

1 **2.0 Description of Nuclear Power Plant and Site**
2 **and Plant Interaction with the Environment**
3
4

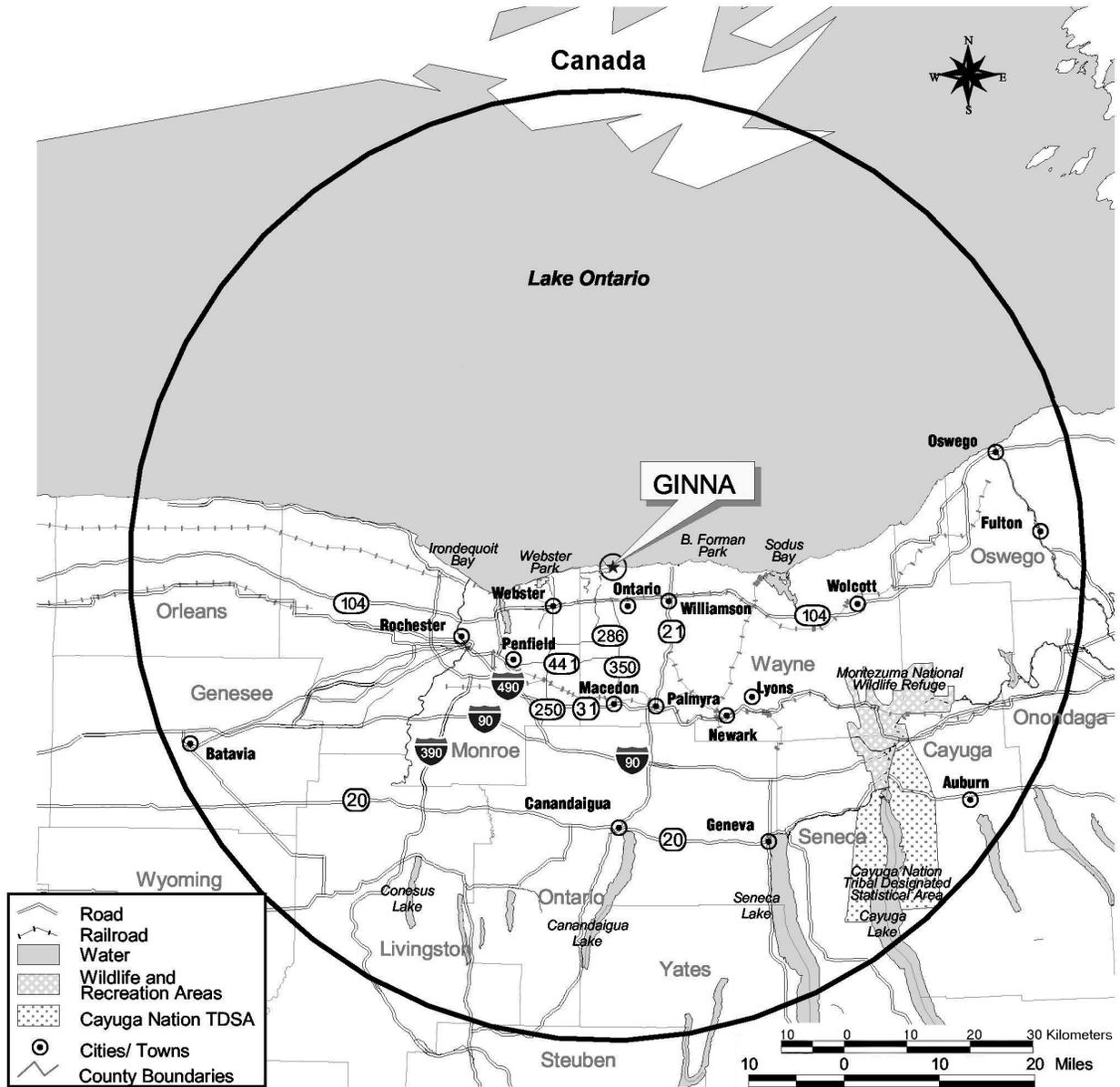
5 The R.E. Ginna Nuclear Power Plant (Ginna) is located 6 km (4 mi) north of Ontario, New York,
6 in the northwest corner of Wayne County and on the south shore of Lake Ontario. The Ginna
7 site is approximately 32 km (20 mi) east of the city of Rochester and 64 km (40 mi) west-
8 southwest of Oswego, New York. The plant consists of one unit equipped with a nuclear steam
9 supply system supplied by Westinghouse Electric Corporation that uses a pressurized water
10 reactor (PWR) and a once-through cooling system. The plant and its environs are discussed in
11 Section 2.1, and the plant's interactions with the environment are presented in Section 2.2.
12

13 **2.1 Plant and Site Description and Proposed Plant**
14 **Operation During the Renewal Term**
15

16 The immediate area around the Ginna site is rural. There are no substantial population
17 centers, industrial complexes, airports, transportation arteries, or parks within a 5-km (3-mi)
18 radius of the site, and the only recreational facility within this radius is the Bear Creek boat ramp
19 located about 2.4 km (1.5 mi) east of the site. The largest community within 16 km (10 mi) of
20 the site is Webster, which is located in Monroe County. Webster, with a town population of
21 about 38,000, is about 11 km (7 mi) west-southwest of the site (RG&E 2002a). The largest
22 metropolitan area within an 80-km (50-mi) radius is Rochester, which is approximately 32 km
23 (20 mi) west of the site and has with a population of about 220,000. Figures 2-1 and 2-2 show
24 the location of Ginna in relationship to the counties and important cities and towns within an 80-
25 km (50-mi) and 10-km (6-mi) radius, respectively.
26

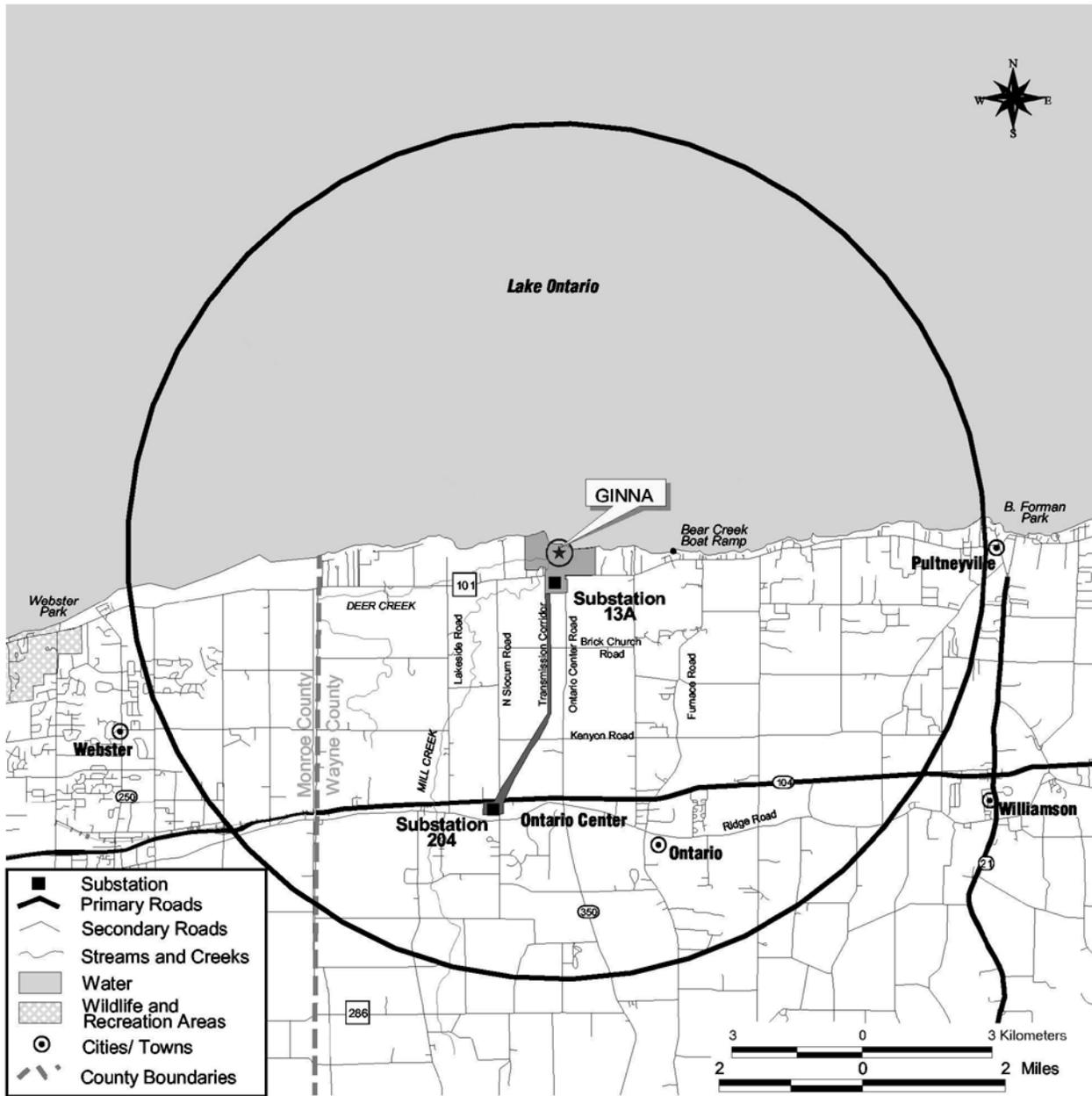
27 The Ginna site is owned by the Rochester Gas and Electric Corporation (RG&E). The site has
28 increased from 137 ha (338 ac) in 1972 to the present size of 197 ha (488 ac), and
29 correspondingly, the shoreline extent has increased from about 0.6 km (1 mi) to 0.9 km
30 (1.5 mi).
31

32 There are three occupied farm houses on the site that are owned by RG&E, and the occupants
33 have leases that are renewable annually at the option of RG&E. There are a number of
34 unoccupied buildings on the site. With the exception of some physical security improvements,
35 there are no plans for additional building onsite. The physical security improvements are not
36 related to license renewal.



1
2

Figure 2-1. Location of R.E. Ginna Nuclear Power Plant, 80-km (50-mi) Region



1 **Figure 2-2.** Location of R.E. Ginna Nuclear Power Plant, 10-km (6-mi) Region

Plant and the Environment

1 The surface of the terrain at the Ginna site on the south shore of Lake Ontario and to the east
2 and west is either flat or gently rolling. The elevation of the site increases to the south from
3 about 78 m (255 ft) above mean sea level (msl) near the edge of Lake Ontario; to 134 m (440
4 ft) at New York State (NYS) Route 104, which is 5.5 km (3.5 mi) south of the lake; and then to
5 about 488 m (1600 ft) at the northern edge of the Appalachian Plateau, which is 48 to 64 km
6 (30 to 40 mi) to the south. Southward from NYS Route 104, the topography gradually changes
7 to a series of small abrupt hills commencing about 16 km (10 mi) south of the site. Surface-
8 water features on the site are limited to Mill Creek, which enters the site from the south, and
9 Deer Creek, which enters from the west. These two creeks join southwest of the plant and
10 empty into Lake Ontario just east of the plant. The general plant area is relatively well drained,
11 with no topographic basins or swampy areas on the site. All drainage, both surface and
12 subsurface, ultimately flows toward the lake.
13

14 **2.1.1 External Appearance and Setting**

15
16 The plant is visible from Lake Road (County Route 101), which borders the site in an east-west
17 direction approximately 518 m (1700 ft) south of the plant. A distinctive design feature of the
18 plant is a facade that conceals the dome of the reactor containment building, thus minimizing
19 the aesthetic impact of the plant on the surrounding community. The area around the site is
20 rural and the agricultural production and undisturbed land onsite enhances this appearance.
21

22 Major structures in addition to the reactor building are the auxiliary building, intermediate
23 building, control building, turbine building, screen house, condensate demineralizer building,
24 standby auxiliary feedwater pump building, and the service building containing offices, shops,
25 and laboratories. Figure 2-3 identifies the major buildings on the site.
26

27 The Ginna site is located in the lake plain, a slender band of land bordering Lake Ontario that is
28 about 8 to 48 km (5 to 30 mi) wide. The terrain is flat-to-rolling and contains numerous short
29 streams that flow northward directly into Lake Ontario (AEC 1973). The surrounding region has
30 agricultural land and rural communities.

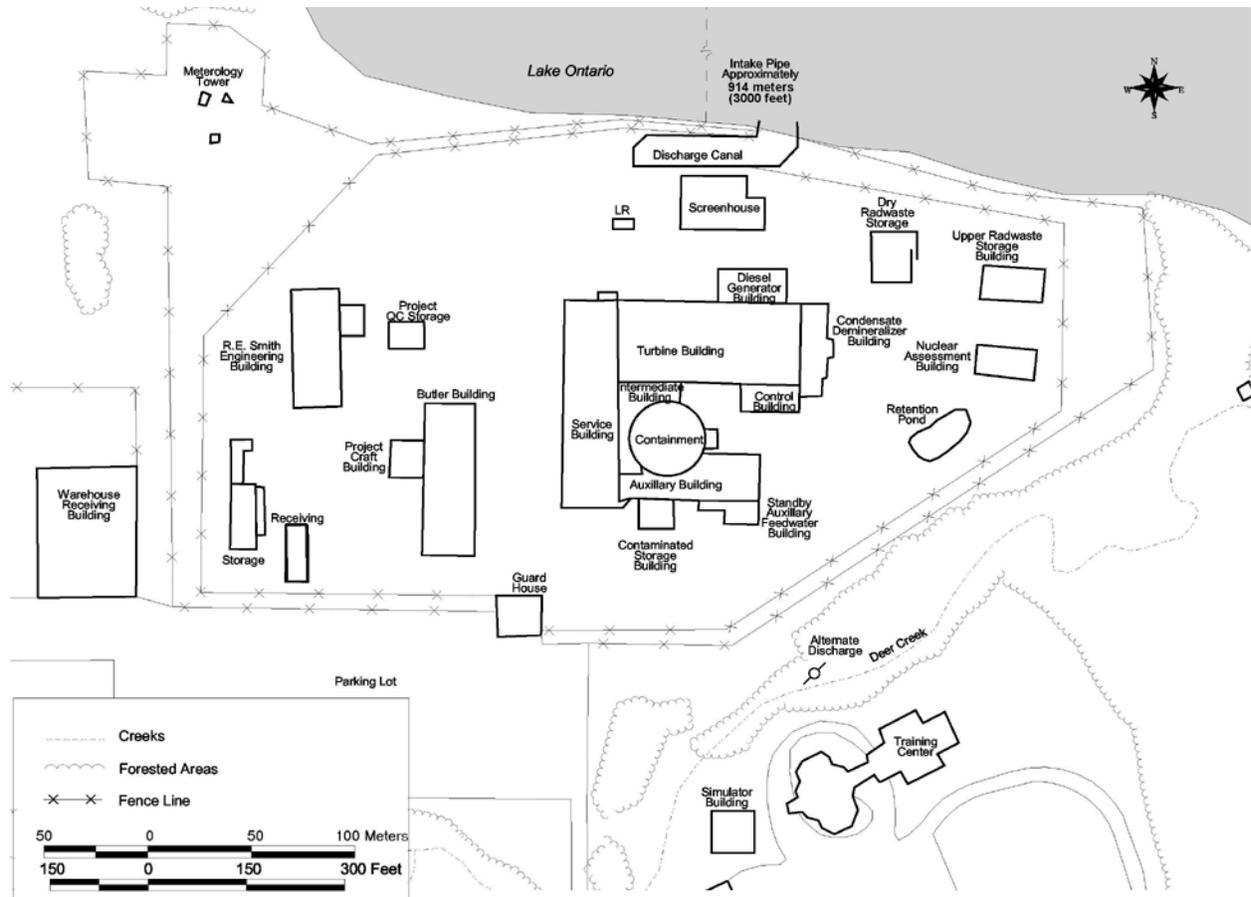


Figure 2-3. R.E. Ginna Nuclear Power Plant Layout

2.1.2 Reactor Systems

The Ginna reactor is a pressurized light-water-moderated and -cooled system designed by Westinghouse Electric Corporation. The system has two identical heat-transfer closed loops, each of which includes a reactor coolant pump and a steam generator connected to the reactor vessel. Ginna began commercial operation in July 1970 at a licensed output of 1300 megawatts thermal power (MW[t]) and at 420 MW net electrical power (MW[e]). On March 1, 1972, on the basis of additional safety and environmental evaluations, the licensed output was increased to 1520 MW(t) and the net electrical output was increased to 490 MW(e).

The reactor containment is a vertical, cylindrical, reinforced-concrete type with pre-stressed tendons in the vertical wall; a reinforced-concrete ring anchored to the bedrock; and a

1 reinforced semi-hemispherical dome. The major components of the reactor coolant system are
2 located within the containment structure. The containment structure provides a physical barrier
3 to protect the equipment from natural disasters and shielding to protect personnel from
4 radiation emitted from the reactor core while at power. A welded steel liner is attached to the
5 inside face of the concrete shell to provide leak-tightness. The reactor vessel is located in the
6 center of the containment structure below ground level. The reactor is licensed to use uranium
7 dioxide fuel that has a maximum enrichment of 5.0 percent uranium-235 by weight. Typical
8 average enrichment is 4.2 percent uranium-235 by weight. The approximate maximum average
9 burnup is less than 55,000 megawatt-days per metric ton uranium (MWd/MTU).

11 **2.1.3 Cooling and Auxiliary Water Systems**

12
13 Lake Ontario is the source of water for the turbine condenser cooling and most auxiliary water
14 systems at Ginna. Water from Lake Ontario reaches Ginna through a submerged offshore
15 intake. Water returns to Lake Ontario through a surface shoreline discharge. The total nominal
16 flow of water for these systems is about 22,370 L/s (354,600 gpm). A flow of approximately
17 21,245 L/s (340,000 gpm) is used to cool the turbine condenser, and the rest of the water is
18 available for auxiliary systems such as service water and fire protection.

19
20 The turbine condenser cooling system removes heat via the main condensers. The system
21 consists of an offshore intake structure designed specifically to minimize the possibility of
22 clogging, an inlet tunnel, four traveling screens, two circulating water pumps, and shoreline
23 discharge via a short discharge canal. The intake structure is located 945 m (3100 ft) from
24 shore at a depth of about 10 m (33 ft) water at mean lake level. Even an occurrence of a
25 historical low water level will result in no less than 4.6 m (15 ft) of water covering the intake
26 structure. Screen racks with bars spaced 25 to 35 cm (10 to 14 in.) apart prevent large objects
27 from entering the system. At full-flow conditions (22,370 L/s [354,600 gpm]), the velocity at the
28 intake screen racks is about 0.2 m (0.8 ft) per second. A 3-m (10-ft) diameter, reinforced-
29 concrete-lined tunnel cut through bedrock extends 945 m (3100 ft) in a northerly direction from
30 the shoreline. Before the intake water reaches the two circulating water pumps that send it
31 through the plant, the water passes through one of four parallel traveling screens. Some of this
32 water is used to flush the debris off the screens into the discharge canal. All fish and debris,
33 excluding collections taken during impingement studies, are returned to Lake Ontario via this
34 discharge canal.

35
36 Water used to cool the turbine condenser is discharged into the discharge canal. The water
37 discharged into the canal enters Lake Ontario at the shoreline. The normal temperature
38 increase over the ambient water temperature at the point of discharge is about 11 °C (20 °F),
39 and the size of the thermal plume is normally about 71 ha (175 ac).

1 The auxiliary system includes service water, fire protection, and other uses. This is about
2 1125 L/s (14,600 gpm) of the total water volume pumped by these systems. The service water
3 system consists of four service water pumps located in the screen house. The service water
4 system circulates lake water from the screen house to various heat exchangers and systems
5 inside the containment and the auxiliary, intermediate, turbine, and diesel generator buildings.
6 The service water system supplies cooling water for various plant needs. It provides multiple
7 water source flow paths to ensure the availability of the ultimate heat sink, which is the lake.
8

9 The treated water system, one of the auxiliary systems, is used in the following secondary plant
10 subsystems: demineralized water production, secondary water chemical treatment, and
11 non-radioactive liquid waste disposal (floor drains, secondary sample effluents, etc.). The
12 treated water subsystems are non-safety-related auxiliary systems that support the functionality
13 of other process systems.
14

15 Domestic-quality potable water, at a flow of about 378,000 L/d (100,000 gpd), is purchased by
16 RG&E from the Ontario Water District for drinking, sanitary purposes, auxiliary boiler feed, and
17 condensate makeup and polishing. Sanitary waste from Ginna is discharged into the
18 wastewater treatment system operated by the town of Ontario.
19

20 **2.1.4 Radioactive Waste Management Systems and Effluent Control Systems**

21
22 Ginna uses liquid, gaseous, and solid radioactive waste management systems to collect and
23 process the wastes that are by-products of reactor operation. These systems reduce the
24 radioactive effluents before they are released to the environment. Discharge streams are
25 appropriately monitored, and safety features are incorporated to preclude releases in excess of
26 the limits specified in 10 CFR Part 20 and to maintain radioactive discharges to levels as low as
27 reasonably achievable (ALARA) according to the requirements of 10 CFR Part 50, Appendix I.
28

29 Waste disposal facilities are designed so that discharge of effluents and offsite shipments are in
30 accordance with applicable U.S. Nuclear Regulatory Commission (NRC) regulations and
31 guidelines. Radioactive fluids entering the waste disposal system are collected in sumps and
32 tanks until a determination of subsequent treatment can be made. The waste is sampled and
33 analyzed to determine the quantity of radioactivity, and an isotopic breakdown is determined if
34 necessary. Before any attempt is made to discharge this waste, it is processed as required and
35 then released under controlled conditions. The system design and operation are directed
36 toward minimizing releases to unrestricted areas.
37

38 Radioactive gases are pumped by compressors through a manifold to one of the gas decay
39 tanks where the gases are held for a suitable period of time for decay. Cover gases in the
40 nitrogen blanketing system are reused to minimize gaseous wastes. During normal operation,

1 gases are discharged intermittently at a controlled rate from these tanks through the monitored
2 plant vent. The system is provided with discharge controls so that environmental conditions do
3 not restrict the release of radioactive effluents to the atmosphere.

4
5 The waste disposal system is designed to package all solid waste in standard liners and other
6 approved packages for removal to burial or processing facilities. The types of solid waste that
7 are produced at Ginna, in addition to dry active waste, are sludge, oily waste, bead resin, and
8 filters.

9
10 Fuel rods that have exhausted a certain percentage of their fuel and then removed from the
11 reactor core for disposal are called spent fuel. Spent fuel is stored onsite in the spent fuel pool.
12 As a result of the Phase-1 rerack and after allowing for a full core discharge capability,
13 sufficient positions remain in the spent fuel pool (based upon projected discharges of 44 fuel
14 assemblies per cycle) to store the projected spent fuel discharge resulting from operation
15 through the spring of 2010 (if Ginna were to continue operating beyond its current license
16 period, which ends in September 2009) (RG&E 2001a).

17
18 The Offsite Dose Calculation Manual (ODCM) (RG&E 2002b), which is subject to NRC
19 inspection, describes the methods and parameters used for calculating offsite doses resulting
20 from radioactive liquid and gaseous effluents. It provides monitoring alarm/trip points for
21 release of effluents, and operational limits for releasing liquid and gaseous effluents are
22 specified to ensure compliance with NRC regulations.

23 24 **2.1.4.1 Liquid Waste Processing Systems and Effluent Controls**

25
26 Liquid wastes are generated primarily by plant maintenance and service operations. Source
27 term influents to the waste disposal system have changed considerably since the original
28 design of the system. However, the current influent quantities into the system are smaller than
29 the quantities for which the system was originally designed. Actual liquid waste discharge
30 quantity figures are provided in the Radioactive Effluent Release Report required by the plant
31 technical specifications (RG&E 2001b).

32
33 Radioactive fluids entering the waste disposal system are collected in sumps and tanks until a
34 determination regarding subsequent treatment can be made. The fluids are sampled and
35 analyzed to determine the quantity of radioactivity, and an isotopic breakdown is determined if
36 necessary. Before any attempt is made to discharge, the waste is processed as required and
37 then released under controlled conditions. The system design and operation are directed
38 toward minimizing releases to unrestricted areas. Discharge streams are monitored and safety

1 features are incorporated to preclude releases in excess of the limits of 10 CFR Part 20 and to
2 maintain radioactive discharges to ALARA levels according to the requirements of 10 CFR
3 Part 50, Appendix I.

4
5 The waste holdup tank (about 79,500 L [21,000 gal]) is the collection point for most primary
6 liquid wastes, via gravity drain where possible. Other drains, such as basement-level drains,
7 drain to a 1419-L (375-gal)-capacity sump tank that is then pumped to the waste holdup tank.

8
9 The bulk of the radioactive liquids discharged from the reactor coolant system are processed
10 and retained inside the plant by the chemical and volume control system recycle train. This
11 recycle approach minimizes liquid input to the waste disposal system, which processes
12 relatively small quantities of generally low-activity wastes. The processed water from waste
13 disposal, from which most of the radioactive material has been removed, is discharged through
14 a monitored line into the circulating water discharge. Liquid wastes are processed to remove
15 most of the radioactive materials.

16
17 From the waste holdup tank, the wastewater can be processed through a demineralization
18 system to one of two monitor tanks and then either released to the circulating water discharge
19 canal or recycled to the reactor makeup water tank. The waste holdup tank vent line is routed
20 through the auxiliary building charcoal filters. The spent resin is sluiced to a shipping container
21 for disposal.

22
23 The 1419-L (375-gal)-capacity auxiliary building sump tank serves as a collecting point for
24 equipment drain water discharged to the basement-level drain header. The drain header
25 receives equipment drains from the refueling water storage tank, residual heat exchangers,
26 chemical and volume control system holdup tanks and recirculation pump, gas stripper feed
27 pumps, boric acid evaporator, spent resin storage tanks, seal water filter, charging pump seal
28 leakoff tank, charging pumps, spray additive tank, seal water heat exchanger, and
29 nonregenerative heat exchanger.

30
31 The 189,200 L (50,000 gal), carbon-steel, high-conductivity waste tank is the collection point for
32 condensate polisher regenerant and high-conductivity wastes. These wastes are retained in
33 the tank prior to release into the circulating water system.

34
35 The retention tank is the collection point for the various building floor and equipment drains.
36 The tank retains this waste prior to discharging it into the circulating water discharge. The
37 tank's contents are continuously monitored for pH and radioactivity.

38
39 The neutralizing tank collects regenerant wastes from the primary makeup water demineralizer
40 system. The tank retains the waste for neutralization prior to discharge to the retention tank.

1 The monitor tanks are part of the chemical and volume control system. These tanks retain the
2 waste until it is discharged to the circulating water discharge or recycled through the
3 demineralization system to the reactor makeup water tank. The contents of the tanks are
4 sampled for radioactivity prior to discharge.

5
6 Liquid batch releases are controlled individually, and each batch release is authorized based on
7 sample analysis and the existing dilution flow in the discharge canal. Plant procedures
8 establish the methods for sampling and analysis of each batch prior to release. A release rate
9 limit is calculated for each batch based on analysis, dilution flow, and all procedural conditions
10 being met before it is authorized for release. The waste stream entering the discharge canal is
11 continuously monitored, and the release would be automatically terminated if the preselected
12 monitor setpoint is exceeded (RG&E 2001a).

13
14 If gross beta analysis is performed for each batch release in lieu of gamma isotopic analysis, a
15 weekly composite for principal gamma emitters and iodine-131 is performed. Additional
16 monthly and quarterly composite analyses are performed as specified. The methodology and
17 equations used to calculate activity are included in the Ginna ODCM (RG&E 2002b).

18 **2.1.4.2 Gaseous Waste Processing Systems and Effluent Controls**

19
20
21 The gaseous waste management system is designed to collect waste gases from various tanks
22 and sampling systems throughout the plant. The primary source of gas received by the waste
23 disposal system is cover gas displaced from the chemical and volume control system holdup
24 tanks as they fill with liquid. Gaseous wastes consist primarily of (1) hydrogen stripped from
25 coolant discharged to the chemical and volume control system holdup tanks during boron
26 dilution, (2) nitrogen and hydrogen gases purged from the chemical and volume control system
27 volume control tank when degassing the reactor coolant, and (3) nitrogen from the closed gas
28 blanketing system. The gas decay tank capacity allows a 45-day decay period before the
29 waste gas is discharged.

30
31 Radioactive gases are pumped to one of the gas decay tanks where they are held for a suitable
32 period of time. Cover gases in the nitrogen blanketing system are reused to minimize gaseous
33 wastes. During normal operation, gases are discharged intermittently at a controlled rate from
34 these tanks through the monitored plant vent. The system is provided with discharge controls
35 so that environmental conditions do not restrict the release of radioactive effluents to the
36 atmosphere.

37
38 Because the chemical and volume control system holdup tank cover gases must be replaced
39 when they are emptied during processing, provisions are made to return the gas from the gas
40 decay tanks to the chemical and volume control system holdup tanks via a reuse header.

1 The gas decay tanks are about 13,300 L (470 ft³) each, with a design pressure of 1.4 kPa
2 (200 psig), and normally operate between 0 and 750 kPa (0 and 110 psig). They can be lined
3 up for draining, gas analyzer sampling, or pressurization with nitrogen. Gas held in the decay
4 tanks can either be returned to the chemical and volume control system holdup tanks via the
5 reuse header, or it can be discharged to the atmosphere if it has decayed sufficiently for
6 release. Before a tank can be emptied to the environment, it is sampled and analyzed to
7 determine and record the activity to be released, and only then discharged to the plant vent at a
8 controlled rate through a radiation monitor. Samples are taken manually from the gas
9 analyzers. During release (through charcoal filters), a trip valve in the discharge line is closed
10 automatically by a high activity level indication in the plant vent.

11
12 The waste disposal panel contains pressure gauges for the tanks using cover gas and also for
13 the gas decay tanks and the vent header. A local plant stack radiation monitor is also provided
14 for the operator's use during releases. All gas system manual operations and releases are
15 controlled locally at the waste disposal panel by the operator. The alarm conditions that are
16 associated with the gaseous waste management system are (1) moisture separator level,
17 (2) vent header pressure, (3) gas analyzer oxygen, (4) plant stack monitor radiation, (5) gas
18 decay tank pressure, and (6) gas decay tank new standby selection. High-pressure alarms are
19 installed on the tanks that vent to the vent header. An alarm on the waste disposal panel will
20 light an annunciator on the main control board.

21
22 An automatic gas analyzer is provided to monitor the concentrations of oxygen and hydrogen in
23 the cover gas of the waste disposal system and the chemical and volume control system tanks.
24 The gas analyzer system sequentially selects samples from vessels of the waste disposal
25 system, analyzes the samples for oxygen and hydrogen, records the results of the analysis, and
26 provides alarms when a hazardous operating condition exists. Upon indication of a high oxygen
27 level, provisions are made to purge the systems to the gaseous waste system with an inert gas.

28
29 Gaseous effluent monitor setpoints are established at concentrations that permit some margin
30 for corrective action to be taken before exceeding offsite dose rates corresponding to 10 CFR
31 Part 20 limitations. The ODCM (RG&E 2002b) establishes the methods for sampling and
32 analysis for continuous ventilation releases and for containment purge releases, as well as the
33 methods for sampling and analysis prior to gas decay tank releases. The dose rates are
34 determined using methodology included in the Ginna ODCM (RG&E 2002b). Calculations were
35 performed in 1976 to demonstrate conformity with numerical guides on design objectives
36 presented in Appendix I to 10 CFR Part 50 for gaseous effluents.

1 **2.1.4.3 Solid-Waste Processing**

2
3 The waste disposal system is designed to package solid waste in standard liners and other
4 approved packages for removal to burial or processing facilities. In addition to dry active waste,
5 solid waste produced at Ginna includes sludge, oily waste, bead resin, and filters.

6
7 There are two onsite solid waste storage facilities with a combined capacity sufficient to
8 accommodate approximately 5 years of operation. The upper radioactive waste storage facility
9 typically provides temporary storage for plant solid waste. The high-integrity container storage
10 facility is a concrete-walled, open-topped structure designed as a shadow shield for the storage
11 of spent resin. The resin is stored in shielded casks that are ready for shipment. Additionally, a
12 reinforced concrete structure houses the old steam generators and is designed for long-term
13 storage.

14
15 Suspended solids and other sludges occasionally require processing. Oily waste is processed
16 at an offsite facility. An alternative method of disposal is to solidify and bury the waste at a
17 licensed burial site.

18
19 Bead resin is used to remove chemical impurities and radioactive contamination from the
20 reactor coolant, the chemical and volume control system, the spent fuel pool, and the liquid
21 waste processing system. When the resin is exhausted or reaches a radiation limit, the spent
22 resin is sluiced to one of two 4247-L (1122-gal) spent resin storage tanks. After sufficient resin
23 has been collected, a transport cask sufficient for the radioactivity present is ordered. Spent
24 resin is slurried from the spent resin storage tank into a liner with water used for sparging and
25 mixing the resin, and nitrogen gas pressure is used to move the resin. A representative sample
26 of the resin is obtained and the concentration of each radioisotope is calculated. After the resin
27 is dewatered, the liner is capped and sealed and the top is put on the transport cask. The cask
28 is surveyed for radiation and contamination and properly labeled and marked. The resin is then
29 transported to a licensed disposal facility.

30
31 When filters become saturated or have a high dose rate, they are dewatered and then replaced.
32 The spent filters are placed in a high-integrity container or solidified in an approved media and
33 shipped in accordance with 10 CFR Part 71, 10 CFR Part 61, and burial site licenses. Dry
34 active waste is shipped in bulk form to a vendor for volume reduction and packaging for delivery
35 to the disposal site (RG&E 2001a).

1 The Ginna ODCM (RG&E 2002b) controls the establishment of a program that outlines the
2 method for processing wet solid wastes and solidifying liquid wastes. It includes applicable
3 process parameters and evaluation methods used at Ginna to ensure compliance with the
4 requirements of 10 CFR Part 71 prior to shipment of containers of radioactive waste from the
5 site.

6
7 A radioactive waste sampling and analysis program has been instituted to ensure compliance
8 with 10 CFR Part 61. Scaling factors have been developed to calculate concentrations of hard-
9 to-measure isotopes from more easily determined isotopes. The scaling factors will enable
10 concentrations of all required isotopes to be determined for each radioactive waste shipment.

11
12 All radioactive waste is shipped to a licensed burial site in accordance with applicable NRC,
13 U.S. Department of Transportation, and State regulations, including burial site regulation
14 requirements. To ensure that personnel exposure is minimized, ALARA considerations are
15 addressed in all phases of the solidification process. The quantities shipped offsite for
16 processing and burial are reported to the NRC in the Radioactive Effluent Release Report
17 (RG&E 2001b).

18 **2.1.5 Nonradioactive Waste Systems**

19
20
21 Hazardous, non-radioactive waste is regulated under the Resource Conservation and Recovery
22 Act (RCRA) administered by the New York State Department of Environmental Conservation
23 (NYSDEC), which classifies Ginna as a “small quantity generator and a treater, storer and/or
24 disposer of hazardous waste.” Following their annual inspection in January 2001, NYSDEC
25 concluded that Ginna was in compliance with all New York State hazardous waste regulations
26 (NYSDEC 2001). This conclusion was consistent with their findings during prior annual
27 inspections.

28
29 The most common types of hazardous waste generated at Ginna are chemical degreasers,
30 acids, and caustics used to clean parts and rags and paper products contaminated with
31 chemicals regulated under RCRA. There are also chemical products that are discarded due to
32 procedural changes, and minor amounts of asbestos and equipment contaminated with
33 polychlorinated biphenyls (PCBs) due to asbestos and PCB abatement efforts. RG&E’s 2001
34 Hazardous Waste Regulatory Fee form estimated that 1570 kg (1.73 tons) of hazardous waste
35 was produced at Ginna in 2000 (RG&E 2001c).

36 **2.1.6 Plant Operation and Maintenance**

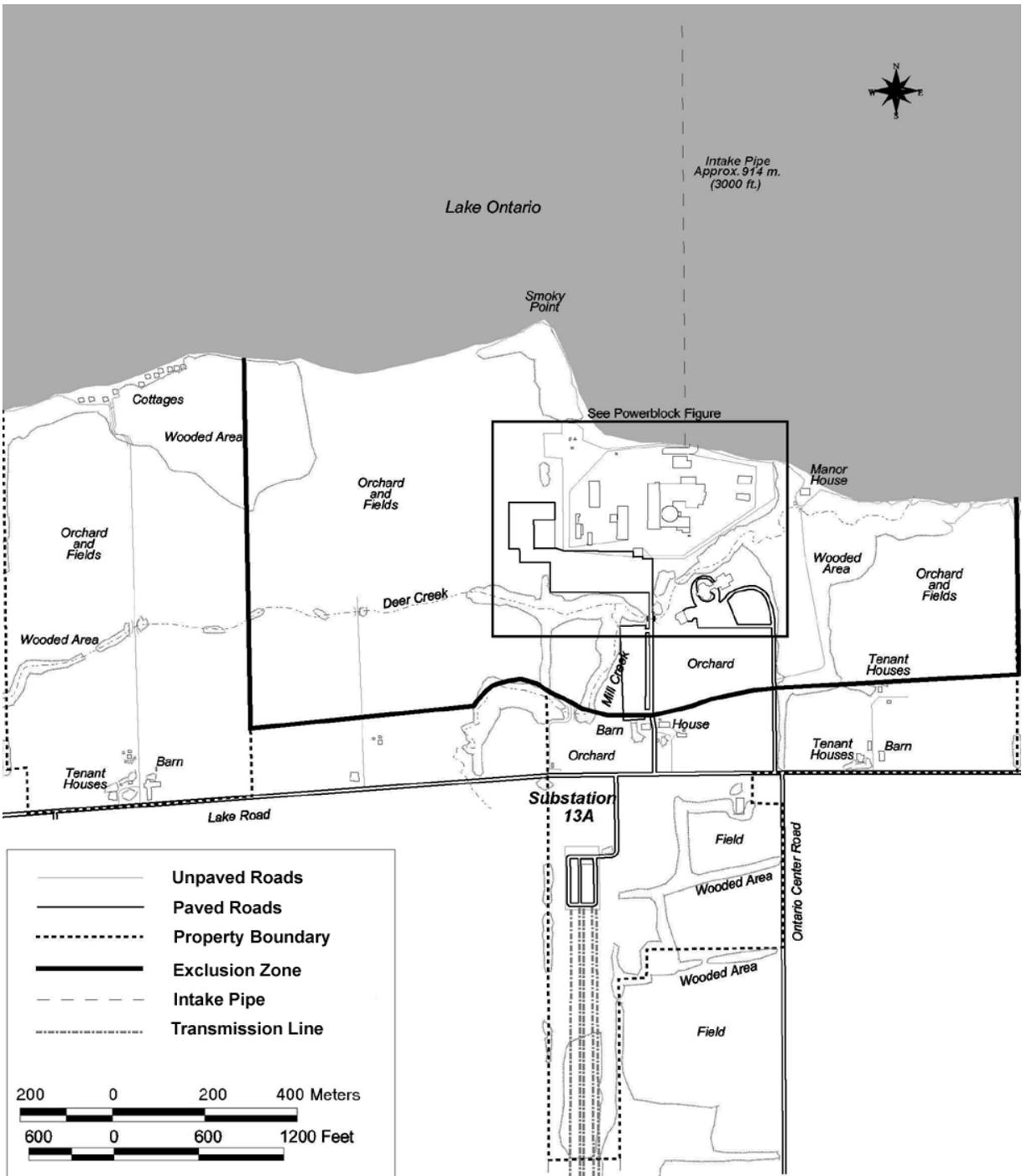
37
38
39 Maintenance activities conducted at Ginna include inspection, testing, and surveillance to
40 maintain the current licensing basis of the plant and ensure compliance with environmental and

1 safety requirements. Certain activities can be performed while the reactor is operating, but
2 some activities require that the plant be shut down. Long-term outages are scheduled for
3 refueling and for certain types of repairs or maintenance, such as replacement of a major
4 component. RG&E refuels the Ginna nuclear unit on an 18-month schedule, generally resulting
5 in a refueling every other year. During refueling outages, site employment increases by as
6 many as 700 workers for temporary duty (typically lasting from 28 to 35 days) (RG&E 2002a).

7
8 An updated final safety analysis report supplement (RG&E 2002c) regarding the effects of
9 aging on systems, structures, and components was included as Appendix A of the Application
10 for Renewed Operating License, in accordance with 10 CFR Part 54. Chapter 3 and Appendix
11 B of the Ginna license renewal application describe the programs and activities that will manage
12 the effects of aging during the license renewal period. RG&E expects to conduct activities
13 related to the management of aging effects during plant operation or normal refueling and other
14 outages, but plans no outages specifically for the purpose of refurbishment. RG&E has no
15 plans to add additional full-time staff (non-outage workers) at the plant during the period of the
16 renewed license.

17 18 **2.1.7 Power Transmission System**

19
20 The *Final Environmental Statement for the R.E. Ginna Plant, Unit 1. Rochester Gas and*
21 *Electric Corporation* (AEC 1973) describes four transmission lines, running in the same right-of-
22 way, that connect the plant with the transmission system. RG&E has not made any
23 modifications to either the right-of-way or the transmission lines since original installation
24 (RG&E 2002a). Ginna generates electricity at 19 kilovolts (kV). This voltage is stepped up to
25 115 kV at the plant and is transmitted 1.0 km (0.6 mi) by four 115-kV underground cables to
26 Substation 13A, which is located south of Ginna on the south side of Lake Road (Figure 2-4).
27 Four 115-kV overhead transmission lines were installed as a direct result of the construction,
28 startup, and operation of Ginna. These lines emanate from Substation 13A and run
29 approximately 5.6 km (3.5 mi) in the same right-of-way in a southerly direction to connect to the
30 transmission grid at Substation 204 (Fruitland), which is on the south side of NYS Route 104
31 (Table 2-1). These lines are supported by wooden structures with two lines per structure.
32 There is a fifth 115-kV line emanating from Substation 13A that serves as a distribution line and
33 is located on its own structures on the east side of the transmission lines right-of-way between
34 Substations 13A and 204. This fifth line was not installed as a direct result of construction,
35 startup, or operation of Ginna.



1 **Figure 2-4.** R.E. Ginna Nuclear Power Plant Transmission Lines

1 The 500-foot-wide transmission lines right-of-way from Ginna to Substation 204 is owned by
 2 RG&E. The portion of the right-of-way between Substation 13A and Substation 204 is in the
 3 town of Ontario and Wayne County and has road crossings at Brick Church Road, Kenyon
 4 Road, North Slocum Road, and NYS Route 104 (Figure 2-2). Locked gates limit access to the
 5 right-of-way from roadways. Land use in this area is predominantly agricultural with only a few
 6 homes adjacent to the right-of-way.

7
 8 The transmission lines right-of-way is characterized by low- to medium-sized shrubs with an
 9 understory of grasses and forbs, and with trees at the edge of the right-of-way. RG&E
 10 manages the right-of-way in accordance with a New York State Public Service Commission-
 11 approved long-range vegetation management plan (RG&E 1995). This plan uses selected
 12 management techniques with the goal of maintaining a low-growing vegetative community. A
 13 relatively thick shrub layer is maintained, with the intention of discouraging the sprouting and
 14 growth of larger trees within the right-of-way. Mowing or brush cutting is rare and, when done,
 15 is typically performed only in small areas as needed to clear access to towers. Trees that may
 16 interfere with the electrical conductors are either trimmed or are cut at the base. Herbicides are
 17 generally only used as spot applications to prevent tree or shrub regrowth. RG&E uses only
 18 non-restricted-use herbicides, and all applications are performed under the supervision of
 19 licensed applicators. RG&E maintains a vegetative buffer along stream crossings and does not
 20 mow or treat vegetation with herbicides within wetland areas or stream crossings unless
 21 specific, individual trees need to be trimmed or removed to maintain safe operation of the right-
 22 of-way.

23
 24 **Table 2-1.** R.E. Ginna Nuclear Power Plant Transmission Lines Right-of-Way
 25

Substation	Number of Lines	kV	Approximate Distance		Corridor Direction	Corridor Width		Corridor Area	
			km	mi		m	ft	hectares (acres)	
204 (Fruitland)	4	115	5.6	3.5	South	152	500	85	212

26
 27
 28 Source: RG&E 2002a
 29

30 **2.2 Plant Interaction with the Environment**

31
 32 Sections 2.2.1 through 2.2.8 provide general descriptions of the environment near Ginna.
 33 Detailed descriptions also are provided, where needed, to support the analysis of potential
 34 environmental impacts of refurbishment and operation during the renewal term, as discussed in
 35 Chapters 3 and 4. Section 2.2.9 describes the historic and archaeological resources in the
 36 area, and Section 2.2.10 describes possible impacts of other Federal project activities.

2.2.1 Land Use

1
2
3 Ginna is in the town of Ontario, New York, in the northwest corner of Wayne County and on the
4 south shore of Lake Ontario. Surface-water features onsite are limited to Mill Creek, which
5 enters the site from the south, and Deer Creek, which enters the site from the west. These two
6 creeks join southwest of the plant and empty into Lake Ontario just east of the plant.
7

8 Ginna is about 32 km (20 mi) east of the center of Rochester and 64 km (40 mi) west-
9 southwest of Oswego. The immediate area around the site is rural. There are no substantial
10 population centers, industrial complexes, airports, transportation arteries, or parks within a
11 4.8-km (3.0-mi) radius. The largest community within 16 km (10 mi) of the site is Webster,
12 located in Monroe County approximately 11.2 km (7.0 mi) west-southwest, with a town
13 population of about 38,000 (RG&E 2002a). The largest metropolitan area within 80 km (50 mi)
14 is Rochester, with a population of about 220,000. Approximately, 48 percent of the workforce
15 at Ginna lives in Wayne County and 44 percent lives in Monroe County. The remaining
16 8 percent live elsewhere.
17

18 The 197-ha (488-ac) Ginna site is owned by RG&E. The land at the site and along the
19 transmission line right-of-way is zoned by the town of Ontario for limited industrial uses, while
20 adjacent lands are zoned for large lot residential uses (exceeding 1858 m² [20,000 ft²]). The
21 original site area was 134 ha (338 ac) at the time of preparation of the 1972 Environmental
22 Report for Ginna (RG&E 1972). During July 1976, approximately 49 ha (122 ac) of additional
23 land was acquired from an adjoining farm, and another 6.7 ha (16.0 ac) was purchased during
24 1988 on the western side of the site. Correspondingly, the shoreline extent has increased from
25 about 1.6 to 2.4 km (1.0 to 1.5 mi). More recently, during 2002, a 68-m (224-ft)-wide strip along
26 the western boundary and frontage at the corner of Lake and Slocum Roads was sold by RG&E
27 to a developer who is building a small subdivision. Approximately half of the site is leased and
28 currently is used for agricultural production, primarily apple orchards and, to a lesser degree,
29 corn and hay fields. Another quarter of the site has been left relatively undisturbed, having a
30 combination of open fields, shrub brush, and trees. The remaining quarter of the site has been
31 developed for the power station and ancillary facilities, with about 10 ha (25 ac) enclosed within
32 the security fences.
33

34 There are three occupied farm houses on the Ginna site, one of which has an occupied out-
35 building. These houses are owned by RG&E, and the occupants have leases that are
36 renewable annually at the option of the RG&E. Two of the houses are located 1250 m (4100 ft)
37 and 884 m (2900 ft), respectively, southwest of the plant, while the third house and its
38 associated out-building are about 701 m (2300 ft) and 579 m (1900 ft) southeast of the plant,
39 respectively. All are located beyond the exclusion area boundary.
40

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1 Unoccupied buildings owned by RG&E include the Brookwood Estate Manor House (used as an
2 employee meeting facility) and garage, located about 274 m (900 ft) east of the plant and
3 fronting the lake; horse barns (used for storage), located about 457 m (1500 ft) south of the
4 plant; and a house (used as a fitness-for-duty center), located about 488 m (1600 ft) south of
5 the plant. While there are currently no plans for further development on the site, additional
6 security features have been added, primarily along the perimeter of the plant area. The
7 addition of these security features are unrelated to and independent of license renewal.

8
9 Webster Park, a 223-ha (550-ac) Monroe County park on the south shore of Lake Ontario, is
10 approximately 9.6 km (6.0 mi) west of the site. Facilities include a fishing pier, campground,
11 day-use shelters, lodges and cabins, picnic areas, tennis courts, baseball and soccer fields,
12 hiking, and cross-country ski trails. Approximately 56 km (35 mi) from Ginna, in southeastern
13 Wayne County along the border with Cayuga and Seneca counties, is the Montezuma
14 Wetlands Complex. The 14,569-ha (36,000-ac) complex includes the Federally owned
15 Montezuma Wildlife Preserve, state-owned Northern Montezuma Wildlife Management Area,
16 lands owned by conservation groups, and private property. The area contains marshes and
17 impoundments, forested wetlands, old fields, meadows, farm fields, and woodlands
18 (RG&E 2002a).

20 **2.2.2 Water Use**

21
22 Lake Ontario is the source of water for cooling and most auxiliary water systems. Ginna uses a
23 once-through condenser cooling system with a submerged offshore intake and a surface
24 shoreline discharge. The average daily withdrawal from and return to the lake for the cooling
25 water and other service water systems is about 22,370 L/s (354,600 gpm).

26
27 In addition, potable water, at a flow of about 378,000 L/d (100,000 gpd), is purchased by RG&E
28 from the Ontario Water District for drinking, sanitary purposes, auxiliary boiler feed, and
29 condensate makeup and polishing. Sanitary waste from Ginna is discharged to the wastewater
30 treatment system operated by the town of Ontario.

32 **2.2.3 Water Quality**

33
34 Lake Ontario provides water of a quality sufficient to serve a variety of needs, including
35 propagation of fish and wildlife and contact recreation. However, the lake is listed on the New
36 York State 2002 Section 303(d) List of Impaired Waters as impaired due to fish consumption
37 advisories as a result of contamination by PCBs, Mirex, and Dioxin.

38
39 Pursuant to the Clean Water Act, the water quality of the plant effluents is regulated through the
40 National Pollutant Discharge Elimination System (NPDES). The Division of Environmental

1 Permits within the NYSDEC is delegated by U.S. Environmental Protection Agency (EPA) to
2 issue NPDES permits, which it refers to as State Pollutant Discharge Elimination System
3 (SPDES) permits. The current permit (NY0000493) was issued February 1, 2003, and is due to
4 expire February 1, 2008. Any new regulations promulgated by the EPA or the State of New
5 York would be reflected in future permits.
6

7 The current permit requires monitoring of discharges from the circulating cooling water system,
8 house service boiler blowdown system, the high-conductivity water tank discharge system
9 (including steam generator blowdown), and the radiation waste holdup and treatment system.
10 Discharge limitations exist on flow, maximum discharge temperature, incremental temperature
11 difference, chlorine, boron, oil and grease, suspended solids, pH, iron, copper, zinc, arsenic,
12 and chromium.
13

14 **2.2.4 Air Quality**

15

16 Ginna has a typical northeastern-U.S. humid climate that is moderated by the influence of Lake
17 Ontario. The nearest national weather station is at the Greater Rochester International Airport
18 (ROC) located about 32 km (20 mi) southwest and inland from the site. The ROC data define
19 the regional climate. The local climate shows lake-effect influences on temperature, moisture,
20 and precipitation.
21

22 Climatological records from 1971 to 2000 at ROC indicate that the normal daily maximum
23 temperatures for the region range from -0.6°C (31.0°F) in January to a high of 27.2°C (81.0°F)
24 in July (NOAA 2002). Normal minimum temperatures range from -8.5°C (17.0°F) in January to
25 15.6°C (60.0°F) in July.
26

27 The regional prevailing winds are from the west-southwest. Based on monitoring data for the
28 period 1992 to 1994 at Ginna, local winds are predominantly from south to west-northwest with
29 the peak direction from the south-southwest. The average annual precipitation measured at
30 ROC is 86.31 cm (33.98 in.). Based on statistics for the 30 years from 1954 through 1983, the
31 probability of a tornado striking the site is expected to be about 2×10^{-5} per year (Ramsdell and
32 Andrews 1986).
33

34 Locally, weather systems coming from Canada tend to pick up moisture as they cross Lake
35 Ontario and deposit it within 24 to 32 km (15 to 20 mi) of the shoreline. Regional snowfall, as
36 recorded at ROC, averages approximately 236 cm (93 in.) per year. Locations closer to the
37 lake, such as the Ginna site, tend to experience many "lake-effect" snow showers and may
38 have more snowfall than recorded at ROC.
39

1 Wind energy potential along the shore of Lake Ontario in the vicinity of Ginna is rated as 3 to 4
2 on a scale of 1 to 7, with a rating of 5 estimated to exist offshore (Elliott et al. 1986). These
3 ratings indicate that wind is a viable energy resource in the area.
4

5 The air quality in the region is designated as better than national standards, in attainment, or
6 unclassified for all criteria pollutants in 40 CFR 81.316 and 40 CFR 81.328. The nearest area
7 of nonattainment is Niagara County, New York, which is classified as marginal for ozone
8 (EPA 2003a). There are no mandatory Class I Federal areas in which visibility is an important
9 value designated in 40 CFR Part 81 within 160 km (100 mi) of Ginna. According to the 1991 to
10 2000 data from the EPA, the number of days when the air quality index was greater than 100
11 for ozone in the Rochester Metropolitan Statistical Area (i.e., "Poor Air Quality") ranged from a
12 low of 0 in 1993 and 1996 to a high of 16 in 1991 (EPA 2003b). The EPA reports 1 day in 2001
13 when the air quality index for ozone was higher than 100 for this area.
14

15 Emissions from diesel generators, boilers, and other activities and facilities associated with
16 Ginna operations are regulated under New York state and Federal regulations. Emissions from
17 these Ginna sources are lower than the thresholds specified in the applicable New York State
18 and Federal air quality regulations. Therefore, RG&E is not required to have air quality permits
19 for Ginna.
20

21 **2.2.5 Aquatic Resources**

22

23 Aquatic resources in the vicinity of Ginna are associated with Lake Ontario, which is the
24 smallest of the Great Lakes and the eleventh largest lake in the world in terms of volume. The
25 lake is approximately 306 km (190 mi) long by 80 km (50 mi) wide, with a surface area of about
26 19,000 km² (7340 mi²). The maximum depth is 244 m (802 ft) and the mean depth is 86 m
27 (283 ft), which is greater than the other Great Lakes, except Lake Superior. Depths of 12 to
28 30 m (40 to 100 ft) are within 0.6 to 1.2 km (1.0 to 2.0 mi) off the southern shore in the area of
29 Ginna. The major source of water for the lake is from Lake Erie via the Niagara River. Water
30 flows from Lake Ontario via the St. Lawrence River to the Atlantic Ocean. The predominant
31 surface currents in front of the station are west to east, and the flows tend to swing towards the
32 southern shoreline (RG&E 2002a).
33

34 There are also two creeks that cross the property of the station and the southern shore of Lake
35 Ontario. Mill Creek crosses the site from the south and flows into Deer Creek. Deer Creek
36 enters the site from the west, joins with Mill Creek, and then flows into Lake Ontario. Deer
37 Creek is a wet-weather stream that dries up in the summer months so there is no direct flow
38 into Lake Ontario during that time of the year (RG&E 2002a). Mill Creek, while flowing year-
39 round, does not have sufficient flow to cross over a rise in the land around the mouth of the
40 creek during the summer months. Flow from Mill Creek is possible through the subsurface;

1 however, aquatic resources could not easily swim in and out of Mill Creek to Lake Ontario
2 during the summer. These creeks do not receive water from Ginna on a routine basis except
3 for occasional storm water runoff. There is a surface impoundment for emergency use that
4 could discharge into Deer Creek.

5
6 The aquatic resources associated with Ginna, especially those in Lake Ontario, are an
7 important resource for fishing, recreation, navigation, tourism, and conservation. Currently, the
8 principal fish in Lake Ontario's offshore pelagic fish community are alewife (*Alosa*
9 *pseudoharengus*) and Atlantic rainbow smelt (*Osmerus m. mordax*), and their salmonid
10 predators, including chinook (*Oncorhynchus tshawytscha*), coho (*O. kisutch*) and Atlantic
11 salmon (*Salmo salar*), lake trout (*Salvelinus namaycush*), rainbow trout (*O. mykiss*), and brown
12 trout (*S. trutta*). Other less abundant pelagic species include threespine stickleback
13 (*Gasterosteus aculeatus*), emerald shiner (*Notropis atherinoides*) and gizzard shad (*Dorosoma*
14 *cepedianum*) (Schaner et al. 2002). The principal fish in the offshore benthic community
15 include lake trout, lake whitefish (*Coregonus clupeaformis*) and slimy sculpin (*Cottus cognatus*).
16 Additional species include burbot (*Lota lota*), round whitefish (*Prosopium cylindraceum*) and
17 deepwater sculpin (*Triglopsis thompsonii*) (Hoyle and Schaner 2002). The salmon and trout
18 populations are maintained chiefly by stocking programs conducted by the NYSDEC and the
19 Ontario Ministry of Natural Resources. While these stocking programs were initially designed
20 to control non-native fish overpopulation, the salmon and trout are now an important
21 commercial and recreational resource resulting in annual expenditures of over \$70 million (Kraft
22 and Carothers 2002).

23
24 The Lake Ontario fish community that existed when Ginna began operations during the early
25 1970s reflected the changes to the fishery over the previous 150 years. The Lake Ontario
26 fishery has been significantly altered over the past 150 years due to frequent introductions of
27 non-native species. Non-native species such as the alewife, rainbow smelt, burbot, threespine
28 stickleback, and several salmon species have profoundly altered the Lake Ontario fishery over
29 the past 100 years. Between the mid-1800s and the early 1970s, populations of important
30 species such as lake sturgeon (*Acipenser fulvescens*), Atlantic salmon, lake trout, lake herring
31 (*Coregonus artedii*), burbot, and deepwater ciscoes (*C. johanna*) had all collapsed. This
32 collapse has been attributed to such factors as overfishing, invasion of sea lamprey
33 (*Petromyzon marinus*), habitat loss, and degraded water quality or eutrophication. The open
34 lake fish community in 1970 was dominated by planktivores such as alewife and smelt due to
35 the lack of large predatory species. Annual alewife die-offs were common at that time, which
36 contributed to the impaired conditions of the lake and shoreline. During the mid-1970s, New
37 York State and the Province of Ontario instituted a salmonid stocking program of up to 8 million
38 fish per year aimed at using the extensive forage base of alewife and smelt. For the next
39 20 years, this program was very successful in both developing a world-class sport fishery on
40 Lake Ontario as well as controlling the forage fish population (RG&E 2002a).

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1 Water quality in Lake Ontario has changed since the initial plans for Ginna during 1972. There
2 has been a substantial decrease in nutrient loading (particularly phosphorus) and the presence
3 of persistent toxic chemicals. As the water quality has improved, the aquatic community has
4 responded. Other factors in the change of the aquatic resources within the lake over time
5 include control measures for alewife (including the salmonid stocking program), the introduction
6 of non-native aquatic species, ongoing anthropogenic impacts, and natural climate variability
7 (RG&E 2002a).

8
9 Evidence of the recent changes in aquatic resources can be seen in the dramatic drop of fish
10 abundance, increases in *Cladophora* sp. (algae), and increases in non-native mollusks of the
11 genus *Dreissena* (zebra and quagga mussels). Fish abundance decreased substantially
12 around 1977 when controls for alewife started to take effect. While numbers of fish have
13 decreased based on data collected by RG&E and by the NYSDEC, the diversity of aquatic
14 species has not changed much and even appears in the last 4 years to be on an upward trend
15 around Ginna. *C. sp.* have been noted to be growing at greater depths in Lake Ontario as the
16 water clarity has improved over the last decade. Mollusks have also been found to be
17 increasing in numbers based on studies by RG&E and by the NYSDEC (RG&E 2002a).

18
19 Ichthyoplankton (fish eggs and larvae) studies conducted at the Ginna site during 1977 and
20 1978 characterize the site with respect to utilization of the Lake Ontario shoreline adjacent to
21 the Ginna site for fish spawning and as a nursery area. More than 90 percent of the fish larvae
22 found during both years were alewives. Also found both years, in the 1-5 percent range, were
23 carp/goldfish (*Cyprinus carpio/Carassius auratus*), smelt, and Johnny darters (*Etheostoma*
24 *nigrum*). All of these species are common components of the local fish community, and typical
25 of the fish communities found along the near shore areas of Lake Ontario's southern shoreline.
26 Conversely, there were no indications that the Ginna site area was unique to, or preferred by,
27 any species as a spawning or nursery area.

28
29 Ginna is not adjacent to any significant bays or other habitat features that may provide unique
30 or important spawning or nursery areas. Studies conducted within Lake Ontario near
31 Chaumont, Sodus, and Irondequoit Bays during 1997 and 1998, show that alewife continues to
32 dominate the ichthyoplankton population and that alewife-spawning locations are ubiquitous.
33 Of particular interest, given the dramatic reduction in productivity within the lake, is the fact that
34 alewife larval densities found during both the late 1970s and the late 1990s were within the
35 same order of magnitude. This indicates the density of alewife larvae available for recruitment
36 have remained fairly constant over time. Further, these recent studies found similar species to
37 those collected at the Ginna intake during the 1970s, and generally support the previously
38 stated conclusions concerning the spawning, nursery, and habitat conditions of the Ginna site
39 (RG&E 2002a).

1 There are no aquatic species Federally listed as threatened or endangered under the
 2 Endangered Species Act (ESA) in the vicinity of Ginna. Through consultation with U.S. Fish
 3 and Wildlife Service (FWS), no aquatic species (fish, mollusks, or plants) were identified in
 4 Wayne County or any counties near Wayne County (FWS 2002).

5
 6 There are two State-listed aquatic species known to occur within Wayne County (Table 2-2).
 7 Through discussions with NYSDEC, one endangered fish was determined to be near Wayne
 8 County (NYSDEC 2003a). The pugnose shiner (*Notropis anogenus*) was reported from Sodus
 9 Bay of Lake Ontario, approximately 32 km (20 mi) west of Ginna. However, the pugnose shiner
 10 has not been reported near Ginna, nor has it ever been captured during studies conducted by
 11 RG&E (RG&E 2002a). The lake sturgeon is a threatened species within New York state and
 12 might be found near Ginna (NYSDEC 2003a). One sturgeon was netted several years ago by
 13 NYSDEC at Pultneyville, a village approximately 9.6 km (6 mi) east of Ginna. No sturgeon has
 14 ever been reported from the vicinity of Ginna (RG&E 2002a).

15
 16 **Table 2-2.** Aquatic Species Listed by the New York State Department of Environmental
 17 Conservation as Endangered, Threatened, or of Special Concern that are Known to
 18 Occur Within Wayne County, New York

Scientific Name	Common Name	State Status
Fish		
<i>Notropis anogenus</i>	pugnose shiner	Endangered
<i>Acipenser fulvescens</i>	lake sturgeon	Threatened

24 Source: (NYSDEC 2003a).

26 2.2.6 Terrestrial Resources

27
 28 The Ginna site lies within the eastern great lakes/Hudson lowlands ecoregion (Omernik 1987).
 29 Prior to European settlement, the area was dominated by beech-maple forest that was typical of
 30 the region. Throughout the region, much of this forest type has been converted to other
 31 vegetation types, primarily various forms of farmland such as orchards, pastures, or crop land
 32 (AEC 1973).

33
 34 The site and its associated transmission line right-of-way are surrounded by a variety of very
 35 typical habitat types found in central and western New York state: mature woodlands,
 36 meadows, and early- and late-stage old fields. In addition, significant acreage is farmed for
 37 grains or is in use for apple production. Portions of the property and the transmission line right-
 38 of-way are currently farmed under a lease arrangement with local residents. The other "natural"
 39 areas within the boundaries of the site are left to go through the natural succession process and

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1 are not actively managed by the applicant (RG&E 2002a). There are no State or Federally
 2 regulated wetlands found either at the Ginna site or on the transmission line right-of-way.

3
 4 The wildlife species that occur at the Ginna site and transmission line right-of-way are also very
 5 typical of those found in similar habitats throughout central and western New York state.
 6 Whitetail deer (*Odocoileus virginianus*), woodchuck (*Marmota monax*), gray squirrel (*Sciurus*
 7 *carolinensis*), cottontail rabbit (*Sylvilagus floridanus*), raccoon (*Procyon lotor*), grey (*Urocyon*
 8 *cinereoargenteus*) and red fox (*Vulpes vulpes*), Eastern chipmunk (*Tamias striatus*), and
 9 meadow vole (*Microtus pennsylvanicus*) are commonly found mammals. Numerous bird
 10 species, including the ring-necked pheasant (*Phasianus colchicus*), American kestrel (*Falco*
 11 *sparverius*), screech owl (*Otus asio*), blue jay (*Cyanocitta cristata*), bluebird (*Sialia sialis*),
 12 American goldfinch (*Carduelis tristis*), and crow (*Corvus brachyrhynchos*), are common.
 13 Amphibians common to the site include American toad (*Bufo americanus*), leopard frog
 14 (*Rana pipiens*), green frog (*R. clamitans*), and wood frog (*R. sylvatica*). Reptiles include the
 15 eastern garter snake (*Thamnophis s. sirtalis*) and ribbon snake (*T. sauritus*) (Dames and Moore
 16 1971).

17
 18 No Federally listed threatened or endangered terrestrial species are known to occur in the
 19 vicinity of Ginna or its associated transmission line right-of-way. Table 2-3 lists species known
 20 to occur or potentially occur in Wayne County. Bald eagles (*Haliaeetus leucocephalus*) will
 21 occasionally be observed in the vicinity, but the nearest known nesting site is approximately
 22 88 km (55 mi) southeast near Montezuma National Wildlife Refuge (NYSDEC 2003a).

23
 24 **Table 2-3.** Terrestrial Species Listed as Threatened or Endangered by the U.S. Fish
 25 and Wildlife Service that Occur or Potentially Occur Within Wayne County,
 26 New York
 27

Scientific Name	Common Name	Federal Status ^(a)
Reptiles		
<i>Clemmys muhlenbergii</i>	bog turtle	T
Birds		
<i>Haliaeetus leucocephalus</i>	bald eagle	T
<i>Charadrius melodus</i>	piping plover	E
Mammals		
<i>Myotis sodalis</i>	Indiana bat	E
Plants		
<i>Isotria medeoloides</i>	small-whorled pogonia	T
<i>Plantanthera leucophaea</i>	prairie fringed orchid	T

28
 29
 30
 31
 32
 33
 34
 35
 36
 37
 38
 39 (a) E = endangered, T = threatened
 40 Source: FWS 2002.

1 The Piping plover (*Charadrius melodus*) could potentially forage on the shoreline near the
2 Ginna site, but it has never been reported in the vicinity and is not known to nest in the area.
3 The nearest designated critical habitat for piping plover is approximately 145 km (90 mi) from
4 the Ginna site on the eastern shore of Lake Ontario (FWS 2001).

5
6 The Ginna site is within the historic range of the bog turtle (*Clemmys mullenbergii*), but there are
7 very few known populations remaining along the south coast of Lake Ontario. The nearest
8 known populations are in northern Seneca and in western Oswego Counties (NYSDEC 2003c).
9 Suitable bog turtle habitat is not known to occur on the Ginna Site or its associated
10 transmission line right-of-way (FWS 2000).

11
12 The Indiana bat (*Myotis sodalis*) is thought to potentially occur in almost all of New York state,
13 although firm knowledge of the distribution is primarily limited to eight known wintering sites, all
14 located well east of the Ginna site (NYSDEC 1998). Some studies indicate that, although the
15 Indiana bat range extends from the west and south across Pennsylvania to eastern New York,
16 western New York is clearly excluded from the distribution maps (Humphrey 1982; Cope 1999).
17 Relatively little is known about the summer range or habitat requirements of this species.

18
19 Neither of the two plant species listed in Table 2-3 (small-whorled pogonia [*Isotaria*
20 *medeoloides*] and eastern prairie fringed orchid [*Plantanthera leucophaea*]) has been observed
21 recently in New York State, and neither is likely to be present in the vicinity of the Ginna site.
22 The FWS officially lists the small-whorled pogonia as potentially occurring in New York State
23 (FWS 2002), but the listing documentation for this species indicates only historic records in
24 New York State (FWS 1994). The NYSDEC does not list Wayne County in its list of potential
25 counties of occurrence for the small-whorled pogonia (NYSDEC 2002). The NYSDEC does list
26 Wayne County as a potential county of occurrence for the eastern prairie fringed orchid, but
27 also indicates that there are no confirmed occurrences of this species anywhere in New York
28 State (NYSDEC 2002). The FWS listing documentation for the eastern prairie fringed orchid
29 also indicates that this species has not been introduced in New York State (FWS 1989).

30
31 Additional species that are listed by NYSDEC as threatened, endangered, rare, or otherwise of
32 concern in New York state that are known to occur in Wayne County are listed in Table 2-4.
33 None of these species are known to occur at Ginna or within the transmission lines right-of-way.
34 The NYSDEC has also listed numerous additional species that it considers as potentially
35 occurring in Wayne County (NYSDEC 2002). Because there are no recent records of any of
36 these additional species from Wayne County, the staff did not consider these further.

Table 2-4. Terrestrial Species Listed by the New York State Department of Environmental Conservation as Endangered, Threatened, or of Special Concern that Occur Within Wayne County, New York

	Scientific Name	Common Name	State Status ^(a)
6	Reptiles		
7	<i>Clemmys guttata</i>	spotted turtle	SC
8	<i>Clemmys muhlenbergii</i>	bog turtle	E
9	<i>Apalone spinifera spinifera</i>	eastern spiny softshell turtle	SC
10	Birds		
11	<i>Accipiter cooperii</i>	Cooper's hawk	SC
12	<i>Accipiter striatus</i>	sharp-shinned hawk	SC
13	<i>Botaurus lentiginosus</i>	American bittern	SC
14	<i>Caprimulgus vociferus</i>	whip-poor-will	SC
15	<i>Charadrius melodus</i>	piping plover	E
16	<i>Chidonias niger</i>	black tern	E
17	<i>Chordeiles minor</i>	common nighthawk	SC
18	<i>Circus cyaneus</i>	northern harrier	T
19	<i>Dendroica cerulea</i>	cerulean warbler	SC
20	<i>Eremophila alpestris</i>	horned lark	SC
21	<i>Haliaeetus leucocephalus</i>	bald eagle	T
22	<i>Melanerpes erythrocephalus</i>	red-headed woodpecker	SC
23	<i>Vermivora chrysoptera</i>	golden-winged warbler	SC
24	Mammals		
25	<i>Myotis leibii</i>	eastern small-footed myotis	SC
26	<i>Myotis sodalis</i>	Indiana bat	E
27	<i>Neotoma magister</i>	Allegheny woodrat	E
28	<i>Syvilagus transitionalis</i>	New England cottontail	SC
29	Plants		
30	<i>Aster borealis</i>	rush aster	T
31	<i>Carex frankii</i>	Frank's sedge	E
32	<i>Diplachne maritima</i>	salt-meadow grass	E
33	<i>Isotria medeoloides</i>	small-whorled pogonia	E
34	<i>Listera australis</i>	southern twayblade	E
35	<i>Plantanthera leucophoea</i>	eastern prairie fringed orchid	E
36	<i>Sacheuchzeria palustris</i>	pod grass	R
37	<i>Scirpus maritimus</i>	seaside bulrush	E
38	(a) State status: E = endangered, T = threatened, SC = species of special concern, R = rare.		
39	Source: NYSDEC 2002, 2003b, 2003c.		

2.2.7 Radiological Impacts

RG&E conducts a radiological environmental monitoring program (REMP) at the Ginna site. Through this program, radiological impacts to workers, the public, and the environment are monitored, documented, and compared to the appropriate standards. The objectives of the REMP are to

- provide representative measurements of radiation and radioactive materials in the exposure pathways and of the radionuclides that have the highest potential for radiation exposures to members of the public
- supplement the radiological effluent monitoring program by verifying that the measurable concentrations of radioactive materials and levels of radiation are not higher than expected on the basis of effluent measurements and the modeling of the environmental exposure pathways.

Radiological releases are summarized in the Annual Radiological Environmental Operating Report (RG&E 2001d) and the Radioactive Effluent Release Report (RG&E 2001b). The limits for all radiological releases are specified in the Ginna ODCM (RG&E 2002b), and these limits are designed to meet Federal standards and requirements. The REMP includes monitoring of the aquatic environment (fish, invertebrates, and shoreline sediment), atmospheric environment (airborne radioiodine, gross beta, and gamma), terrestrial environment (vegetation), and direct radiation.

RG&E's review of historical data on releases and the resultant dose calculations revealed that the doses to maximally exposed individuals in the vicinity of Ginna have been a small fraction of the limits specified in the Ginna ODCM (RG&E 2002b) to meet EPA radiation standards in 40 CFR Part 190 as required by 10 CFR 20.1301(d). For 2001, dose estimates were calculated based on actual liquid and gaseous effluent release data (RG&E 2001b). Calculations were performed by RG&E using the plant effluent release data, onsite meteorological data, and appropriate pathways identified in the ODCM (RG&E 2002b).

During 2001, Ginna did not release any strontium-90 or strontium-89 in either its gaseous or liquid effluents. In 1999 and 2000, there were minor gaseous releases of strontium-89 (1.3×10^{-6} MBq [3.42×10^{-11} Ci] during 1999 and 6.3×10^{-3} MBq [1.69×10^{-7} Ci] during 2000). An assessment of doses to the maximally exposed individual from gaseous and liquid effluents was performed by RG&E for locations representing the maximum dose. In all cases, doses were well below the technical specification limits as defined in the ODCM (RG&E 2002b). During 1999 and 2000, doses had been elevated above 1998 levels due to gaseous effluent activity from a fuel cladding defect in cycle 28 (May 1999 to October 2000). Following the

1 repair of the fuel cladding defect in cycle 29, dose levels during 2001 were more consistent with
2 those in 1998.

3
4 The RG&E assessment of radiation dose to the general public from radioactive effluents
5 assumed a person is located in the vicinity of the National Guard outpost for 10 hours/day,
6 5 days/week, 50 weeks/year. Although the National Guard post is just within the site boundary,
7 it houses non-RG&E employees who are considered "members of the public." Doses were
8 assessed based on the noble gas exposure, inhalation, ground-plane, and ingestion pathways.
9 For 2001, the total body dose was estimated to be 0.048 mSv (4.8 mrem) total body
10 (0.048 mSv [4.8 mrem] direct radiation plus 1.4×10^{-4} mSv [1.4×10^{-2} mrem] all other pathways)
11 and 2.3×10^{-4} mSv (2.3×10^{-2} mrem) thyroid (maximum organ dose). The ODCM
12 (RG&E 2002b) and 40 CFR Part 190 limits for the total dose to members of the public due to
13 radiation and radioactivity from uranium fuel cycle sources are <0.25 mSv (<25 mrem) total
14 body or any organ and <0.75 mSv (<75 mrem) thyroid for a calendar year. Therefore, doses
15 from Ginna are only a fraction of the regulatory limit.

16
17 The applicant does not anticipate any significant changes to the radioactive effluent releases or
18 exposures from Ginna operations during the renewal period; therefore, the impacts to the
19 environment are not expected to change.

20 21 **2.2.8 Socioeconomic Factors**

22
23 The staff reviewed the Ginna ER (RG&E 2002a) and information obtained from several county,
24 city, and economic development staff during a site visit to Wayne and Monroe Counties from
25 November 4 through 7, 2002. The following information describes the economy, population,
26 and communities near Ginna.

27 28 **2.2.8.1 Housing**

29
30 Ginna employs approximately 500 people on a full-time basis, with more than 80 percent of the
31 normal operating workforce composed of RG&E employees. Approximately 48 percent of
32 these employees (plant and contract employees) live in Wayne County, 44 percent in Monroe
33 County, 2.5 percent in Ontario County, 1.6 percent in Livingston County, with the remainder
34 living in other locations (Table 2-5). Because approximately 92 percent of the Ginna employees
35 live in Wayne and Monroe counties and Wayne County is where the plant is located, the focus
36 of the socioeconomic analysis is on these two counties.

Table 2-5. R.E. Ginna Nuclear Power Plant Employee and Contractor Employee Residence by County in New York State

County	Number of Personnel	Percent of Total Personnel
Wayne	240	48
Monroe	220	44
Ontario	15	3
Livingston	10	2
Other	15	3
Total	500	100

Source: RG&E 2002a

RG&E refuels Ginna on an 18-month cycle. During refueling, the number of employees increases by as many as 700 temporary workers for a period of 30 to 40 days. These temporary employees primarily stay at hotels, motels, and temporary rental housing available in Wayne and Monroe counties (RG&E 2002a).

Table 2-6 provides the number of housing units and housing unit vacancies for Wayne and Monroe counties for 1990 and 2000. Wayne County had approximately 38,800 housing units in 2000, with a vacancy rate less than 10 percent. Monroe County, which has a larger population base and a relatively stronger employment market, had a vacancy rate of approximately

Table 2-6. Total Occupied and Vacant (Available) Housing Units in Wayne and Monroe Counties in New York State, 1990 and 2000

	1990	2000	Approximate Percent Change
WAYNE COUNTY			
Housing Units	35,188	38,767	10
Occupied Units	31,977	34,908	9
Vacant Units	3,211	3,859	20
MONROE COUNTY			
Housing Units	285,524	304,388	6
Occupied Units	271,944	286,512	5
Vacant Units	13,580	17,876	32

Sources: USCB 1990, 2000

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1 6 percent in 2000 based on a housing stock of approximately 304,400 units (USCB 2000a).
 2 Wayne and Monroe counties are not subject to growth-control measures that limit housing
 3 development.

4
 5 Table 2-7 contains data on population, estimated population, and annual population growth
 6 rates for Wayne and Monroe Counties. Both counties saw similar growth in population during
 7 the 1990s.

8
 9 **Table 2-7.** Population Growth in Monroe and Wayne Counties in New York State from
 10 1970 to 2020

	Monroe County		Wayne County	
	Population	Percent Change (in 10-year increments)	Population	Percent Change (in 10-year increments)
13 1970 ^(a)	711,917	--	79,404	–
14 1980 ^(a)	702,238	(-1.4)	84,581	6.4
15 1990 ^(a)	713,968	1.7	89,123	5.4
16 2000 ^(a)	735,343	3.0	93,765	5.2
17 2010 ^(b)	735,708 (est)	0.0	96,931 (est)	3.4
18 2020 ^(b)	742,150 (est)	1.0	98,454 (est)	1.6

19
 20 -- = No data available.
 21 (a) USCB 1995, USCB 2000a
 22 (b) GFLRPC 1997

23
 24 **2.2.8.2 Public Services**

25
 26 Public services include water supply, education, and transportation.

27
 28 • **Water Supply**

29
 30 The water system of Monroe County is organized at a county level by the Monroe County Water
 31 Authority (MCWA), while Wayne County’s water system is organized mainly at a town level.
 32 Although there is no available estimate of the percentage of households serviced by private
 33 wells in the two counties, officials from the Ontario Water District estimate that no more than a
 34 dozen households are serviced by private wells. The two counties have five primary surface
 35 potable water sources: Lake Ontario, Hemlock Lake, Canadice Lakes, Third Creek Basin, and
 36 Canadaigua Lake. In addition, Lyons Village purchases water from Junius Ponds in Seneca
 37 County and draws additional water from two wells that are supplied by the Fairport/Lyons
 38 Glacial Stream Channel (RG&E 2002a).
 39

The daily consumption and areas served by the major public water supply districts are listed in Table 2-8. The primary public water service providers in Wayne County are the Ontario Water District and the town of Williamson. The Ontario Water District plans to increase the size of its intake pipes, which would result in a doubling of the intake capacity.

The MCWA has a capacity for 585,825 m³/day (145 MGD) with a peak usage of 461,770 m³/day (122 MGD). Presently, the MCWA has enough supply to handle an additional 9200 households. Rochester has its own water system with over 2800 ha (7000 ac) of land in the watershed around Hemlock and Canadice Lakes. The city is permitted to draw, on average, 140,045 m³/day (37 MGD), with a maximum daily usage of 181,680 m³/day (48 MGD). If the city needs supplemental water, it purchases from the MCWA.

Table 2-8. Major^(a) Public Water Supply Systems in Monroe and Wayne Counties in New York State

Water System	County	Source	Permitted Capacity m ³ /d (MGD)	Average Daily Demand m ³ /d(MGD)	Peak Demand Per Day m ³ /d (MGD)	Area Served
MCWA	Monroe	Surficial Aquifer	5.5 x 10 ⁵ (145)	2.3 x 10 ⁵ (60)	4.6 x 10 ⁵ (122)	Monroe County except for City of Rochester
City of Rochester	Monroe	Surficial Aquifer	1.8 x 10 ⁵ (48)	1.4 x 10 ⁵ (37)	1.8 x 10 ⁵ (46.5)	City of Rochester
Ontario Water District	Wayne	Surficial Aquifer	1.3 x 10 ⁴ (3.5)	7.2 x 10 ³ (1.9)	1.3 x 10 ⁴ (3.5)	Town of Ontario
Town of Williamson	Wayne	Surficial Aquifer	1.5 x 10 ⁴ (4.0)	6.8 x 10 ³ (1.8)	1.4 x 10 ⁴ (3.7)	Town of Williamson
Newark	Wayne	Surficial Aquifer	1.3 x 10 ⁴ (3.5)	5.3 x 10 ³ (1.4)	7.9 x 10 ³ (2.1)	Newark

(a) Only permitted plants with a treatment capacity greater than 3.785 x 10³ m³/day (1 MGD) are listed in the table.
Source: RG&E 2002a, 2002b

• Transportation

There are 13 counties wholly or partially within the 80-km (50-mi) radius of Ginna. The 13-county area is served by a network of interstate freeways including Interstate 90 (I-90), I-390, I-490, and I-81. In addition to interstate freeways, the region's transportation network includes an international airport and a train network. The Port of Rochester, at the mouth of the Genesee River, is also available to a limited number of cargo ships and passenger ferries.

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1 I-90 runs east-west through the region connecting the urban area of Rochester with Buffalo and
2 Syracuse. I-390 enters Monroe County from the south and flows into a beltway system that
3 connects the Rochester suburbs, and I-81 runs through Syracuse along the east side of the
4 13 counties bordering Ginna. The main east-west transportation routes providing access to
5 Ginna are County Route 101 (Lake Road) and NYS Route 104. Lake Road, a two-lane road,
6 provides direct access to Ginna along much of the southern border of the site. NYS Route 104,
7 the predominant east-west corridor near the plant, runs parallel to Lake Road, approximately
8 5.8 km (3.6 mi) south of Ginna. Ontario Center Road in the town of Ontario runs north-south,
9 connecting NYS Route 104 to Lake Road immediately south of Ginna. Several other secondary
10 roads run north-south providing access to Lake Road from NYS Route 104. Employees
11 commuting from Monroe County and other points west of Ginna are likely to use NYS Routes
12 104, 441, or 286 to access Lake Road. Employees commuting from the south and east are
13 likely to use north-south corridors NYS Routes 21 and 350 to reach NYS Route 104, and then
14 use Ontario Center Road to Lake Road (RG&E 2002a).

15
16 State roads are rated with a “volume/capacity ratio,” which indicates whether the road is being
17 actively used over-capacity (value > 1.0), at-capacity (value = 1.0), or under-capacity (value
18 < 1.0) (RG&E 2002a). In addition, state roads carry “surface score ratings” ranging from a low
19 of “1” (impassable) to a high of “10” (new construction). The highest volume/capacity ratio
20 around Ginna is in Monroe County on a stretch of NYS Route 441 from Route 260 to the
21 Wayne County line. The volume/capacity ratio for this stretch of road ranges from 0.7 to 1.0,
22 which indicates the road is just under- or at-capacity. NYS Route 104 in Monroe County
23 between the Wayne County line and NYS Route 250 has a surface score rating of 5 (i.e., “high-
24 poor” condition), which is the lowest rating of the state roads surrounding Ginna. This is
25 primarily a reflection of the high volume on this stretch of road due to people working for Xerox
26 in Webster and for people commuting to Rochester. In addition, the surface ratings of NYS
27 Route 350 near Ginna and NYS Route 441 between Route 260 and the Wayne County line are
28 rated between 5 and 6; however, most of the state road surfaces in the area are rated around 7
29 (i.e., “good” condition) (RG&E 2002a).

30
31 The Greater Rochester International Airport is located in southwest Rochester just off of I-390,
32 approximately 32 km (20 mi) from Ginna. A primary passenger railway, operated by Amtrak,
33 runs east-west approximately 21.6 km (13.5 mi) south of Ginna. In addition, the Ontario
34 Midland Railroad, a local privately owned “shortline” that feeds into the CSX Transportation
35 lines, operates both passenger and freight service. The east-west portion of the “T” runs
36 approximately 5 km (3 mi) south of Ginna from Webster to Wolcott. The north-south portion of
37 the track runs from Sodus to Newark, 26 km (16 mi) east of Ginna. RG&E owns a corridor of
38 property from the railroad mainline track; however, no track has been built on this corridor
39 (RG&E 2002a).

40

1 The Port of Rochester, located on Lake Ontario at the mouth of the Genesee River, was
 2 decommissioned as a commercial port in 1980. It now is used by only two cruise ships in the
 3 summer. In addition, a cement freighter passes by the Port, but docks farther south on the
 4 Genesee River at a cement plant (RG&E 2002b). In recent years the City of Rochester has
 5 invested millions of dollars into infrastructure improvements to the port as part of the City's
 6 Local Waterfront Revitalization Program. The program involves redeveloping about 11 ha
 7 (28 ac) of land and includes the construction of new streets, pedestrian amenities, a new
 8 bridge, boat marinas, and infrastructure to support a high-speed ferry operation between
 9 Rochester and Toronto, Canada (City of Rochester 2002).

11 2.2.8.3 Offsite Land Use

12 Wayne and Monroe Counties are located along Lake Ontario's south shore. The Genesee
 13 Finger Lakes Regional Planning Council produces an annual report that contains land-use
 14 coverage data based on remote sensing satellite imagery. The results of the 1999 study are
 15 found in Table 2-9 (GFLRPC 2001). The Council notes that eastern Monroe and western
 16 Wayne Counties are among the fastest growing areas in the region. The following are
 17 discussions of land use in each of these two counties.
 18

19
 20 **Table 2-9.** Land Use in Wayne and Monroe Counties in New York State

Land Use	Wayne County			Monroe County		
	Square Kilometers	Square Miles	Percent of Total	Square Kilometers	Square Miles	Percent of Total
Water	29.5	11.4	2.0	20.9	8.1	1.0
Urban/Built Up	11.1	4.3	1.0	125.6	48.5	7.0
Forested Areas	821.7	317.4	52.0	517.8	200.0	30.0
Fields	722.1	278.9	45.0	1061.5	410.0	62.0
Total	1584.4	612.0	100.0	1725.8	666.6	100.0

29 Source: GFLRPC 2001

31 • Wayne County

32
 33 Wayne County is rich in agriculture, with approximately 840 farms present in 1997. Although
 34 the acreage used in farming dropped from 77,423 ha (191,309 ac) to 67,662 ha (167,190 ac)
 35 between 1987 and 1997, the county ranks forty-third nationwide in the number of acres
 36 dedicated to orchards (255 farms). Other primary crops include corn (358 farms), hay and
 37 other grains (342 farms), beef and milk cows (223 farms), oats, potatoes, and vegetables. The
 38 land within 8-km (5-mi) radius of Ginna is used principally for growing apples, cherries, grapes,
 39 and field crops (RG&E 2002a).

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1 Most of the Wayne County land that is farmland, pastures, grassland, and other areas of non-
2 forested vegetation would be included in the “Fields” category in Table 2-9. The amount of land
3 made up of low-density, large-lot residential developments has increased in recent years,
4 particularly along the west side of the county within a short commute distance from Rochester.
5 There has been relatively little retail or commercial growth. This is also evident from the annual
6 land use census conducted by RG&E to determine land-use changes and identify the nearest
7 gardens and locations of milk animals used for commercial production within 8 km (5 mi) of the
8 station (RG&E 2002d). The NYS Route 104 corridor has been the primary conduit for this
9 growth. In Table 2-9, residential land would be part of the land use categories “Forested
10 Areas,” which are all areas with moderate to dense tree coverage, and “Urban/Built Up” land,
11 which includes developed areas as well as roads and parking lots (GFLRPC 2001).

12
13 Wayne County is composed of 15 towns, each with an elected Town Supervisor. According to
14 Wayne County Department of Development, the Wayne County towns abutting Lake Ontario do
15 not have any restrictive ordinances placed on growth and development, and there is no reason
16 to suspect that there will be limitations placed on building in the vicinity of Ginna in the
17 foreseeable future (RG&E 2002a).

18 19 • **Monroe County**

20
21 Monroe County is more developed and industrialized than Wayne County and is home to
22 Rochester, the third largest city in New York State. Monroe County comprises 19 towns,
23 10 villages, and the city of Rochester. The New York State Constitution grants all cities, towns,
24 and villages the right of “home-rule” power; therefore, county-level, land-use planning is very
25 limited. The county sees its role as very minimal in land-use planning and does not have any
26 restrictions to growth. Recently, however, Monroe County provided \$2 million from a tobacco
27 settlement to leverage other local and state funding for the purpose of open space preservation.
28 The suburban towns, however, must initiate the open space actions (RG&E 2002a).

29
30 The town of Webster in eastern Monroe County is the fastest growing municipality in the
31 county. It had 14 major projects out of 123 major projects proposed in Monroe County in 2001.
32 The town issued 227 building permits, which accounted for 16 percent of all permits issued in
33 Monroe County that year. Townhouses and apartments comprised 57 percent of these permits
34 (RG&E 2002d). Lot sizes for single family residences are a minimum of about 0.2 ha (0.5 ac),
35 but the average size is 1.2 ha (3.0 ac) because of the lack of sewer systems. Recently, the
36 town of Webster defeated a ballot measure that would have provided funds to preserve
37 1214 ha (3000 ac) as open space, although there is an ongoing effort to identify and retain farm

1 properties in agriculture using tax incentives with the purchase of development rights. The
2 MCWA is planning to expand capacity on the east side of the county with a new intake line into
3 Lake Ontario.^(a)
4

5 The city of Rochester has declined in population over the last two decades, due to declining
6 household size and movement to the suburbs. No restrictions on growth are in place in
7 Rochester. The town of Webster, which is the town closest to Ginna in Monroe County, passed
8 a comprehensive plan to control building zones and development in 1998; however, there are
9 no growth control measures in place (RG&E 2002a).
10

11 **2.2.8.4 Visual Aesthetics and Noise**

12

13 Ginna is located in Wayne County just off the south shore of Lake Ontario. The Ginna site
14 occupies an area of 197 ha (488 ac) and includes 0.6 km (1.5 mi) of shoreline. The topography
15 of the site is either flat or gently rolling. The land in the area increases in elevation to the south,
16 from about 78 m (255 ft) above mean sea level (msl) near the edge of the lake; to 134 m
17 (440 ft) at Ridge Road about 5.6 km (3.5 mi) south of the plant; to 488 m (1600 ft) at the
18 northern edge of the Appalachian Plateau, about 56 km (35 mi) to the south. Southward from
19 NYS Route 104, the terrain progressively roughens, with a series of small abrupt hills
20 commencing about 16 km (10 mi) south of the site (RG&E 2002a).
21

22 Surface-water features onsite include Mill Creek, which enters the site from the south, and Deer
23 Creek, which enters the site from the west. Both creeks join southwest of the plant and empty
24 into Lake Ontario just east of the plant. The general plant area is relatively well drained, with no
25 topographic basins or swampy areas onsite. Approximately half of the site is leased and
26 currently being used for agricultural production, primarily apple orchards and, to a lesser
27 degree, corn and hay fields. Another quarter of the site has been left relatively undisturbed,
28 having a combination of open fields, shrub brush, and trees. The remaining quarter of the site
29 has been developed for the power station and ancillary facilities, with about 104 ha (256 ac)
30 enclosed within the security fences (RG&E 2002a).
31

32 Approaching from the south on State Road 350, the Ginna site is not visible until approximately
33 1 km (0.6 mi) from the main entrance of the site. The view of the plant is fairly well blocked by
34 woods and vegetation from the southwest and southeast. However, the transmission lines from
35 the plant are visible from greater distances due to their elevation.
36

37 From Lake Ontario, the plant is visible from the north with limited visibility directly east and west.
38 Many upscale homes have been built on Lake Ontario, but few are in sight of the plant. The

(a) Discussion with Gary Kleist, Commissioner of Public Works, Webster, New York (October 6, 2002).

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1 lights from the plant, however, are noticeable to residents along the lake several miles from the
2 plant, particularly in the winter when the light is reflected off snow on the ground. Noise from
3 Ginna, at locations on the plant site, is barely noticeable except very close to the reactor
4 containment building.

5
6 The immediate area around the site is rural. There are no substantial population centers,
7 industrial complexes, airports, transportation arteries, or parks within a 4.8-km (3.0-mi) radius of
8 Ginna, and the only recreational facility within this radius is the Bear Creek boat ramp, about
9 2.4 km (1.5 mi) from the site. The largest municipality within 16 km (10 mi) of Ginna is
10 Webster, located in Monroe County, and approximately 11 km (7 mi) west-southwest of Ginna.
11 Webster Park, a 223-ha (550-ac) Monroe County park on the south shore of Lake Ontario, is
12 approximately 10 km (6 mi) west of the site. The nearest wildlife refuge is the Montezuma
13 Wetlands Complex, located approximately 56 km (35 mi) from the Ginna site, in southeastern
14 Wayne County. This complex is composed of 15,000 ha (36,000 ac) of marshes, forested
15 wetlands, old fields, meadows, farm fields, and woodlands under Federal, State, and private
16 control (RG&E 2002a).

17 18 **2.2.8.5 Demography**

19 20 • **Resident Population Within 80 km (50 mi)**

21
22 Population was estimated from the Ginna site out to 80 km (50 mi) in 16-km (10-mi) annular
23 rings. An estimated 581,745 people live within 32 km (20 mi) of Ginna, and 1.25 million people
24 live within 80 km (50 mi) (USCB 2000b). The largest population center within a portion of the
25 16-km (10-mi) area is Webster (town population 37,926 and village population of 5216)
26 (USCB 2000b). Between 1990 and 2000, the Wayne County population grew by about
27 5 percent (which was the same growth rate as New York State during these years). The
28 Monroe County population grew by about 3 percent.

29 30 • **Workforce**

31
32 The economy in Wayne County is much more closely linked to Ginna activities than Monroe
33 County, as RG&E is one of the largest employers in Wayne County and pays more in property
34 tax than any other single tax paying entity. The largest employer in Wayne County is the
35 county government itself. In addition to the county and Ginna, most other larger employers are
36 moderately sized manufacturing plants, including Garlock (manufacturing gaskets, seals, and
37 rubber goods), Parker Hannifin Corporation (manufacturing refrigeration and air-conditioning
38 products), and IEC Electronics (assembling electronic parts for computers) (WCEDC 1996).
39 The Ames department stores were also a major employer in the area until their closure in 2002.
40 This closure is expected to have a negative impact on the economy of Wayne County, not only

1 because of the loss of employment from its three stores, but also because it was one of the
 2 primary sources of sales tax revenue in the county. Wayne County has relatively few sources
 3 of sales tax revenue, as most of the larger retail centers are found in neighboring counties. The
 4 Wayne County economy is also struggling with the recent downsizing of IEC Electronics which
 5 went from 1300 employees in 1996 to approximately 200 in 2002.^(a)

6
 7 One factor that could potentially counter some of the negative impact from recent business
 8 closures and downsizing in Wayne County is its recent designation as an "Empire Zone" by the
 9 State of New York. The Empire Zone classification entitles the county to reduce certain State
 10 taxes on businesses that choose to site themselves in the county. The State also provides, as
 11 part of its Empire Zone program, a certain amount of funding to the county to attract new
 12 businesses to the area.^(a)

13
 14 Table 2-10 presents information on the major employment sectors and number of employees
 15 for Wayne and Monroe counties.

16
 17 **Table 2-10.** Major Employment Sectors in Wayne and Monroe Counties in New York
 18 State (2000)

Employment Sector	Number of Employees	
	Wayne	Monroe
Services	15,280	150,960
Retail trade	7,400	60,380
Manufacturing	7,400	81,140
Agriculture	1,780	11,320
Construction	1,020	13,440
Other	13,860	43,930
Unemployed	2,560	16,230
Total jobs – full- and part-time	49,300	377,400

29 Source: RG&E 2002a

31
 32 • **Transient Populations**

33
 34 During the summer months, the lakeside population increases by about 500 people within a
 35 8-km (5-mi) radius of the plant site and by about 4000 people within a 32-km (20-mi) radius.

(a) Discussion with Jim Armstrong, Wayne County Economic Development Corporation
 (November 4, 2002).

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1 The nearest group of houses are summer cottages located 1.3 km (0.8 mi) west of the site.
2 Other than the summertime residents of the area, there are no large groups of transients within
3 8 km (5 mi) of Ginna (RG&E 2002a).

4 5 • **Migrant Labor**

6
7 Migrant farm workers are individuals whose employment requires travel to harvest agricultural
8 crops. These workers may or may not have a permanent residence. Some migrant workers
9 may follow the harvesting of crops, particularly fruit, throughout the northeastern U.S. rural
10 areas. Others may be permanent residents near Ginna who travel from farm to farm harvesting
11 crops.

12
13 Migrant workers can be members of minority or low-income populations. Because they travel
14 and can spend a significant amount of time in an area without being actual residents, migrant
15 workers may be unavailable for counting by census takers. If uncounated, these workers would
16 be “underrepresented” in U.S. Census Bureau (USCB) minority and low-income population
17 counts (RG&E 2002a).

18
19 Wayne County does have a migrant labor population, with most of these workers arriving after
20 May and staying through October, primarily for the apple-picking season. Approximately
21 115 farm-worker camps of five or more persons are scattered throughout Wayne County, with
22 a total population of about 4400 workers. Information from Rural New York Farmworker
23 Opportunities shows that there are about 12 camps with about 130 migrant workers located in
24 the vicinity of the Ginna site (RG&E 2002a).

25
26 The majority of the migrant farm laborers in rural New York state come from Mexico and speak
27 Spanish. In addition, there are several hundred Haitian workers, and other workers come from
28 Jamaica, Puerto Rico, Guatemala, Honduras, and other countries in the Caribbean and Central
29 America. There are also some African-American migrant workers who come to New York state
30 from Florida.^(a)

31
32 There are an estimated 1000 children of migrant workers, ranging in age from infants to 21,
33 who qualify for the migrant education program in Wayne County. Some workers and their
34 families are in the county for as long as 9 months, but the vast majority are present for a
35 relatively short time (usually from the end of August until October). Also, there are some

(a) Cornell Migrant Program. Personal communications (e-mail) with Kay Embrey, Senior Extension Associate, Department of Human Development, College of Human Ecology, Cornell University, Alton, New York (October 30, 2002).

1 seasonal (as opposed to migratory) workers who live in Wayne County all year and work on the
2 farms doing many of the same seasonal tasks as the migrant workers.^(a)

3 4 **2.2.8.6 Taxes**

5
6 Property taxes are used to fund schools, police and fire protection, road maintenance, and
7 other municipal services. Property taxes may be levied by counties, cities, towns, villages,
8 school districts, and special districts. Ginna is located in the town of Ontario, Wayne County,
9 and the Wayne Central School District. RG&E tax payments for Ginna to these jurisdictions are
10 detailed in Table 2-11. Tax payments for Ginna averaged 13.2 percent of the total revenue
11 collected and 37.2 percent of total property taxes for Ontario for the period from 1995 to 2001
12 (RG&E 2002a).^(b) Ginna accounted for a smaller proportion of the Wayne County total revenue,
13 an average of 2.0 percent of the total revenue and 6.4 percent of total property taxes for the
14 same period. Ginna accounted for an average of 12.4 percent of the total revenue for the
15 period 1995 through 1999 for the Wayne Central School District (RG&E 2002a).

16
17 Over time, tax payments from Ginna constitute a decreasing percentage of each taxing entity's
18 revenues and budgets. RG&E expects this trend to continue into the future, and with respect to
19 the town of Ontario and Wayne Central School District, this trend is approaching a level that is
20 10 percent or less of the taxing jurisdiction's total revenue. In an agreement with the three
21 taxing jurisdictions, the assessed value of the facility will be reduced by \$13 million per year
22 through 2009. While this reduction does not directly translate to a percentage reduction in
23 taxes, it does suggest that these levels will continue to decline, as shown in Table 2-11.
24

(a) Cornell Migrant Program. Personal communications (e-mail) with Kay Embrey, Senior Extension Associate, Department of Human Development, College of Human Ecology, Cornell University, Alton, New York (October 30, 2002).

(b) Tax payments for Ginna as a percentage of the town budget would be significantly higher than percentage of total revenue, as the total revenue includes fees collected for dedicated funds, such as the water fund and debt service. In 2001, the town of Ontario's budget for items supported by taxes totaled \$3.9 million dollars. The total amount paid by RG&E for Ginna to the town was \$700,000 or approximately 18 percent of the budget (Discussion with Richard Clark, Town of Ontario Supervisor, November 6, 2002.)

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Table 2-11. Property Taxes Paid to the Town of Ontario, Wayne County, and Wayne Central School District in New York State by RG&E for R.E. Ginna Nuclear Power Plant

Year	Total Property Tax Revenues (\$)	Property Tax Paid		Total Revenue (\$)	Percent of Total Revenue
		for Ginna Station (\$)	Percent of Total Property Taxes		
WAYNE COUNTY					
1995	25,637,215	1,977,607	7.7	79,315,166	2.5
1996	26,040,581	1,767,004	6.8	80,650,726	2.2
1997	26,012,141	1,661,234	6.4	82,669,765	2.0
1998	25,923,815	1,599,601	6.2	84,526,663	1.9
1999	25,504,000	1,597,823	6.3	85,934,651	1.9
2000	26,911,005	1,634,372	6.1	88,697,549	1.8
2001	27,198,909	1,489,193	5.5	92,486,009	1.6
TOWN OF ONTARIO					
1995	1,489,983	720,503	48.5	4,868,418	14.8
1996	1,772,832	683,209	38.5	5,105,070	13.4
1997	1,984,839	731,959	36.9	5,413,726	13.5
1998	2,119,847	765,647	36.1	5,552,530	13.8
1999	2,174,857	764,523	35.2	5,923,504	12.9
2000	2,224,925	749,000	33.7	5,889,192	12.7
2001	2,225,607	704,898	31.7	6,182,603	11.4
WAYNE CENTRAL SCHOOL DISTRICT					
1995	NA	3,270,099	NA	23,865,546	13.7
1996	NA	3,172,118	NA	23,635,950	13.4
1997	NA	3,183,220	NA	24,964,558	12.8
1998	NA	3,165,620	NA	27,248,584	11.6
1999	NA	3,105,391	NA	28,927,432	10.7
2000	NA	3,170,478	NA	NA	NA
2001	NA	3,182,172	NA	NA	NA

Source: RG&E 2002a
NA = not applicable

There is relatively little tax revenue generation from sales tax in Wayne County due to the low number of retail centers in the county. The tax revenue generated by property taxes makes up a significant portion of the overall revenue generated by Wayne County and the town of

1 Ontario. Despite the fact that most property in the county is used for agricultural purposes,
2 most of the property tax revenue comes from the residential sector (nearly 70 percent). The tax
3 revenue generated by Ginna alone makes up about 6 percent of property tax revenues, while
4 all other commercial properties generate approximately 10 percent of the property revenues for
5 the county.^(a)
6

7 **2.2.9 Historic and Archaeological Resources**

8
9 This section discusses the historic and archaeological background of the Ginna site and the
10 surrounding area.
11

12 **2.2.9.1 Historic and Archaeological Background**

13
14 There is evidence that Native American populations lived and foraged in what is now Wayne
15 County from at least 10,000 B.C. until they were displaced by Euro-American populations in the
16 late eighteenth and early nineteenth centuries (Secor 1987). However, known archaeological
17 sites are sparse in the area immediately south of Lake Ontario. In most periods, this area
18 seems to have been used temporarily for hunting, gathering, and fishing. Larger, more
19 permanent settlements tended to be located farther south.
20

21 Paleoindian hunters appear to have been attracted to the tundra and spruce woodland
22 environment characteristic of the area by the presence of large game animals such as
23 mammoth and bison. They preferred to make their hunting camps on well-drained hills or rises.
24 The fluted chipped stone projectile points that mark this period have been found near Savannah
25 in southeastern Wayne County (Secor 1987). By 8000 B.C., deciduous forests associated with
26 smaller game had spread into the area around Lake Ontario. Early and Middle Archaic (7000 to
27 4000 B.C.) populations adapted to these new resources by taking a wider variety of game and
28 by using a greater variety of smaller stone tools. By the end of the Middle Archaic (4000 B.C.),
29 the area was part of the Lake-Forest biome and the associated Lake-Forest culture area. At
30 this time, fishing and forest hunting and gathering provided the subsistence base for small,
31 mobile bands. This more efficient exploitation of the environment allowed Archaic groups to
32 remain in larger camps for longer periods of time (Funk 1978). By 3000 B.C., the area around
33 Lake Ontario was home to essentially modern fauna. Archaeological sites from the period yield
34 thick, parallel-sided projectile points and, by 3000 B.C., ground stone axes and adzes. During
35 the Late Archaic Meadowood Phase (4000 to 1500 B.C.), small habitation sites with circular
36 houses are found along sizable streams, suggesting the continuing dependence of small bands
37 on fishing (Tuck 1978a).

(a) Discussion with Robert Diener, Director of Real Property Tax Service, Wayne County, New York
(November 4, 2002).

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1 The appearance of pottery at about 1000 B.C. marks the onset of the Early Woodland Period
2 (1000 B.C. to A.D. 100). Experiments with plant domestication, greater sedentism, and larger
3 settlements characterize this period. The typical Early Woodland settlement pattern is one of
4 larger base settlements and dispersed smaller camps associated with the seasonal exploitation
5 of specific resources. The evidence from Wayne County suggests small-scale hunting and
6 fishing camps. Larger settlements were located farther south and to the west along the
7 Genesee River (Versaggi 1999).

8
9 During the Middle Woodland Period (A.D. 100 to 1000), intensive hunting and fishing continued
10 in the Lake-Forest Zone, with an emphasis on fishing. Horticulture based on maize, beans, and
11 squash was introduced to the area by A.D. 1000 and was practiced along with foraging. The
12 earliest horticultural villages that have been discovered still retain good access to streams and
13 other water sources.

14
15 During the Late Woodland Period, the antecedents of the historical Iroquois tribes begin to
16 emerge out of the Middle Woodland traditions. The Owasco phases begin around 1000 and
17 the Iroquois phases begin around 1350. The Seneca appear to have developed in an area
18 stretching from the Genesee River Valley to Seneca Lake that reaches north to Lake Ontario
19 including Wayne County. Beginning with small, seasonally occupied campsites situated on
20 knolls and terraces along the Genesee River, the increased reliance on horticulture led to the
21 consolidation of settlement into larger, palisaded, hilltop hamlets after 1350 (Niemczycki 1984).
22 These semi-sedentary villages included longhouse-like dwellings, thought to have provided
23 communal shelter for extended, probably matrilineal families (Tuck 1978b), and cemeteries.
24 Archaeological investigations along the Genesee River suggest a post-1450 settlement pattern
25 composed of pairs of large agricultural villages located well south of the lake that changed
26 location about every 20 years, associated with a large number of smaller special-use camps
27 (Wray et al. 1991).

28
29 By 1550, five Iroquois nations, including the Seneca and their eastern neighbors the Cayuga,
30 had formed a league or confederacy. After European contact, the Iroquois became increasingly
31 dependent on European metal goods, which they obtained through trade for furs. After
32 depleting the supply of beaver in their own lands, the Iroquois sought to control the fur trade
33 passing through their lands. They actively resisted the activities of French fur traders along the
34 Great Lakes, expanded their control over neighboring Native American groups, and sent war
35 parties great distances to take captives and to maintain control of trade routes and trade
36 (Abrams 1976). In 1687, the French reacted by burning the main Seneca villages. The Seneca
37 sought refuge with the Cayuga and eventually established more dispersed communities closer
38 to the Cayuga, east of the Genesee Valley and west of Canandaigua Lake, well inland from
39 Lake Ontario (Niemczycki 1984).

40

1 The Iroquois' enmity with the French caused them to ally with the British, whom they supported
2 in colonial conflicts. Initial agreements with British colonial governments recognized the claims
3 of six Iroquois nations to northwestern Pennsylvania and western New York. Constant warfare
4 with European powers and an influx of smallpox eventually diminished the Seneca population.
5 During the American Revolution, the Iroquois were initially neutral, but eventually sided with the
6 British. The colonies sent troops into western New York to subdue the Iroquois League. The
7 Treaty of Fort Stanwix in 1784 acknowledged the American victory but reserved for the Iroquois
8 much of western New York. About a third of the reserve, including the Wayne County area,
9 was acquired by land speculators Oliver Phelps and Nathaniel Gorham in 1787, thus opening
10 up the area to Euro-American settlement. By 1797, the Seneca had lost control of all but
11 11 relatively small parcels of their land. By 1802, when their lands had been further reduced,
12 the Seneca had become increasingly Americanized. Longhouses no longer marked their
13 settlements, and individuals began to own land. The number of Seneca in western New York
14 further declined as a result of the Indian Removal Act of 1820, but a core population remained.
15 Today, they own four reservations in New York state (Abrams 1976).

16
17 Euro-American settlement increased dramatically after the Revolutionary War. At the
18 conclusion of the war, both Massachusetts and New York held territorial claims to western
19 New York state. In a compromise settlement, Massachusetts relinquished claims to
20 sovereignty over territory in exchange for the authority to sell the right to acquire land from the
21 Iroquois. Phelps and Gorham purchased these rights for a large section of western New York.
22 They had the land surveyed and divided into tracts for sale, and then sold their rights to this
23 area to the Pultney of London Company in 1801 (Scully-Hill 1993). The first Euro-American
24 settlers arrived in the Wayne County area in 1789. Finding the area thickly forested, they first
25 settled along the lakeshore. Lake Ontario served as their main transportation route until the
26 Erie Canal was built in 1823. The town of Ontario was formed in 1807, and Wayne County was
27 formed in 1823.

28
29 Lakeshore property, such as that now occupied by Ginna, was the first to be settled and
30 cleared. Although the area was eventually farmed, small-scale industry arose along the lake
31 during the clearing process. Noah Fuller discovered a salt spring on Smoky Point, and salt
32 production began there in 1810 (McIntosh 1975). With plenty of wood for fuel, brick kilns are
33 said to have been located in the same vicinity, where bricks were produced for the Brick Church
34 located on Ontario Center Road about a mile south of Ginna.^(a) Hematite deposits that crop out
35 south of the Ginna site between Lake Road and Ridge Road were first recognized in 1811.
36 Surface mining and iron production were underway in the area by 1820. The first blast furnace
37 was built in 1835. The large Furnaceville Iron Company furnace went into production in 1880.

(a) Personal communication (e-mail) with Ray Todd, Ontario Historical and Landmark Preservation Society, Ontario, New York (November 6, 2002).

1 This new large furnace triggered a mining boom. Ontario became a mining town and remained
2 so until the end of World War I. The pits left from the mining activity filled with water and
3 served as reservoirs until 1953. Hematite continued to be mined as pigment for a local paint
4 mill until 1948 (Scully-Hill 1993). The transmission line right-of-way from Ginna appears to pass
5 through the mining area before reaching Substation 204. After the decline of mining and iron
6 production, Ontario returned to its rural character, which it retains today.

7
8 In the early part of the 20th century, during the Country Place Era of American architecture, the
9 stretch of shoreline now occupied by Ginna attracted Rochester residents seeking a summer
10 retreat. Beginning as early as 1907, at least 11 summer cottages, known as the Gates Grove
11 Cottages, were built along the lakeshore on the western end of the Ginna property. The area is
12 currently wooded, and three cottages remain. In 1913, Laura Ellwanger, daughter-in-law of
13 prominent Rochester businessman and horticulturalist George Herman Ellwanger, purchased
14 approximately 31 ha (77 ac), on which she built a summer residence called Brookwood. The
15 estate included a Tudor Revival “manor house,” a carriage house, pool, extensive gardens, and
16 other out-buildings.^(a)

17
18 The Brookwood Estate, the neighboring Bailey Farm, and adjacent parcels were acquired by
19 RG&E for the site of a nuclear power plant in 1958 (Hammer 1967). Ground was broken for
20 Ginna (initially called Brookwood) in 1966. The plant was substantially completed in 1969 and
21 became operational in 1970. Most of the structures constructed for the plant are located on the
22 former Bailey Farm.

23 24 **2.2.9.2 Historic and Archaeological Resources at Ginna Site**

25
26 Ginna is currently located on a 197-ha (488-ac) parcel of land on the shores of Lake Ontario.
27 Roughly a quarter of the land has been developed for the power plant itself and ancillary
28 structures. About half the land is leased for agricultural use, and the remaining quarter has
29 been left relatively undisturbed and consists of open fields, shrub-brush, and trees. Two
30 streams, Deer Creek and Mill Creek, drain the area and empty into the lake just east of the
31 plant. These resources are likely to have made this part of Wayne County attractive for human
32 use in both prehistoric and historic times. While no archaeological sites have been recorded at
33 Ginna, archaeological sites have been found along both creeks in relative proximity to the site.
34 The New York State Historic Preservation Officer (SHPO) states that the Ginna property is
35 located in an archaeologically sensitive area.^(b)

(a) Personal communication (e-mail) with C. Howk, Landmark Society of Western New York, Rochester, New York (January 9, 2003).

(b) Personal communication (e-mail) with Nancy Todd, New York State Office of Parks, Recreation, and Historic Preservation, Waterford, New York (December 27, 2002).

1 Iroquoian Native American tribes were contacted by letter to determine the area's traditional
2 cultural importance (see Appendix C). Of these, the Seneca Nation of New York responded.
3 The Seneca consider the location and area of the Ginna site to be part of their traditional range
4 and to be culturally highly sensitive (Mitchell and Maybee 2002).

5
6 During 1958, RG&E acquired 137 ha (388 ac) for the construction of Ginna. During planning
7 and construction of the plant, care was taken to preserve the rural character of the area. The
8 Brookwood Manor House, four original farm houses with barns located along Lake Road, and
9 the Gates Grove Cottages were preserved. The SHPO considers the Brookwood Estate to
10 embody the distinctive characteristics of the Country Place Era and to be eligible for inclusion in
11 the National Register of Historic Places (NRHP). The four farms on Lake Road all appear on
12 the 1858 plat of the area and were initially occupied by pioneer Ontario families. The Bailey
13 Farm belonged to the Hodges family, which first arrived in Ontario in 1811, while the remaining
14 farms came to be owned by the Gates family, who came to Ontario as early as 1816. The
15 existing farm houses range in date from 1866 to 1920 (Kemmet 2002). In the opinion of the
16 SHPO, the farms are not eligible for listing on the NRHP. The Gates Grove Cottages are not
17 owned by RG&E, although it does own the property. These cottages are likewise not
18 considered eligible for listing on the NRHP.^(a)

19
20 There are two historic properties in the town of Ontario currently listed on the NRHP. Brick
21 Church Corners, also known as Ontario Heritage Square, is a historic district located at the
22 intersection of Brick Church and Ontario Center Roads about a mile south of Ginna, and just
23 east of the transmission line right-of-way. This 121-ha (300-ac) district includes eight early- to
24 mid-19th-century structures. The second is the First Presbyterian Church of Ontario Center
25 located 4.8 km (3 mi) south of Ginna at 1638 Ridge Road in Ontario Center. It is noted for its
26 period (1900 to 1924) Tudor Revival architecture. Three other historic sites, located between
27 1.6 to 3.2 km (1 to 2 mi) from Ginna, may be eligible for listing on the NRHP: the Albright
28 School (SHPO A117-08-002), Bear Creek Harbor (SHPO A117-08-0026), and Furnaceville
29 (SHPO A117-08-0028).^(a) These sites are all associated with the development of the
30 community of Ontario.

31 **2.2.10 Related Federal Project Activities and Consultations**

32
33
34 The staff reviewed the possibility that activities of other Federal agencies might impact the
35 operation of Ginna during the license renewal term. Any such activities could result in
36 cumulative environmental impacts and the possible need for the Federal agency to become a
37 cooperating agency for preparation of the SEIS.

(a) Personal communication (letter) with Wayne Boyko, Rochester Museum and Science Center,
Rochester, New York (January 13, 2003).

1 There are two major Federal projects planned for the region. In November 2001, the
2 U.S. Congress approved funding for the Port of Rochester Harbor and Ferry Terminal Project,
3 locally known as the “fast ferry.” The Port of Rochester is located approximately 24 km (15 mi)
4 west of the Ginna site. According to Congresswoman Louise Slaughter, who secured the
5 funding in the U.S. House of Representatives, the monies will be spent for harbor and port
6 construction and to pay for a portion of the terminal services for the ferry service and cruise and
7 excursion services. Congress also approved spending money on the planned Center of
8 Excellence in Photonics and Optoelectronics to be located in Rochester. The Center will
9 combine Federal, State, and private monies and will focus on developing technology transfer
10 and pilot fabrication facilities for imaging and communications devices that can be shared
11 between Center partners (including Kodak, Xerox, Corning, the University of Rochester, and the
12 Rochester Institute of Technology). There is also a Federally owned wildlife preserve discussed
13 in Section 2.2.5.

14
15 After reviewing the Federal activities in the vicinity of the Ginna plant, the staff determined that
16 there were no Federal project activities that would make it desirable for another Federal agency
17 to become a cooperating agency for preparation of the SEIS.

18
19 NRC is required under Section 102 of National Environmental Policy Act of 1969 to consult with
20 and obtain the comments of any Federal agency that has jurisdiction by law or special expertise
21 with respect to any environmental impact involved. NRC consulted with the FWS. Consultation
22 correspondence is included in Appendix E.

23 24 **2.3 References**

25
26 10 CFR Part 20. Code of Federal Regulations, Title 10, *Energy*, Part 20, “Standards for
27 Protection Against Radiation.”

28
29 10 CFR Part 50. Code of Federal Regulations, Title 10, *Energy*, Part 50, “Domestic Licensing
30 of Production and Utilization Facilities.”

31
32 10 CFR Part 51. Code of Federal Regulations, Title 10, *Energy*, Part 51, “Environmental
33 Protection Regulations for Domestic Licensing and Related Regulatory Functions.”

34
35 10 CFR Part 52. Code of Federal Regulations, Title 10, *Energy*, Part 52, “Early Site Permits;
36 Standard Design Certifications and Combined Licenses for Nuclear Power Plants.”

37
38 10 CFR Part 54. Code of Federal Regulations, Title 10, *Energy*, Part 54, “Requirements for
39 Renewal of Operating Licenses for Nuclear Power Plants.”
40

- 1 10 CFR Part 61. Code of Federal Regulations, Title 10, *Energy*, Part 61, "Licensing
2 Requirements for Land Disposal of Radioactive Waste."
3
4 10 CFR Part 71. Code of Federal Regulations, Title 10, *Energy*, Part 71, "Packaging and
5 Transportation of Radioactive Material."
6
7 40 CFR Part 81. Code of Federal Regulations, Title 40, *Protection of Environment*, Part 81,
8 "Designation of Areas for Air Quality Planning Purposes."
9
10 40 CFR Part 190. Code of Federal Regulations, Title 40, *Protection of Environment*, Part 190,
11 "Environmental Radiation Protection Standards for Nuclear Power Operations."
12

13 Abrams, G. H. J. 1976. *The Seneca People*. Indian Tribal Series: Phoenix, Arizona.

14
15 American Nuclear Society (ANS). 1992. *Controlled Nuclear Chain Reaction: The First
16 50 Years*. American Nuclear Society, La Grange Park, Illinois.

17
18 City of Rochester. 2002. "Port of Rochester Request for Qualifications." City of Rochester
19 Economic Development Department. Accessed at
20 <http://www.cityofrochester.gov/edd/portrfq/pdf> on January 6, 2003.

21
22 Clean Water Act. 33 USC 1251 et seq. (also known as the Federal Water Pollution Control Act
23 [FWPCA] of 1977)

24
25 Cope, J. B. 1999. "Indiana Bat." In Wilson, D. E. and S. Ruff, ed. *The Smithsonian Book of
26 North American Mammals*. Smithsonian Institution Press, Washington, D.C.

27
28 Dames and Moore. 1971. *Terrestrial Biological Survey, Nuclear Power Plant Site and
29 Environs, Ginna Nuclear Power Station*. Ontario, New York.

30
31 Elliott, D. L., C. G. Holladay, W. R. Barchet, H. P. Foote, and W. F. Sandusky. 1986. *Wind
32 Energy Resource Atlas of the United States*. COE/CH 10093-4, U.S. Department of Energy,
33 Washington, D.C.

34
35 Endangered Species Act. 16 USC 1531, et seq.

36
37 Funk, R. F. 1978. "Post-Pleistocene Adaptations." *Handbook of North American Indians*,
38 *Vol. 15, Northeast*. Smithsonian Institution, edited by B. G. Trigger, Washington, D.C.

Plant and the Environment

1 Genesee Finger Lakes Regional Planning Council (GFLRPC). 1997. "1997 County and
2 Subcounty population Projections." Accessed at <http://www.gflrpc.org/DTRCenter/1997.html> on
3 January 7, 2003.

4
5 Genesee Finger Lakes Regional Planning Council (GFLRPC). 2001. *Genesee Finger Lakes
6 Regional Planning Council 2001 Annual Report*. Rochester, New York.

7
8 Hammer, S. 1967. *The RG&E Story, Vol. 2, The Ginna Years*. Christopher Press, Rochester,
9 New York.

10
11 Hoyle, J. A., and T. Schaner. 2002. *Lake Ontario Offshore Benthic Fish Community*. In *Lake
12 Ontario Management Unit 2001 Annual Report*. Lake Ontario Committee Meeting, Great Lakes
13 Fishery Commission. Queen's Printer for Ontario, Toronto, Canada. Available at:
14 http://www.glfc.org/lakecom/loc/mgmt_unit/index.html.

15
16 Humphrey, S. R. 1982. "Bats." *Wild Mammals of North America, Biology, Management, and
17 Economics*, J. A. Chapman and G. A. Feldhamer, eds., Johns Hopkins University Press,
18 Baltimore, Maryland.

19
20 Kemmet, K. 2002. "Real Estate—NRC Re-Licensing." Memorandum from Ken Kemmet
21 (Rochester Gas and Electric Corporation, Rochester, New York) to G. Wrobel (Rochester Gas
22 and Electric Corporation, Ontario, New York), November 15, 2002.

23
24 Kraft, C., and C. Carothers. 2002. *The Lake Ontario Salmon Fishery*. Cornell Cooperative
25 Extension and NY Sea Grant, Department of Natural Resources, Cornell University. Ithaca,
26 New York. Available at: <http://www.dnr.cornell.edu/ext/fish/salmon.html>

27
28 McIntosh, W. H. 1975. *History of Wayne County, New York*. Dendron Press, Pultneyville,
29 New York.

30
31 Mitchell, K. and L. Maybee. 2002. "Comments on 67 FR 63171—R.E. Ginna Nuclear Power
32 Plant." E-mail from K. Mitchell and L. Maybee (Seneca Nation of New York, Irving, New York)
33 to the U.S. Nuclear Regulatory Commission (Washington, D.C.), December 11, 2002.

34
35 National Environmental Policy Act of 1969 (NEPA). 42 USC 4321 et seq.

36
37 New York State Department of Environmental Conservation (NYSDEC). 1998. *Indiana Bat
38 Fact Sheet*. Accessed at
39 <http://www.dec.stagte.ny.us/weebite/dfwmmr/wildlife/endspec/inbafs.html> on January 7, 2003.

1 New York State Department of Environmental Conservation (NYSDEC). 2001. Letter from
2 NYSDEC to M.E. Dangler (RG&E) regarding hazardous waste compliance inspection. Avon,
3 New York.

4
5 New York State Department of Environmental Conservation (NYSDEC). 2002. *New York Rare*
6 *Plant Status List, May 2002*. Ed. by S. M. Young, New York Natural Heritage Program, Albany,
7 New York.

8
9 New York State Department of Environmental Conservation (NYSDEC). 2003a. *List of*
10 *Endangered, Threatened and Special Concern Fish and Wildlife Species of New York State*.
11 New York Department of Environmental Conservation, Division of Fish, Wildlife and Marine
12 Resources. Accessed at
13 <http://www.dec.state.ny.us/website/dfwmr/wildlife/endspec/etsclist.html> on January 22, 2003.

14
15 New York State Department of Environmental Conservation (NYSDEC). 2003b. *New York*
16 *State Breeding Bird Atlas Project 2000*. Accessed at [http://www.dec.sgtate.ny.us/apps/bba/](http://www.dec.sgtate.ny.us/apps/bba/index.html)
17 [index.html](http://www.dec.sgtate.ny.us/apps/bba/index.html) on January 7, 2003.

18
19 New York State Department of Environmental Conservation (NYSDEC). 2003c. *New York*
20 *State Amphibian and Reptile Atlas Project 1990–1999*. Accessed at
21 <http://www.dec.state.ny.us/website/dfwmr/wildlife/herp/> on January 7, 2003.

22
23 Niemczycki, M. A. P. 1984. *The Origin and Development of the Seneca and Cayuga Tribes of*
24 *New York State*. Research Record No. 17, Research Division, Rochester Museum and Science
25 Center, Rochester, New York.

26
27 Omernik, J. M. 1987. "Ecoregions of the Conterminous United States. Map
28 (Scale 1:7500000)." *Annals of the Association of American Geographers*, 77(1): 118-125.

29
30 Ramsdell, J. V. and G. L. Andrews. 1986. *Tornado Climatology in the Contiguous United*
31 *States*. NUREG/CR-4461, Nuclear Regulatory Commission, Washington, D.C.

32
33 Resource Conservation and Recovery Act of 1976 (RCRA). 42 USC 6901 et seq.

34
35 Rochester Gas and Electric Corporation (RG&E). 1972. R.E. Ginna Nuclear Power Plant
36 Unit No. 1, Environmental Report, Vol. 1. Docket No. 50-244. Rochester, New York.

37
38 Rochester Gas and Electric Corporation (RG&E). 1977. *Ginna Nuclear Power Plant, 316(a)*
39 *Demonstration Supplement*. NPDES Permit No. 070 02 2 000079 (NY 0000493), RG&E Report
40 No. BP-13-043, Rochester, New York.

Plant and the Environment

1 Rochester Gas and Electric Corporation (RG&E). 1995. *Electric Transmission Right-Of-Way*
2 *Management Plan*. Rochester Gas and Electric Corporation, Rochester, New York.

3
4 Rochester Gas and Electric Corporation (RG&E). 2001a. R.E. Ginna Nuclear Power Plant,
5 Updated Final Safety Analysis Report. Rev 16. April 2001. Rochester, New York.

6
7 Rochester Gas and Electric Corporation (RG&E). 2001b. *Annual Radioactive Effluent Release*
8 *Report*, R.E. Ginna Nuclear Power Plant, Docket No. 50-244. Rochester, New York.

9
10 Rochester Gas and Electric Corporation (RG&E). 2001c. *The 2001 Hazardous Waste*
11 *Regulatory Fee Information (form)* to New York State Department of Environmental
12 Conservation, Division of Solid and Hazardous Materials. Rochester, New York.

13
14 Rochester Gas and Electric Corporation (RG&E). 2001d. *Annual Radiological Environmental*
15 *Operating Report*, R.E. Ginna Nuclear Plant. Docket No. 50-244. Rochester, New York.

16
17 Rochester Gas and Electric Corporation (RG&E). 2002a. *R.E. Ginna Nuclear Power Plant*
18 *Application for Renewed Operating License, Appendix E – Environmental Report*. Rochester,
19 New York.

20
21 Rochester Gas and Electric Corporation (RG&E). 2002b. *R.E. Ginna Nuclear Power Plant:*
22 *Offsite Dose Calculation Manual*. Revision 17. Rochester, New York.

23
24 Rochester Gas and Electric Corporation (RG&E). 2002c. *R.E. Ginna Nuclear Power Plant*
25 *Application for Renewed Operating License, Appendix A – Updated Final Safety Analysis*
26 *Report Supplement*. Rochester, New York.

27
28 Rochester Gas and Electric Corporation (RG&E). 2002d. Letter dated December 23, 2002,
29 from R. C. McCready (RG&E) to R. Schaaf (NRC) submitting additional information following
30 the site visit to the R.E. Ginna Nuclear Power Plant. Rochester, New York. (Accession
31 No. ML030140009).

32
33 Schaner, T., J. N. Bowlby, M. E. Daniels, and B. F. Lantry. 2002. *Lake Ontario Offshore*
34 *Pelagic Fish Community*. In *Lake Ontario Management Unit 2001 Annual Report*. Lake Ontario
35 Committee Meeting, Great Lakes Fishery Commission. Queen's Printer for Ontario, Toronto,
36 Canada. Available at http://www.glfc.org.lakecom/loc/mgmt_unit/index.html.

37
38 Scully-Hill, Virginia. 1993. *Ontario's History 1807-1993 as Preserved at Heritage Square,*
39 *Ontario, New York*. Empire State Weeklies, Ontario, New York.

1 Secor, H. 1987. *Pre-history of the Savannah, New York Area 9000 B.C. to 1700 A.D.* Wayne
2 County Historical Society, Lyons, New York.

3
4 Tuck, J. A. 1978a. "Regional Cultural Development: 3000–300 B.C." *Handbook of North
5 American Indians, Vol. 15, Northeast*. Smithsonian Institution, edited by B. G. Trigger,
6 Washington, D.C.

7
8 Tuck, J. A. 1978b. "Northern Iroquoian Prehistory." *Handbook of North American Indians,
9 Vol. 15, Northeast*. Smithsonian Institution, edited by B. G. Trigger, Washington, D.C.

10
11 U.S. Atomic Energy Commission (AEC). 1973. *Final Environmental Statement Related to the
12 Operation of the R.E. Ginna Nuclear Power Plant, Unit 1. Rochester Gas and Electric
13 Corporation*. Docket No. 50-244. U.S. Atomic Energy Commission, Washington, DC.

14
15 U.S. Census Bureau (USCB). 1990. U.S. Bureau of Census, 1990 Census of Population and
16 Housing, Summary Tape file 1. Accessed at <http://factfinder.census.gov> on January 6, 2003.

17
18 U.S. Census Bureau (USCB). 1995. New York Population of Counties by Decennial Census:
19 1900 to 1990. Accessed at <http://www.census.gov/population/cencounts/ny190090.txt> on
20 January 6, 2003.

21
22 U.S. Census Bureau (USCB). 2000a. U.S. Bureau of Census, Census 2000, Table DP-1.
23 Profile of General Demographic characteristics. Accessed at
24 <http://www.census.gov/census2000/states/ny.html> on April 9, 2003.

25
26 U.S. Census Bureau (USCB). 2000b. "Census 2000 Summary File 1 (SF-1) 100 Percent
27 Data." Accessed at <http://factfinder.census.gov/servlet/DatasetMainPageServlet> on
28 April 9, 2003.

29
30 U.S. Environmental Protection Agency (EPA). 2003a. *Green Book, Nonattainment Areas for
31 Criteria Pollutants*. Accessed at <http://www.epa.gov/oar/oaqps/greenbk/> on January 9, 2003.

32
33 U.S. Environmental Protection Agency (EPA). 2003b. *Number of Days with AQI Values
34 Greater Than 100 at Trend Sites, 1991–2000, and All Sites in 2000*. Accessed at
35 <http://www.epa.gov/oar/oaqtrnd00/pdffiles/aqiall.pdf> on January 15, 2003.

36
37 U.S. Fish and Wildlife Service (FWS). 1989. "Endangered and Threatened Wildlife and Plants;
38 Determination of Threatened Status for Eastern and Western Prairie Fringed Orchids." *Federal
39 Register*, Vol. 54, 39857 - 39863, September 28, 1989.

Plant and the Environment

1 U.S. Fish and Wildlife Service (FWS). 1994. "Endangered and Threatened Wildlife and Plants;
2 Final Rule to Reclassify the Plant *Isotria medeoloides* (small whorled pogonia) from
3 Endangered to Threatened." *Federal Register* Vol. 59, 50852 - 50857, October 6, 1994.

4
5 U.S. Fish and Wildlife Service (FWS). 2000. *Guidelines for Bog Turtle Surveys*. Pennsylvania
6 Field Office, State College, Pennsylvania. August 30, 2000 Revision.

7
8 U.S. Fish and Wildlife Service (FWS). 2001. "Endangered and Threatened Wildlife and Plants;
9 Final Determination of Critical Habitat for the Great Lakes Breeding Population of the Piping
10 Plover." *Federal Register* Vol. 66, 22938-22969, May 7, 2001.

11
12 U.S. Fish and Wildlife Service (FWS). 2002. Letter from D. A. Stilwell (FWS) to P. M. Sawyko
13 (RG&E). 25 February 2002.

14
15 U.S. National Atmospheric and Oceanic Administration (NOAA). 2002. *Climatology of the*
16 *United States No. 81, Monthly Station Normals of Temperature, Precipitation, and Heating and*
17 *Cooling Degree Days, 1971–2000, 30 New York (revision date February 2002)*. National
18 Climatic Center, Asheville, North Carolina.

19
20 U.S. Nuclear Regulatory Commission (NRC). 1996. *Generic Environmental Impact Statement*
21 *for License Renewal of Nuclear Plants*. NUREG-1437, Volumes 1 and 2, Washington, D.C.

22
23 U.S. Nuclear Regulatory Commission (NRC). 1999. *Generic Environmental Impact Statement*
24 *for License Renewal of Nuclear Plants, Main Report*, "Section 6.3 – Transportation, Table 9.1,
25 Summary of findings on NEPA issues for license renewal of nuclear power plants, Final
26 Report." NUREG-1437, Volume 1, Addendum 1, Washington, D.C.

27
28 Versaggi, N. M. 1999. "Regional Diversity within the Early Woodland of the Northeast."
29 *Northeast Anthropology*, 57: 45-56.

30
31 Wayne County Economic Development Corporation (WCEDC). 1996. *Wayne County Strategic*
32 *Economic Development Plan*. Prepared by Nutter Associates, Lyons, New York.

33
34 Wray, C. F., M. L. Sempowski, and L. P. Saunders. 1991. *Tram and Cameron: Two Early*
35 *Contact Era Seneca Sites*. Research Record No. 21, Research Division, Rochester Museum
36 and Science Center, Rochester, New York.