adjacent to the existing CPS Unit 1 intake structure. Cooling tower blowdown and other plant discharges will use the existing CPS Unit 1 discharge flume as a discharge path to Clinton Lake. The additional discharge flow from the EGC ESP Facility is insignificant relative to the capacity of the existing discharge flume.

The CPS Facility's safety related systems and equipment will not be shared or cross-connected with the EGC ESP Facility. However the EGC ESP Facility will use the existing CPS Ultimate Heat Sink (UHS) as a source of makeup water for the EGC ESP Facility UHS.

Some structures, such as warehouse and training buildings and parking lots, may be shared. Some support facilities, such as domestic water supply and sewage treatment, may also be shared. The existing switchyard will be expanded to accommodate the output of the new facility and to provide the necessary off-site power. The switchyard area intended for the canceled CPS Unit 2 will be utilized for this purpose. Existing transmission right of way will be used.

The location of the EGC ESP Facility new structures relative to the existing CPS facilities is shown on Figure 1.2-4.

1.3 Overview of Reactor Types

Information from several reactor plant designs either currently commercially available or anticipated to be commercially available within the term of the ESP was used to aid in developing input for the SSAR (and ER). The EGC ESP Facility may be any one of these reactor designs or an alternative design whose design parameters fall within the range of the information developed to characterize the ESP Facility. The reactor designs considered include light water reactors, gas-cooled reactors, and a heavy water moderated, light water cooled reactor. A brief overview of each of these reactor types is provided below for background understanding.

The approach underpinning this application is that these advanced reactor designs formed the basis of a surrogate plant design referred to as the PPE or Plant Parameters Envelope (see Section 1.4). Under this approach, any future design that is demonstrated to be bounded by the PPE, is suitable for the site, and the terms of the ESP granted pursuant to this Application remain valid and final. EGC therefore, is not seeking an ESP that concludes that the site is suitable and impacts acceptable for these designs. Rather EGC seeks an ESP that renders this conclusion for the surrogate plant.

1.3.1 Advanced Boiling Water Reactor

The Advanced Boiling Water Reactor (ABWR) is a commercially available advanced reactor designed by GE and certified by the USNRC. ABWRs have been built and are in operation in Japan and more are under construction in Taiwan and Japan. The ABWR standard design was reviewed and certified by the USNRC in 1997 (10 CFR 52, Appendix A).

The ABWR is a single-cycle, forced-circulation, 3,926 MWt boiling water reactor. The ABWR incorporates design features proven in years of worldwide boiling water reactor experience, along with advanced features such as vessel-mounted reactor recirculation pumps; fine motion control rod drives; and digital, multiplexed, fiber-optic control, and instrumentation.

The site related parameters for the ABWR used in developing the SSAR and ER are based on one ABWR unit.

1.3.2 AP1000 Reactor

The AP1000 reactor is designed by Westinghouse Electric Company. It is a larger version of the AP600 design. The AP600 design was reviewed and certified by the USNRC in 1999 (10 CFR 52, Appendix C). Westinghouse submitted an application to the USNRC on March 28, 2002 for certification of the AP1000. Certification of the design is anticipated within the next several years.

The AP1000 is a 3,400 MWt pressurized water reactor. The core, reactor vessel, internals, and fuel are essentially the same design as for present operating Westinghouse pressurized water reactors (PWRs). Fuel power density has been decreased to provide more thermal margin and canned rotor primary pumps have been adopted to improve reliability. The innovative aspect of the design is its reliance on passive features for emergency cooling of

the reactor and containment. The AP1000 is of the same design as the AP600, but up-rated in power to achieve economy of scale.

The site related parameters for the AP1000 used in developing the SSAR and ER are based on two AP1000 units (6,800 MWt).

1.3.3 Pebble Bed Modular Reactor

The Pebble Bed Modular Reactor (PBMR) is being developed in South Africa by PBMR (Pty) LTD for deployment worldwide. Exelon has participated in the development of the PBMR.

The PBMR is a graphite-moderated, helium-cooled reactor. Heat generated by nuclear fission in the reactor is transferred to the helium and converted into electrical energy in a gas turbo generator via a Brayton direct cycle. The PBMR core is based on high temperature, gas-cooled technology. The PBMR fuel elements are spherical fuel kernels consisting of stoichiometric uranium dioxide surrounded by four layers or coatings. Proceeding outward from the fuel kernel there is a buffer layer, an inner pyrocarbon layer, a silicon carbide layer and an outer pyrocarbon layer. The 400 MWt PBMR module is the basic (and standard) stand-alone module of the PBMR electric power generation system. A commercial PBMR power plant may have one or more identical modules.

The site related parameters for the PBMR used in developing the SSAR and ER are based on a power plant consisting of eight modules (3,200 MWt).

1.3.4 Gas Turbine Modular Helium Reactor

The Gas Turbine Modular Helium Reactor (GT-MHR) is under development by General Atomics Corporation (GA). GA submitted a pre-application licensing plan for the GT-MHR to the USNRC on February 18, 2002.

The GT-MHR is a graphite-moderated, helium-cooled reactor. Heat generated by nuclear fission in the reactor is transferred to the helium and converted into electrical energy in a gas turbo generator via a Brayton direct cycle. The fuel consists of spherical fuel particles; each encapsulated in multiple coating layers, formed into cylindrical fuel compacts, and loaded into fuel channels in graphite blocks. The 600 MWt GT-MHR is the basic stand-alone module of the GT-MHR. Up to four modules (2,400 MWt) comprise a complete plant.

The site related parameters for the GT-MHR used in developing the SSAR and ER are based on a power plant consisting of four modules.

1.3.5 Advanced CANDU Reactor

The Advanced Canada Deuterium Uranium (CANDU) Reactor (ACR-700) is under development by Atomic Energy of Canada, Ltd. (AECL).

The ACR-700 is a 1,983 MWt light water-cooled, heavy water moderated reactor. This evolution of the CANDU design is based on the current CANDU-6 reactor design.

The reactor is a stainless steel horizontal cylinder (referred to as the calandria), closed at each end by end shields, which support the horizontal fuel channels that span the calandria. The calandria is housed in and supported by a light water filled, steel lined concrete structure that provides thermal shielding. The calandria contains a heavy water (D_2O)

moderator at low temperature and pressure, reactivity control mechanisms, and several hundred fuel channels.

The heat transport system circulates pressurized light water coolant through the reactor fuel channels to remove heat produced by fission in the uranium fuel. The heat is conveyed by the reactor coolant to the steam generators where it is used to produce steam for the turbine cycle.

The site related parameters for the ACR-700 used in developing the SSAR and ER are based on two ACR-700 units (3,966 MWt).

1.3.6 IRIS Reactor

The International Reactor Innovative and Secure (IRIS) is a medium power, pressurized, light water-cooled reactor being designed by Westinghouse Electric Company.

IRIS is an innovative design, but it does not require new technology development, since it relies on the proven light water reactor technology. IRIS features a 1,000 MWt thermal core with standard commercial fuel assemblies (using uranium oxide fuel) that can operate over a four-year long straight burn fuel cycle.

The IRIS design features an integral reactor vessel that contains the reactor coolant system components, including the pressurizer, steam generators, and reactor coolant pumps, as well as reactor vessel radiation shields. This integral reactor vessel configuration allows the use of a small, high design pressure, spherical steel containment, resulting in a high level of safety. The IRIS reactor development has employed a “safety by design” approach that has eliminated or reduced the consequences of most serious event sequences.

The site related parameters for the IRIS used in developing the SSAR and ER are based on three IRIS units (3,000 MWt).

1.3.7 ESBWR

The Economic Simplified Boiling Water Reactor (ESBWR) is a new boiling water reactor designed by General Electric. The design is based on the 2000 MWt Simplified Boiling Water Reactor (SBWR), which was reviewed by the NRC as part of a design certification application in the early 1990’s. As a first step toward design certification of the ESBWR, GE submitted an application to the NRC in April 2002 for review and closure of the technology issues related to the passive safety systems of the ESBWR. Following the completion of this review, a formal application for design certification of the ESBWR is planned for submittal in early 2004. The ESBWR is a 4000 MWt boiling water reactor that relies on the use of natural circulation and passive safety features to enhance the plant performance and simplify the design.

The ESBWR has achieved a major plant simplification by elimination of the recirculation pumps and significantly reducing the number of control rods and control rod drives. Natural circulation in the ESBWR is established due to the density differences between the water in the reactor vessel annulus (outside the shroud and chimney) and the steam/water mixture inside the shroud and chimney. The chimney is an open-ended stainless steel cylinder installed above the core at the flow outlet side that forms the inboard boundary of the downcomer annulus. The chimney adds vertical length to the upward flow path for two

phase (steam-water) coolant leaving the core and to the downward flow path for the single phase (liquid) recirculation flow returning to the core lower plenum, thus augmenting the natural circulation driving head.

The site related parameters for the ESBWR used in developing the SSAR and ER are based on one ESBWR unit.

1.4 Plant Parameters Envelope

EGC has not made a firm decision of when to build a nuclear power facility at the EGC ESP Site nor has the reactor technology that might potentially be deployed been selected. In the absence of these determinations, the PPE concept is being used to serve as a surrogate for the actual facility information.

The PPE is a set of design parameters that are expected to bound the characteristics of a reactor or reactors that might later be deployed at a site.

In terms of safety reviews, this means that design characteristics of potential designs will be no more demanding from a site suitability perspective than the bounding design parameters listing in the PPE tabulation.

In terms of environmental reviews, this means that impacts of the selected design will not be significantly greater than impacts evaluated in the ESP using the bounding design parameters in the PPE.

The following sections describe how the PPE approach is developed and applied.

1.4.1 Plant Parameters Envelope Approach

The listing of plant parameters necessary to define the plant-site interface were developed based on previous industry and Department of Energy-sponsored work performed in the early 1990s as part of the ESP Demonstration Program and current reactor vendor design input data. As a result of earlier and current efforts, appropriate design parameters have been identified for inclusion in the PPE through a systematic review of regulatory criteria and guidance, ESP application content requirements, and experience with previous site suitability studies. The plant parameters are used to characterize (1) the functional or operational needs of the plant from the site's natural or environmental resources, (2) the plant's impact on the site and surrounding environs and, (3) the site imposed requirements on the plant. For example, water used for cooling may be from a natural site resource; plant heat rejection affects the site and environs; site wind conditions impose a force on plant structures.

Design parameters are the postulated features of the reactor or reactors that could be built and values are chosen to bound a range of possible future facilities. The PPE values are generally based on certified design information and the best available information for as yet uncertified designs. Some of the values have been modified to include margin.

Site characteristics, on the other hand, are the physical, environmental, and demographic features of a proposed facility location. Site characteristics are established through data collection and/or analysis and are developed in accordance with NRC requirements and guidance. Examples of site characteristics are maximum wind speed, maximum snow loading, and seismicity.

Site parameters are the postulated physical, environmental, and demographic features of an unspecified site. These are the site-related parameters that vendors have assumed in completing (certifying) a reactor design. They establish the physical, environmental, and

demographic characteristics that a site must possess if it is to be suitable for the vendor's reactors.

Design characteristics are the actual features of a reactor or reactors.

At COL application phase, design characteristics are assessed to verify they fall within the site characteristics and environmental impacts approved in the ESP. Certain design parameters in the PPE correspond to site characteristics, while other design parameters do not. For example, maximum snow loading is both a characteristic of the site that is quantified based on meteorological data and an important parameter in the design of plant structures. In contrast, building height is solely associated with the design and has no corresponding site characteristic.

A set of plant parameter values is developed considering the values provided by various reactor vendors and by applying appropriate conservatism where required to characterize the surrogate facility. As applicable, the most limiting (maximum or minimum) bounding value is selected. The complete set of plant parameter values describes, or envelopes, the site-facility interface. This type of facility characterization is considered sufficient to assess the future use of the site for a nuclear electric generating facility from both a safety and environmental viewpoint.

1.4.2 Applicable Plant Parameters Envelope

Tables 1.4-1 through 1.4-8 present the listing of parameters used, the PPE values selected or the site characteristic values used in assessing the safety and environmental impact of constructing and operating the EGC ESP Facility. Table 1.4-9 provides a description or definition and bases for the plant parameters utilized in evaluating the safety and or environmental impact of locating the proposed nuclear generating capacity at the EGC ESP Site.

As indicated in Section 1.4.1, the listing of plant parameters necessary to define the plant-site interfaces was developed based on previous industry and Department of Energy sponsored work performed in the early 1990s. A preliminary version of this listing was issued as Appendix C to Revision A of NEI 01-02 and was updated by the Pilot ESP Applicants to reflect changes in parameter content, numbering and designations. This updated PPE listing will, when issued, present a comprehensive set of the possible plant parameters. Due to site- specific conditions many of the originally listed parameters are not applicable to, nor included in, the EGC ESP tabulation. Only those plant parameters and site characteristics utilized in EGC ESP SSAR, ER, EP or Redress Plan assessments are presented in Tables 1.4-1 through 1.4-9.

1.5 USNRC Regulatory Guides

Table 1.5-1 lists the applicable Division 1 USNRC Regulatory Guides considered in the development of the EGC ESP SSAR. Relevant portions of these guides were applied, as appropriate, as discussed in the conformance/comment column of the Table.

The only other ESP applicable Regulatory Guide is from Division 4. The EGC SSAR considered Regulatory Guide 4.7, Revision 2 (April 1998), “General Site Suitability Criteria for Nuclear Power Stations,” Regulatory Positions C.1 though C.8. Regulatory Positions C.9 through C.12 are not addressed in the SSAR. The affected SSAR Sections for this regulatory guide are 2.1.2, 2.1.3, 2.2, 2.3, 2.4, 2.5, 3.4.1.6, and 3.4.1.7. Regulatory Guide 4.7 provides no additional specific criteria for consideration with the one exception that Regulatory Guide 4.7 was used as a reference for the distance criterion as identified in SSAR section 3.4.1.6.

In addition, NRC Review Standard (RS)-002, “Processing Applications for Early Site Permits,” identifies the NRC regulations applicable to the EGC ESP SSAR. This NRC document also identifies the affected SSAR sections. EGC deviations from the RS002 identifications are as follows.

- RS002, § 3.5.1.6 - This topic is addressed in EGC ESP SSAR § 2.2.
- RS002, § 13.3 - This topic is addressed in EGC ESP "major features" Emergency Plan.
- RS002, § 15.0 - This topic is addressed in EGC ESP SSAR § 3.3.
- RS002, § 17.1.1 - This topic is not addressed in the EGC ESP SSAR.
- SSAR, § 3.1 - This section addresses Radiological Effluent per 10 CFR 52.17(a)(1)(iv). This topic is also addressed in the Environmental Report.
- SSAR, § 3.2 - This section addresses Thermal Discharges per 10 CFR 52.17(a)(1)(iv). This topic is also addressed in the Environmental Report.
- SSAR, § 3.3 - This section addresses RS002 § 15.0 topics.
- SSAR, § 3.4 - This section addresses conformance with 10 CFR 100 - Reactor Site Criteria.

Further, SSAR sections 3.4.1 and 3.4.2 address 10 CFR 100.21 and 100.23, respectively, including 10 CFR 100.21(f) in SSAR Section 3.4.1.6, “Site Characteristics - Security Plans.”

CHAPTER 1

References

Chapter Introduction

10 CFR 52. Code of Federal Regulations. "Early Site Permits; Standard Design Certification; and Combined Licenses for Nuclear Power Plants."

10 CFR 52. Subpart A. Code of Federal Regulations. "Early Site Permits."

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10 CFR 52. Appendix C. Code of Federal Regulations. "Design Certification Rule for the AP600 Design."

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CHAPTER 1

Tables

TABLE 1.4-1
Plant Parameters Envelope (PPE) EGC ESP Facility

PPE Section		PPE Value	Site Characteristic Value	Usage
1.	**Structure**			
1.1	**Building Characteristics**			
1.1.1	Height	234 ft above grade	Not Applicable	ER
1.1.2	Foundation Embedment	140 ft below grade	Not Applicable	ER
1.2	**Precipitation (for Roof Design)**			
1.2.1	Maximum Rainfall Rate	Note 1	18.15 in/hr (6.08 in/5 min)	SSAR
1.2.2	Snow Load	Note 1	40 psf	SSAR ER
1.3	**Safe Shutdown Earthquake (SSE)**			
1.3.1	Design Response Spectra	Note 1	Site Specific Determination: Figure 2.5-12	SSAR
1.3.2	Peak Ground Acceleration	Note 1	0.35 g	SSAR
1.3.3	Time History	Note 1	NUREG/CR-6728	SSAR
1.3.4	Capable Tectonic Structures or Sources	Note 1	No active faults: < 25 mi Possible faults: > 25 mi < 200 mi	SSAR
1.4	**Site Water Level (Allowable)**			
1.4.1	Maximum Flood (or Tsunami)	Note 1	26.1 ft below grade	SSAR
1.4.2	Maximum Ground Water	Note 1	5 ft below grade	SSAR
1.5	**Soil Properties Design Bases**			
1.5.1	Liquefaction	Note 1	None at site below 60 ft below ground surface (bgs) Soils above 60 ft bgs to be replaced or improved	SSAR
1.5.2	Minimum Bearing Capacity (Static)	Note 1	50,000 lbs/ ft^2	SSAR
1.5.3	Minimum Shear Wave Velocity	Note 1	0 – 50 ft = 820 fps 50 – 285 ft = 1090 fps 285 – 310 ft = 2580 fps	SSAR

TABLE 1.4-1
Plant Parameters Envelope (PPE) EGC ESP Facility

PPE Section		PPE Value	Site Characteristic Value	Usage
1.6	**Tornado (Design Bases)**			
1.6.1	Maximum Pressure Drop	Note 1	2.0 psi	SSAR
1.6.2	Maximum Rotational Speed	Note 1	240 mph	SSAR
1.6.3	Maximum Translational Speed	Note 1	60 mph	SSAR
1.6.4	Maximum Wind Speed	Note 1	300 mph	SSAR
1.6.6	Radius of Maximum Rotational Speed	Note 1	150 ft	SSAR
1.6.7	Rate of Pressure Drop	Note 1	1.2 psi/sec	SSAR
1.7	**Wind**			
1.7.1	Basic Wind Speed	Note 1	75 mph	SSAR
	OR 3-second Gust	Note 1	96 mph	SSAR
1.7.2	Importance Factors	1.11 (Safety Related)	Not Applicable	SSAR
2.	**Normal Plant Heat Sink**			
2.1	**Ambient Air Temperatures**			
2.1.1	Normal Shutdown Max Ambient Temp (1% exceedance)	Note 1	91°F	SSAR
2.1.2	Normal Shutdown Max Wet Bulb Temp (1% exceedance)	Note 1	78°F	SSAR
2.1.3	Normal Shutdown Min Ambient Temp (1% exceedance)	Note 1	0°F	SSAR
2.1.4	Rx Thermal Power Max Ambient Temp (0% exceedance)	Note 1	117°F	SSAR
2.1.5	Rx Thermal Power Max Wet Bulb Temp (0% exceedance)	Note 1	86°F	SSAR
2.1.6	Rx Thermal Power Min Ambient Temp (0% exceedance)	Note 1	-36°F	SSAR
2.3	**Condenser**			
2.3.2	Condenser / Heat Exchanger Duty	15.08 E+09 Btu/hr	Not Applicable	SSAR ER
2.4	**Mechanical Draft Cooling Towers**			
2.4.1	Acreage	50 ac	Not Applicable	ER
2.4.3	Blowdown Constituents and Concentrations	See Table 1.4-2	Not Applicable	SSAR ER
2.4.4	Blowdown Flow Rate	12,000 gpm (49,000 gpm max.)	Not Applicable	SSAR ER

TABLE 1.4-1
Plant Parameters Envelope (PPE) EGC ESP Facility

PPE Section		PPE Value	Site Characteristic Value	Usage
2.4.5	Blowdown Temperature	100°F	Not Applicable	SSAR
				ER
2.4.7	Evaporation Rate	31,500 gpm (Note 2)	Not Applicable	SSAR
2.4.8	Height	60 ft	Not Applicable	ER
2.4.9	Makeup Flow Rate	42,000 gpm	Not Applicable	ER
2.4.10	Noise	55 dBa @ 1,000 ft	Not Applicable	ER
2.4.12	Cooling Water Flow Rate	1,200,000 gpm	Not Applicable	SSAR
2.4.13	Heat Rejection Rate (Blowdown)	12,000 gpm	Not Applicable	ER
		(49,000 gpm max.) @ 100°F		
2.4.14	Maximum Consumption of Raw Water	60,000 gpm	Not Applicable	ER
2.5	**Natural Draft Cooling Towers**			
2.5.1	Acreage	34.5 ac total (with 3 X 2.75 ac per reactor basin, 8.25 ac total for basins)	Not Applicable	ER
2.5.3	Blowdown Constituents and Concentrations	See Table 1.4-2	Not Applicable	ER
2.5.4	Blowdown Flow Rate	12,000 gpm	Not Applicable	SSAR
		(49,000 gpm max.)		ER
2.5.5	Blowdown Temperature	100°F	Not Applicable	SSAR
				ER
2.5.7	Evaporation Rate	31,500 gpm (Note 2)	Not Applicable	SSAR
2.5.8	Height	550 ft	Not Applicable	ER
2.5.9	Makeup Flow Rate	42,000 gpm	Not Applicable	ER
2.5.10	Noise	55 dBa @ 1,000 ft	Not Applicable	ER
2.5.12	Cooling Water Flow rate	1,200,000 gpm	Not Applicable	SSAR
				ER
2.5.13	Heat Rejection Rate (Blowdown)	12,000 gpm normal	Not Applicable	ER
		(49,000 gpm max.) @ 100°F		
2.5.14	Maximum Consumption of Raw Water	60,000 gpm	Not Applicable	ER
3.	**Ultimate Heat Sink**			
3.1	**Ambient Air Requirements**			
3.1.1	Maximum Ambient Temperature (0% exceedance)	Note 1	117°F	SSAR

TABLE 1.4-1
Plant Parameters Envelope (PPE) EGC ESP Facility

PPE Section		PPE Value	Site Characteristic Value	Usage
3.1.2	Maximum Wet Bulb Temperature (0% exceedance)	Note 1	86°F	SSAR
3.1.3	Minimum Ambient Temperature (0% exceedance)	Note 1	-36°F	SSAR
3.1.4	Maximum 30-day Average Wet Bulb Temperature	Note 1	74.7°F	SSAR
3.1.5	Coincident 30-day Average Dry Bulb Temperature	Note 1	82°F	SSAR
3.1.6	Maximum 1-day Average Wet Bulb Temperature	Note 1	81°F	SSAR
3.1.7	Coincident 1-day Average Dry Bulb Temperature	Note 1	87.6°F	SSAR
3.1.8	Maximum 5-day Average Wet Bulb Temperature	Note 1	79.7°F	SSAR
3.1.9	Coincident 5-day Average Dry Bulb Temperature	Note 1	86.2°F	SSAR
3.1.10	Maximum Cumulative Degree-Days Below Freezing	Note 1	1141.5 degree-days	SSAR
3.1.11	Maximum Ambient Temperature (1% exceedance)	Note 1	91°F	SSAR
3.1.12	Maximum Wet Bulb Temperature (1% exceedance)	Note 1	78°F	SSAR
3.1.13	Minimum Ambient Temperature (1% exceedance)	Note 1	0°F	SSAR
3.2	**CCW Heat Exchanger**			
3.2.1	Maximum Inlet Temp. to CCW Heat Exchanger	95 °F	Not Applicable	SSAR
3.2.2	CCW Heat Exchanger Duty	225 E+06 Btu/hr	Not Applicable	SSAR
		411.4E+06 Btu/hr (Shutdown)		ER
3.3	**Mechanical Draft Cooling Towers**			
3.3.1	Acreage	0.5 ac	Not Applicable	ER
3.3.3	Blowdown Constituents and Concentrations	See Table 1.4-2	Not Applicable	ER
3.3.4	Blowdown Flow Rate	144 gpm expected	Not Applicable	SSAR
		(700 gpm max.)		ER
3.3.5	Blowdown Temperature	95°F	Not Applicable	SSAR
				ER

TABLE 1.4-1
Plant Parameters Envelope (PPE) EGC ESP Facility

PPE Section		PPE Value	Site Characteristic Value	Usage
3.3.7	Evaporation Rate	411 gpm	Not Applicable	SSAR
		(700 gpm max.)		
3.3.8	Height	60 ft	Not Applicable	ER
3.3.9	Makeup Flow Rate	555 gpm	Not Applicable	SSAR
		(1,400 gpm max)		ER
3.3.10	Noise	55 dBa @ 1,000 ft	Not Applicable	ER
3.3.12	Cooling Water Flow rate	26,125 gpm normal	Not Applicable	SSAR
		(52,250 gpm shutdown)		ER
3.3.13	Heat Rejection Rate (blowdown)	144 gpm expected	Not Applicable	ER
		(700 max. gpm) @ 95°F		
4.	**Containment Heat Removal System (Post-Accident)**			
4.1	**Ambient Air Requirements**			
4.1.1	Maximum Ambient Air Temperature (0% exceedance)	Note 1	117°F	SSAR
4.1.2	Minimum Ambient Air Temperature (0% exceedance)	Note 1	-36°F	SSAR
5.	**Potable Water/Sanitary Waste System**			
5.1	**Discharge to Site Water Bodies**			
5.1.1	Flow Rate	60 gpm expected	Not Applicable	SSAR
		(198 max gpm)		ER
5.2	**Raw Water Requirements**			
5.2.1	Maximum Use	198 gpm	Not Applicable	ER
5.2.2	Monthly Average Use	90 gpm	Not Applicable	SSAR
				ER
6.	**Demineralized Water System**			
6.1	**Discharge to Site Water Bodies**			
6.1.1	Flow Rate	110 gpm expected	Not Applicable	ER
		(145 gpm max.).		
6.2	**Raw Water Requirements**			
6.2.1	Maximum Use	720 gpm	Not Applicable	ER
6.2.2	Monthly Average Use	550 gpm	Not Applicable	SSAR
				ER

TABLE 1.4-1
Plant Parameters Envelope (PPE) EGC ESP Facility

PPE Section		PPE Value	Site Characteristic Value	Usage
7.	**Fire Protection System**			
7.1	**Raw Water Requirements**			
7.1.1	Maximum Use	2500 gpm	Not Applicable	ER
7.1.2	Monthly Average Use	10 gpm	Not Applicable	SSAR ER
8.	**Miscellaneous Drain**			
8.1	**Discharge to Site Water Bodies**			
8.1.1	Flow Rate	75 gpm total (150 gpm max)	Not Applicable	ER
9.	**Unit Vent/Airborne Effluent Release Point**			
9.1	**Atmospheric Dispersion (CHI/Q) (Accident)**			
9.1.1	0-2 hr @ EAB (sec/m^3)	Notes 1,3	2.52E-04 (5%)3.56E-05 (50%)	SSAR ER
9.1.2	0-8 hr @ LPZ (sec/m^3)	Notes 1,3	3.00E-05 (5%) 3.40E-06 (50%)	SSAR ER
9.1.3	8-24 hr @ LPZ (sec/m^3)	Notes 1,3	2.02E-05 (5%)2.85E-06 (50%)	SSAR ER
9.1.4	1-4 day @ LPZ (sec/m^3)	Notes 1,3	8.53E-06 (5%)1.85E-06 (50%)	SSAR ER
9.1.5	4-30 day @ LPZ (sec/m^3)	Notes 1,3	2.48E-06 (5%)1.00E-06 (50%)	SSAR ER
9.2	**Atmospheric Dispersion (CHI/Q)(Annual Average)**	Note 1	2.04E-06 sec/m^3 @ EAB	SSAR ER
9.3	**Dose Consequences**			
9.3.1	Normal	Note 1	10 CFR 20, 10 CFR 50 Appendix I, and 40 CFR 190 dose limits. Refer to SSAR 3.1.1 and 3.1.1.2 and ER 5.4	SSAR ER
9.3.2	Post-Accident	Note 1	10 CFR 50.34(a)(1) and 10 CFR 100 dose limits. Refer to SSAR 3.3 and ER 7.1	SSAR ER
9.4	**Release Point**			

TABLE 1.4-1
Plant Parameters Envelope (PPE) EGC ESP Facility

PPE Section		PPE Value	Site Characteristic Value	Usage
9.4.2	Elevation (Normal)	Note 1	Ground Level	SSAR
9.4.3	Elevation (Post Accident)	Note 1	Ground Level	SSAR
9.4.4	Minimum Distance to Site Boundary	Note 1, 3	1025 m (3,362 ft)	SSAR
9.4.7	Minimum Distance to Low Population Zone	Note 1	4018 m (2.5 mi)	SSAR
9.5	**Source Term**			
9.5.1	Gaseous (Normal)	See Table 1.4-3 for isotopic breakdown.	Not Applicable	SSAR ER
9.5.2	Gaseous (Post-Accident)	Based on limiting DBAs. (Refer to SSAR 3.3)	Not Applicable	SSAR
9.5.3	Tritium (Normal)	See Table 1.4-3	Not Applicable	SSAR ER
10.	**Liquid Radwaste System**			
10.1	**Dose Consequences**			
10.1.1	Normal	Note 1	10 CFR 20, 10 CFR 50 Appendix I, and 40 CFR 190 dose limits. Refer to SSAR 3.1.2 and 3.1.2.2 and ER 5.4	SSAR
10.2	**Release Point**			
10.2.1	Flow Rate	Average daily discharge for 292 days per year with dilution flow of 2,400 gpm	Not Applicable	SSAR ER
10.3	**Source Term**			
10.3.1	Liquid	See Table 1.4-4 for isotopic listing.	Not Applicable	SSAR ER
10.3.2	Tritium	See Table 1.4-4	Not Applicable	SSAR ER
11.	**Solid Radwaste System**			
11.2	**Solid Radwaste**			
11.2.1	Activity	See Table 1.4-5	Not Applicable	SSAR ER
11.2.2	Principal Radionuclides	See Table 1.4-5	Not Applicable	SSAR ER
11.2.3	Volume	15,087 ft^3/yr avg.	Not Applicable	SSAR ER

TABLE 1.4-1
Plant Parameters Envelope (PPE) EGC ESP Facility

PPE Section		PPE Value	Site Characteristic Value	Usage
13.	**Auxiliary Boiler System**			
13.1	**Exhaust Elevation**	110 ft above grade	Not Applicable	ER
13.2	**Flue Gas Effluents**	See Table 1.4-6	Not Applicable	ER
14.	**Heating, Ventilating, and Air Conditioning System**			
14.1	**Ambient Air Requirements**			
14.1.1	Non-safety HVAC Max Ambient Temperature (1% exceedance)	Note 1	91°F	SSAR
14.1.2	Non-safety HVAC Min Ambient Temperature (1% exceedance)	Note 1	0°F	SSAR
14.1.3	Safety HVAC Max Ambient Temperature (0% exceedance)	Note 1	117°F	SSAR
14.1.4	Safety HVAC Min Ambient (0% exceedance)	Note 1	-36°F	SSAR
15.	**On-site/Off-site Electrical Power System**			
15.1	**Acreage**			
15.1.1	Switchyard	15 ac	Not Applicable	ER
16.	**Standby Power System**			
16.1	**Diesel**			
16.1.2	Diesel Exhaust Elevation	30 ft above grade	Not Applicable	ER
16.1.3	Diesel Flue Gas Effluents	See Table 1.4-7	Not Applicable	ER
16.2	**Gas-Turbine**			
16.2.2	Gas-Turbine Exhaust Elevation	60 ft	Not Applicable	ER
16.2.3	Gas-Turbine Flue Gas Effluents	See Table 1.4-8	Not Applicable	ER
16.2.5	Gas-Turbine Fuel Type	Distillate	Not Applicable	ER
17.	**Plant Characteristics**			
17.3	**Megawatts Thermal**	6,800 MWt	Not Applicable	SSAR ER
17.4	**Plant Design Life**	60 years	Not Applicable	ER
17.5	**Plant Population**			
17.5.1	Operation	580 people	Not Applicable	ER EP
17.5.2	Refueling / Major Maintenance	1,000 people	Not Applicable	EP

TABLE 1.4-1
Plant Parameters Envelope (PPE) EGC ESP Facility

PPE Section		PPE Value	Site Characteristic Value	Usage
18.	**Construction**			
18.2	**Acreage**			
18.2.1	Laydown Area	29 ac	Not Applicable	ER
18.2.2	Temporary Construction Facilities	52 ac	Not Applicable	ER
18.3	**Construction**			
18.3.1	Noise	76-101 dBa at 50 ft	Not Applicable	ER
18.4	**Plant Population**			
18.4.1	Construction	3,150 people (max.)	Not Applicable	ER
18.5	**Site Preparation Duration**	18 months	Not Applicable	ER

Note:
1. Surrogate PPE value not used since actual site characteristic value is available.
2. 5% margin added to vendor supplied PPE quantity to establish value
3. Re-evaluated site accident 5% Chi/Qs using 36 months of data for the period 1-1-2000 to 12-31-2002 and a minimum distance of 805 m. Also shown are the 50% Chi/Qs used in the ER accident assessments.

TABLE 1.4-2
Blowdown Constituents and Concentrations EGC ESP Facility

Constituent	Concentration (ppm)[a]		
	River Source	Well/ Treated Water	Envelope
Chlorine demand	10.1		10.1
Free available chlorine	0.5		0.5
Chromium			NA
Copper		6	6
Iron	0.9	3.5	3.5
Zinc		0.6	0.6
Phosphate		7.2	7.2
Sulfate	599	3,500	3,500
Oil and grease			NA
Total dissolved solids		17,000	17,000
Total suspended solids	49.5	150	150

[a] Assumed cycles of concentration equals 4.

TABLE 1.4-3
Composite Average Annual Normal Gaseous Release EGC ESP Facility

Isotope	Release – Ci/yr	Isotope	Release – Ci/yr
Kr-83m	8.38E-04	Sr-89	6.00E-03
Kr-85m	7.20E+01	Sr-90	2.40E-03
Kr-85	8.20E+03	Y-90	4.59E-05
Kr-87	3.00E+01	Sr-91	1.00E-03
Kr-88	9.20E+01	Sr-92	7.84E-04
Kr-89	2.41E+02	Y-91	2.41E-04
Kr-90	3.24E-04	Y-92	6.22E-04
Xe-131m	3.60E+03	Y-93	1.11E-03
Xe-133m	1.74E+02	Zr-95	2.00E-03
Xe-133	9.20E+03	Nb-95	8.38E-03
Xe-135m	4.05E+02	Mo-99	5.95E-02
Xe-135	6.60E+02	Tc-99m	2.97E-04
Xe-137	5.14E+02	Ru-103	3.51E-03
Xe-138	4.32E+02	Rh-103m	1.11E-04
Xe-139	4.05E-04	Ru-106	1.56E-04
I-131	2.59E-01	Rh-106	1.89E-05
I-132	2.19E+00	Ag-110m	2.00E-06
I-133	1.70E+00	Sb-124	1.81E-04
I-134	3.78E+00	Sb-125	1.22E-04
I-135	2.41E+00	Te-129m	2.19E-04
C-14	1.46E+01	Te-131m	7.57E-05
Na-24	4.05E-03	Te-132	1.89E-05
P-32	9.19E-04	Cs-134	6.22E-03
Ar-41	4.00E+02	Cs-136	5.95E-04
Cr-51	3.51E-02	Cs-137	9.46E-03
Mn-54	5.41E-03	Cs-138	1.70E-04
Mn-56	3.51E-03	Ba-140	2.70E-02
Fe-55	6.49E-03	La-140	1.81E-03
Co-57	1.64E-05	Ce-141	9.19E-03
Co-58	4.60E-02	Ce-144	1.89E-05
Co-60	1.74E-02	Pr-144	1.89E-05
Fe-59	8.11E-04	W-187	1.89E-04
Ni-63	6.49E-06	Np-239	1.19E-02
Cu-64	1.00E-02	Total (w/o H-3)	24,045
Zn-65	1.11E-02	H-3	3,530
Rb-89	4.32E-05	Total	27,575

TABLE 1.4-4
Composite Average Annual Normal Liquid Release EGC ESP Facility

Isotope	Release – Ci/yr	Isotope	Release – Ci/yr
C-14	4.40E-04	Rh-103m	9.86E-03
Na-24	3.26E-03	Ru-106	1.47E-01
P-32	1.80E-04	Rh-106	1.47E-01
Cr-51	7.70E-03	Ag-110m	2.10E-03
Mn-54	2.60E-03	Ag-110	2.80E-04
Mn-56	3.81E-03	Sb-122	4.12E-04
Fe-55	5.81E-03	Sb-124	1.78E-03
Fe-59	4.00E-04	Sb-125	2.00E-04
Ni-63	1.40E-04	Te-129m	2.40E-04
Cu-64	7.51E-03	Te-129	3.00E-04
Co-56	5.19E-03	Te-131m	1.80E-04
Co-57	7.19E-05	Te-131	6.00E-05
Co-58	6.72E-03	I-131	2.83E-02
Co-60	9.11E-03	Te-132	4.80E-04
Zn-65	8.20E-04	I-132	3.28E-03
W -187	2.60E-04	I-133	1.34E-02
Np-239	3.11E-03	I-134	1.70E-03
Br-84	4.00E-05	Cs-134	1.99E-02
Rb-88	5.40E-04	I-135	9.94E-03
Rb-89	4.41E-05	Cs-136	1.26E-03
Sr-89	2.00E-04	Cs-137	2.66E-02
Sr-90	3.51E-05	Cs- 138	1.90E-04
Sr-91	9.00E-04	Ba-137m	2.49E-02
Y-90	3.11E-06	Ba-140	1.10E-02
Y-91	1.10E-04	La-140	1.49E-02
Sr-92	8.00E-04	Ce-141	1.80E-04
Y-91m	2.00E-05	Ce-143	3.80E-04
Y-92	6.00E-04	Pr-143	2.60E-04
Y-93	9.00E-04	Ce-144	6.32E-03
Zr-95	1.04E-03	Pr-144	6.32E-03
Nb-95	1.91E-03		
Mo-99	1.14E-03	Total (w/o H-3)	5.53E-01
Tc-99m	1.10E-03	H-3	3,100
Ru-103	9.86E-03	Total	3,100.553

TABLE 1.4-5
Composite Principal Radionuclides in Solid Radwaste EGC ESP Facility

Radionuclide	Quantity Ci/yr
Fe-55	1,761.37
Fe-59	2.70
Co-60	395.92
Mn-54	347.22
Cr-51	97.14
Co-58	187.20
Zn-65	51.40
Nb-95	162
Ag-110m	2.18
Zr-95	76.45
Ba-137m	1014
Ba-140	1.06
La-140	1.21
Cs-134	628
Cs-136	0.06
Cs-137	1014
Sr-89	1.77
Sr-90	2.48
Y-90	2.48
I-131	81.91
I-133	4.55
Na-24	0.44
Rh-106	0.12
Ru-103	2.18
Ru-106	1.37
Sb-124	11.29
Ce-141	0.14
Ce-144	0.11
Gd-153	3.09
Other	72.86
Total (rounded to nearest hundred)	5,900

TABLE 1.4-6
Emissions from Auxiliary Boilers EGC ESP Facility

Pollutant Discharged	Quantity (lbs/yr)
Particulates	34,500
Sulfur oxides	115,000
Carbon monoxide	1,749
Hydrocarbons	100,200
Nitrogen oxides	19,022

Note: Emissions are based on 30 days per year of operation

TABLE 1.4-7
Emissions from Standby Diesel Generators EGC ESP Facility

Pollutant Discharged	Quantity (lbs/yr)
Particulates	1,620
Sulfur oxides	5,010
Carbon monoxide	4,600
Hydrocarbons	3,070
Nitrogen oxide	28,968

Note: Emissions are based on 4 hr/month operation for each of the generators

TABLE 1.4-8
Standby Power System Gas Turbine Flue Gas Effluents EGC ESP Facility

Fuel: Distillate 20°F Ambient 9,890 Btu/kWH (LHV)

10,480 Btu/kWH (HHV)

96,960 lb/hr Fuel Consumption Rate

Effluent	PPMVD	Quantity (lbs/yr)
NO_x (PPMVD @ 15% 0_2)	95	-
NO_x as NO_2	-	725
CO	25	85
UHC	10	20
VOC	5	10
SO_2	55	470
SO_3	5	30
Sulfur Mist	-	50
Particulates	-	22
Exhaust Analysis	**% Vol**	
Argon	0.86	
Nitrogen	72.56	
Oxygen	11.2	
Carbon Dioxide	5.19	
Water	9.87	

Note: Emissions are based on 4 hr/month operation for each of the generators

TABLE 1.4-9
Plant Parameter Definitions

	Parameter	Units	Definition	Bounding Value [a]
1.	**Structure**			
1.1	**Building Characteristics**			
1.1.1	Height	ft	The height from finished grade to the top of the tallest power block structure, excluding cooling towers.	Maximum
1.1.2	Foundation Embedment	ft	The depth from finished grade to the bottom of the basemat for the most deeply embedded power block structure.	Maximum
1.2	**Precipitation (for Roof Design)**			
1.2.1	Maximum Rainfall Rate	in per hr/in per 5 min	The probable maximum precipitation (PMP) value that can be accommodated by a plant design. Expressed as maximum precipitation for 1 hr in 1 mi^2 with a ratio for five minutes to the 1 hr PMP of 0.32 as found in National Weather Service Publication HMR No. 52.	Minimum
1.2.2	Snow Load	lbs/ft^2	The maximum load on structure roofs due to the accumulation of snow that can be accommodated by a plant design.	Minimum
1.3	**Safe Shutdown Earthquake (SSE)**			
1.3.1	Design Response Spectra	Not Applicable	The assumed design response spectra used to establish a plant's seismic design.	
1.3.2	Peak Ground Acceleration	Fraction of gravity acceleration	The maximum earthquake ground acceleration for which a plant is designed; this is defined as the acceleration which corresponds to the zero period in the response spectra taken in the free field at plant grade elevation.	Minimum
1.3.3	Time History	Not Applicable	The plot of earthquake ground motion as a function of time used to establish a plant's seismic design.	Minimum
1.3.4	Capable Tectonic Structures or Sources	Not Applicable	The assumption made in a plant design about the presence of capable faults or earthquake sources in the vicinity of the plant site (for example, no fault displacement potential within the investigative area).	Minimum
1.4	**Site Water Level (Allowable)**			

TABLE 1.4-9
Plant Parameter Definitions

	Parameter	Units	Definition	Bounding Value [a]
1.4.1	Maximum Flood (or Tsunami)	ft	Design assumption regarding the difference in elevation between finished plant grade and the water level due to the probable maximum flood (defined in ANSI/ANS 2.8-1992) used in the plant design.	Minimum (i.e., lowest elevation)
1.4.2	Maximum Ground Water	ft	Design assumption regarding the difference in elevation between finished plant grade and the maximum site ground water level used in the plant design.	Minimum (i.e., lowest elevation)
1.5	**Soil Properties Design Bases**			
1.5.1	Liquefaction	Not Applicable	Design assumption regarding the presence of potentially liquefying soils at a site (for example, None at Site-Specific SSE).	Minimum
1.5.2	Minimum Bearing Capacity (Static)	lbs/ft^2	Design assumption regarding the capacity of the competent load-bearing layer required to support the loads exerted by plant structures used in the plant design.	Maximum
1.5.3	Minimum Shear Wave Velocity	fps	The assumed limiting propagation velocity of shear waves through the foundation materials used in the plant design.	Maximum
1.6	**Tornado (Design Bases)**			
1.6.1	Maximum Pressure Drop	psi	The design assumption for the decrease in ambient pressure from normal atmospheric pressure due to the passage of the tornado.	Minimum
1.6.2	Maximum Rotational Speed	mph	The design assumption for the component of tornado wind speed due to the rotation within the tornado.	Minimum
1.6.3	Maximum Translational Speed	mph	The design assumption for the component of tornado wind speed due to the movement of the tornado over the ground.	Minimum
1.6.4	Maximum Wind Speed	mph	The design assumption for the sum of maximum rotational and maximum translational wind speed components.	Minimum
1.6.6	Radius of Maximum Rotational Speed	ft	The design assumption for distance from the center of the tornado at which the maximum rotational wind speed occurs.	Minimum
1.6.7	Rate of Pressure Drop	psi/sec	The assumed design rate at which the pressure drops due to the passage of the tornado.	Minimum

TABLE 1.4-9
Plant Parameter Definitions

	Parameter	Units	Definition	Bounding Value [a]
1.7	**Wind**			
1.7.1	Basic Wind Speed OR 3-second Gust	mph	The design wind, or "fastest mile of wind" with a 100-year return period (NUREG-0800, Sections 2.3.1 and 3.3.1) for which the facility is designed. The 3-second gust wind velocity per SEI/ASCE 7-98, associated with a 100-year return period at 33 ft (10 m) above the ground level in the site area.	Minimum Minimum
1.7.2	Importance Factors	Not Applicable	Multiplication factors (as defined in ASCE-7-98, 2000) applied to basic wind speed to develop the plant design.	Minimum
2.	**Normal Plant Heat Sink**			
2.1	**Ambient Air Temperatures**			
2.1.1	Normal Shutdown Max Ambient Temp (1% exceedance)	°F	Assumption used for the maximum ambient temperature that will be exceeded no more than 1% of the time, to design plant systems capable of effecting normal shutdown under the assumed temperature condition	Minimum
2.1.2	Normal Shutdown Max Wet Bulb Temp (1% exceedance)	°F	Assumption used for the maximum wet bulb temperature that will be exceeded no more than 1% of the time – used in design of plant systems that must be capable of effecting normal shutdown under the assumed temperature condition	Minimum
2.1.3	Normal Shutdown Min Ambient (1% exceedance)	°F	Assumption used for the minimum ambient temperature that will be exceeded no more than 1% of the time to design plant systems that must be capable of effecting normal shutdown under the assumed temperature condition	Maximum
2.1.4	Rx Thermal Power Max Ambient Temp (0% exceedance)	°F	Assumption used for the maximum ambient temperature - used in the design of plant systems that must be capable of supporting full power operation under the assumed temperature condition	Minimum
2.1.5	Rx Thermal Power Max Wet Bulb Temp (0% exceedance)	°F	Assumption used for the maximum wet bulb temperature - used in the design of plant systems that must be capable of supporting full power operation under the assumed temperature condition	Minimum

TABLE 1.4-9
Plant Parameter Definitions

	Parameter	Units	Definition	Bounding Value [a]
2.1.6	Rx Thermal Power Min Ambient Temp (0% exceedance)	°F	Assumption used for the minimum ambient temperature - used in the design of plant systems that must be capable of supporting full power operation under the assumed temperature condition	Maximum
2.3	Condenser			
2.3.2	Condenser / Heat Exchanger Duty	Btu/hr	Design value for the waste heat rejected to the circulating water system across the condensers.	Maximum
2.4	Mechanical Draft Cooling Towers			
2.5	Natural Draft Cooling Towers			
2.4.1, 2.5.1	Acreage	ac	The land required for cooling towers or ponds, including support facilities such as equipment sheds, basins, canals, or shoreline buffer areas.	Maximum
2.4.3, 2.5.3	Blowdown Constituents and Concentrations	ppm	The maximum expected concentrations for anticipated constituents in the cooling water systems blowdown to the receiving water body.	Maximum
2.4.4, 2.5.4	Blowdown Flow Rate	gpm	The normal (and maximum) flow rate of the blowdown stream from the cooling water systems to the receiving water body for closed system designs.	Maximum
2.4.5, 2.5.5	Blowdown Temperature	°F	The maximum expected blowdown temperature at the point of discharge to the receiving water body.	Maximum
2.4.7, 2.5.7	Evaporation Rate	gpm	The expected (and maximum) rate at which water is lost by evaporation from the cooling water systems.	Maximum
2.4.8, 2.5.8	Height	ft	The vertical height above finished grade of either natural draft or mechanical draft cooling towers associated with the cooling water systems.	Maximum
2.4.9, 2.5.9	Makeup Flow Rate	gpm	The expected (and maximum) rate of removal of water from a natural source to replace water losses from closed cooling water systems	Maximum
2.4.10, 2.5.10	Noise	dBa	The maximum expected sound level produced by operation of cooling towers, measured at 1000 feet from the noise source.	Maximum

TABLE 1.4-9
Plant Parameter Definitions

Parameter		Units	Definition	Bounding Value [a]
2.4.12, 2.5.12	Cooling Water Flow Rate	gpm	The total cooling water flow rate through the condenser/heat exchangers.	Maximum
2.4.13, 2.5.13	Heat Rejection Rate (blowdown)	gpm @ °F	The expected heat rejection rate to an off-site receiving waterbody expressed as flow in GPM at temperature.	Maximum
2.4.14, 2.5.14	Maximum Consumption of Raw Water	gpm	The expected maximum short-term consumptive use of water by the cooling water systems.	Maximum
3.	**Ultimate Heat Sink**			
3.1	**Ambient Air Requirements**			
3.1.1	Maximum Ambient Temperature (0% Exceedance)	°F	Assumption used for the maximum ambient temperature in designing the UHS system to provide heat rejection for 30 days under the assumed temperature condition	Minimum
3.1.2	Maximum Ambient Wet Bulb Temperature (0% Exceedance)	°F	Assumption used for the maximum wet bulb temperature in designing the UHS system to provide heat rejection for 30 days under the assumed temperature condition	Minimum
3.1.3	Minimum Ambient Temperature (0% Exceedance)	°F	Assumption used for the minimum ambient temperature in designing the UHS system to provide heat rejection for 30 days under the assumed temperature condition	Maximum
3.1.4	Maximum 30-day Average Wet Bulb Temperature	°F	The historical maximum 30-day running average wet bulb temperature observed in the site region, as recommended by RG 1.27	Minimum
3.1.5	Coincident 30-day Average Dry Bulb Temperature	°F	The 30-day average dry bulb temperature that coincides with the historical maximum 30-day average wet bulb temperature, as recommended by RG 1.27	Minimum
3.1.6	Maximum 1-day Average Wet Bulb Temperature	°F	The historical maximum 1-day average wet bulb temperature observed in the site region, as recommended by RG 1.27	Minimum
3.1.7	Coincident 1-day Average Dry Bulb Temperature	°F	The 1-day average dry bulb temperature that coincides with the historical maximum 1-day average wet bulb temperature, as recommended by RG 1.27	Minimum
3.1.8	Maximum 5-day Average Wet Bulb Temperature	°F	The historical maximum 5-day average wet bulb temperature observed in the site region, as recommended by RG 1.27	Minimum

TABLE 1.4-9
Plant Parameter Definitions

	Parameter	Units	Definition	Bounding Value [a]
3.1.9	Coincident 5-day Average Dry Bulb Temperature	°F	The 5-day average dry bulb temperature that coincides with the historical maximum 5-day average wet bulb temperature, as recommended by RG 1.27	Minimum
3.1.10	Maximum Cumulative Degree-Days Below Freezing	degree (°F)-days	Mean number of degrees Fahrenheit below freezing each day accumulated over a winter	Minimum
3.1.11	Maximum Ambient Temperature (1% exceedance)	°F	Assumption used for the maximum ambient temperature that will be exceeded no more than 1% of the time in designing the UHS system	Minimum
3.1.12	Maximum Wet Bulb Temperature (1% exceedance)	°F	Assumption used for the maximum wet bulb temperature that will be exceeded no more than 1% of the time in designing the UHS system	Minimum
3.1.13	Minimum Ambient Temperature (1% exceedance)	°F	Assumption used for the minimum ambient temperature that will be exceeded no more than 1% of the time in designing the UHS system	Maximum
3.2	**CCW Heat Exchanger**			
3.2.1	Maximum Inlet Temp to CCW Heat Exchanger	°F	The maximum temperature of safety-related service water at the inlet of the UHS component cooling water heat exchanger.	Minimum
3.2.2	CCW Heat Exchanger Duty	Btu/hr	The heat transferred to the safety-related service water system for rejection to the environment in UHS heat removal devices.	Maximum
3.3	**Mechanical Draft Cooling Towers**			
3.3.1	Acreage	ac	The land required for UHS cooling towers or ponds, including support facilities such as equipment sheds, basins, canals, or shoreline buffer areas.	Maximum
3.3.3	Blowdown Constituents and Concentrations	ppm	The maximum expected concentrations for anticipated constituents in the UHS blowdown to the receiving water body.	Maximum
3.3.4	Blowdown Flow Rate	gpm	The normal (and maximum) flow rate of the blowdown stream from the UHS system toe receiving water body for closed system designs.	Maximum
3.3.5	Blowdown Temperature	°F	The maximum expected UHS blowdown temperature at the point of discharge to the receiving water body.	Maximum

TABLE 1.4-9
Plant Parameter Definitions

	Parameter	Units	Definition	Bounding Value [a]
3.3.7	Evaporation Rate	gpm	The expected (and maximum) rate at which water is lost by evaporation from the UHS system.	Maximum
3.3.8	Height	ft	The vertical height above finished grade of mechanical draft cooling towers associated with the UHS system	Maximum
3.3.9	Makeup Flow Rate	gpm	The expected (and maximum) rate of removal of water from a natural source to replace water losses from the UHS system.	Maximum
3.3.10	Noise	dBa	The maximum expected sound level produced by operation of mechanical draft UHS cooling towers, measured at 1000 ft from the noise source.	Maximum
3.3.12	Cooling Water Flow Rate	gpm	The total cooling water flow rate through the UHS system.	Maximum
3.3.13	Heat Rejection Rate (blowdown)	gpm @ °F	The expected heat rejection rate to an off-site receiving waterbody expressed as flow in GPM at temperature.	Maximum
4.	**Containment Heat Removal System (Post-Accident)**			
4.1	**Ambient Air Requirements**			
4.1.1	Maximum Ambient Air Temperature (0% Exceedance)	°F	Assumed maximum ambient temperature used in designing the containment heat removal system	Minimum
4.1.2	Minimum Ambient Temperature (0% Exceedance)	°F	Assumed minimum ambient temperature used in designing the containment heat removal system	Maximum
5.	**Potable Water/Sanitary Waste System**			
5.1	**Discharge to Site Water Bodies**			
5.1.1	Flow Rate	gpm	The expected (and maximum) effluent flow rate from the potable and sanitary waste water systems to the receiving water body.	Maximum
5.2	**Raw Water Requirements**			

TABLE 1.4-9
Plant Parameter Definitions

	Parameter	Units	Definition	Bounding Value [a]
5.2.1	Maximum Use	gpm	The maximum short-term rate of withdrawal from the water source for the potable and sanitary waste water systems.	Maximum
5.2.2	Monthly Average Use	gpm	The average rate of withdrawal from the water source for the potable and sanitary waste water systems.	Maximum
6.	**Demineralized Water System**			
6.1	**Discharge to Site Water Bodies**			
6.1.1	Flow Rate	gpm	The expected (and maximum) effluent flow rate from the demineralized system to the receiving water body.	Maximum
6.2	**Raw Water Requirements**			
6.2.1	Maximum Use	gpm	The maximum short-term rate of withdrawal from the water source for the demineralized water system.	Maximum
6.2.2	Monthly Average Use	gpm	The average rate of withdrawal from the water source for the demineralized water system.	Maximum
7.	**Fire Protection System**			
7.1	Raw Water Requirements			
7.1.1	Maximum Use	gpm	The maximum short-term rate of withdrawal from the water source for the fire protection water system.	Maximum
7.1.2	Monthly Average Use	gpm	The average rate of withdrawal from the water source for the fire protection water system.	Maximum
8.	**Miscellaneous Drain**			
8.1	**Discharge to Site Water Bodies**			
8.1.1	Flow Rate	gpm	The expected (and maximum) effluent flow rate from miscellaneous drains to the receiving water body.	Maximum
9.	**Unit Vent/Airborne Effluent Release Point**			
9.1	**Atmospheric Dispersion (CHI/Q) (Accident)**	sec/m^3	The atmospheric dispersion coefficients used in the design safety analysis to estimate dose consequences of accident airborne releases	

TABLE 1.4-9
Plant Parameter Definitions

	Parameter	Units	Definition	Bounding Value [a]
9.1.1	0-2 hr @ EAB		.	Minimum
9.1.2	0-8 hr @ LPZ			Minimum
9.1.3	8-24 hr @ LPZ			Minimum
9.1.4	1-4 day @ LPZ			Minimum
9.1.5	4-30 day @ LPZ			Minimum
9.2	**Atmospheric Dispersion (CHI/Q) (Annual Average)**	sec/m^3	The atmospheric dispersion coefficient used in the safety analysis for the dose consequences of normal airborne releases.	Minimum
9.3	**Dose Consequences**	sec/m^3		
9.3.1	Normal	rem	The estimated design radiological dose consequences due to airborne effluent releases from normal operation of the plant.	Maximum
9.3.2	Post-Accident	rem	The estimated design radiological dose consequences due to airborne effluent releases from postulated accidents.	Maximum
9.4	**Release Point**			
9.4.2	Elevation (Normal)	ft	The elevation above finished grade of the release point for routine operational releases.	Minimum
9.4.3	Elevation (Post Accident)	ft	The elevation above finished grade of the release point for accident sequence releases.	Minimum
9.4.4	Minimum Distance to Site Boundary	m	The minimum lateral distance from the release point to the site boundary.	Minimum
9.4.7	Minimum Distance to Low Population Zone	m	The minimum lateral distance from the release point to the low population zone.	Minimum
9.5	**Source Term**			
9.5.1	Gaseous (Normal)	Ci/yr	The annual activity, by isotope, contained in routine plant airborne effluent streams.	Maximum
9.5.2	Gaseous (Post-Accident)	Ci	The activity, by isotope, contained in post-accident airborne effluents.	Maximum
9.5.3	Tritium (Normal)	Ci/yr	The annual activity of tritium contained in routine plant airborne effluent streams.	Maximum
10.	**Liquid Radwaste System**			
10.1	**Dose Consequences**			
10.1.1	Normal	rem	The estimated design radiological dose consequences due to liquid effluent releases from normal operation of the plant.	Maximum

TABLE 1.4-9
Plant Parameter Definitions

	Parameter	Units	Definition	Bounding Value [a]
10.2	**Release Point**			
10.2.1	Flow Rate	gpm	The discharge (and minimum dilution) flow rate of liquid potentially radioactive effluent streams from plant systems to the receiving waterbody.	Minimum
10.3	**Source Term**			
10.3.1	Liquid	Ci/yr	The annual activity, by isotope, contained in routine plant liquid effluent streams.	Maximum
10.3.2	Tritium	Ci/yr	The annual activity of tritium contained in routine plant airborne effluent streams.	Maximum
11.	**Solid Radwaste System**			
11.2	**Solid Radwaste**			
11.2.1	Activity	Ci/yr	The annual activity, by isotope, contained in solid radioactive wastes generated during routine plant operations.	Maximum
11.2.2	Principal Radionuclides	Ci/yr	The principal radionuclides contained in solid radioactive wastes generated during routine plant operations.	Maximum
11.2.3	Volume	ft^3/yr	The expected volume of solid radioactive wastes generated during routine plant operations.	Maximum
13.	**Auxiliary Boiler System**			
13.1	**Exhaust Elevation**	ft	The height above finished plant grade at which the flue gas effluents are released to the environment.	Minimum
13.2	**Flue Gas Effluents**	lbs/yr	The expected combustion products and anticipated quantities released to the environment due to operation of the auxiliary boilers, diesel engines and gas turbines.	Maximum
14.	**Heating, Ventilating and Air Conditioning Systems**			
14.1	**Ambient Air Requirements**			
14.1.1	Non-safety HVAC Max Ambient Temp (1% exceedance)	°F	Assumption used for the maximum ambient temperature that will be exceeded no more than 1% of the time, to design the non-safety HVAC systems	Minimum

TABLE 1.4-9
Plant Parameter Definitions

	Parameter	Units	Definition	Bounding Value [a]
14.1.2	Non-safety HVAC Min Ambient Temp (1% exceedance)	°F	Assumption used for the minimum ambient temperature that will be exceeded no more than 1% of the time, to design the non-safety HVAC systems	Maximum
14.1.3	Safety HVAC Max Ambient Temp (0% exceedance)	°F	Assumption used for the maximum ambient temperature, to design the safety-related HVAC systems	Minimum
14.1.4	Safety HVAC Min Ambient Temp (0% exceedance)	°F	Assumption used for the minimum ambient temperature, to design the safety-related HVAC systems	Maximum
15.	**On-site/Off-site Electrical Power System**			
15.1	**Acreage**			
15.1.1	Switchyard	ac	The land usage required for the high voltage switchyard used to connect the plant to the transmission grid.	Maximum
16.	**Standby Power System**			
16.1	**Diesel**			
16.1.2	Diesel Exhaust Elevation	ft	The elevation above finished grade of the release point for standby diesel exhaust releases.	Minimum
16.1.3	Diesel Flue Gas Effluents	lbs/yr	The expected combustion products and anticipated quantities released to the environment due to operation of the emergency standby diesel generators.	Maximum
16.1.4	Diesel Noise	dBa	The maximum expected sound level produced by operation of diesel engines turbines, measured at 50 feet from the noise source.	Maximum
16.2	**Gas-Turbine**			
16.2.2	Gas-Turbine Exhaust Elevation	ft	The elevation above finished grade of the release point for standby gas-turbine exhaust releases.	Minimum
16.2.3	Gas-Turbine Flue Gas Effluents	lbs/yr	The expected combustion products and anticipated quantities released to the environment due to operation of the emergency standby gas-turbine generators.	Maximum
16.2.5	Gas-Turbine Fuel Type	Not Applicable	The type of fuel oil required for proper operation of the gas-turbines.	N/A
17.	**Plant Characteristics**			

TABLE 1.4-9
Plant Parameter Definitions

	Parameter	Units	Definition	Bounding Value [a]
17.3	**Megawatts Thermal**	MWt	The thermal power generated by all units.	Maximum
17.4	**Plant Design Life**	Years	The operational life for which the plant is designed.	Maximum
17.5	**Plant Population**			
17.5.1	Operation	Persons	The number of people required to operate the plant.	Maximum
17.5.2	Refueling / Major Maintenance	Persons	The additional number of temporary staff required to conduct refueling and major maintenance activities.	Maximum
18.	**Construction**			
18.2	**Acreage**			
18.2.1	Laydown Area	ac	The land area required to provide space for construction support facilities.	Maximum
18.2.2	Temporary Construction Facilities	ac		Maximum
18.3	**Construction**			
18.3.1	Noise	dBa	The maximum expected sound level due to construction activities, measured at 50 feet from the noise source.	Maximum
18.4	**Plant Population**			
18.4.1	Construction	Persons	The number of people required to construct the plant.	Maximum
18.5	**Site Preparation Duration**	Months	Length of time required to prepare the plant site for construction.	Maximum

[a] The bounding (minimum or maximum) value associated with the alternative reactor technology plant parameter is selected based upon the largest or smallest value that would be required to satisfy a plant design constraint or result in a limiting environmental impact.

TABLE 1.5-1
Regulatory Guide Applicability/Conformance

Guide Number	Title	Rev.	SSAR Section	Conformance/Comments
1.3	Assumptions Used for Evaluating the Potential Radiological Consequences of a Loss of Coolant Accident for Boiling Water Reactors	2	3.3.4.10	C.1: Conforms. C.2: Conforms except for meteorology, dose conversion and iodine retention. ESP uses Regulatory Guides 1.145 and 1.183 methods for meteorology and dose conversion, respectively. Suppression pool retention of iodine is credited in ABWR standard design.
1.23	On-site Meteorological Programs (ANS 2.5-1984 proposed as Regulatory Guide 1.23, Revision 1)	--	2.3.2.1.3.6 2.3.3 2.3.4.2	C.1: Conforms. C.2: Conforms. C.3: Not applicable for ESP – Currently located in CPS Control Room. C.4: Conforms. C.5: Conforms. C.6: Conforms. C.7: Not applicable. C.8: Conforms with ANS 2.5-1984 proposed as Regulatory Guide 1.23, Revision 1, with the following exceptions: 1) accuracy of dewpoint temperature; 2) precipitation is not recorded on the digital portion of the data acquisition system; 3) digital accuracies.
1.25	Assumptions Used for Evaluating the Potential Radiological Consequences of a Fuel Handling Accident in the Fuel Handling and Storage Facility for Boiling and Pressurized Water Reactors (Safety Guide 25)	--	3.3.4.13	C.1: Conforms. C.2: Conforms, with exception of using Regulatory Guide 1.145 accident meteorology. C.3: Conforms, with exception of using Regulatory Guide 1.183 dose conversion methodology.
1.27	Ultimate Heat Sink for Nuclear Power Plants	2	2.3.1.2.4 2.4.11.5 3.2.2	C.1: Conforms. C.2: Conforms except item 2.b which is not applicable. C.3: Conforms. C.4: Not applicable for ESP.

TABLE 1.5-1
Regulatory Guide Applicability/Conformance

Guide Number	Title	Rev.	SSAR Section	Conformance/Comments
1.59	Design Basis Floods for Nuclear Power Plants	2	2.4.2.2 2.4.3	C.1: Conforms except for items a, c, and d which are not applicable for ESP. C.2: Conforms. C.3: Not applicable for ESP. C.4: Not applicable.
1.70	Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants (LWR Edition)	3	1.1.1 2.1.3.6 2.2.2.5.3 3.4.1.8	Used for general guidance for format and content, as applicable.
1.76	Design Basis Tornado for Nuclear Power Plants	--	2.3.1.2.2	C.1: Not used – later guidance utilized. C.2: Not applicable.
1.77	Assumptions Used for Evaluating a Control Rod Ejection Accident for Pressurized Water Reactors	--	3.3.4.4	C.1: Conforms. C.2: Conforms. C.3: Conforms, with the exception that offsite dose consequence acceptance criteria and radiological assumptions used are per Regulatory Guide 1.183, (Appendix H).
1.78	Evaluating the Habitability of a Nuclear Power Plant Control Room During a Postulated Hazardous Chemical Release	1	2.2.3.1.3	C.1: Conforms for ESP screening evaluations, other positions not applicable for ESP. C.2: Not applicable for ESP. C.3: Not applicable for ESP. C.4: Not applicable for ESP. C.5: Not applicable for ESP.
1.91	Evaluations of Explosions Postulated To Occur on Transportation Routes Near Nuclear Power Plants	1	2.2.3.1.2	C.1: Conforms. C.2: Conforms. C.3: Not applicable based on C.1 and C.2 conformance.
1.101	Emergency Planning and Preparedness for Nuclear Power Reactors	3	Emergency Plan	Conforms: The Emergency Plan has been developed to comply with 10 CFR 52.17 using the guidance provided in NUREG-0654/FEMA-REP-1, Rev. 1, Supplement 2.

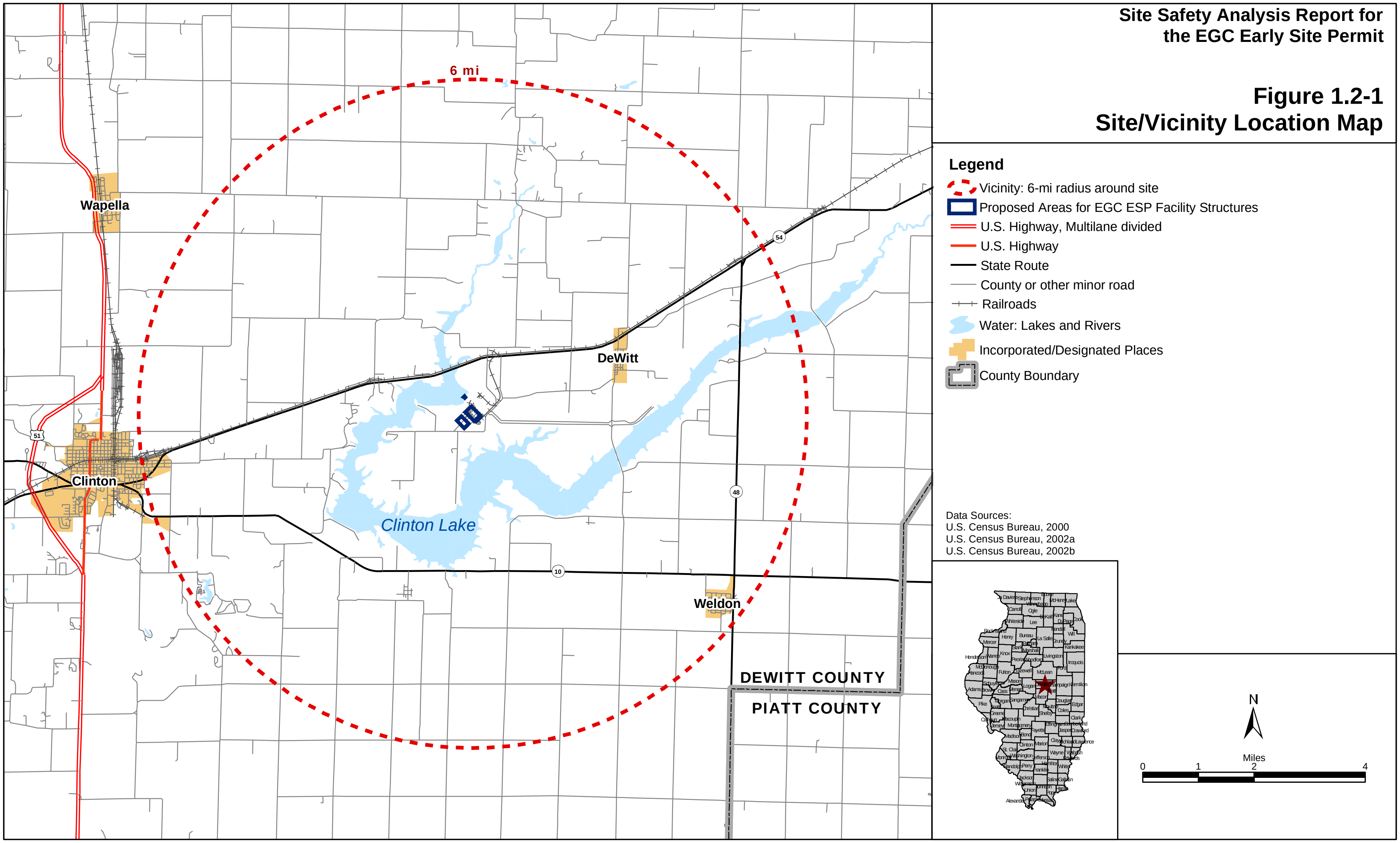
TABLE 1.5-1
Regulatory Guide Applicability/Conformance

Guide Number	Title	Rev.	SSAR Section	Conformance/Comments
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	1	2.3.5.1 3.1.1.2 3.1.2.2	C.1: Conforms. C.2: Conforms. C.3: Conforms. C.4: Conforms. C.5: Conforms.
1.111	Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Light-Water-Cooled Reactors	1	2.3.5.1 3.1.1.2	C.1: Conforms. C.2: Conforms. C.3: Conforms. C.4: Conforms.
1.113	Estimating Aquatic Dispersion of Effluents from Accidental and Routine Reactor Releases for the Purpose of Implementing Appendix I	1	3.1.2.2	C.1: Conforms. C.2: Conforms per C.1. C.3: Conforms.
1.132	Site Investigations for Foundations of Nuclear Power Plants	1	2.4.13 2.5.1 2.5.4.2 2.5.4.3 2.5.4.4 Appendix A	C.1: Conforms with exceptions related to specific foundation design which is not applicable for ESP. C.2: Conforms. C.3: Conforms. C.4: Conforms. C.5: Conforms with exceptions related to spacing and depth in Appendix, which is related to foundation design and therefore not applicable for ESP. C.6: Conforms with exceptions of sample interval which is related to foundation design and therefore not applicable for ESP. C.7: Conforms.
1.138	Laboratory Investigations of Soils for Engineering Analysis and Design of Nuclear Power Plants	--	2.5.4.2 Appendix A	C.1: Conforms with exceptions related to specific foundation design which is not applicable for ESP. C.2: Conforms. C.3: Conforms. C.4: Conforms. C.5: Conforms.

TABLE 1.5-1
Regulatory Guide Applicability/Conformance

Guide Number	Title	Rev.	SSAR Section	Conformance/Comments
1.145	Atmospheric Dispersion Models for Potential Accident Consequence Assessments at Nuclear Power Plants	1	2.3.4 3.3.2	C.1: Conforms for ground level releases. C.2: Conforms to general methods sections. C.3: Conforms. C.4: Conforms.
1.165	Identification and Characterization of Seismic Sources and Determination of Safe Shutdown Earthquake Ground Motion	--	2.5.1 2.5.2 2.5.3 2.5.4 Appendix A Appendix B	C.1: Conforms. C.2: Conforms. C.3: Conforms, except 1) alternate method used to conduct probabilistic seismic hazard analysis (PSHA), and 2) revisions of the industry seismic databases and/or reexamination of the acceptability of the reference probability, and associated updating of the site specific PSHA, are subject to the provisions and limitations of 10 CFR 50.109 and 52.39. C.4: Conforms.
1.183	Alternative Radiological Source Terms For Evaluating Design Basis Accidents At Nuclear Power Reactors	-	3.3.1 3.3.2 3.3.3 3.3.4	C.1: Conforms for AP1000 DBAs and ESBWR LOCA. C.2: Conforms for AP1000 and ESBWR. C.3: Conforms for AP1000 and ESBWR. C.4: Conform with the exception of Control room and NUREG 0737 considerations which are not applicable for ESP. C.5: Conforms for AP1000 DBAs and ESBWR LOCA. C.6: Not Applicable for ESP.

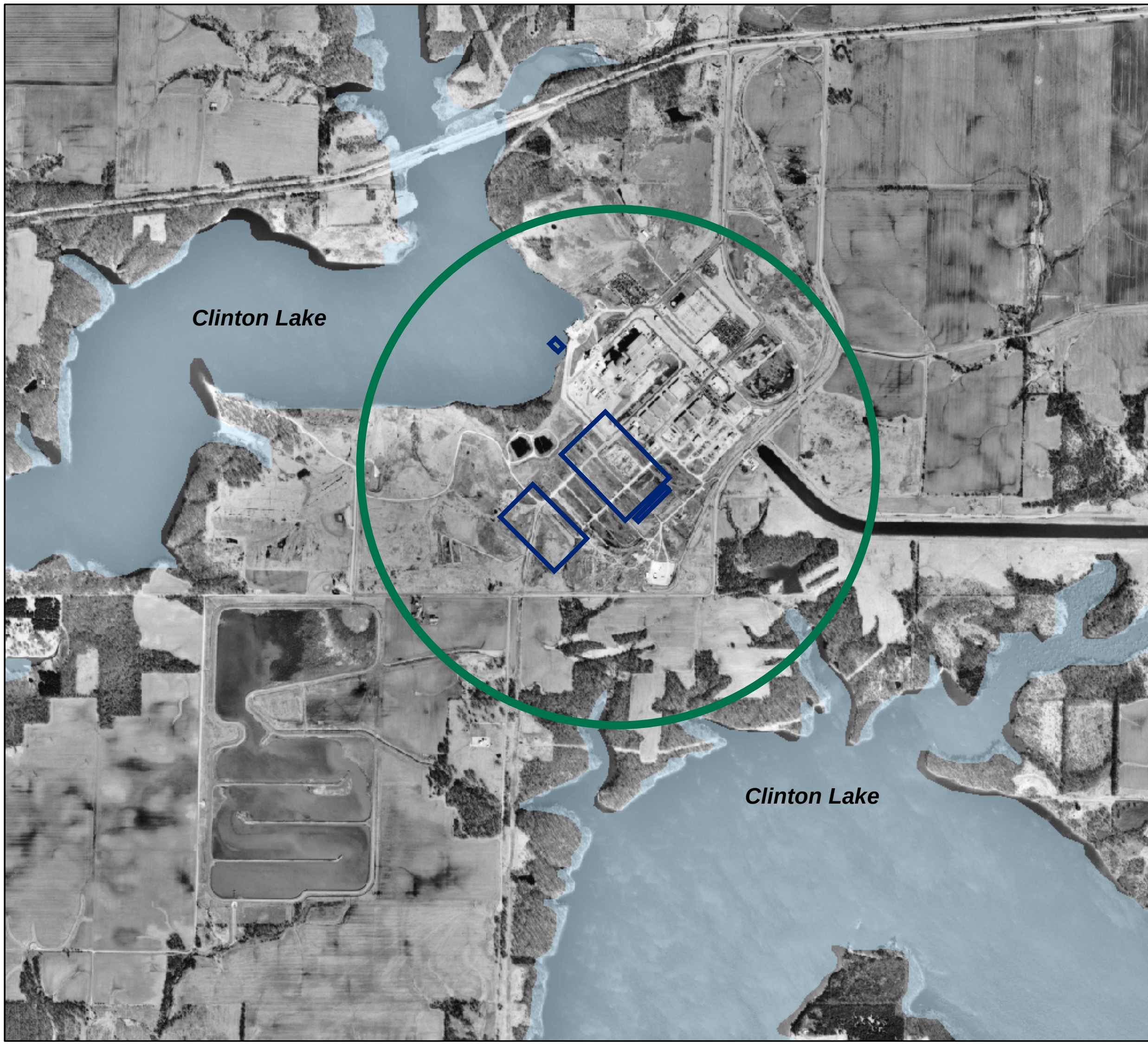
Figure 1.2-1
Site/Vicinity Location Map



Data Sources:
U.S. Census Bureau, 2000
U.S. Census Bureau, 2002a
U.S. Census Bureau, 2002b

Site Safety Analysis Report for the EGC Early Site Permi

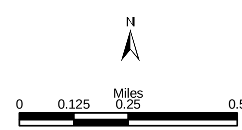
Figure 1.2-2
Aerial View of Site



Legend

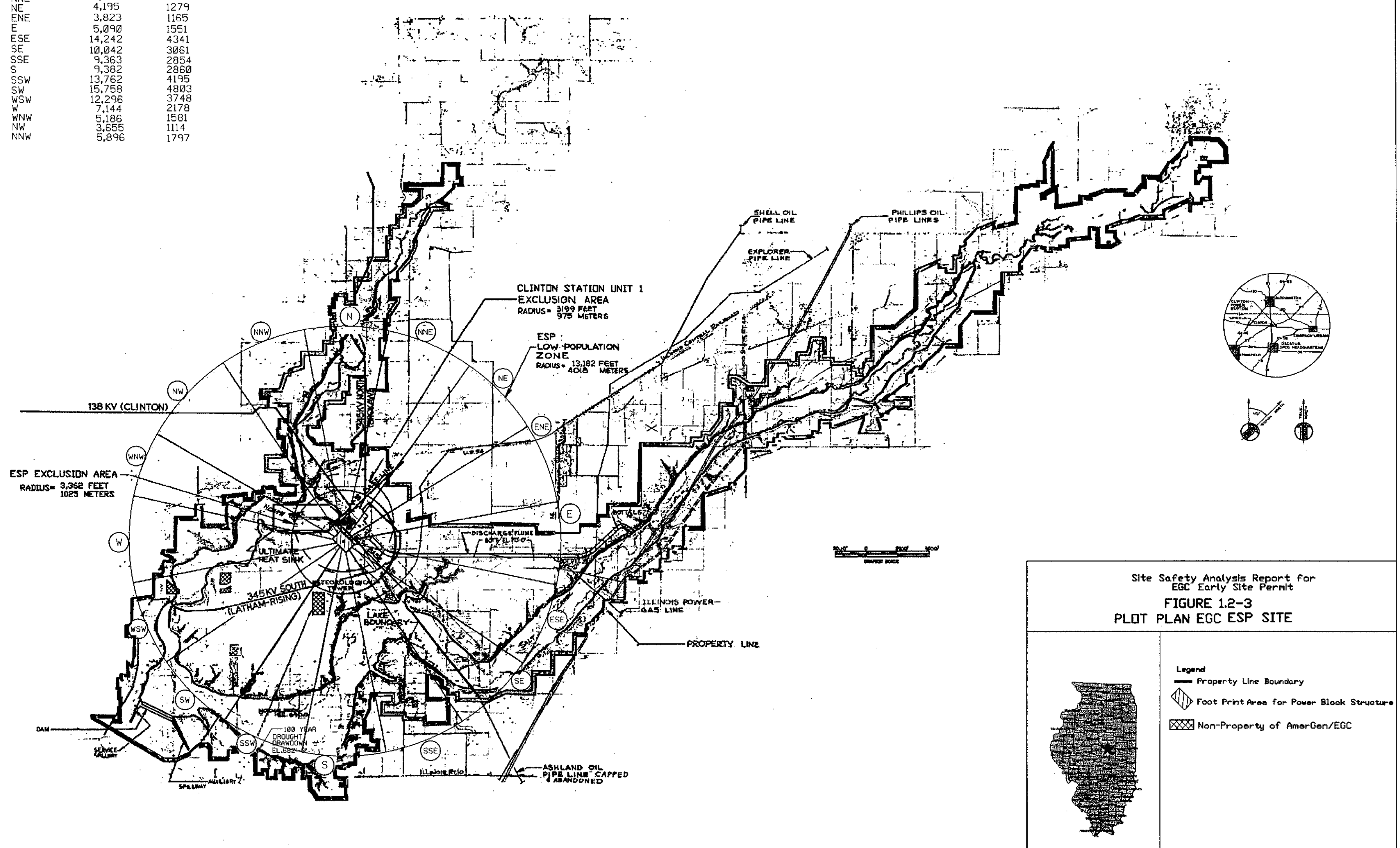
- Proposed Areas for EGC ESP Facility Structures
- ESP Exclusion Area Boundary (1025 meters)
- Water: Lakes and Rivers

Data Sources:
IDNR, 1998 and 1999



DISTANCE TO PROPERTY LINE

SECTOR AREAS	FEET	METERS
N	5,305	1617
NNE	4,484	1367
NE	4,195	1279
ENE	3,823	1165
E	5,090	1551
ESE	14,242	4341
SE	10,042	3061
SSE	9,363	2854
S	9,382	2860
SSW	13,762	4195
SW	15,758	4803
WSW	12,296	3748
W	7,144	2178
WNW	5,186	1581
NW	3,655	1114
NNW	5,896	1797

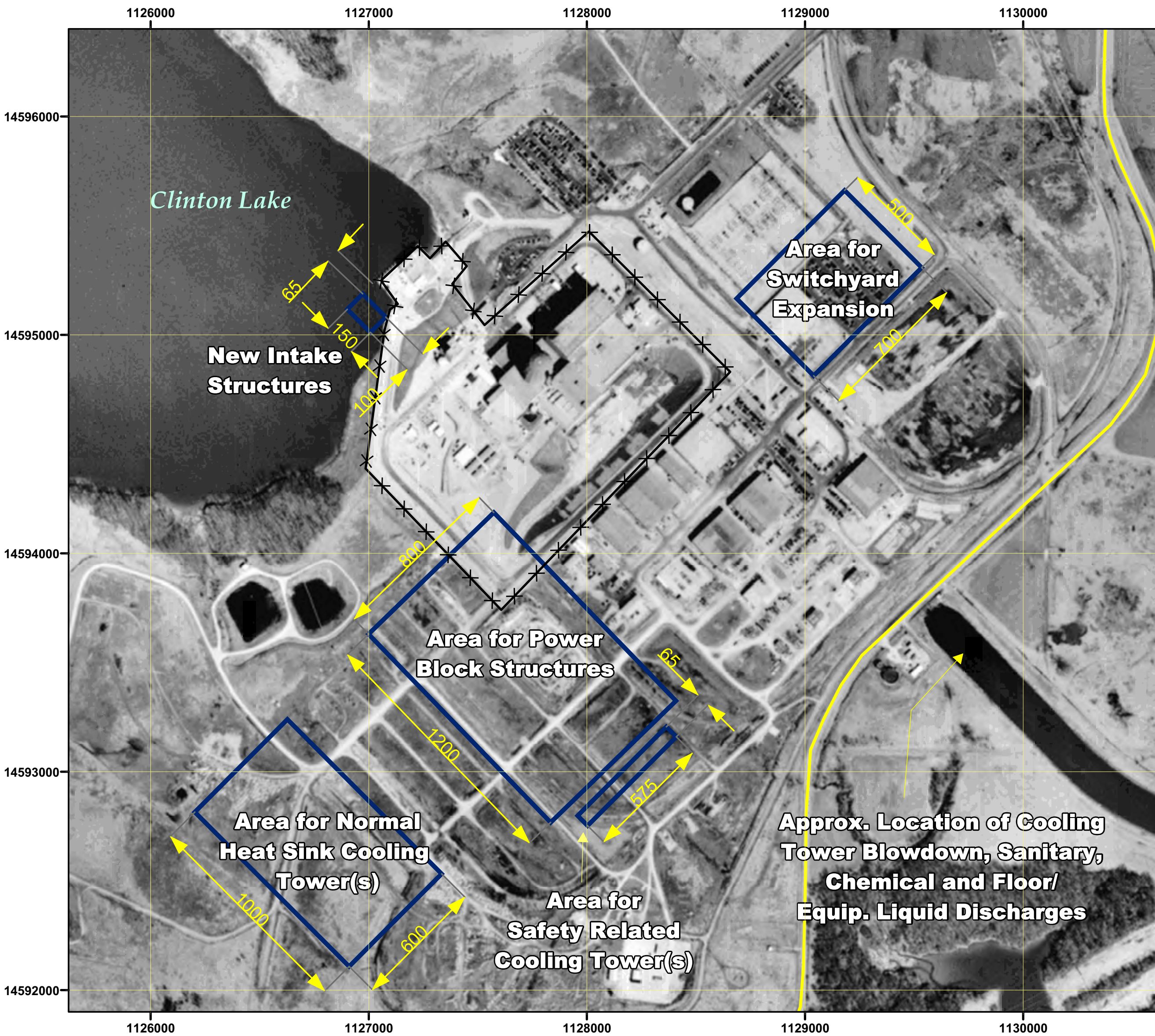


Site Safety Analysis Report for
EGC Early Site Permit

FIGURE 1.2-3
PLOT PLAN EGC ESP SITE

Site Safety Analysis Report for the EGC Early Site Permit

Figure 1.2-4
ESP Site Development Details



Legend

- Proposed Areas for EGC ESP Facility Structures
- Protected Area
- Public Roads

NOTE: All dimensions are in feet.

Data Sources:
IDNR, 1998 and 1999