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April 29, 2008

U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Attention: Document Control Desk

Subject: Grand Gulf Nuclear Station (GGNS) 2007 Annual Radiological
Environmental Operating Report (AREOR)

Grand Gulf Nuclear Station
Docket No. 50-416
License No. NPF-29

Ladies & Gentlemen:

In accordance with the Grand Gulf Nuclear Station Unit 1 Technical Specification 5.6.2, attached is the Annual Radiological Environmental Operating Report for the period January 1, 2007 through December 31, 2007.

This letter does not contain any commitments. If you have questions or require additional information concerning these reports, please contact Mr. Richard Scarbrough (601) 437-6316, or this office at (601) 437-6685.

Yours truly,

A handwritten signature in black ink, appearing to read "Michael J. Larson".

Michael J. Larson
Acting Licensing Manager

MJL:mjl

attachment: 2007 Annual Radiological Environmental Operating Report
cc: (See Next Page)

cc:

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**ENTERGY OPERATIONS, INC.
GRAND GULF NUCLEAR STATION**

**ANNUAL
RADIOLOGICAL ENVIRONMENTAL
OPERATING REPORT**

January 1, 2007-December 31, 2007

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Summary

The Annual Radiological Environmental Operating Report presents data obtained through analyses of environmental samples collected for Grand Gulf Nuclear Station's (GGNS) Radiological Environmental Monitoring Program (REMP) for the period January 1, 2007 through December 31, 2007. This report fulfills the requirements of GGNS Technical Specification 5.6.2.

To supplement the REMP, GGNS personnel collected duplicate surface water, ground water, vegetation, sediment and fish samples during the reporting period. Special samples collected during the reporting period included vegetation and surface water. GGNS did not detect any plant-related radionuclides in these samples.

Radiological Environmental Monitoring Program

GGNS established the REMP in 1978 prior to the station becoming operational (1985) to provide data on background radiation and radioactivity normally present in the area. GGNS has continued to monitor the environment by sampling air, water, sediment, fish and food products, as well as measuring radiation directly. GGNS also samples milk if commercial milk production is occurring within five miles of the plant.

The REMP includes sampling indicator and control locations within an 18-mile radius of the plant. The REMP utilizes indicator locations near the site to show any increases or buildup of radioactivity that might occur due to station operation, and control locations farther away from the site to indicate the presence of only naturally occurring radioactivity. GGNS personnel compare indicator results with control and preoperational results to assess any impact GGNS operation might have had on the surrounding environment.

In the current year, GGNS personnel collected environmental samples for radiological analysis. They compared results of indicator locations with control locations and previous studies, and concluded that overall no significant relationship exists between GGNS operation and effect on the plant environs. Their review of current year data, in many cases, showed undetectable radiation levels in the environment and near background level in significant pathways associated with GGNS.

Harmful Effects or Irreversible Damage

The REMP monitoring did not detect any harmful effects or evidence of irreversible damage in the current year. Therefore, no analysis or planned course of action to alleviate problems was necessary.

Reporting Levels

GGNS' review indicates that no samples equaled or exceeded reporting levels for radioactivity concentration in environmental samples, as outlined in ODCM Specifications Table 6.12.1-2 when averaged over any calendar quarter, due to GGNS effluents. Therefore, results did not trigger any Radiological Monitoring Program Special Reports.

Radioactivity Not Attributable to GGNS

In previous years, the GGNS REMP detected radioactivity attributable to other sources twice. These include the 25th Chinese nuclear test explosion in 1980, and the radioactivity plume release due to reactor core degradation at the Chernobyl Nuclear Power Plant in 1986.

Comparison to Federal and State Programs

GGNS personnel compared REMP data to federal and state monitoring programs as results became available. Historically, the programs used for comparison have included the U.S. Nuclear Regulatory Commission (NRC) TLD Direct Radiation Monitoring Network and the Mississippi State Department of Health (MSDH), Division of Radiological Health.

The NRC TLD Network Program was discontinued in 1998. Historically these results compared favorably to those from the GGNS REMP. GGNS TLD results remain similar to the historical average and continue to verify that plant operation is not affecting the ambient radiation levels in the environment.

The MSDH and the GGNS REMP entail similar radiological environmental monitoring program requirements. These programs include concurrent air sampling and splitting or sharing sample media such as water, sediment, fish and food products. Both programs have obtained similar results over previous years. The results of MSDH's monitoring program for the reporting period compared favorably with the GGNS REMP and did not indicate elevated levels of radiation or radioactivity build-up attributed to plant operations.

Sample Deviations

◆ Milk

The REMP did not include milk sampling within five miles (8 km) of GGNS in the current year due to unavailability. ODCM Specifications require collection of milk samples if available commercially within 8 km (5 miles) of the plant. GGNS personnel collected vegetation samples to monitor the ingestion pathway, as specified in ODCM Specifications Table 6.12.1-1, because of milk unavailability.

◆ Required Lower Limit of Detection (LLD) Values

LLDs during this reporting period were within the acceptable limits required by the ODCM specifications.

◆ **Air Samples**

The following air sample locations had reduced run times due to weather-related outages. As described in footnote (a) to ODCM Specification Table 6.12.1-1, deviations from the required sampling schedule are permitted due to malfunction of sampling equipment and other legitimate reasons.

Sample Location	Date In	Date Out	RunTime hours	Out-of-service hours	Comments
AS-7 UH	04/10/07	04/17/07	165.55	2.98	Power Outage
AS-1 PG	04/10/07	04/17/07	33.68	141.65	Power Outage
AS-3 61VA	06/26/07	07/03/07	106.87	62.53	Power Outage
AS-7 UH	07/03/07	07/10/07	162.56	3.44	Power Outage
AS-3 61VA	07/03/07	07/10/07	158.16	7.96	Power Outage
AS-1 PG	09/11/07	09/18/07	60.08	106.25	Power Outage
AS-3 61VA	10/23/07	10/30/07	30.10	136.98	Power Outage

Based on the sample collection period reductions, air samples were collected the following percentages of the available time:

AS-1 PG	97.17%
AS-3 61VA	97.63%
AS-7 UH	99.93%

◆ **Missed Samples**

After deploying the second quarter environmental TLD's, it was discovered that the deployed set had received a significant transit dose. This dose proved to render the deployed TLD's useless and replacements were sent to GGNS by the vendor. This event contributed to a period of 20 days where the direct radiation pathway was not monitored between the removal of the first quarter TLD's and the deployment of the replacement second quarter TLD's.

◆ **Unavailable Results**

GGNS received analytical results in adequate time for inclusion in this report. In addition, GGNS' review identified no missing results.

Program Modifications

During this reporting period, six supplemental TLD locations [formerly S-2 through S-7] were incorporated into the REMP. S-7[M-100] replaced monitoring location M-17 due to safety concerns associated with accessibility. Offsite Dose Calculation Manual revision 35 was issued September 2007 to incorporate the program modification.

Attachments

Attachment 1 contains results of TLD, air, water, sediment, fish, food products and special samples collected. TLDs were analyzed by AREVA. All remaining samples were analyzed by River Bend Station's (RBS) Environmental Laboratory. Attachment 1 also contains RBS' results from participation in the interlaboratory comparison program.

1.0 Introduction

1.1 Radiological Environmental Monitoring Program

GGNS established the REMP to ensure that plant operating controls properly function to minimize any associated radiation endangerment to human health or the environment. The REMP is designed for:

- Analyzing important pathways for anticipated types and quantities of radionuclides released into the environment.
- Considering the possibility of a buildup of long-lived radionuclides in the environment and identifying physical and biological accumulations that may contribute to human exposures.
- Considering the potential radiation exposure to plant and animal life in the environment surrounding GGNS.
- Correlating levels of radiation and radioactivity in the environment with radioactive releases from station operation.

1.2 Pathways Monitored

The airborne, direct radiation, waterborne and ingestion pathways, as seen in Figure 1-1, are monitored as required by GGNS ODCM Table 6.12.1-1. A description of the GGNS REMP utilized to monitor the exposure pathways is provided in Table 1.1 and shown in Figures 1-2 and 1-3. GGNS may supplement this program with additional sampling in order to provide a comprehensive and well-balanced program.

Section 2.0 of this report provides a discussion of sampling results with Section 3.0 providing a summary of results for the monitored exposure pathways.

1.3 Land Use Census

GGNS personnel conduct a land use census biannually, as required by ODCM Specification 6.12.2. Data for the most recent land use census is included. The purpose of this census is to identify changes in uses of land within five miles of GGNS that would require modifications to the REMP or the ODCM. The most important criteria during this census are to determine location in each sector of the nearest:

- 1) Residence
- 2) Animal milked for human consumption
- 3) Garden of greater than 50 m² (500 ft²) producing broadleaf vegetation.

When performed, GGNS personnel conduct the land use census by:

- Field surveys in each meteorological sector out to five miles in order to confirm:
 - Nearest permanent residence
 - Nearest unoccupied residence
 - Nearest garden and approximate size
 - Nearest milking animal.
- Identifying locations on maps, measuring distances to GGNS and recording results on surveillance data sheets.
- Comparing current land use census results to previous results.
- Contacting the Claiborne County Agent for verification of nearest dairy animals.

Table 1.1

Radiological Environmental Sampling Program

Exposure Pathway	Requirement	Sample Point Description, Distance and Direction	Sampling and Collection Frequency	Type and Frequency Of Analyses
Airborne	<p>Radioiodine and Particulates 1 sample close to the SITE BOUNDARY having the highest calculated annual average groundlevel D/Q.</p>	<p>AS-7 UH (Sector H, Radius 0.5 Miles) – South-southeast of GGNS at the IBEW Union Hall.</p>	Continuous sampler operation with sample collection per 7 days or as required by dust loading, whichever is more frequent	<p>Radioiodine Cannister – I-131; 7 days</p> <p>Particulate Sampler – Gross beta radioactivity following filter change, composite (by location) for gamma isotopic; 92 days</p>
	<p>Radioiodine and Particulates 1 sample from the vicinity of a community having the highest calculated annual average groundlevel D/Q.</p>	<p>AS-1 PG (Sector G, Radius 5.5 Miles) – Southeast of GGNS at the Port Gibson City Barn.</p>		
	<p>Radioiodine and Particulates 1 sample from a control location 15 - 30 km (10 - 20 miles) distance.</p>	<p>AS-3 61VA (Sector B, Radius 18 Miles) – North-northeast of GGNS on Hwy 61, North of the Vicksburg Airport.</p>		
Direct Radiation	<p>TLDs An inner ring of stations in the general areas of the SITE BOUNDARY.</p>	<p>M-16 (Sector A, Radius 0.9 Miles) – Meteorological Tower.</p> <p>M-17 (Sector C, Radius 0.5 Miles) – South Side, Grand Gulf Road.</p> <p>M-19 (Sector E, Radius 0.5 Miles) – Eastern SITE BOUNDARY Property line, North-northeast of HWSA.</p>	92 days	Gamma dose; 92 days

Table 1.1

Radiological Environmental Sampling Program

Exposure Pathway	Requirement	Sample Point Description, Distance and Direction	Sampling and Collection Frequency	Type and Frequency Of Analyses
Direct Radiation	<p>TLDs An inner ring of stations in the general areas of the SITE BOUNDARY.</p>	<p>M-21 (Sector J, Radius 0.4 Miles) – Near Former Training Center Building on Bald Hill Road.</p> <p>M-22 (Sector G, Radius 0.5 Miles) – Former RR Entrance Crossing On Bald Hill Road.</p> <p>M-23 (Sector Q, Radius 0.5 Miles) – Gin Lake Road 50 Yards North of Heavy Haul Road on Power Pole.</p> <p>M-25 (Sector N, Radius 1.6 Miles) – Radial Well Number 1.</p> <p>M-28 (Sector L, Radius 0.9 Miles) – Former Glodjo Residence.</p> <p>M-94 (Sector R, Radius 0.8 Miles) – Sector R Near Meteorological Tower.</p>	92 days	Gamma dose; 92 days

Table 1.1

Radiological Environmental Sampling Program

Exposure Pathway	Requirement	Sample Point Description, Distance and Direction	Sampling and Collection Frequency	Type and Frequency Of Analyses
Direct Radiation	<p><u>TLDs</u> An inner ring of stations in the general areas of the SITE BOUNDARY.</p>	<p>M-95 (Sector F, Radius 0.5 mi) – Spoils Area, fence of old storage area, near entrance gate</p> <p>M-96 (Sector B, Radius 0.7 mi.) – North Gate Fence</p> <p>M-97 (Sector D, Radius 0.8 mi.) – Grand Gulf Road entrance gate to spoils area</p> <p>M-98 (Sector H, Radius 0.5 mi.) – Bald Hill Road, across from Union Hall in curve</p> <p>M-99 (Sector K, Radius 0.4 mi.) – North Fence of old Ball Field near utility pole</p> <p>M-100 (Sector C, Radius 0.6 mi.) – Grand Gulf Road, across from L. Frazier</p>	92 days	Gamma dose; 92 days
	<p><u>TLDs</u> An outer ring approximately 3 to 5 miles from the site.</p>	<p>M-36 (Sector P, Radius 5.0 Miles) – Curve on HW 608, Point Nearest GGNS at Power Pole.</p> <p>M-40 (Sector M, Radius 2.3 Miles) – Headly Drive, Near River Port Entrance.</p>		

Table 1.1

Radiological Environmental Sampling Program

Exposure Pathway	Requirement	Sample Point Description, Distance and Direction	Sampling and Collection Frequency	Type and Frequency Of Analyses
Direct Radiation	<p><u>TLDs</u> An outer ring approximately 3 to 5 miles from the site.</p>	<p>M-48 (Sector K, Radius 4.8 Miles) – 0.4 Miles South on Mont Gomer Road on West Side.</p> <p>M-49 (Sector H, Radius 4.5 Miles) – Fork in Bessie Weathers Road/Shafter Road.</p> <p>M-50 (Sector B, Radius 5.3 Miles) – Panola Hunting Club Entrance.</p> <p>M-55 (Sector D, Radius 5.0 Miles) – Near Ingelside Karnac Ferry Road/Ashland Road Intersection.</p> <p>M-57 (Sector F, Radius 4.5 Miles) – Hwy 61, Behind the Welcome to Port Gibson Sign at Glensdale Subdivision.</p>	92 days	Gamma dose; 92 days
	<p><u>TLDs</u> 8 stations in special interest areas such as population centers, nearby residences, schools, and in 1 or 2 areas to serve as control stations.</p>	<p>M-01 (Sector E, Radius 3.5 Miles) – Across the road from Lake Claiborne Entry Gate. (Special Interest)</p> <p>M-07 (Sector G, Radius 5.5 Miles) – AS-1 PG, Port Gibson City Barn. (Special Interest)</p> <p>M-09 (Sector D, Radius 3.5 Miles) – Warner Tully Y-Camp. (Special Interest)</p> <p>M-10 (Sector A, Radius 1.5 Miles) – Grand Gulf Military Park. (Special Interest)</p>		

Table 1.1

Radiological Environmental Sampling Program

Exposure Pathway	Requirement	Sample Point Description, Distance and Direction	Sampling and Collection Frequency	Type and Frequency Of Analyses
Direct Radiation	<p>TLDs 8 stations in special interest areas such as population centers, nearby residences, schools, and in 1 or 2 areas to serve as control stations</p>	<p>M-14 (Sector B, Radius 18.0 Miles) – AS-3-61VA, Hwy 61, North of Vicksburg Airport. (Control)</p> <p>M-33 (Sector P, Radius 12.5 Miles) – Newellton, Louisiana Water Tower. (Special Interest)</p> <p>M-38 (Sector M, Radius 9.5 Miles) – Lake Bruin State Park, Entrance Road. (Special Interest)</p> <p>M-39 (Sector M, Radius 13.0 Miles) – St. Joseph, Louisiana, Auxiliary Water Tank. (Special Interest)</p>	92 days	Gamma dose; 92 days

Table 1.1

Radiological Environmental Sampling Program

Exposure Pathway	Requirement	Sample Point Description, Distance and Direction	Sampling and Collection Frequency	Type and Frequency Of Analyses
Waterborne	Surface Water 1 sample upstream.	MRUP (Sector R, Radius 1.8 Miles) - At least 4500 ft upstream of the GGNS discharge point into the Mississippi River to allow adequate mixing of the Mississippi and Big Black Rivers.	92 days	Gamma isotopic and tritium analyses; 92 days
	1 sample downstream.	MRDOWN (Sector N, Radius 1.6 Miles) - At least 5000 ft downstream of the GGNS discharge point into the Mississippi River near Radial Well No. 1.		
	1 sample downstream during a Liquid Radwaste Discharge.	MRDOWN (Sector P, Radius 1.3 Miles) – Downstream of the GGNS discharge point into the Mississippi River near Radial Well No. 5.	366 days	Gamma isotopic and tritium analyses; 366 days
	1 sample from Outfall 007	OUTFALL 007 (Sector N, Radius 0.2 Miles) – Storm Drain System	31 days	Tritium; 31 days

Table 1.1

Radiological Environmental Sampling Program

Exposure Pathway	Requirement	Sample Point Description, Distance and Direction	Sampling and Collection Frequency	Type and Frequency Of Analyses
Waterborne	<p><u>Groundwater</u> Samples from 2 sources.</p>	<p>PGWELL (Sector G, Radius 5.0 Miles) - Port Gibson Wells – Take from distribution system or one of the five wells.</p> <p>CONSTWELL (Sector Q, Radius 0.4 Miles) – GGNS Construction Water Well – Taken from distribution system or the well.</p>	366 days	Gamma isotopic and tritium analyses; 366 days
	<p><u>Sediment From Shoreline</u> 1 sample from downstream area.</p> <p>1 sample from upstream area.</p>	<p>SEDHAM (Sector N, Radius 1.6 Miles) – Downstream of the GGNS discharge point in the Mississippi River near Hamilton Lake outlet.</p> <p>SEDCONT (Minimum of 100 yds) – Upstream of the GGNS discharge point in the Mississippi River.</p>	366 days	Gamma isotopic; 366 days
Ingestion	<p><u>Milk</u> 1 sample from milking animals within 8 km if milk is available commercially.</p> <p>1 control sample (only if indicator exists) >8 km if milk is available.</p>	<p>Currently, no available milking animals within 8 km of GGNS.</p> <p>ALCONT (Sector K, Radius 10.5 Miles) - Located South-southwest of GGNS at Alcorn State University.</p>	92 days when required	Gamma isotopic and I-131; 92 days

Table 1.1

Radiological Environmental Sampling Program

Exposure Pathway	Requirement	Sample Point Description, Distance and Direction	Sampling and Collection Frequency	Type and Frequency Of Analyses
Ingestion	<p>Fish 1 sample in vicinity of GGNS discharge point.</p> <p>1 sample uninfluenced by GGNS discharge.</p>	<p>FISHDOWN – Downstream of the GGNS discharge point into the Mississippi River</p> <p>FISHUP – Upstream of the GGNS discharge point in the Mississippi River uninfluenced by plant operations.</p>	366 days	Gamma isotopic on edible portion; 366 days
	<p>Food Products 1 sample of broadleaf vegetation grown in one of two different offsite locations with highest anticipated annual average ground level D/Q if milk sampling is not performed.</p> <p>1 sample of similar vegetation grown 15 – 30 km distant if milk sampling is not performed.</p>	<p>VEG-J (Sector J, Radius 0.4 Miles) – South of GGNS near former Training Center on Bald Hill Road.</p> <p>VEG-CONT (Sector K, Radius 10.5 Miles) – Alcorn State University south-southwest of GGNS when available, otherwise a location 15-30 km distant.</p>	92 days when available	Gamma isotopic and I-131; 92 days

FIGURE 1-1
Exposure Pathways

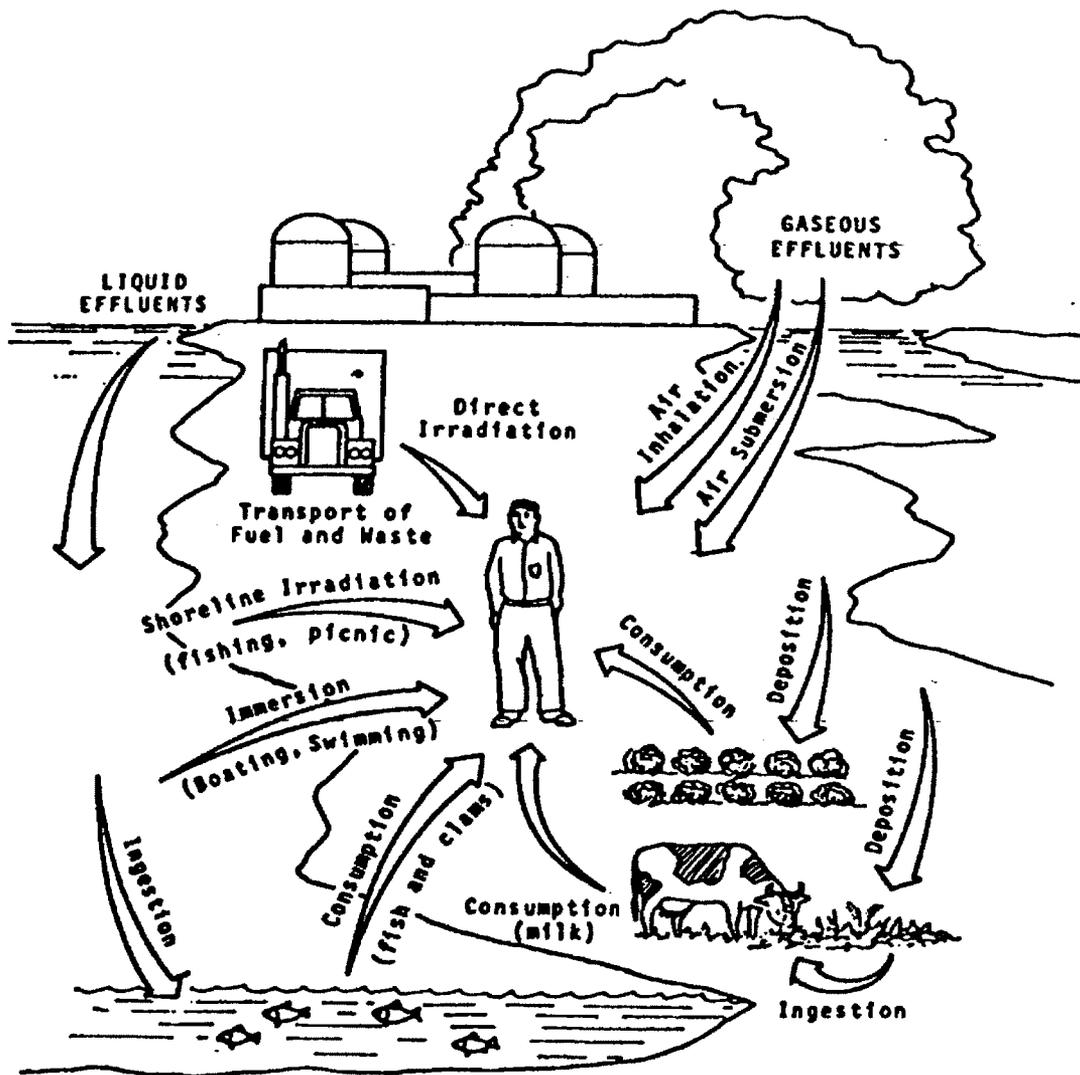


FIGURE 1-2

SAMPLE COLLECTION SITES – NEAR FIELD

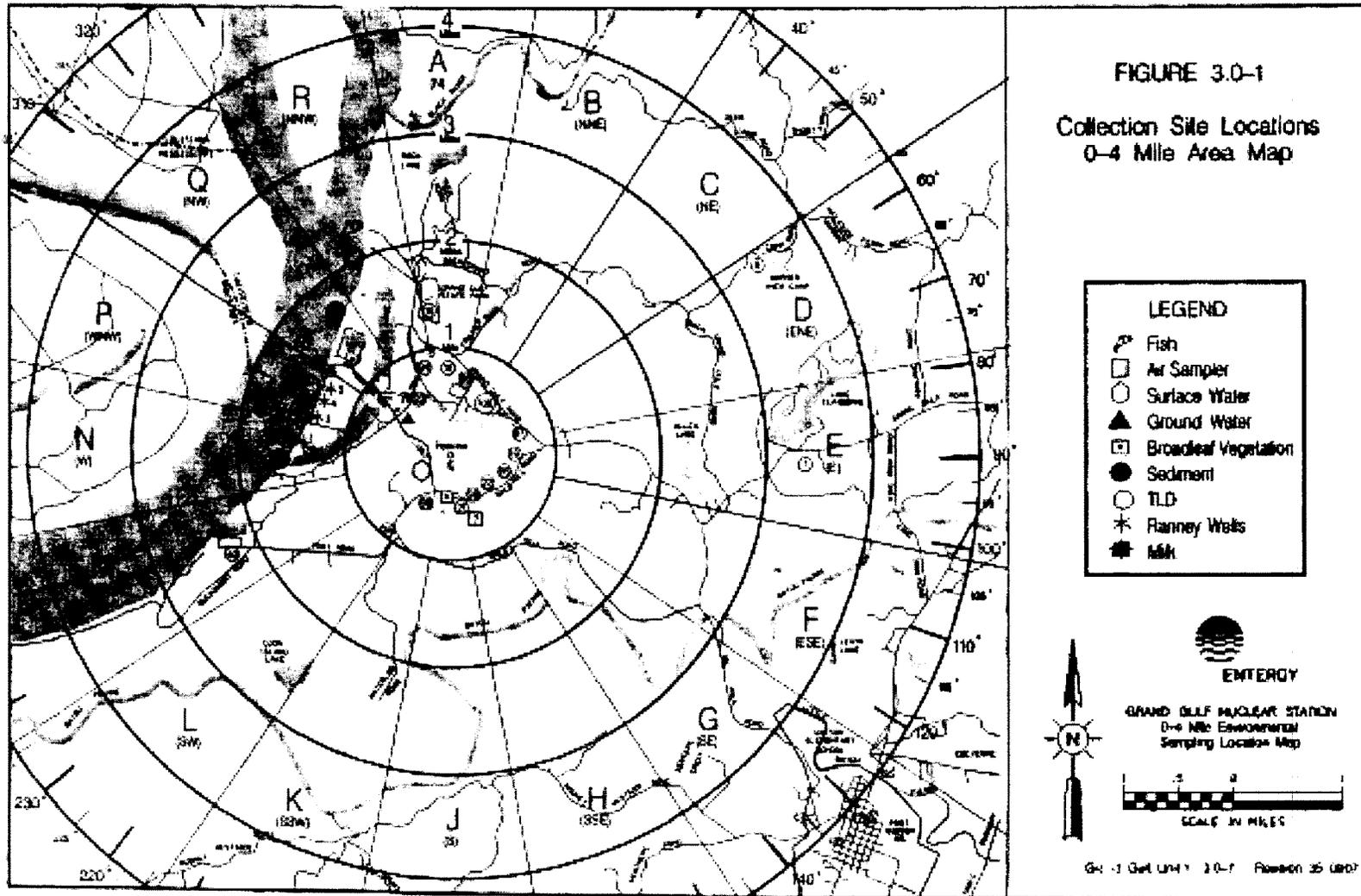
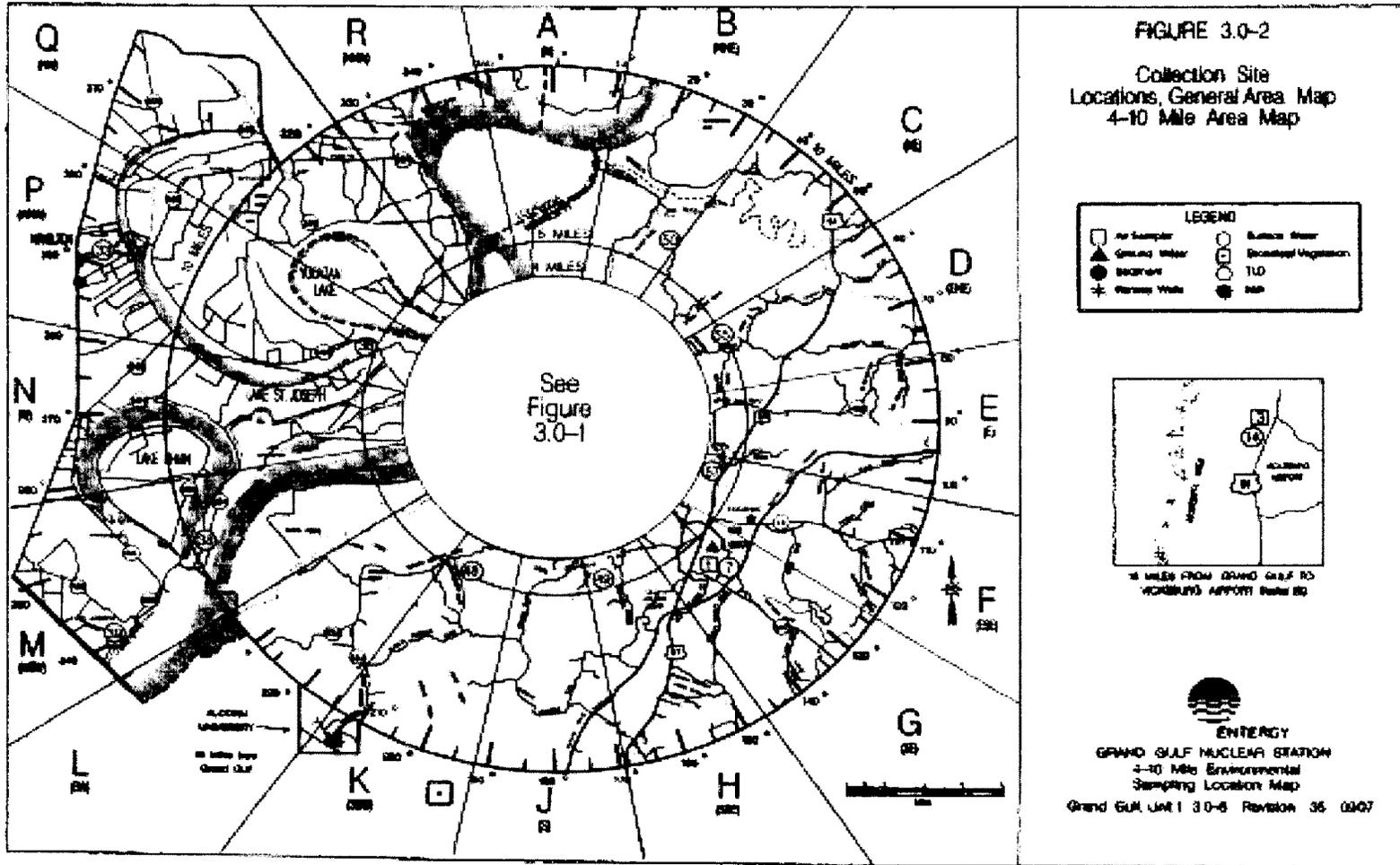


FIGURE 1-3
 SAMPLE COLLECTION SITES – FAR FIELD



2.0 Interpretation and Trends of Results

2.1 Air Particulate and Radioiodine Sample Results

GGNS did not detect any plant related gamma emitting radionuclides in the quarterly air particulate composites or Iodine-131 in the radioiodine cartridges during the reporting period, as has been the case in previous years. The REMP detected radioactivity in this pathway attributable to other sources twice. These include the 25th Chinese nuclear test explosion in 1980, and the radioactive plume release due to reactor core degradation at Chernobyl Nuclear Power Plant in 1986. Therefore, the airborne exposure pathway has been unaffected by the operation of GGNS and airborne concentrations continue to be at background levels.

Table 3.1, which includes gross beta concentrations, provides a comparison of the indicator and control means and ranges, further emphasizes that the airborne pathway continues to remain at background levels. In the absence of plant-related gamma radionuclides, gross beta activity is attributed to naturally occurring radionuclides. Consistent trends are present for control and indicator locations. This further supports the presence of naturally occurring activity.

2.2 Thermoluminescent Dosimetry Sample Results

GGNS calculates dose by subtracting shield readings from control and indicator location readings and reports measured dose as net exposure normalized to 92 days. GGNS relies on comparison of the indicator locations to the control location as a measure of plant impact. Gamma radiation dose in the reporting period is compared to control location readings for previous years as shown in Figure 2-1.

GGNS' comparison of the indicator results to the control and to previous indicator results, as seen in Figure 2-1 and Table 3.1, indicates that plant operations had no significant impact on ambient radiation levels during the reporting period.

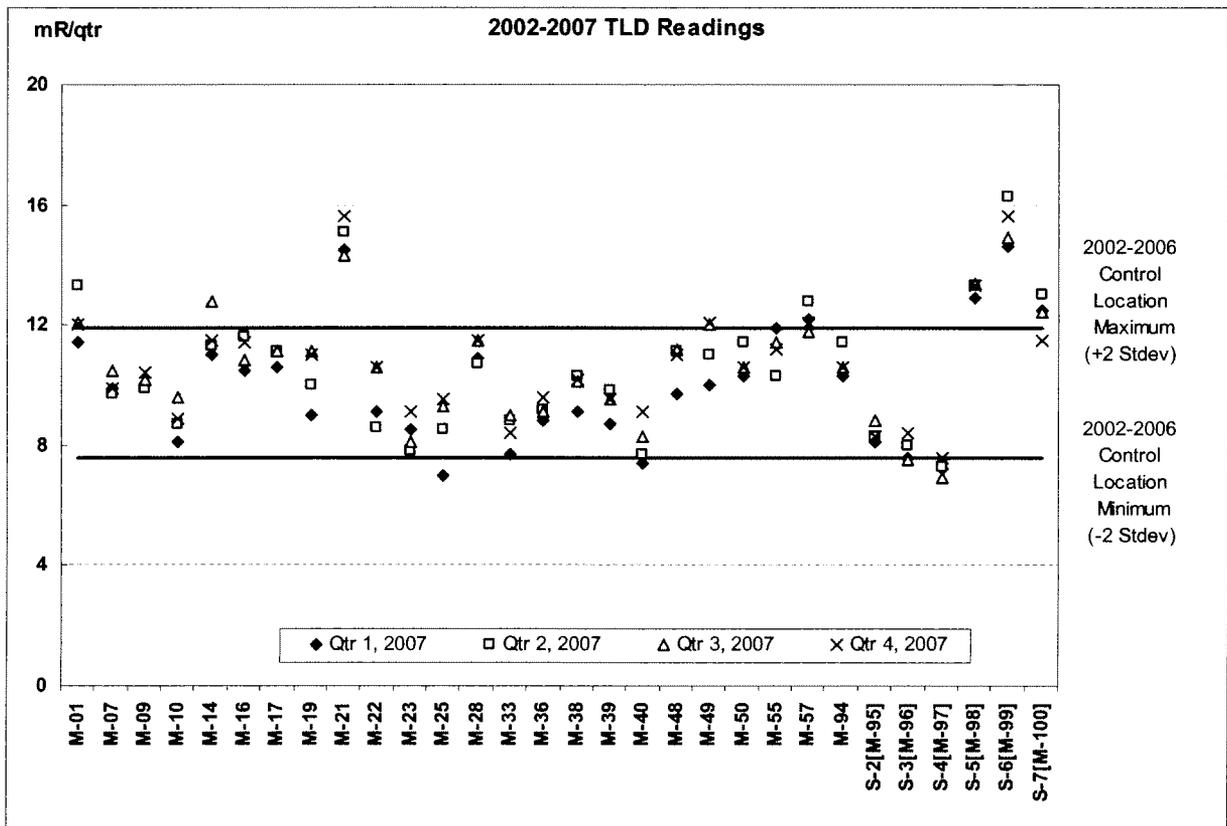
During this reporting period, six supplemental TLD locations [formerly S-2 through S-7] were incorporated into the REMP. S-7[M-100] replaced monitoring location M-17 due to safety concerns associated with accessibility. Additional monitoring at five locations serves to characterize the effect of hydrogen injection, described further in the following paragraph.

TLD	Location
S-2 [M-95]	Sector F, 0.5 mi
S-3 [M-96]	Sector B, 0.7 mi.
S-4 [M-97]	Sector D, 0.8 mi.
S-5 [M-98]	Sector H, 0.5 mi.
S-6 [M-99]	Sector K, 0.4 mi.
S-7 [M-100]	Sector C, 0.6 mi.

Hydrogen injection into the feedwater system provides protection against Intergranular Stress Corrosion of plant components.

With the exception of TLD locations M-21 (Sector J, 0.4 miles), M-98 (Sector H 0.5 miles and M-99 (Sector K, 0.4 miles) direct radiation levels continue to remain at or near background. The dose rate at these locations is a result of increased Nitrogen-16 levels associated with hydrogen injection as discussed above. Dose rates at locations M-21 [3.2 millirem per quarter], M-98 [1.6 millirem per quarter] and M-99 [3.7 millirem per quarter] above Control location M-14 (sector B, 18.0 miles) remain well below the limitations of 10 CFR 20.1301(a)(2) and 10CFR 20.1302(b)(2)(ii).

Figure 2-1



In 2007 the site utilized a different vendor for TLD processing. The 2007 TLDs showed an average increase of 13%. This increase was distributed across control, near site and far site locations and is attributed to differences in dosimeter processing.

2.3 Water Sample Results

Surface water samples were collected from three indicator and one control location and analyzed for gamma emitting radionuclides and tritium. Plant related gamma emitting radionuclides and tritium remained undetectable in the upstream and downstream Mississippi River locations, which is consistent with preoperational and previous operational years. Storm waters contribute to Outfall 007 and can include tritium as a result of washout and entrainment of routine, previously monitored gaseous effluents. As a result, tritium levels below the minimum detection level requirement are occasionally observed. When detected, Tritium was measured at an average concentration of 1027 ± 264 pCi/L in the Outfall 007 (indicator) location.

In addition to the tritium samples required by the REMP, four special surface water samples for gamma were collected at the Outfall 007 location. Plant related gamma emitting radionuclides remained undetectable in these samples.

Based on review of results and historical data, GGNS concluded that plant operations had no significant impact on this pathway during the reporting period.

Groundwater samples were collected from two locations (indicator and control) and analyzed for gamma emitting radionuclides and tritium. GGNS did not detect any plant related gamma emitting radionuclides or tritium in groundwater samples during the reporting period.

Based on review of results and historical data, GGNS concluded that plant operations had no significant impact on this pathway during the reporting period.

2.4 Sediment Sample Results

Sediment samples were collected from two ODCM Specification locations (indicator and control) and analyzed for gamma emitting radionuclides. In this reporting period, plant related gamma emitting radionuclides were below detectable concentrations in the upstream (control) and downstream (indicator) locations.

Based on review of results and historical data, GGNS concluded that plant operations had no significant impact on this pathway during the reporting period.

2.5 Milk Sample Results

GGNS personnel did not collect milk samples within five miles of the site in the reporting period due to the absence of milking animals. Since there are no dairies within five miles of GGNS, it is concluded GGNS' operation had no impact on this pathway.

2.6 Fish Sample Results

Fish samples were collected from two locations (indicator and control) and analyzed for gamma emitting radionuclides. GGNS did not detect any plant related gamma emitting radionuclides in fish samples during the reporting period, as has been the case in preoperational and previous operational years. These results indicate that this pathway has not been affected by plant operations.

2.7 Food Product Sample Results

Food product samples were collected from control and indicator locations when available and analyzed for gamma emitting radionuclides. GGNS did not detect any plant related gamma emitting radionuclides in vegetation samples during the reporting period. Nuclides detected previously at the control and indicator locations are attributed to the Chernobyl release and atmospheric weapons testing. These results indicate that this pathway has not been affected by plant operations.

Two samples of vegetation were collected at an onsite location to supplement the REMP. GGNS did not detect any plant related gamma emitting radionuclides in this vegetation sample during the reporting period.

2.8 Land Use Census Results

Results from the Land Use Census performed April 10-12, 2006 are included in this report. Methods utilized include: visual surveys, door to door surveys, telephone interviews, GPS, Aerial Photography, and consultation with the local county agent concerning dairy production in Claiborne County.

During the survey the following questions were asked:

- 1). Name of occupant
- 2). Address
- 3). Number of people residing at residence
- 4). Age group of occupants
- 5). Any farm animal raised for human consumption
- 6). Any dairy production
- 7). Maintain a garden

Changes from the previous Land Use Census were evaluated in accordance with GGNS surveillance 06-EN-S000-0-0002. The differences were compared to the locations and assumptions used in calculations for compliance with the Offsite Dose Calculation Manual (ODCM), LCO 6.11.6. It was determined that the locations and assumptions currently used in ODCM are more conservative than any of the changes. Other determinations from the previous Land Use Census results are:

- The child age group with the highest dose commitment is in Sector A (North) at 1.78 miles, GGNS ODCM calculations currently uses the maximum calculated dose from either Sector L (Southwest) at 0.89 miles or Sector C (Northeast) at 0.67 miles. Doses calculated at Sector A would be lower.
- One location recorded as occupied in the previous land use census is now unoccupied, sector E (East) at 0.83 miles.
- Because of downwind location and/or distance from the site, in no case will the occupancy of an existing unoccupied residence cause any ODCM critical receptor calculation results to be less conservative.
- No additional sampling locations are required as the onsite garden/vegetation sampling location (Sector J, 0.4 miles) is more conservative than changes identified in the land use census.
- Cattle are raised for human consumption (most notably Sector H, J, and K). GGNS uses the Grass/Cow/Meat pathway.

- The milk pathway does not need to be activated, no commercial dairy production is occurring within 5 miles. Resident in Sector F occasionally milks cows for consumption if the cow is producing too much milk for the calf. This is not commercial dairy production as referenced by ODCM Table 6.12.1-1; therefore, the milk pathway does not need to be activated.
- Sectors M, N, P, and Q are remote areas in which the primary use is hunting. Area was surveyed by vehicle and aerial photographs. Also, all areas in Louisiana within 5 miles belong to the “Winter Quarters” exclusive hunting club. From the previous census, personnel at entrance gate were interviewed and responded, “No permanent residence or gardens, the area is posted”.
- Gardens, regardless of size, were included in the census data.

**Table 2.1
Land Use Census Results**

Parameter		Sector A *	Sector B	Sector C	Sector D
I. Nearest Occupied Residence	a. Distance (mile)	0.98	0.83	0.67	2.57
	b. Number of Occupants	2	2	2	6
	c. Degrees from true north	354.0	15.1	42.1	60.5
II. Nearest Unoccupied Residence (closer than occupied residence)	a. Distance (mile)	0.94	None	None	None
III. Nearest Milk Animal	a. Distance	None	None	None	None
IV. Nearest Broadleaf Garden	a. Distance (mile)	1.78	1.52	0.67	2.86
	b. Garden size (ft ²)	≈ 1200	≈ 4050	≈ 1250	≈ 500
	c. Degrees from true north	352.2	21.9	42.1	59.7
V. Census Comparison	a. Is nearest occupied residence in same location as last census?	Yes	Yes	Yes	Yes
	b. Is nearest milk animal in same location as last census?	N/A	N/A	N/A	N/A
	c. Is nearest broadleaf garden in same location as last census?	No	Yes	Yes	Yes

* Change from last census, see attached table of Land Use Census Changes

**Table 2.1
Land Use Census Results**

Parameter		Sector E *	Sector F *	Sector G	Sector H
I. Nearest Occupied Residence	a. Distance (mile)	0.89	2.25	2.10	1.11
	b. Number of Occupants	3	2	3	6
	c. Degrees from true north	86.9	101.5	129.7	152.5
II. Nearest Unoccupied Residence (closer than occupied residence)	a. Distance (mile)	0.83	None	1.93	1.08
III. Nearest Milk Animal	a. Distance	None	None	None	None
IV. Nearest Broadleaf Garden	a. Distance (mile)	0.89	4.05	3.81	1.11
	b. Garden size (ft ²)	≈1000	≈50	≈1600	≈ 500
	c. Degrees from true north	86.9	114.3	129.1	152.5
V. Census Comparison	a. Is nearest occupied residence in same location as last census?	No	Yes	Yes	Yes
	b. Is nearest milk animal in same location as last census?	N/A	N/A	N/A	N/A
	c. Is nearest broadleaf garden in same location as last census?	Yes	No	Yes	Yes

* Change from last census, see attached table of Land Use Census Changes

**Table 2.1
Land Use Census Results**

Parameter		Sector J	Sector K *	Sector L*	Sector M
I. Nearest Occupied Residence	a. Distance (mile)	3.16	2.23	0.89	None
	b. Number of Occupants	2	1	2	
	c. Degrees from true north	174.3	196.9	219.7	
II. Nearest Unoccupied Residence (closer than occupied residence)	a. Distance (mile)	None	None	None	None
III. Nearest Milk Animal	a. Distance	None	None	None	None
IV. Nearest Broadleaf Garden	a. Distance (mile)	3.16	2.23	0.89	None
	b. Garden size (ft ²)	≈ 500	≈ 2500	≈ 300	
	c. Degrees from true north	174.3	196.9	219.7	
V. Census Comparison	a. Is nearest occupied residence in same location as last census?	Yes	Yes	Yes	N/A
	b. Is nearest milk animal in same location as last census?	N/A	N/A	N/A	N/A
	c. Is nearest broadleaf garden in same location as last census?	Yes	Yes	Yes	N/A

* Change from last census, see attached table of Land Use Census Changes

**Table 2.1
Land Use Census Results**

Parameter		Sector N	Sector P	Sector Q	Sector R
I. Nearest Occupied Residence	a. Distance (mile)	None	None	None	1.11
	b. Number of Occupants				2
	c. Degrees from true north				346.1
II. Nearest Unoccupied Residence (closer than occupied residence)	a. Distance (mile)	1.61	4.83	3.5	None
III. Nearest Milk Animal	a. Distance	None	None	None	None
IV. Nearest Broadleaf Garden	a. Distance (mile)	None	None	None	1.46
	b. Garden size (ft ²)				≈ 4000
	c. Degrees from true north				342.9
V. Census Comparison	a. Is nearest occupied residence in same location as last census?	N/A	N/A	N/A	Yes
	b. Is nearest milk animal in same location as last census?	N/A	N/A	N/A	N/A
	c. Is nearest broadleaf garden in same location as last census?	N/A	N/A	N/A	Yes

* Change from last census, see attached table of Land Use Census Changes

Land Use Census Changes

SECTOR	PARAMETER	Reason for Change
A	Nearest Occupied Residence	Name Change
A	Nearest Garden	New nearest garden
E	Nearest Occupied Residence	Moved out from 0.83 miles to 0.89 miles
E	Unoccupied Residence	House unoccupied
E	Garden Size	More accurate size, now two ≈ 500 ft ² gardens
F	Nearest Garden	New nearest garden
K	Garden Size	More accurate size
L	Garden Size	More accurate size

2.9 Interlaboratory Comparison Results

River Bend Station (RBS) Environmental Laboratory analyzed interlaboratory comparison samples to fulfill the requirements of the ODCM Specifications 6.12.1. Attachment 1, Radiological Environmental Monitoring Report, contains these results in Table 9.1. GGNS' review of RBS' interlaboratory comparison indicated that 98% of results were within control limits for accuracy, and 100% of results were within control limits for precision.

3.0 Radiological Environmental Monitoring Program Summary

3.1 Program Results Summary

Table 3.1 summarizes the REMP results. GGNS personnel did not use values reported as less than the lower limit of detection (<LLD) when determining ranges and means for indicator and control locations.

TABLE 3.1

Radiological Environmental Monitoring Program SummaryName of Facility: **Grand Gulf Nuclear Station** Docket No: **50-416**Location of Facility: **Claiborne County, Mississippi** Reporting Period: **January - December 2007**

Sample Type (Units)	Type & Number of Analyses ^a	LLD ^b	Indicator Locations Mean (F) ^c [Range]	Location with Highest Annual Mean		Control Locations Mean (F) ^c [Range]	Number of Nonroutine Results ^e
				Location ^d	Mean (F) ^c [Range]		
Air Particulates (pCi/m ³)	GB 156	0.01	0.027 (104 / 104) [0.011 - 0.061]	AS-1 PG (Sector G, 5.5 mi)	0.028 (52 / 52) [0.014 - 0.061]	0.026 (52 / 52) [0.010 - 0.046]	0
	GS 12						
	Cs-134 Cs-137	0.05 0.06	<LLD <LLD	N/A N/A	N/A N/A	<LLD <LLD	0 0
Airborne Iodine (pCi/m ³)	I-131 156	0.07	<LLD	N/A	N/A	<LLD	0
Inner Ring TLDs (mR/Qtr)	Gamma 59	(f)	10.7 (59 / 59) [6.9-16.3]	M-99 (Sector K, 0.4 mi.)	15.3 (4 / 4) [14.6-16.3]	N/A	0
Outer Ring TLDs (mR/Qtr)	Gamma 28	(f)	10.5 (28 / 28) [7.4 - 12.8]	M-57 (Sector F, 4.5 mi.)	12.2 (4 / 4) [11.8-12.8]	N/A	0
Special Interest TLDs (mR/Qtr)	Gamma 28	(f)	9.8 (28 / 28) [7.7 - 13.3]	M-01 (Sector E, 3.5 mi.)	12.2 (4 / 4) [11.4-13.3]	N/A	0
Control TLDs (mR/Qtr)	Gamma 4	(f)	N/A	N/A	N/A	11.6 (4 / 4) [11.0-12.8]	0

TABLE 3.1

Radiological Environmental Monitoring Program Summary

Name of Facility: Grand Gulf Nuclear Station Docket No: 50-416
 Location of Facility: Claiborne County, Mississippi Reporting Period: January - December 2007

Sample Type (Units)	Type & Number of Analyses ^a	LLD ^b	Indicator Location Mean (F) ^c [Range]	Location with Highest Annual Mean		Control Locations Mean (F) ^c [Range]	Number of Nonroutine Results ^e
				Location ^d	Mean (F) ^c [Range]		
Surface Water (pCi/l)	H-3 24	3000	1027 (4 / 19) [606 - 2115]	Outfall 007 (Sector N, Radius 0.2 mi.)	1027 (4 / 12) [606 - 2115]	<LLD	0
	GS 12						
	I-131	15	<LLD	N/A	N/A	<LLD	0
	Mn-54	15	<LLD	N/A	N/A	<LLD	0
	Fe-59	30	<LLD	N/A	N/A	<LLD	0
	Co-58	15	<LLD	N/A	N/A	<LLD	0
	Co-60	15	<LLD	N/A	N/A	<LLD	0
	Zn-65	30	<LLD	N/A	N/A	<LLD	0
	Zr-95	30	<LLD	N/A	N/A	<LLD	0
	Nb-95	15	<LLD	N/A	N/A	<LLD	0
	Cs-134	15	<LLD	N/A	N/A	<LLD	0
	Cs-137	18	<LLD	N/A	N/A	<LLD	0
	Ba-140	60	<LLD	N/A	N/A	<LLD	0
	La-140	15	<LLD	N/A	N/A	<LLD	0

TABLE 3.1

Radiological Environmental Monitoring Program SummaryName of Facility: Grand Gulf Nuclear Station Docket No: 50-416Location of Facility: Claiborne County, Mississippi Reporting Period: January - December 2007

Sample Type (Units)	Type & Number of Analyses ^a	LLD ^b	Indicator Locations Mean (F) ^c [Range]	Location with Highest Annual Mean		Control Locations Mean (F) ^c [Range]	Number of Nonroutine Results ^e
				Location ^d	Mean (F) ^c [Range]		
Groundwater (pCi/l)	H-3 2	2000	<LLD	N/A	N/A	<LLD	0
	I-131 2	1	<LLD	N/A	N/A	<LLD	0
	GS 4						
	Mn-54	15	<LLD	N/A	N/A	<LLD	0
	Fe-59	30	<LLD	N/A	N/A	<LLD	0
	Co-58	15	<LLD	N/A	N/A	<LLD	0
	Co-60	15	<LLD	N/A	N/A	<LLD	0
	Zn-65	30	<LLD	N/A	N/A	<LLD	0
	Zr-95	30	<LLD	N/A	N/A	<LLD	0
	Nb-95	15	<LLD	N/A	N/A	<LLD	0
	Cs-134	15	<LLD	N/A	N/A	<LLD	0
	Cs-137	18	<LLD	N/A	N/A	<LLD	0
	Ba-140	60	<LLD	N/A	N/A	<LLD	0
La-140	15	<LLD	<LLD	N/A	N/A	<LLD	0
Sediment (pCi/kg)	GS 4						
	Cs-134	150	<LLD	N/A	N/A	<LLD	0
	Cs-137	180	<LLD	N/A	N/A	<LLD	0

TABLE 3.1

Radiological Environmental Monitoring Program SummaryName of Facility: Grand Gulf Nuclear Station Docket No: 50-416Location of Facility: Claiborne County, Mississippi Reporting Period: January - December 2007

Sample Type (Units)	Type & Number of Analyses ^a	LLD ^b	Indicator Location Mean (F) ^c [Range]	Location with Highest Annual Mean		Control Locations Mean (F) ^c [Range]	Number of Nonroutine Results ^e
				Location ^d	Mean (F) ^c [Range]		
Fish (pCi/kg)	GS 2						
	Mn-54	130	<LLD	N/A	N/A	<LLD	0
	Fe-59	260	<LLD	N/A	N/A	<LLD	0
	Co-58	130	<LLD	N/A	N/A	<LLD	0
	Co-60	130	<LLD	N/A	N/A	<LLD	0
	Zn-65	260	<LLD	N/A	N/A	<LLD	0
	Cs-134	130	<LLD	N/A	N/A	<LLD	0
Cs-137	150	<LLD	<LLD	N/A	N/A	<LLD	0
Food Products (pCi/kg)	I-131 10	60	<LLD	N/A	N/A	<LLD	0
	GS 10						
	Cs-134	60	<LLD	N/A	N/A	<LLD	0
	Cs-137	80	<LLD	N/A	N/A	<LLD	0
Vegetation (Special) pCi/Kg	I-131 2	60	<LLD	N/A	N/A	<LLD	0
	GS 2						
	Cs-134	60	<LLD	N/A	N/A	<LLD	0
	Cs-137	80	<LLD	N/A	N/A	<LLD	0

TABLE 3.1

Radiological Environmental Monitoring Program Summary

Name of Facility: Grand Gulf Nuclear Station Docket No: 50-416

Location of Facility: Claiborne County, Mississippi

Reporting Period: January - December 2007

Sample Type (Units)	Type & Number of Analyses ^a	LLD ^b	Indicator Location Mean (F) ^c [Range]	Location with Highest Annual Mean		Control Locations Mean (F) ^c [Range]	Number of Nonroutine Results ^e
				Location ^d	Mean (F) ^c [Range]		
Surface Water (Special) (pCi/l)	GS 4						
	I-131	15	<LLD	N/A	N/A	<LLD	0
	Mn-54	15	<LLD	N/A	N/A	<LLD	0
	Fe-59	30	<LLD	N/A	N/A	<LLD	0
	Co-58	15	<LLD	N/A	N/A	<LLD	0
	Co-60	15	<LLD	N/A	N/A	<LLD	0
	Zn-65	30	<LLD	N/A	N/A	<LLD	0
	Zr-95	30	<LLD	N/A	N/A	<LLD	0
	Nb-95	15	<LLD	N/A	N/A	<LLD	0
	Cs-134	15	<LLD	N/A	N/A	<LLD	0
	Cs-137	18	<LLD	N/A	N/A	<LLD	0
	Ba-140	60	<LLD	N/A	N/A	<LLD	0
	La-140	15	<LLD	N/A	N/A	<LLD	0

^a GB = Gross beta; I-131 = Iodine-131; H-3 = Tritium; GS = Gamma scan.

^b LLD = Required lower limit of detection based on GGNS ODCM Table 6.12.1-3.

^c Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis (F).

^d Where applicable, locations are specified by name, distance from reactor site and meteorological sector.

^e Non-routine results are those which exceed ten times the control station value. If no control station value is available, the result is considered non-routine if it exceeds ten times the preoperational value for the location.

^f LLD is not defined in GGNS ODCM Table 6.12.1-3.

Attachment 1

Radiological Monitoring Report

Summary of Monitoring Results

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Table 1.1

Sample Type: Air Particulate Filter and Radioiodine Cartridge

Analysis: Gross Beta and I-131

Units: pCi/m³

AIR SAMPLE AS-1 PG - GGNS Nearest Community

LLD (pCi/m ³)	AS-1 PG			0.07	0.01	
LAB ID	START DATE	END DATE		I-131	GROSS BETA	
20070005	12/27/2006	1/2/2007		< 0.018	0.026	+/- 0.0012
20070034	1/2/2007	1/9/2007		< 0.020	0.028	+/- 0.0011
20070065	1/9/2007	1/16/2007		< 0.022	0.014	+/- 0.0008
20070042	1/16/2007	1/23/2007		< 0.016	0.028	+/- 0.0011
20070120	1/23/2007	1/30/2007		< 0.018	0.036	+/- 0.0012
20070136	1/30/2007	2/5/2007		< 0.024	0.031	+/- 0.0012
20070167	2/5/2007	2/13/2007		< 0.017	0.034	+/- 0.0011
20070174	2/13/2007	2/20/2007		< 0.018	0.025	+/- 0.0011
20070201	2/20/2007	2/27/2007		< 0.019	0.022	+/- 0.0010
20070218	2/27/2007	3/6/2007		< 0.021	0.025	+/- 0.0011
20070246	3/6/2007	3/13/2007		< 0.019	0.030	+/- 0.0011
20070267	3/13/2007	3/20/2007		< 0.019	0.020	+/- 0.0010
20070294	3/20/2007	3/27/2007		< 0.019	0.023	+/- 0.0010
20070308	3/27/2007	4/3/2007		< 0.015	0.024	+/- 0.0010
20070371	4/3/2007	4/10/2007		< 0.018	0.026	+/- 0.0010
20070392	4/10/2007	4/17/2007		< 0.066	0.055	+/- 0.0066
20070426	4/17/2007	4/24/2007		< 0.017	0.026	+/- 0.0010
20070453	4/24/2007	5/1/2007		< 0.025	0.024	+/- 0.0010

LLD (pCi/m ³)	AS-1 PG			0.07	0.01	
LAB ID		START DATE	END DATE	I-131	GROSS BETA	
20070468		5/1/2007	5/8/2007	< 0.029	0.023	+/- 0.0010
20070481		5/8/2007	5/15/2007	< 0.020	0.032	+/- 0.0011
20070526		5/15/2007	5/22/2007	< 0.028	0.028	+/- 0.0010
20070535		5/22/2007	5/29/2007	< 0.021	0.028	+/- 0.0012
20070568		5/29/2007	6/5/2007	< 0.015	0.026	+/- 0.0010
20070598		6/5/2007	6/12/2007	< 0.020	0.027	+/- 0.0011
20070659		6/12/2007	6/19/2007	< 0.018	0.031	+/- 0.0011
20070679		6/19/2007	6/26/2007	< 0.019	0.026	+/- 0.0011
20070699		6/26/2007	7/3/2007	< 0.018	0.021	+/- 0.0009
20070729		7/3/2007	7/10/2007	< 0.020	0.014	+/- 0.0008
20070756		7/10/2007	7/17/2007	< 0.018	0.017	+/- 0.0009
20070770		7/17/2007	7/23/2007	< 0.018	0.014	+/- 0.0011
20070804		7/23/2007	7/31/2007	< 0.015	0.018	+/- 0.0008
20070842		7/31/2007	8/7/2007	< 0.016	0.026	+/- 0.0010
20070861		8/7/2007	8/14/2007	< 0.021	0.036	+/- 0.0012
20070892		8/14/2007	8/21/2007	< 0.024	0.030	+/- 0.0011
20070909		8/21/2007	8/28/2007	< 0.025	0.021	+/- 0.0010
20070914		8/28/2007	9/4/2007	< 0.015	0.026	+/- 0.0010
20070941		9/4/2007	9/11/2007	< 0.019	0.030	+/- 0.0011
20070969		9/11/2007	9/18/2007	< 0.069	0.061	+/- 0.0041

LLD (pCi/m ³)	AS-1 PG			0.07	0.01	
LAB ID		START DATE	END DATE	I-131	GROSS	BETA
20071010		9/18/2007	9/25/2007	< 0.016	0.032	+/- 0.0011
20071058		9/29/2007	10/2/2007	< 0.017	0.035	+/- 0.0011
20071091		10/2/2007	10/9/2007	< 0.019	0.018	+/- 0.0009
20071117		10/9/2007	10/16/2007	< 0.019	0.029	+/- 0.0010
20071148		10/16/2007	10/23/2007	< 0.021	0.020	+/- 0.0010
20071159		10/23/2007	10/30/2007	< 0.018	0.022	+/- 0.0010
20071204		10/30/2007	11/6/2007	< 0.021	0.051	+/- 0.0014
20071221		11/6/2007	11/13/2007	< 0.018	0.038	+/- 0.0012
20071248		11/13/2007	11/20/2007	< 0.017	0.032	+/- 0.0011
20071266		11/20/2007	11/27/2007	< 0.029	0.020	+/- 0.0010
20071291		11/27/2007	12/4/2007	< 0.019	0.047	+/- 0.0014
20071308		12/4/2007	12/11/2007	< 0.020	0.035	+/- 0.0012
20071341		12/11/2007	12/19/2007	< 0.017	0.024	+/- 0.0009
20071345		12/19/2007	12/26/2007	< 0.013	0.031	+/- 0.0011
Average:						0.028
Maximum						0.061
Minimum:						0.014

Table 1.1

Sample Type: Air Particulate Filter and Radioiodine Cartridge

Analysis: Gross Beta and I-131

Units: pCi/m³**AIR SAMPLE AS-3 61VA - GGNS - Control**

LLD (pCi/m ³)	AS-3			0.07	0.01	
LAB ID	START DATE	END DATE		I-131	GROSS BETA	
20070006	12/27/2006	1/2/2007		< 0.020	0.027	+/- 0.0012
20070035	1/2/2007	1/9/2007		< 0.015	0.027	+/- 0.0011
20070066	1/9/2007	1/16/2007		< 0.018	0.016	+/- 0.0009
20070043	1/16/2007	1/23/2007		< 0.014	0.030	+/- 0.0012
20070121	1/23/2007	1/30/2007		< 0.019	0.036	+/- 0.0012
20070137	1/30/2007	2/5/2007		< 0.022	0.035	+/- 0.0013
20070168	2/5/2007	2/13/2007		< 0.016	0.033	+/- 0.0011
20070175	2/13/2007	2/20/2007		< 0.018	0.029	+/- 0.0011
20070202	2/20/2007	2/27/2007		< 0.015	0.023	+/- 0.0010
20070219	2/27/2007	3/6/2007		< 0.016	0.024	+/- 0.0011
20070247	3/6/2007	3/13/2007		< 0.019	0.029	+/- 0.0011
20070268	3/13/2007	3/20/2007		< 0.017	0.019	+/- 0.0009
20070295	3/20/2007	3/27/2007		< 0.018	0.023	+/- 0.0010
20070309	3/27/2007	4/3/2007		< 0.014	0.023	+/- 0.0010
20070372	4/3/2007	4/10/2007		< 0.020	0.028	+/- 0.0011
20070393	4/10/2007	4/17/2007		< 0.019	0.022	+/- 0.0010
20070427	4/17/2007	4/24/2007		< 0.018	0.024	+/- 0.0010
20070454	4/24/2007	5/1/2007		< 0.025	0.024	+/- 0.0010

LLD (pCi/m ³)	AS-3			0.07	0.01
LAB ID		START DATE	END DATE	I-131	GROSS BETA
20070469		5/1/2007	5/8/2007	< 0.030	0.023 +/- 0.0010
20070482		5/8/2007	5/15/2007	< 0.015	0.026 +/- 0.0010
20070527		5/15/2007	5/22/2007	< 0.031	0.024 +/- 0.0010
20070536		5/22/2007	5/29/2007	< 0.020	0.025 +/- 0.0011
20070569		5/29/2007	6/5/2007	< 0.017	0.027 +/- 0.0010
20070599		6/5/2007	6/12/2007	< 0.020	0.027 +/- 0.0010
20070660		6/12/2007	6/19/2007	< 0.015	0.029 +/- 0.0011
20070680		6/19/2007	6/26/2007	< 0.014	0.023 +/- 0.0011
20070700		6/26/2007	7/3/2007	< 0.058	0.046 +/- 0.0026
20070730		7/3/2007	7/10/2007	< 0.022	0.015 +/- 0.0009
20070757		7/10/2007	7/17/2007	< 0.017	0.017 +/- 0.0009
20070771		7/17/2007	7/23/2007	< 0.019	0.012 +/- 0.0011
20070805		7/23/2007	7/31/2007	< 0.015	0.019 +/- 0.0008
20070843		7/31/2007	8/7/2007	< 0.016	0.030 +/- 0.0011
20070861		8/7/2007	8/14/2007	< 0.017	0.040 +/- 0.0012
20070893		8/14/2007	8/21/2007	< 0.022	0.028 +/- 0.0010
20070910		8/21/2007	8/28/2007	< 0.022	0.020 +/- 0.0009
20070915		8/28/2007	9/4/2007	< 0.019	0.023 +/- 0.0010
20070942		9/4/2007	9/11/2007	< 0.020	0.026 +/- 0.0010
20070970		9/11/2007	9/18/2007	< 0.016	0.028 +/- 0.0010

LLD (pCi/m ³)	AS-3			0.07	0.01
LAB ID		START DATE	END DATE	I-131	GROSS BETA
20071011		9/18/2007	9/25/2007	< 0.017	0.025 +/- 0.0010
20071059		9/29/2007	10/2/2007	< 0.018	0.034 +/- 0.0011
20071092		10/2/2007	10/9/2007	< 0.017	0.015 +/- 0.0008
20071118		10/9/2007	10/16/2007	< 0.019	0.025 +/- 0.0010
20071149		10/16/2007	10/23/2007	< 0.019	0.020 +/- 0.0010
20071160		10/23/2007	10/30/2007	< 0.070	0.010 +/- 0.0033
20071205		10/30/2007	11/6/2007	< 0.021	0.040 +/- 0.0012
20071222		11/6/2007	11/13/2007	< 0.020	0.033 +/- 0.0012
20071249		11/13/2007	11/20/2007	< 0.017	0.026 +/- 0.0010
20071267		11/20/2007	11/27/2007	< 0.025	0.019 +/- 0.0009
20071292		11/27/2007	12/4/2007	< 0.015	0.039 +/- 0.0013
20071309		12/4/2007	12/11/2007	< 0.018	0.031 +/- 0.0011
20071342		12/11/2007	12/19/2007	< 0.016	0.021 +/- 0.0009
20071346		12/19/2007	12/26/2007	< 0.015	0.027 +/- 0.0010
Average:					0.026
Maximum					0.046
Minimum:					0.010

Table 1.1

Sample Type: Air Particulate Filter and Radioiodine Cartridge

Analysis: Gross Beta and I-131

Units: pCi/m³

AIR SAMPLE AS-7 - GGNS - Indicator

LLD (pCi/m ³)	AS-7UH			0.07	0.01	
LAB ID	START DATE	END DATE		I-131	GROSS BETA	
20070007	12/27/2006	1/2/2007		< 0.015	0.026	+/- 0.0012
20070036	1/2/2007	1/9/2007		< 0.016	0.026	+/- 0.0010
20070067	1/9/2007	1/16/2007		< 0.016	0.014	+/- 0.0008
20070044	1/16/2007	1/23/2007		< 0.016	0.030	+/- 0.0012
20070122	1/23/2007	1/30/2007		< 0.020	0.036	+/- 0.0012
20070138	1/30/2007	2/5/2007		< 0.017	0.032	+/- 0.0012
20070169	2/5/2007	2/13/2007		< 0.016	0.034	+/- 0.0011
20070176	2/13/2007	2/20/2007		< 0.014	0.032	+/- 0.0012
20070203	2/20/2007	2/27/2007		< 0.017	0.021	+/- 0.0010
20070220	2/27/2007	3/6/2007		< 0.018	0.024	+/- 0.0011
20070248	3/6/2007	3/13/2007		< 0.019	0.034	+/- 0.0012
20070269	3/13/2007	3/20/2007		< 0.020	0.020	+/- 0.0010
20070296	3/20/2007	3/27/2007		< 0.017	0.023	+/- 0.0010
20070310	3/27/2007	4/3/2007		< 0.018	0.024	+/- 0.0010
20070373	4/3/2007	4/10/2007		< 0.018	0.027	+/- 0.0011
20070394	4/10/2007	4/17/2007		< 0.018	0.024	+/- 0.0010
20070428	4/17/2007	4/24/2007		< 0.019	0.026	+/- 0.0010
20070455	4/24/2007	5/1/2007		< 0.029	0.023	+/- 0.0010

LLD (pCi/m ³)	AS-7UH			0.07	0.01	
LAB ID		START DATE	END DATE	I-131	GROSS BETA	
20070470		5/1/2007	5/8/2007	< 0.029	0.024	+/- 0.0010
20070483		5/8/2007	5/15/2007	< 0.019	0.030	+/- 0.0011
20070528		5/15/2007	5/22/2007	< 0.031	0.025	+/- 0.0010
20070537		5/22/2007	5/29/2007	< 0.018	0.025	+/- 0.0011
20070570		5/29/2007	6/5/2007	< 0.019	0.023	+/- 0.0010
20070600		6/5/2007	6/12/2007	< 0.019	0.026	+/- 0.0010
20070661		6/12/2007	6/19/2007	< 0.019	0.032	+/- 0.0011
20070681		6/19/2007	6/26/2007	< 0.018	0.027	+/- 0.0011
20070701		6/26/2007	7/3/2007	< 0.020	0.021	+/- 0.0009
20070731		7/3/2007	7/10/2007	< 0.021	0.013	+/- 0.0008
20070758		7/10/2007	7/17/2007	< 0.021	0.016	+/- 0.0008
20070772		7/17/2007	7/23/2007	< 0.017	0.011	+/- 0.0010
20070806		7/23/2007	7/31/2007	< 0.016	0.018	+/- 0.0008
20070844		7/31/2007	8/7/2007	< 0.019	0.025	+/- 0.0010
20070863		8/7/2007	8/14/2007	< 0.017	0.036	+/- 0.0012
20070894		8/14/2007	8/21/2007	< 0.023	0.030	+/- 0.0011
20070911		8/21/2007	8/28/2007	< 0.026	0.020	+/- 0.0009
20070916		8/28/2007	9/4/2007	< 0.017	0.026	+/- 0.0010
20070943		9/4/2007	9/11/2007	< 0.018	0.027	+/- 0.0010
20070971		9/11/2007	9/18/2007	< 0.023	0.033	+/- 0.0011
20071012		9/18/2007	9/25/2007	< 0.018	0.028	+/- 0.0010

LLD (pCi/m ³)	AS-7UH			0.07	0.01
LAB ID		START DATE	END DATE	I-131	GROSS BETA
20071060		9/25/2007	10/2/2007	< 0.018	0.032 +/- 0.0011
20071093		10/2/2007	10/9/2007	< 0.017	0.018 +/- 0.0009
20071119		10/9/2007	10/16/2007	< 0.017	0.031 +/- 0.0011
20071150		10/16/2007	10/23/2007	< 0.017	0.019 +/- 0.0009
20071161		10/23/2007	10/30/2007	< 0.019	0.022 +/- 0.0010
20071206		10/30/2007	11/6/2007	< 0.016	0.048 +/- 0.0013
20071223		11/6/2007	11/13/2007	< 0.019	0.037 +/- 0.0012
20071250		11/13/2007	11/20/2007	< 0.014	0.029 +/- 0.0011
20071268		11/20/2007	11/27/2007	< 0.025	0.020 +/- 0.0010
20071293		11/27/2007	12/4/2007	< 0.013	0.044 +/- 0.0013
20071310		12/4/2007	12/11/2007	< 0.014	0.032 +/- 0.0011
20071343		12/11/2007	12/19/2007	< 0.014	0.024 +/- 0.0009
20071347		12/19/2007	12/26/2007	< 0.014	0.027 +/- 0.0010
Average:					0.026
Maximum					0.048
Minimum:					0.011

Table 1.2

Sample Type: Air Particulate Filter

Analysis: Gamma Isotopic

Units: pCi/m³

AIR PARTICULATE FILTER QUARTERLY COMPOSITES (GAMMA) - GGNS

LLD (pCi/m ³)			0.05	0.06
LAB ID	LOCATION	DATE	CS-134	CS-137
20070362	AS-1 PG	2/16/2007	< 0.006	< 0.005
20070363	AS-3 61VA	2/16/2007	< 0.004	< 0.005
20070364	AS-7 UH	2/16/2007	< 0.005	< 0.003
20070714	AS-1 PG	5/18/2007	< 0.007	< 0.004
20070724	AS-3 61VA	5/18/2007	< 0.006	< 0.006
20070725	AS-7 UH	5/18/2007	< 0.008	< 0.005
20071103	AS-1 PG	8/17/2007	< 0.005	< 0.004
20071104	AS-3 61VA	8/17/2007	< 0.005	< 0.004
20071105	AS-7 UH	8/17/2007	< 0.005	< 0.004
20071384	AS-1 PG	11/13/2007	< 0.006	< 0.004
20071385	AS-3 61VA	11/13/2007	< 0.005	< 0.006
20071386	AS-7 UH	11/13/2007	< 0.004	< 0.004

Table 2.1

Sample Type: Thermoluminescent Dosimeters

Analysis: Gamma Dose

Units: mrem/Qtr

Inner Ring - Within General Area of Site Boundary (ODCM Specifications)					
Station	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Annual Mean
M-16	10.5	11.6	10.8	11.4	11.1
M-17	10.6	11.1	11.1	**	10.9
M-19	9.0	10.0	11.1	11.0	10.3
M-21	14.5	15.1	14.3	15.6	14.9
M-22	9.1	8.6	10.6	10.6	9.7
M-23	8.5	7.8	8.1	9.1	8.4
M-25	7.0	8.5	9.3	9.5	8.6
M-28	10.9	10.7	11.5	11.5	11.2
M-94	10.3	11.4	10.6	10.6	10.7
S-2 [M-95]	8.1	8.3	8.8	8.3	8.4
S-2 [M-96]	7.6	8.0	7.5	8.4	7.9
S-4 [M-97]	7.2	7.3	6.9	7.6	7.2
S-5 [M-98]	12.9	13.3	13.4	13.3	13.2
S-6 [M-99] *	14.6	16.3	14.9	15.6	15.3
S-7 [M-100]	12.5	13.0	12.4	11.5	12.4

** replaced by M-100

* Location with highest annual mean.

Outer Ring – Approximately Three (3) to Five (5) Miles from the Site (ODCM Specifications)					
Station	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Annual Mean
M-36	8.8	9.2	9.1	9.6	9.2
M-40	7.4	7.7	8.3	9.1	8.1
M-48	9.7	11.1	11.2	11.0	10.7
M-49	10.0	11.0	12.0	12.1	11.3
M-50	9.4	10.5	10.6	11.8	10.6
M-55	11.9	10.3	11.4	11.2	11.2
M-57*	12.2	12.8	11.8	12.1	12.2

* Location with highest annual mean.

Table 2.2

Sample Type: **Thermoluminescent Dosimeters**

Analysis: Gamma Dose

Units: mrem/Qtr

Special Interest Areas – Population Centers & Schools (ODCM Specifications)					
Station	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Annual Mean
M-01*	11.4	13.3	12.1	12	12.2
M-07	9.9	9.7	10.5	9.9	10.0
M-09	10.0	9.9	10.2	10.4	10.1
M-10	8.1	8.7	9.6	8.9	8.8
M-33	7.7	8.8	9.0	8.4	8.5
M-38	9.1	10.3	10.1	10.2	9.9
M-39	8.7	9.8	9.5	9.5	9.3

* Location with highest annual mean.

Table 2.3

Sample Type: **Thermoluminescent Dosimeters**

Analysis: Gamma Dose

Units: mrem/Qtr

Special Interest Areas – Control (ODCM Specifications)					
Station	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Annual Mean
M-14	11.0	11.3	12.8	11.5	11.6

Table 3.1

Sample Type: **Surface Water**

Analysis: Gamma Isotopic

Units: pCi/l

SURFACE WATER SAMPLES (GAMMA) - GGNS

LLD (pCi/l)			15	15	30	15	30	15	30	15	15	18	60	15
LAB ID	LOCATION	DATE	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
20070038	MR DOWN	1/9/2007	< 10.91	< 8.68	< 20.56	< 10.80	< 23.92	< 14.83	< 20.00	< 11.96	< 12.32	< 10.39	< 43.00	< 11.17
20070039	MRUP	1/9/2007	< 9.54	< 7.03	< 12.79	< 8.03	< 24.00	< 11.27	< 19.94	< 14.60	< 12.04	< 7.57	< 47.60	< 14.24
20070040	MRDOWN GG	1/9/2007	< 11.38	< 9.68	< 23.15	< 5.87	< 17.06	< 12.70	< 19.06	< 12.09	< 10.28	< 12.20	< 30.91	< 12.30
20070041	MRUPGG	1/9/2007	< 7.42	< 6.17	< 13.43	< 6.79	< 11.14	< 8.61	< 13.05	< 8.03	< 6.24	< 7.28	< 23.21	< 10.93
20070312	MR DOWN	4/3/2007	< 13.63	< 11.79	< 21.50	< 7.75	< 21.09	< 13.14	< 20.26	< 12.94	< 9.88	< 6.39	< 39.42	< 14.07
20070313	MRUP	4/3/2007	< 8.08	< 8.71	< 18.17	< 9.59	< 20.41	< 10.68	< 14.37	< 10.05	< 10.77	< 9.11	< 44.82	< 10.01
20070773	MR DOWN	7/24/2007	< 7.35	< 10.47	< 18.07	< 9.05	< 26.12	< 11.31	< 17.79	< 14.80	< 12.40	< 10.93	< 34.05	< 10.56
20070774	MRUP	7/24/2007	< 6.37	< 10.63	< 24.30	< 7.47	< 28.02	< 11.86	< 12.87	< 13.90	< 8.61	< 11.29	< 36.17	< 14.72
20071107	MR DOWN	10/9/2007	< 7.06	< 6.37	< 11.14	< 6.22	< 17.07	< 8.01	< 13.50	< 9.01	< 7.17	< 9.67	< 30.38	< 14.60
20071108	MRUP	10/9/200	< 2.16	< 2.30	< 5.51	< 1.97	< 4.72	< 3.27	< 4.27	< 14.99	< 2.27	< 2.05	< 23.82	< 7.84
20071224	MR DOWN *	11/14/2007	< 9.53	< 8.30	< 24.38	< 12.63	< 12.97	< 11.21	< 19.31	< 14.64	< 12.87	< 14.27	< 41.72	< 14.08
20071226	MR DOWN GG *	11/14/2007	< 5.39	< 4.71	< 13.50	< 5.89	< 13.34	< 7.16	< 10.91	< 8.62	< 6.45	< 5.60	< 27.80	< 6.09

“GG” – indicates duplicate sample.

* Annual Sample collected during liquid discharge

Table 3.2

Sample Type: **Surface Water**

Analysis: Tritium

Units: pCi/l

SURFACE WATER SAMPLES (TRITIUM) - GGNS

LLD (pCi/l)	SURFACE WATER H-3		3000
LAB ID	LOCATION	DATE	TRITIUM
20070016	OUTFALL 007	1/3/2007	< 572
20070038	MR DOWN	1/9/2007	< 586
20070039	MRUP	1/9/2007	< 578
20070040	MRDOWN GG	1/9/2007	< 581
20070041	MRUPGG	1/9/2007	< 578
20070119	OUTFALL 007	2/1/2007	2,115 +/- 294
20070222	OUTFALL 007	3/6/2007	677 +/- 265
20070305	OUTFALL 007	4/1/2007	711 +/- 255
20070314	MR DOWN	4/3/2007	< 537
20070315	MRUP	4/3/2007	< 541
20070472	OUTFALL 007	5/9/2007	< 555
20070609	OUTFALL 007	6/11/2007	< 525
20070733	OUTFALL 007	7/10/2007	606 +/- 241
20070773	MR DOWN	7/24/2007	< 520
20070774	MRUP	7/24/2007	< 519
20070850	OUTFALL 007	8/8/2007	< 547
20070933	OUTFALL 007	9/7/2007	< 525
20071068	OUTFALL 007	10/3/2007	< 518
20071107	MR DOWN	10/9/2007	< 536
20071108	MRUP	10/9/2007	< 536
20071201	OUTFALL 007	11/6/2007	< 551
20071225	MR DOWN*	11/14/2007	< 546
20071227	MRDOWN GG*	11/14/2007	< 545
20071311	OUTFALL 007	12/6/2007	< 585

* Annual Sample collected during liquid discharge

"GG" – indicates duplicate sample.

Table 4.1

Sample Type: **Groundwater**

Analysis: Gamma Isotopic

Units: pCi/l

GROUND WATER SAMPLES (GAMMA) - GGNS

LLD (pCi/l)			15	15	30	15	30	15	30	15	18	60	15
LAB ID	LOCATION	DATE	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	CS-134	CS-137	BA-140	LA-140
20071354	PGWELL	12/26/2007	< 6.01	< 6.38	< 11.66	< 5.78	< 10.04	< 6.36	< 8.88	< 5.66	< 5.37	< 23.29	< 10.04
20071357	CONSTWELL	12/26/2007	< 5.64	< 6.89	< 10.36	< 4.33	< 11.63	< 6.02	< 11.91	< 7.39	< 5.61	< 19.86	< 9.10
20071360	PGWELL GG	12/26/2007	< 6.25	< 4.67	< 7.80	< 4.58	< 12.31	< 7.49	< 9.24	< 5.51	< 6.17	< 20.04	< 7.74
20071361	CONSTWELL GG	12/26/2007	< 5.98	< 4.75	< 14.66	< 7.29	< 15.22	< 9.29	< 11.09	< 7.05	< 7.96	< 25.48	< 12.85

“GG” – indicates duplicate sample.

Table 4.2

Sample Type: Groundwater

Analysis: Tritium

Units: pCi/l

GROUND WATER SAMPLES (TRITIUM) - GGNS

LLD (pCi/l)			2000
LAB ID	LOCATION	DATE	TRITIUM
20071356	PGWELL	12/26/2007	< 566.24
20071359	CONSTWELL	12/26/2007	< 591.86

Table 4.3

Sample Type: **Groundwater**

Analysis: Iodine

Units: pCi/l

GROUND WATER SAMPLES (Iodine-131) - GGNS

LLD(pCi/l)			1.0
LAB ID	LOCATION	DATE	I-131
20071355	PGWELL	12/26/2007	< 0.89
20071358	CONSTWELL	12/26/2007	< 0.75

Table 5.1

Sample Type: **Sediment**

Analysis: Gamma Isotopic

Units: pCi/kg

SEDIMENT SAMPLES (GAMMA) - GGNS

LLD (pCi/KG)			150	180
LAB ID	LOCATION	DATE	CS-134	CS-137
20071348	SEDHAM	12/26/2007	< 25.47	< 31.44
20071349	SEDCONT	12/26/2007	< 20.60	< 19.60
20071350	SEDHAM GG	12/26/2007	< 30.61	< 32.11
20071351	SEDCONT GG	12/26/2007	< 20.22	< 20.97

“GG” – indicates duplicate sample.

Table 6.1

Sample Type: **Fish**

Analysis: Gamma Isotopic

Units: pCi/kg

FISH SAMPLES (GAMMA) - GGNS

LLD (pCi/kg)			130	130	260	130	260	130	150
LAB ID	LOCATION	DATE	MN-54	CO-58	FE-59	CO-60	ZN-65	CS-134	CS-137
20070809	FISHUP	7/19/2007	< 16.11	< 13.03	< 34.61	< 17.62	< 39.35	< 12.30	< 15.34
20070810	FISHDOWN	7/19/2007	< 13.27	< 10.40	< 34.89	< 14.73	< 39.33	< 10.77	< 11.61

Table 7.1

Sample Type: **Food Products**

Analysis: Iodine-131 and Gamma Isotopic

Units: pCi/kg

VEGETATION SAMPLES (GAMMA) - GGNS

LLD (pCi/kg)			60	60	80
LAB ID	LOCATION	DATE	I-131	CS-134	CS-137
20070051	VEG-CONT	1/19/2007	< 50.31	< 26.78	< 30.44
20070052	VEG-J	1/19/2007	< 58.75	< 45.92	< 47.77
20070053	VEG-CONT GG	1/19/2007	< 42.29	< 38.11	< 36.99
20070054	VEG-J GG	1/19/2007	< 51.19	< 28.32	< 46.57
20070473	VEG-CONT	5/9/2007	< 59.46	< 28.29	< 42.33
20070474	VEG-J	5/9/2007	< 58.35	< 32.18	< 38.60
20070807	VEG-CONT	7/30/2007	< 58.54	< 37.76	< 28.98
20070808	VEG-J	7/30/2007	< 59.70	< 38.00	< 39.20
20071109	VEG-CONT	10/10/2007	< 48.20	< 48.27	< 44.38
20071110	VEG-J	10/10/2007	< 59.41	< 42.02	< 38.97

“GG” – indicates duplicate sample.

Table 8.1

Sample Type: **Special Samples**

Analysis: Gamma Isotopic

Units: pCi/kg

SPECIAL VEGETATION SAMPLES (GAMMA) – GGNS

LLD (pCi/kg)			60	60	80
LAB ID	LOCATION	DATE	I-131	CS-134	CS-137
20070973	SECTOR "F" VEG	9/18/2007	< 45.51	< 55.34	< 35.47
20070974	SECTOR "F" GG VEG	9/18/2007	< 44.34	< 59.07	< 60.31

“GG” – indicates duplicate sample.

SPECIAL SURFACE WATER SAMPLES (GAMMA) – GGNS

LLD (pCi/l)			15	15	30	15	30	15	30	15	15	18	60	15
LAB ID	LOCATION	DATE	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
20070012	OUTFALL 007	1/3/2007	< 8.00	< 7.69	< 14.31	< 8.02	< 19.04	< 10.95	< 13.45	< 8.53	< 8.94	< 8.00	< 31.38	< 11.59
20070319	OUTFALL 007	4/2/2007	< 6.65	< 6.46	< 10.17	< 4.15	< 22.85	< 11.62	< 12.21	< 12.44	< 9.82	< 12.31	< 40.82	< 11.93
20070737	OUTFALL 007	7/10/2007	< 11.27	< 12.66	< 17.88	< 7.57	< 15.62	< 9.17	< 21.38	< 14.23	< 11.79	< 10.92	< 45.73	< 11.94
20071072	OUTFALL 007	10/3/2007	< 6.79	< 5.82	< 12.99	< 4.69	< 9.36	< 6.40	< 13.26	< 8.34	< 6.97	< 7.36	< 30.23	< 11.50

Table 9.1

Sample Type: Interlaboratory Comparison

Analysis: Gross Beta, Tritium, Iodine-131 and Gamma Isotopic

ENVIRONMENTAL (CROSS-CHECK) PROGRAM PARTICIPATION RESULTS							
Sample Type (units)	Sample #	Date	Analysis	Known Value ^(a)	RBS Value	RBS N-DEV ^(b)	RBS N-RANGE ^(c)
I-131 Cartridge	E5390-125	6/14/2007	I-131	7.91E+01	7.97E+01	0.13	0.01
Gross Beta Water	E5389-125	6/14/2007	BETA	1.99E+02	2.25E+02	1.49	0.06
Gamma Water (pCi/liter)	E5388-125	6/14/2007	Cr-51	4.11E+02	4.20E+02	0.75	0.20
			Mn-54	1.33E+02	1.48E+02	3.89^(d)	0.04
			Co-58	1.59E+02	1.64E+02	1.01	0.06
			Fe-59	1.34E+02	1.45E+02	2.83	0.16
			Co-60	1.91E+02	1.95E+02	0.75	0.09
			Zn-65	2.68E+02	2.82E+02	0.87	0.13
			I-131	1.02E+02	1.02E+02	-0.02	0.16
			Cs-134	1.94E+02	1.93E+02	-0.11	0.24
			Cs-137	1.35E+02	1.40E+02	1.21	0.32
			Ce-141	1.60E+02	1.63E+02	0.57	0.38
Tritium Water	E5467-125	9/13/2007	H-3	1.20E+04	1.11E+04	-1.26	0.06
Gross Beta Filter	E5468-125	9/13/2007	BETA	3.23E+01	2.81E+01	-1.46	0.03
Gamma Filter (pCi/filter)	E5469-125	9/13/07	Cr-51	1.25E+02	1.22E+02	-0.09	0.03
			Mn-54	7.26E+01	7.82E+01	1.93	0.14
			Co-58	4.94E+01	4.87E+01	-0.23	0.19
			Fe-59	4.79E+01	5.17E+01	1.33	0.04
			Co-60	6.41E+01	6.48E+01	0.26	0.03
			Zn-65	8.76E+01	9.96E+01	2.38	0.09
			Cs-134	6.38E+01	6.12E+01	-0.89	0.08
			Cs-137	5.65E+01	5.85E+01	0.69	0.11
			Ce-141	9.14E+01	9.12E+01	-0.06	0.12
Gamma Soil (pCi/gram)	E5470-125	9/13/2007	Cr-51	3.91E-01	3.83E-01	-0.07	0.03
			Mn-54	2.27E-01	2.43E-01	0.24	0.01
			Co-58	1.54E-01	1.38E-01	-0.36	0.04
			Fe-59	1.49E-01	1.48E-01	-0.03	0.02
			Co-60	2.00E-01	1.94E-01	-0.11	0.01
			Zn-65	2.73E-01	3.00E-01	1.74	0.09
			Cs-134	1.99E-01	2.03E-01	0.07	0.02
			Cs-137	2.73E-01	2.99E-01	0.33	0.02
			Ce-141	2.85E-01	2.81E-01	-0.05	0.03

RIVER BEND STATION							
ENVIRONMENTAL (CROSS-CHECK) PROGRAM PARTICIPATION RESULTS							
Sample Type (units)	Sample #	Date	Analysis	Known Value ^(a)	RBS Value	RBS N-DEV ^(b)	RBS N-RANGE ^(c)
Gamma Milk (pCi/liter)	E5391-125	6/12/2007	Cr-51	5.12E+02	5.17E+02	0.12	0.06
			Mn-54	1.66E+02	1.82E+02	1.14	0.11
			Co-58	1.98E+02	2.02E+02	0.24	0.05
			Fe-59	1.67E+02	1.85E+02	1.23	0.09
			Co-60	2.38E+02	2.37E+02	-0.03	0.02
			Zn-65	3.34E+02	3.72E+02	1.98	0.07
			I-131	7.01E+01	7.03E+01	0.05	0.20
			Cs-134	2.42E+02	2.42E+02	0.02	0.07
			Cs-137	1.69E+02	1.70E+02	0.06	0.03
			Ce-141	2.00E+02	2.03E+02	0.16	0.05
			NOTES:				

(a) The known value as determined by Vendor.

(b) The normalized deviation from the "known" value is computed from the deviation and the standard error of the mean; ± 2.00 is the warning limit and ± 3.00 is the control limit. This is a measure of accuracy of the analytical methods.

(c) The normalized range is computed from the mean range, the control limit, and the standard error of the range; $+2.000$ is the warning limit and $+3.000$ is the control limit. This is a measure of precision of the analytical methods.

(d) Results reported were outside Control Limits.

Exceptions:

There was one result outside the control limits for accuracy in the 2007 Interlaboratory Comparison program participation studies. The normalized-deviation for nuclide Manganese-54 (Mn-54) in a gamma isotopic water analysis, Samplee number E5388-125 of 6/14/2007, was $+3.89$, which is outside the control limit of ± 3.00 for accuracy. This high bias result is considered conservative and is considered as having no impact on past results of the program. The results for (Mn-54) in all other program samples were within control limits for the year 2007; with normalized-deviations of 0.24 in sediment sample analysis; 1.93 in an air filter sample analysis; and 1.14 in a milk sample analysis. Reanalysis of the 2007 water sample produced results very similar to the original averaged result.

A review concerning the high bias was performed with no obvious issues associated with the counting of the water samples. The vendor was contacted concerning this result. Explanation from vendor was that the effect of coincidence summing in calibration sources containing Y-88 and Co-60 may cause a lower efficiency for energies in the same region as Mn-54. The lower efficiency will result in a higher concentration for Mn-54. This phenomenon can sometimes also be seen with energies associated with Fe-59 and Zn-65.

98% of interlaboratory crosscheck results were within control limits for accuracy and 100% were within control limits for precision.