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River Bend Station - Unit 1
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Ladies and Gentlemen:

Enclosed is the River Bend Station (RBS) Annual Radiological Environmental Operating Report for the period January 1, 2005, through December 31, 2005. This report is submitted in accordance with the RBS Technical Specifications, Section 5.6.2.

Should you have any questions regarding the enclosed information, please contact Mr. Bill Fountain at (225) 381-4625.

Sincerely,

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RIVER BEND STATION

ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT FOR 2005

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Summary

The Annual Radiological Environmental Operating Report presents data obtained through analyses of environmental samples collected for the River Bend Station (RBS) Radiological Environmental Monitoring Program (REMP) for the period January 1, 2005 through December 31, 2005. This report fulfills a requirement specified in RBS Technical Requirements Manual (TRM) 5.6.2 as required by Technical Specification 5.6.2 of Appendix A to RBS License Number NPF-47. During 2005, REMP results remained at background levels, as has been the case in previous years.

All required lower limit of detection (LLD) capabilities were achieved in all sample analyses during 2005. No measurable levels of radiation above baseline levels were detected in the vicinity of River Bend Station. The 2005 Radiological Environmental Monitoring Program thus substantiated the adequacy of source control and effluent monitoring at River Bend Station with no observed impact of plant operations on the environment.

Radiological Environmental Monitoring Program

RBS established the REMP prior to the station's becoming operational (1985) to provide data on background radiation and radioactivity normally present in the area. RBS has continued to monitor the environment by sampling air, water, sediment, fish and food products, as well as measuring direct radiation. RBS also samples milk if milk-producing animals used for human consumption are present within five miles (8 km) of the plant.

The REMP includes sampling indicator and control locations within an approximately 20-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. RBS personnel compare indicator results with control and preoperational results to assess any impact RBS operation might have had on the surrounding environment.

In 2005, environmental samples were collected for radiological analysis. The results of indicator locations were compared with control locations and previous studies. It was concluded that overall, no significant relationship exists between RBS operation and effect on the area around the plant. The review of 2005 data, in many cases, showed radioactivity levels in the environment were undetectable in many locations and near background levels in significant pathways.

Harmful Effects or Irreversible Damage

The REMP monitoring did not detect any harmful effects or evidence of irreversible damage in 2005. Therefore, no analysis or planned course of action to alleviate problems was necessary.

Reporting Levels

RBS's review indicates that no samples equaled or exceeded reporting levels for radioactivity concentration in environmental samples, as outlined in RBS Technical Requirements Manual Table 3.12.1-2, when averaged over any calendar quarter. Therefore, 2005 results did not result in any Radiological Monitoring Program Special Reports.

Radioactivity Not Attributable to RBS

The RBS REMP detected no radioactivity attributable to other sources during year 2005. Following the radioactive plume release due to reactor core degradation at the Chernobyl Nuclear Power Plant in 1986, RBS REMP detected I-131 in water, vegetation, and air samples. I-131 was also detected during 1998 in the wastewater treatment plant effluent. This was attributed to the medical treatment of a RBS employee.

Comparison to Federal and State Programs

RBS 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 (Thermoluninescent Dosimeter) Direct Radiation Monitoring Network and the Environmental Radiological Laboratory – Department of Environmental Quality Laboratory Services Division (ERL-DEQLSD).

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

The ERL-DEQLSD and the RBS REMP entail similar radiological environmental monitoring program requirements. These programs include co-located air sample locations, and splitting or sharing sample media such as water, fish and food products. Both programs have obtained similar results over previous years.

Sample Deviations

- **Milk**

  The REMP did not include milk sampling within five miles (8 km) of RBS in 2005 due to unavailability of milk-producing animals used for human consumption. RBS's Technical Requirements Manual requires collection of milk samples if available commercially

within 8 km (5 miles) of the plant. RBS personnel collected vegetation samples to monitor the ingestion pathway, as specified in RBS Technical Requirements Manual Table 3.12.1-1, because of milk unavailability.

- **Required Lower Limit of Detection (LLD) Values**

All LLDs during this reporting period were more conservative than the acceptable limits required by the RBS Technical Requirement Manual (TRM).

- **Sampling Deviations**

Listed below are sampling deviations that occurred during 2005. No LLD values were exceeded in the air sampling deviations. As described in footnote (a) to RBS Technical Requirements Manual Table 3.12.1-1, deviations are permitted from the required sampling schedule due to malfunction of equipment or other legitimate reasons.

Station	Sampling Period	Problem Description	Comment
RAS-2 Air Pump #1081 AP1	3/29/04 – 9/29/04 (last deployment)	Pump found out of specifications during calibration on 1/24/05	Air flow data (LPM) recorded every two weeks indicated satisfactory operation of air pump #1081 for entire deployment period.
AGC	2/14/05 – 2/28/05	Power outage	Loss of 0.8 hours (< 1% sample volume) due to local power outage of unknown origin.
AP1, AN1, AQS2	3/14/05 – 3/28/05	Power outages	AP1 and AN1 had loss of 0.3 hour and AQS2 had loss of 0.4 hour due to local power outages. Both less than 1% sample volume.
WU	Semi-annual groundwater sample due 6-9-05	Sample was not collected due to inoperative pump	Sample was collected 6/29/05 after temporary repair within plant schedule late date.
AN1, AP1	6/20/05 – 7/5/05	Power outages	AN1 loss of 210.7 hours (58% volume) due to lighting strike. AP1 loss of 4.6 hours (1.2%volume).
AQS2	7/18/05 – 8/1/05	Power outage	Loss of 30 minutes (<1% volume) due to weather related power outage.
AP1, AN1	8/1/05 – 8/15/05	Power outages	Loss of 1.2 and 1.3 hours (<1% volume) each due to transformer problems on site.
AP1, AN1, AGC	8/15/05 – 8/31/05	Power outages	Loss of 47.6 hours (12.3% volume), 47.9 hours (12.4% volume), and 6.2 hours (1.6%volume) due to Hurricane Katrina.
AP1, AN1	8/31/05 – 9/12/05	Power outages	Loss of 7.3 hours (2.5% volume) and 4.4 hours (1.5% volume) due to Hurricane Katrina.
AP1, AN1,AGC	9/12/05 – 9/26/05	Power outages	Loss of 0.2 hour (<1% volume) at AP1 and AN1; loss of 5.6 hours (1.6% volume) at AGC due to Hurricane Rita.

- **Missed Samples**

  A down-gradient ground water sample was not collected per plant schedule on 6/9/05, due to an inoperative well pump. The sample was finally collected on 6/29/05 after a temporary repair was completed. The actual collection date was within the plant surveillance late date.

- **Unavailable Results**

  No sample results during 2005 were unavailable.

Program Modifications

RBS made no modifications to the REMP during the year 2005.

Attachments

Attachment 1 contains results of air, TLD, water, sediment, fish, food products and special samples collected in 2005. TLDs were analyzed by Waterford-3 Dosimetry. All remaining samples were analyzed by RBS Environmental Laboratory. Attachment 1 also contains RBS' participation in the Interlaboratory Comparison Program during the year 2005.

1.0 Introduction

1.1 Radiological Environmental Monitoring Program

RBS 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 RBS.
- 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 the RBS Technical Requirements Manual 3.12.1. A description of the RBS REMP sample locations utilized to monitor exposure pathways are described in Table 1.1 and shown in Figures 1-2 and 1-3. RBS may occasionally 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 2005 sampling results with Section 3.0 providing a summary of results for the monitored exposure pathways.

1.3 Land Use Census

RBS personnel conduct a land use census biannually, as required by RBS Technical Requirements Manual 3.12.2. The last land use census was performed in 2004. The purpose of this census is to identify changes in uses of land within five miles of RBS that would require modifications to the REMP or the Technical Requirements Manual. The most important criteria during this census is to determine the location in each sector of the nearest:

1) Residence
2) Animal milked for human consumption
3) Garden of greater than 50 m^2 (500 ft^2) producing broadleaf vegetation *

The method used by RBS personnel for conducting this land use census is as follows:

- RBS personnel conduct door-to-door field surveys, and/or aerial surveys in each meteorological sector out to five miles in order to locate the nearest resident and milk animal.

- Consultation with County Agents from each parish area is used especially in verifying the presence of milk animals in the five mile radius of River Bend.

- As a result of these surveys, the following information is obtained in each meteorological sector:

  1) Nearest permanent residence
  2) Nearest milking animal

- RBS personnel identify locations on the map, measure distances to RBS and record results. Distance and direction from RBS reactor building is also determined by use of a GPS instrument.

- Locations, if any, are identified which yield a calculated dose or dose commitments greater than those currently calculated in the Technical Requirements Manual.

- RBS personnel compare results to previous census.

* RBS personnel do not perform a garden census since Technical Requirements Manual 3.12.2 allows the routine sampling of broadleaf vegetation in the highest D/Q sector near the site boundary in lieu of the garden census.

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	**Radioiodine and Particulates** 2 samples from close to the 2 SITE BOUNDARY locations, in different sectors, of the highest calculated annual average ground level D/Q.	**AN1 (0.9 km W)** - RBS site Hwy 965; 0.4 km south of Activity Center. **AP1 (0.9 km WNW)** – Behind River Bend Station Activity Center.	Continuous sampler operation with sample collection every two weeks, or more frequently if required by dust loading.	Radioiodine Cannisters – I-131 analysis every two weeks. Air Particulate – Gross beta radioactivity analysis following filter change.
	Radioiodine and Particulates 1 sample from the vicinity of a community having the highest calculated annual average groundlevel D/Q.	**AQS2 (5.8 km NW)** - St. Francis Substation on US Hwy. (Bus.) 61 in St. Francisville.		
	Radioiodine and Particulates 1 sample from a control location, as for example 15 - 30 km distance and in the least prevalent wind direction.	**AGC (17.0 km SE)** – Entergy Service Center compound in Zachary. (Control)		
Direct Radiation	**TLDs** One ring of stations, one in each meteorological sector in the general area of the SITE BOUNDARY.	**TA1 (1.7 km N)** - River Bend Training Center. **TB1 (0.5 km NNE)** - Utility pole near River Bend Station cooling tower yard area. **TC1 (1.7 km NE)** - Stub pole at Jct. US Hwy. 61 and Old Highway 61.	Quarterly	mR exposure quarterly.

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	**TLDs** One ring of stations, one in each meteorological sector in the general area of the SITE BOUNDARY.	**TD1 (1.6 km ENE)** – Stub pole along WF7, 150m S of Jct. WF7 and US Hwy. 61. **TE1 (1.3 km E)** – Stub pole along WF7, 1 km S of Jct. WF7 and US Hwy. 61. **TF1 (1.3 km ESE)** – Stub pole along WF7, 1.6 km S of Jct. WF7 and US Hwy. 61. **TG1 (1.6 km SE)** – Stub pole along WF7, 2 km S of Jct. WF7 and US Hwy. 61. **TH1 (1.7 km SSE)** – Stub pole at power line crossing of WF7 (near Grants Bayou). **TJ1 (1.5 km S)** – Stub pole near River Bend Station Gate #23 on Powell Station Road (LA Hwy. 965). **TK1 (0.9 km SSW)** – Utility pole on Powell Station Road (LA Hwy. 965), 20 m S of River Bend Station River Access Road. **TL1 (1.0 km SW)** – First utility pole on Powell Station Road (LA Hwy. 965) S of former Illinois Central Gulf RR crossing.	Quarterly	mR exposure quarterly.

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	**TLDs** One ring of stations, one in each meteorological sector in the general area of the SITE BOUNDARY.	**TM1 (0.9 km WSW)** - Third utility pole on Powell Station Road (LA Hwy. 965) N of former Illinois Central Gulf RR crossing. **TN1 (0.9 km W)** – Utility pole along Powell Station Road (LA Hwy. 965), near garden and AN1 air sampler location. **TP1 (0.9 km WNW)** - Behind River Bend Station Activity Center at AP1 air sampler location. **TQ1 (0.6 km NW)** – Across from MA-1 on RBS North Access Road. **TR1 (0.8 km NNW)** – River Bend Station North Access Road across from Main Plant entrance.	Quarterly	mR exposure quarterly.
	TLDs The balance of the stations (8) to be placed in special interest areas such as population centers, nearby residences, schools, and in 1 or 2 areas to serve as control locations.	**TAC (15.8 km N)** – Utility pole at Jct. of US Hwy. 61 and LA Hwy. 421, 7.9 km north of Bains. (Control) **TCS (12.3 km NE)** – Utility pole at gate to East Louisiana State Hospital in Jackson. (Special) **TEC (16.0 km E)** – Stub pole at jct. of Hwy. 955 and Greenbrier Road, 4.8 km North of Jct. of Hwys 955 and 964. (Control)		

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	**TLDs** The balance of the stations (8) to be placed in special interest areas such as population centers, nearby residences, schools, and in 1 or 2 areas to serve as control locations.	**TGS (17.0 km SE)** – Entergy Service Center compound in Zachary. (Special) **TNS (6.0 km W)** – Utility pole with electrical meter at west bank ferry landing (LA Hwy. 10). (Special) **TQS1 (4.0 km NW)** – Utility pole front of Pentecostal church (opposite West Feliciana Parish Hospital) near Jct. US Hwy. 61 and Commerce Street. (Special) **TQS2 (5.8 km NW)** – St. Francis Substation on business US Hwy. 61 in St. Francisville. (Special) **TRS (9.2 km NNW)** - Stub pole at Jct. of US Hwy. 61 and WF2 near Bains (West Feliciana High School). (Special)	Quarterly	mR exposure quarterly.
Waterborne	**Surface Water** 1 sample upstream and 1 sample downstream.	**SWU (5.0 km W)** - Mississippi River about 4 km upstream from the plant liquid discharge outfall, near LA Hwy. 10 ferry crossing. **SWD (7.75 km S)** - Mississippi River about 4 km downstream from plant liquid discharge outfall, near paper mill.	Grab samples quarterly	Gamma isotopic analysis ,and tritium analysis quarterly.

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	**Groundwater** Samples from 1 or 2 sources only if likely to be affected.	**WU (~470 m NNE)** - Upland Terrace Aquifer well upgradient from plant. **WD (~470 m SW)** – Upland Terrace Aquifer well downgradient from plant.	Semiannually	Gamma isotopic and tritium analysis semiannually.
	Sediment From Shoreline 1 sample from downstream area with existing or potential recreational value.	**SEDD (7.75 km S)** – Mississippi River about 4 km downstream from plant liquid discharge outfall, near paper mill.	Annually	Gamma isotopic analysis annually.
Ingestion	**Milk** If commercially available, 1 sample from milking animals within 8 km distant where doses are calculated to be greater than 1 mrem per year. 1 sample from milking animals at a control location 15 – 30 km distant when an indicator location exists.	Currently, no available milking animals within 8 km of RBS.	Quarterly when animals are on pasture.	Gamma isotopic and I-131 analysis quarterly when animals are on pasture.
	Fish and Invertebrates 1 sample of a commercially and/or recreationally important species in vicinity of plant discharge area. 1 sample of similar species in area not influenced by plant discharge.	**FD (7.75 km S)** - One sample of a commercially and/or recreationally important species from downstream area influenced by plant discharge. **FU (4.0 km WSW)** - One sample of a commercially and/or recreationally important species from upstream area not influenced by plant discharge.	Annually	Gamma isotopic analysis on edible portions annually

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	**Food Products** 1 sample of one type of broadleaf vegetation grown near the SITE BOUNDARY location of highest predicted annual average ground level D/Q if milk sampling is not performed. 1 sample of similar broadleaf vegetation grown 15 – 30 km distant, if milk sampling is not performed.	**GN1 (0.9 km W)** – Sampling will be performed in accordance with Table 3.12.1-1 Section 4.a of the Technical Requirements Manual. **GQC (32.0 km NW)** - One sample of similar vegetables from LA State Penitentiary at Angola. (Control)	Quarterly during the growing season.	Gamma isotopic and I-131 analysis quarterly.

FIGURE 1-1
EXPOSURE PATHWAYS

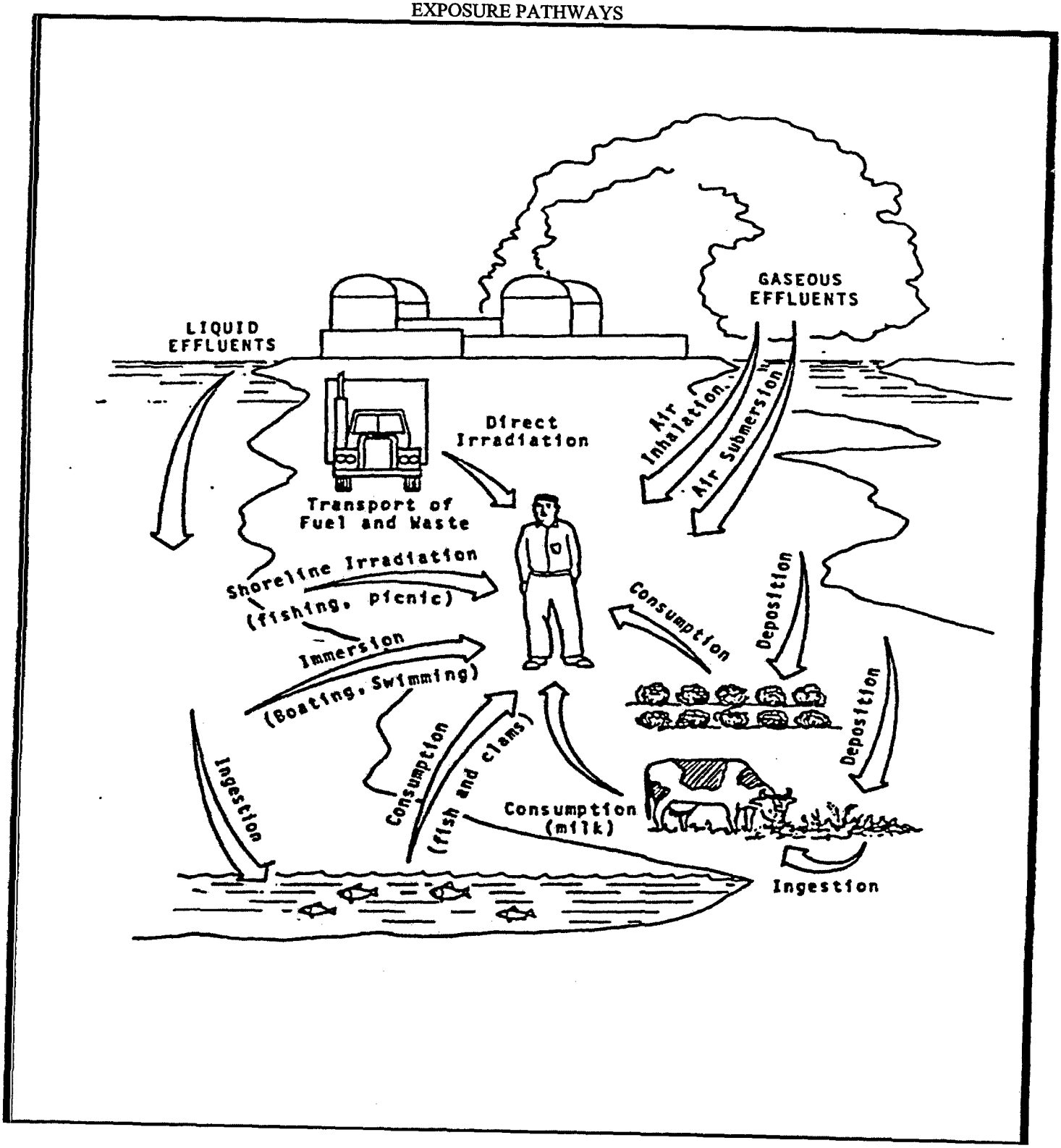


FIGURE 1-2
SAMPLE COLLECTION SITES – NEAR FIELD

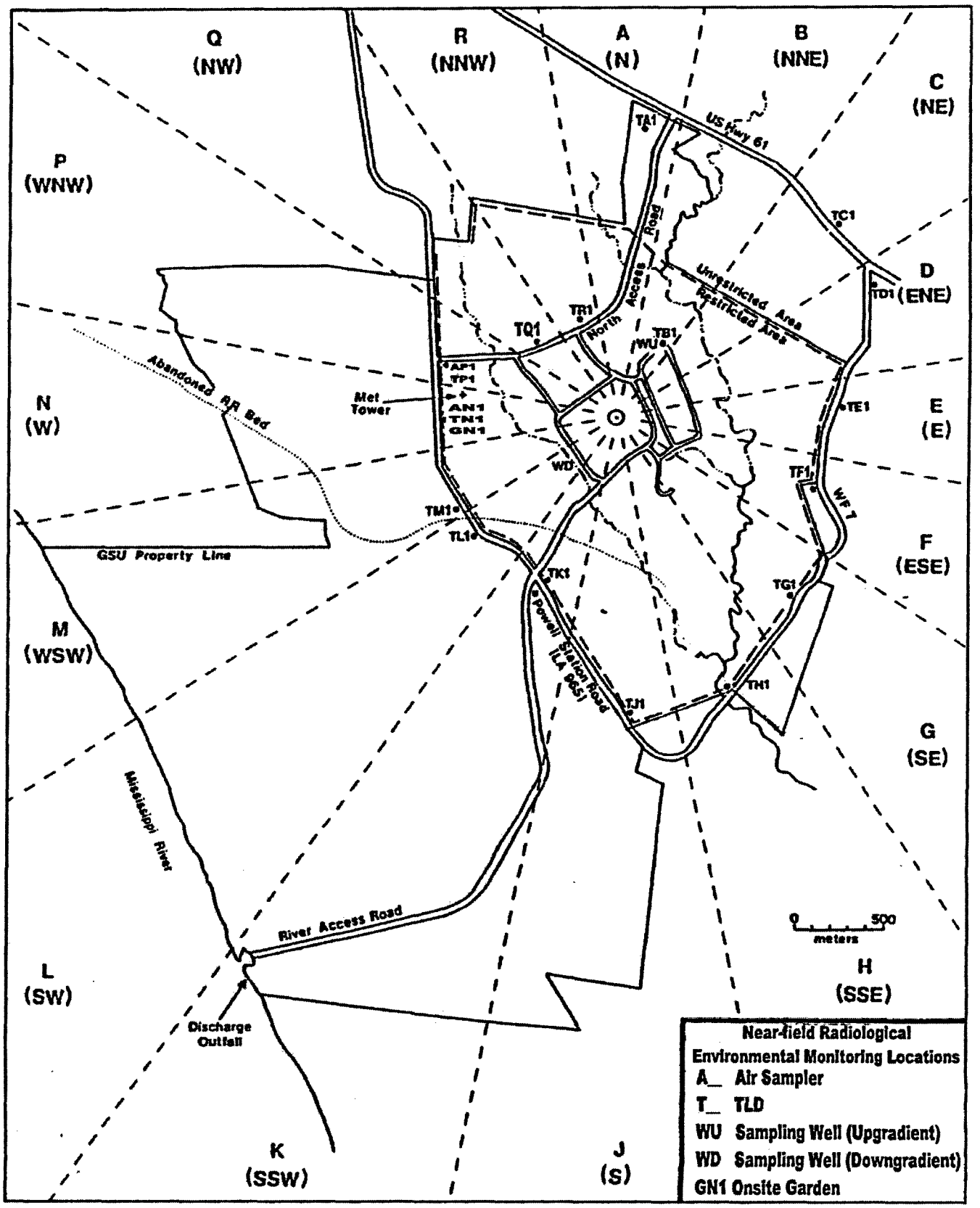
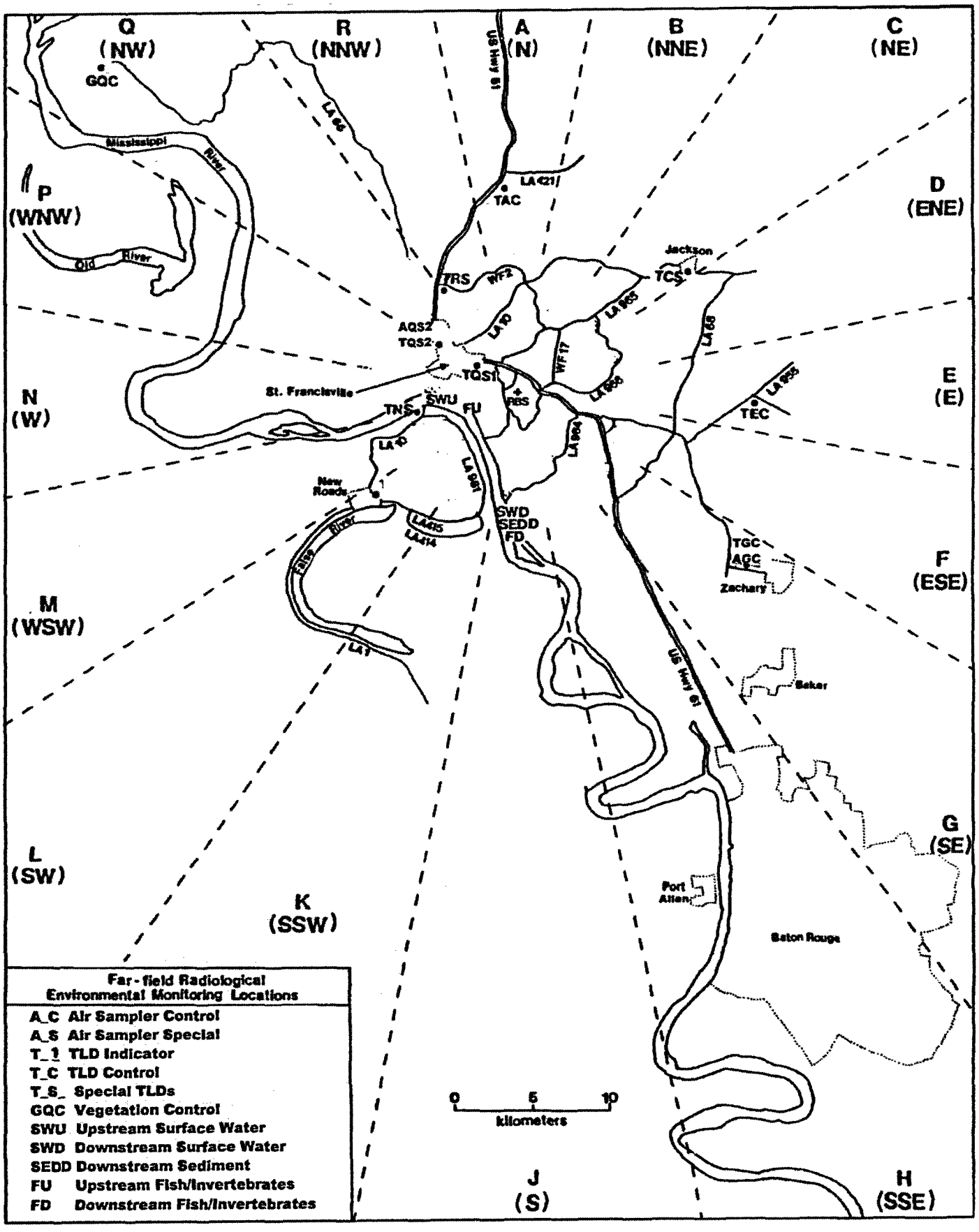


FIGURE 1-3
SAMPLE COLLECTION SITES-FAR FIELD



2.0 Interpretation and Trends of Results

2.1 Air Particulate and Radioiodine Sample Results

Iodine-131 was not detected in the radioiodine cartridges during 2005, as has been the case in previous years. Indicator gross beta air particulate results for 2005 were similar to preoperational and operational levels as seen below. Results are reported as annual average pCi/m^3 (picocuries per cubic meter).

Monitoring Period	Result
Preoperational	0.030
2005	0.022
2004	0.018
2003	0.021
2002	0.020
2001	0.021

Table 3.1 provides a comparison of the indicator and control location mean values, which further emphasizes that the airborne pathway continues to remain at background levels. Figure 2-2 also shows a comparison of indicator results from 2005 versus control location data from 1986 to 2004. Five indicator results for 2005 were out of the upper three-sigma limit. These results were due to the volume losses from power outages caused by hurricanes Katrina and Rita.

2.2 Thermoluminescent Dosimetry Sample Results

Gamma radiation exposure in the reporting period compares to previous years and remains below preoperational levels. Figure 2-1 compares quarterly indicator results for 2005 with control location data from 1986 to 2004. All indicator results are within the upper control three-sigma limit of the control data.

RBS normalizes measured exposure to 90 days and relies on comparison of the indicator locations to the control as a measure of plant impact. RBS's comparison of the inner ring and special interest area TLD results to the controls, as seen in Table 3.1, indicates that the ambient radiation levels are unaffected by plant operations. Therefore, levels continue to remain at or near background.

2.3 Water Sample Results

Analytical results for 2005 surface water and groundwater samples were similar to those reported in previous years.

Surface water samples were collected from two locations (indicator and control) and analyzed for gamma radionuclides and tritium. Gamma radionuclides were below detectable limits at the indicator and control locations. Tritium was also below detectable limits at all locations. Listed below is a comparison of 2005 results from the indicator location as compared to the preoperational and previous operational years. Results are reported as annual average pCi/l (picocuries per liter).

Radionuclide	2005	2001 – 2004	Preoperational
Gammas	<LLD	<LLD	<LLD
Tritium	<LLD	<LLD	<LLD

Groundwater samples were collected from two locations (indicator and control) and analyzed for gamma radionuclides and tritium. Gamma radionuclides and Tritium were below detectable limits at the indicator and control locations. Listed below is a comparison of 2005 results from the indicator location as compared to the preoperational and previous operational years. Results are reported as annual average pCi/l.

Radionuclide	2005	2001 – 2004	Preoperational
Gammas	<LLD	<LLD	<LLD
Tritium	<LLD	<LLD	<LLD

Based on these comparisons, the operation of RBS had no impact on this pathway during 2005, and levels of radionuclides monitored for this pathway continue to remain similar to those obtained in operational and preoperational years.

RBS personnel also collected special effluent wastewater samples from the wastewater treatment plant during 2005 to supplement the REMP. RBS did not detect any gamma radionuclides in these samples, which were analyzed to RBS TRM LLD requirements for water.

2.4 Sediment Sample Results

Sediment sample was collected from the indicator location in 2005 and analyzed for gamma radionuclides. Gamma radionuclides Cs-134 and Cs-137 were below detectable limits, which is consistent with the preoperational and operational monitoring periods. Therefore, based on these measurements, RBS operations had no significant radiological impact upon the environment or public by this pathway.

RBS personnel also collected special sediment samples from East Creek and West Creek during 2005 to supplement the REMP. RBS did not detect any gamma

radionuclides in these samples, which were analyzed to RBS TRM LLD requirements for sediment.

2.5 Milk Sample Results

Milk samples were not collected during 2005 due to the unavailability of indicator locations within 5 miles (8 km) of RBS. Since there are no dairies within five miles of the RBS site, it is concluded RBS's operation had no impact on this pathway in 2005.

2.6 Fish and Invertebrate Sample Results

Fish samples were collected from two locations (indicator and control) and analyzed for gamma radionuclides. In 2005, gamma radionuclides were below detectable limits, which is consistent with the preoperational and operational monitoring periods. Therefore, based on these measurements, RBS operations had no significant radiological impact upon the environment or public by this pathway.

2.7 Food Product Sample Results

Food product samples were collected when available from two locations (indicator and control) in 2005 and analyzed for Iodine-131 and gamma radionuclides. The 2005 levels remained undetectable, which is consistent with previous operational years. Therefore, since levels continue to remain at background, it can be concluded that plant operations is not impacting this pathway.

2.8 Land Use Census Results

The current land use census was conducted during 2004 in accordance with RBS Technical Requirements Manual 3.12.2. Although there were some minor changes between the 2002 and 2004 census as seen in Table 2-1, the land use census did not identify any location(s) that yields a calculated dose or dose commitment greater than the values currently being calculated in requirement TSR 3.11.2.3.1. Most of these changes were due to the use of a GPS instrument in locating the resident's bearing and range from the reactor building, as compared to previous methods used in this process. In addition, no dairy animals were found within 8 km of RBS during the 2004 census.

RBS personnel did not perform a garden census since Technical Requirements Manual 3.12.2 allows the routine sampling of broadleaf vegetation in the highest D/Q sector near the site boundary in lieu of the garden census.

2.9 Interlaboratory Comparison Results

RBS' Environmental Laboratory analyzed interlaboratory comparison samples to fulfill the requirements of Technical Requirements Manual 3.12.3. Attachment 1, 2005 Radiological Environmental Monitoring Report, contains these results. RBS's review of interlaboratory comparison results indicated that 98% of the sample results for accuracy, and 100% of the sample results for precision were within the acceptable control limits.

Table 2-1
Land Use Census Results
2004

Item	Sector	Direction	Nearest Residence	Range (km)	Nearest Milk Animal	Range (km)
1	A	N	5498 Hwy. 61	1.8	-	-
2	B	NNE	5435 Hwy. 61	1.6	-	-
3	C	NE	4531 Old Hwy. 61[1]	1.4	-	-
4	D	ENE	12657 Powell Station Road	1.4	-	-
5	E	E	4585 Hwy. 61[2]	2.6	-	-
6	F	ESE	12010 Fairview Way, Star Hill Trace Subdivision[3]	2.7	-	-
7	G	SE	3213 Hwy. 964	4.0	-	-
8	H	SSE	11813 Powell Station Road	1.7	-	-
9	J	S	11649 Powell Station Road	1.8	-	-
10	K	SSW	8909 Hwy. 981[4]	6.5	-	-
11	L	SW	[5]	-	-	-
12	M	WSW	[5]	-	-	-
13	N	W	11101 Ferdinand Street	6.1	-	-
14	P	WNW	10426 Old Field Road	3.7	-	-
15	Q	NW	9666 Hwy.965	1.3	-	-
16	R	NNW	5898 Hwy. 61[6]	2.6	-	-

1 New resident at same range of 1.4 km, compared to 2002 census, in sector C.
2 New resident at a range of 2.6 km., compared to 2.2 km. in 2002 census, in sector E.
3 New resident at a range of 2.7 km., compared to 2.8 km. in 2002 census, in sector F.
4 New resident at a range of 6.5 km., compared to 7.4 km. in 2002 census, in sector K.
5 No resident found in sector L or M within 8 km. distance.
6 New resident at a range of 2.6 km., compared to 1.7 km. in 2002 census, in sector R.

FIGURE 2-1
TLD Indicator Results (2005) Versus Control Data (1986-2004)

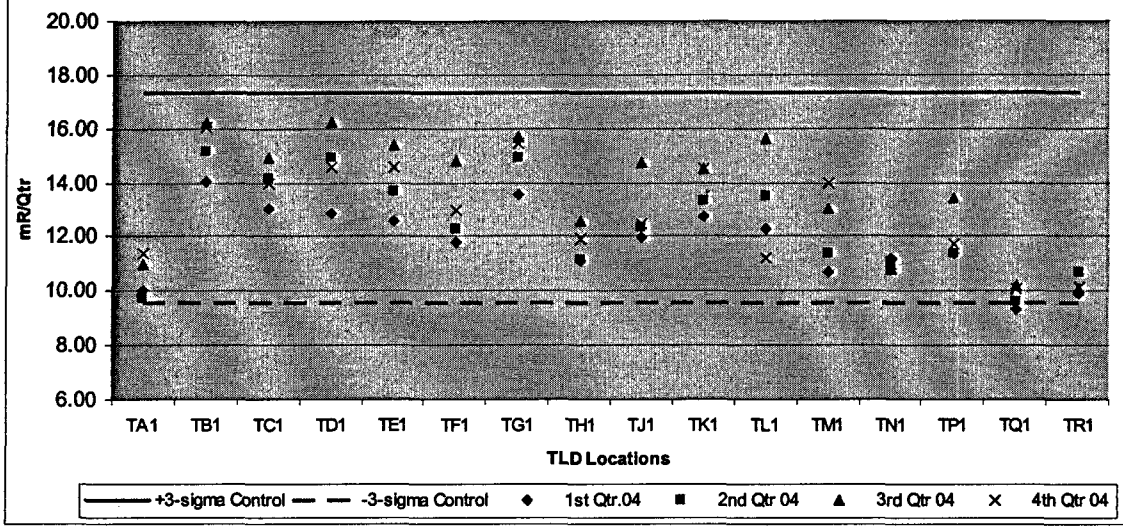
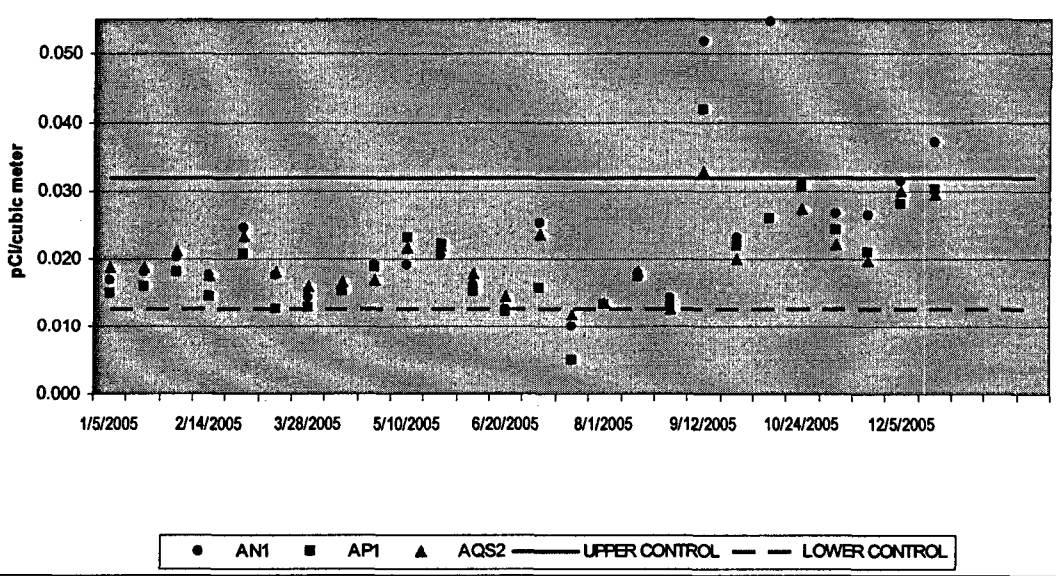


FIGURE 2-2
Gross Beta Indicator Results (2005) Versus Control Data (1986-2004)



3.0 Radiological Environmental Monitoring Program Summary

3.1 2005 Program Results Summary

Table 3.1 summarizes the 2005 REMP results. RBS 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 Summary

Name of Facility: River Bend Station Docket No: 50-458
Location of Facility: West Feliciana Parish, Louisiana Reporting Period: January - December 2005

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)	Gross Beta 104	0.01	0.021 (78 / 78) [0.005 - 0.063]	AN1 (0.9 km W)	0.023 (26 / 26) [0.010 - 0.055]	0.019 (26 / 26) [0.005 - 0.048]	0
Airborne Iodine (pCi/m^3)	I-131 104	0.07	<LLD	N/A	N/A	<LLD	0
Indicators TLDs (mR/Qtr)	Gamma 64	(f)	12.69 (64 / 64) [9.30 – 16.20]	TB1 (0.5 km NNE)	15.36 (4 / 4) [14.04 – 16.20]	N/A	0
Special Interest TLDs (mR/Qtr)	Gamma 24	(f)	13.64 (24 / 24) [10.88 – 16.68]	TGS (17.0 km SE)	15.16 (4 / 4) [14.04 – 15.61]	N/A	0
Control TLDs (mR/Qtr)	Gamma 8	(f)	N/A	N/A	N/A	13.71 (8 / 8) [11.08 – 15.19]	0

TABLE 3.1

Radiological Environmental Monitoring Program Summary

Name of Facility: River Bend Station Docket No: 50-458
Location of Facility: West Feliciana Parish, Louisiana Reporting Period: January - December 2005

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 10	3000	<LLD	N/A	N/A	<LLD	0
	Gamma 10					<LLD	
	Mn-54	15	<LLD	N/A	N/A	<LLD	0
	Co-58	15	<LLD	N/A	N/A	<LLD	0
	Fe-59	30	<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
	I-131	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		0

TABLE 3.1

Radiological Environmental Monitoring Program Summary

Name of Facility: River Bend Station Docket No: 50-458
Location of Facility: West Feliciana Parish, Louisiana Reporting Period: January - December 2005

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/1)	H-3 4	3000	<LLD	N/A	N/A	<LLD	0
	Gamma 4					<LLD	
	Mn-54	15	<LLD	N/A	N/A	<LLD	0
	Co-58	15	<LLD	N/A	N/A	<LLD	0
	Fe-59	30	<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
	I-131	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		0
Shoreline Sediment (pCi/kg)	Gamma 1						
	Cs-134	150	<LLD	N/A	N/A	<LLD [g]	0
	Cs-137	180	<LLD	N/A	N/A	<LLD	0

TABLE 3.1

Radiological Environmental Monitoring Program Summary

Name of Facility: River Bend Station
Location of Facility: West Feliciana Parish, Louisiana

Docket No: 50-458
Reporting Period: January - December 2005

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)	Gamma 4						
	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	N/A	N/A	<LLD	0
Food Products (pCi/kg)	I-131 8	60	<LLD	N/A	N/A	<LLD	0
	Gamma 8						
	Cs-134	60	<LLD	N/A	N/A	<LLD	0
	Cs-137	80	<LLD	N/A	N/A	<LLD	0
Special Sediment (East & West Creek) (pCi/kg)	Gamma 8						
	Cs-134	150	<LLD	N/A	N/A	N/A	0
	Cs-137	180	<LLD	N/A	N/A	N/A	0

TABLE 3.1

Radiological Environmental Monitoring Program Summary

Name of Facility: River Bend Station Docket No: 50-458
Location of Facility: West Feliciana Parish, Louisiana Reporting Period: January - December 2005

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]		
Special Water (Wastewater Plant Effluent) (pCi/1)	Gamma 12						
	Mn-54	15	<LLD	N/A	N/A	N/A	0
	Fe-59	30	<LLD	N/A	N/A	N/A	0
	Co-58	15	<LLD	N/A	N/A	N/A	0
	Co-60	15	<LLD	N/A	N/A	N/A	0
	Zn-65	30	<LLD	N/A	N/A	N/A	0
	Zr-95	30	<LLD	N/A	N/A	N/A	0
	Nb-95	15	<LLD	N/A	N/A	N/A	0
	I-131	15	<LLD	N/A	N/A	N/A	0
	Cs-134	15	<LLD	N/A	N/A	N/A	0
	Cs-137	18	<LLD	N/A	N/A	N/A	0
	Ba-140	60	<LLD	N/A	N/A	N/A	0
	La-140	15	<LLD	N/A	N/A	N/A	0

a I-131 = Iodine-131; H-3 = Tritium

b LLD = Required lower limit of detection based on RBS Technical Requirements Manual Table 3.12.1-3.

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

d Locations are specified (1) by name and (2) direction and distance relative to reactor site.

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 RBS Technical Requirements Manual Table 3.12.1-3.

g Control location for sediment is upstream surface water sample.

Attachment 1

2005 Radiological Monitoring Report

Summary of Monitoring Results

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Table 1.1
Sample Type: **Air Particulate and Charcoal Cartridge – Indicator Location AN1**
Analysis: Gross Beta and Iodine
Units: pCi/m^3

LLD (pCi/m^3)			0.07	0.01
LAB ID	**START DATE**	**END DATE**	**I-131**	**GROSS BETA**
20050006	12/20/2004	1/5/2005	< 0.007	0.017 +/-0.001
20050050	1/5/2005	1/17/2005	< 0.006	0.018 +/-0.001
20050088	1/17/2005	1/31/2005	< 0.008	0.020 +/-0.001
20050118	1/31/2005	2/14/2005	< 0.007	0.018 +/-0.001
20050177	2/14/2005	2/28/2005	< 0.008	0.025 +/-0.001
20050229	2/28/2005	3/14/2005	< 0.007	0.018 +/-0.001
20050305	3/14/2005	3/28/2005	< 0.009	0.014 +/-0.001
20050367	3/28/2005	4/11/2005	< 0.009	0.016 +/-0.001
20050411	4/11/2005	4/25/2005	< 0.007	0.019 +/-0.001
20050444	4/25/2005	5/10/2005	< 0.007	0.019 +/-0.001
20050484	5/10/2005	5/23/2005	< 0.007	0.021 +/-0.001
20050542	5/23/2005	6/6/2005	< 0.008	0.016 +/-0.001
20050612	6/6/2005	6/20/2005	< 0.007	0.013 +/-0.001
20050666	6/20/2005	7/5/2005	< 0.012	0.025 +/-0.002
20050729	7/7/2005	7/18/2005	< 0.008	0.010 +/-0.001
20050784	7/18/2005	8/1/2005	< 0.008	0.013 +/-0.001
20050837	8/1/2005	8/15/2005	< 0.007	0.018 +/-0.001
20050897	8/15/2005	8/31/2005	< 0.009	0.015 +/-0.001
20050940	8/31/2005	9/12/2005	< 0.010	0.052 +/-0.002
20050988	9/12/2005	9/26/2005	< 0.006	0.023 +/-0.001
20051090	9/26/2005	10/10/2005	< 0.009	0.055 +/-0.002
20051163	10/10/2005	10/24/2005	< 0.008	0.031 +/-0.001
20051240	10/24/2005	11/7/2005	< 0.007	0.027 +/-0.001
20051273	11/7/2005	11/21/2005	< 0.007	0.026 +/-0.002
20051310	11/21/2005	12/5/2005	< 0.006	0.031 +/-0.001
20051362	12/5/2005	12/19/2005	< 0.008	0.037 +/-0.002
Average:				0.023
Maximum:				0.055
Minimum:				0.010

Table 1.2
Sample Type: **Air Particulate and Charcoal Cartridge – Indicator Location AP1**
Analysis: Gross Beta and Iodine
Units: pCi/m^3

LLD (pCi/m^3)			0.07	0.01
LAB ID	**START DATE**	**END DATE**	**I-131**	**GROSS BETA**
20050005	12/20/2004	1/5/2005	< 0.007	0.015 +/-0.001
20050049	1/5/2005	1/17/2005	< 0.009	0.016 +/-0.001
20050087	1/17/2005	1/31/2005	< 0.009	0.018 +/-0.001
20050117	1/31/2005	2/14/2005	< 0.009	0.015 +/-0.001
20050176	2/14/2005	2/28/2005	< 0.009	0.021 +/-0.001
20050228	2/28/2005	3/14/2005	< 0.010	0.013 +/-0.001
20050304	3/14/2005	3/28/2005	< 0.010	0.013 +/-0.001
20050366	3/28/2005	4/11/2005	< 0.008	0.015 +/-0.001
20050410	4/11/2005	4/25/2005	< 0.009	0.019 +/-0.001
20050443	4/25/2005	5/10/2005	< 0.008	0.023 +/-0.001
20050483	5/10/2005	5/23/2005	< 0.007	0.022 +/-0.001
20050541	5/23/2005	6/6/2005	< 0.007	0.015 +/-0.001
20050611	6/6/2005	6/20/2005	< 0.008	0.012 +/-0.001
20050665	6/20/2005	7/5/2005	< 0.008	0.016 +/-0.001
20050728	7/5/2005	7/18/2005	< 0.006	0.005 +/-0.001
20050783	7/18/2005	8/1/2005	< 0.008	0.014 +/-0.001
20050836	8/1/2005	8/15/2005	< 0.009	0.018 +/-0.001
20050896	8/15/2005	8/31/2005	< 0.008	0.013 +/-0.001
20050939	8/31/2005	9/12/2005	< 0.007	0.042 +/-0.002
20050987	9/12/2005	9/26/2005	< 0.007	0.022 +/-0.001
20051089	9/26/2005	10/10/2005	< 0.006	0.026 +/-0.001
20051162	10/10/2005	10/24/2005	< 0.007	0.031 +/-0.001
20051239	10/24/2005	11/7/2005	< 0.007	0.024 +/-0.002
20051272	11/7/2005	11/21/2005	< 0.007	0.021 +/-0.001
20051309	11/21/2005	12/5/2005	< 0.008	0.028 +/-0.001
20051361	12/5/2005	12/19/2005	< 0.007	0.030 +/-0.001
Average:				0.019
Maximum:				0.042
Minimum:				0.005

Table 1.3
Sample Type: **Air Particulate and Charcoal Cartridge – Indicator Location AQS2**
Analysis: Gross Beta and Iodine
Units: pCi/m^3

LLD (pCi/m^3)			0.07	0.01
LAB ID	**START DATE**	**END DATE**	**I-131**	**GROSS BETA**
20050007	12/20/2004	1/5/2005	< 0.006	0.019 +/-0.001
20050051	1/5/2005	1/17/2005	< 0.008	0.019 +/-0.001
20050089	1/17/2005	1/31/2005	< 0.007	0.021 +/-0.001
20050119	1/31/2005	2/14/2005	< 0.008	0.018 +/-0.001
20050178	2/14/2005	2/28/2005	< 0.009	0.023 +/-0.001
20050230	2/28/2005	3/14/2005	< 0.010	0.018 +/-0.001
20050306	3/14/2005	3/28/2005	< 0.008	0.016 +/-0.001
20050368	3/28/2005	4/11/2005	< 0.009	0.017 +/-0.001
20050412	4/11/2005	4/25/2005	< 0.006	0.017 +/-0.001
20050445	4/25/2005	5/10/2005	< 0.007	0.022 +/-0.001
20050485	5/10/2005	5/23/2005	< 0.008	0.022 +/-0.001
20050543	5/23/2005	6/6/2005	< 0.007	0.018 +/-0.001
20050613	6/6/2005	6/20/2005	< 0.007	0.015 +/-0.001
20050667	6/20/2005	7/5/2005	< 0.007	0.024 +/-0.001
20050730	7/5/2005	7/18/2005	< 0.007	0.012 +/-0.001
20050785	7/18/2005	8/1/2005	< 0.008	0.014 +/-0.001
20050838	8/1/2005	8/15/2005	< 0.009	0.018 +/-0.001
20050898	8/15/2005	8/31/2005	< 0.007	0.013 +/-0.001
20050941	8/31/2005	9/12/2005	< 0.009	0.033 +/-0.002
20050989	9/12/2005	9/26/2005	< 0.008	0.020 +/-0.001
20051091	9/26/2005	10/10/2005	< 0.009	0.063 +/-0.002
20051164	10/10/2005	10/24/2005	< 0.008	0.027 +/-0.001
20051241	10/24/2005	11/7/2005	< 0.009	0.022 +/-0.001
20051274	11/7/2005	11/21/2005	< 0.009	0.020 +/-0.001
20051311	11/21/2005	12/5/2005	< 0.008	0.030 +/-0.002
20051363	12/5/2005	12/19/2005	< 0.010	0.029 +/-0.002
Average:				0.022
Maximum:				0.063
Minimum:				0.012

Table 1.4
Sample Type: **Air Particulate and Charcoal Cartridge – Control Location AGC**
Analysis: Gross Beta and Iodine
Units: pCi/m^3

LLD (pCi/m^3)			0.07	0.01
LAB ID	**START DATE**	**END DATE**	**I-131**	**GROSS BETA**
20050008	12/20/2004	1/5/2005	< 0.007	0.017 +/- 0.001
20050052	1/5/2005	1/17/2005	< 0.008	0.021 +/- 0.001
20050090	1/17/2005	1/31/2005	< 0.007	0.024 +/- 0.001
20050120	1/31/2005	2/14/2005	< 0.006	0.017 +/- 0.001
20050179	2/14/2005	2/28/2005	< 0.008	0.005 +/- 0.001
20050231	2/28/2005	3/14/2005	< 0.008	0.015 +/- 0.001
20050307	3/14/2005	3/28/2005	< 0.008	0.015 +/- 0.001
20050369	3/28/2005	4/11/2005	< 0.008	0.015 +/- 0.001
20050413	4/11/2005	4/25/2005	< 0.008	0.015 +/- 0.001
20050446	4/25/2005	5/10/2005	< 0.007	0.020 +/- 0.001
20050486	5/10/2005	5/23/2005	< 0.010	0.020 +/- 0.001
20050544	5/23/2005	6/6/2005	< 0.007	0.015 +/- 0.001
20050614	6/6/2005	6/20/2005	< 0.008	0.012 +/- 0.001
20050668	6/20/2005	7/5/2005	< 0.007	0.018 +/- 0.001
20050731	7/5/2005	7/18/2005	< 0.007	0.010 +/- 0.001
20050786	7/18/2005	8/1/2005	< 0.007	0.014 +/- 0.001
20050839	8/1/2005	8/15/2005	< 0.006	0.017 +/- 0.001
20050899	8/15/2005	8/31/2005	< 0.007	0.013 +/- 0.001
20050942	8/31/2005	9/12/2005	< 0.006	0.026 +/- 0.001
20050990	9/12/2005	9/26/2005	< 0.007	0.019 +/- 0.001
20051092	9/26/2005	10/10/2005	< 0.008	0.048 +/- 0.002
20051165	10/10/2005	10/24/2005	< 0.006	0.025 +/- 0.001
20051242	10/24/2005	11/7/2005	< 0.007	0.022 +/- 0.001
20051275	11/7/2005	11/21/2005	< 0.007	0.019 +/- 0.001
20051312	11/21/2005	12/5/2005	< 0.006	0.023 +/- 0.001
20051364	12/5/2005	12/19/2005	< 0.006	0.029 +/- 0.001
Average:				0.019
Maximum:				0.048
Minimum:				0.005

Table 2.1
Sample Type: **Thermoluminescent Dosimeters (TLD)**
Analysis: mR Exposure
Units: mR/Qtr

INDICATORS	1ST QTR	2ND QTR	3RD QTR	4TH QTR	MEAN
TA1	9.99	9.72	10.96	11.39	10.52
TB1	14.04	15.14	16.20	16.07	15.36
TC1	13.05	14.17	14.92	13.95	14.02
TD1	12.86	14.94	16.20	14.57	14.64
TE1	12.56	13.68	15.41	14.57	14.06
TF1	11.77	12.23	14.82	12.98	12.95
TG1	13.55	14.94	15.71	15.45	14.91
TH1	11.08	11.17	12.54	11.92	11.68
TJ1	11.97	12.33	14.72	12.45	12.87
TK1	12.76	13.30	14.52	14.48	13.76
TL1	12.26	13.49	15.61	11.22	13.15
TM1	10.68	11.36	13.04	13.95	12.26
TN1	11.18	10.97	10.76	10.95	10.97
TP1	11.37	11.36	13.43	11.75	11.98
TQ1	9.30	9.62	10.17	10.07	9.79
TR1	9.89	10.68	10.07	10.16	10.20
MAX	14.04	15.14	16.20	16.07	15.36
AVG	11.77	12.44	13.69	12.87	12.69
MIN	9.30	9.62	10.07	10.07	9.79

SPECIAL INTEREST	1ST QTR	2ND QTR	3RD QTR	4TH QTR	MEAN
TCS	12.76	16.68	12.35	11.75	13.38
TGS	14.04	15.43	15.61	15.54	15.16
TNS	10.88	11.94	13.73	12.98	12.38
TRS	12.56	13.68	14.62	13.42	13.57
TQS1	13.75	14.36	16.50	14.39	14.75
TQS2	11.77	12.04	14.42	12.19	12.60
MAX	14.04	16.68	16.50	15.54	15.16
AVG	12.63	14.02	14.54	13.38	13.64
MIN	10.88	11.94	12.35	11.75	12.38

CONTROLS	1ST QTR	2ND QTR	3RD QTR	4TH QTR	MEAN
TAC	14.24	15.04	15.12	15.19	14.90
TEC	11.08	11.75	13.14	14.13	12.52
MAX	14.24	15.04	15.12	15.19	14.90
AVG	12.66	13.39	14.13	14.66	13.71
MIN	11.08	11.75	13.14	14.13	12.52

	INDICATOR	CONTROL	SPECIAL
MAX	16.20	15.19	16.68
AVG	12.69	13.71	13.64
MIN	9.30	11.08	10.88

Table 3.1
Sample Type: **Surface Water**
Analysis: Gamma Isotopic and Tritium
Units: pCi/l

LLD (pCi/l)			15	15	30	15	30	15	30	15	15	18	60	15
LAB ID	**LOCATION**	**DATE**	**MN-54**	**C0-58**	**FE-59**	**CO-60**	**ZN-65**	**NB-95**	**ZR-95**	**I-131**	**CS-134**	**CS-137**	**BA-140**	**LA-140**
20050009	SWD	1/6/2005	< 3.72	< 4.46	< 12.20	< 6.06	< 8.70	< 5.42	< 8.30	< 4.46	< 6.66	< 5.08	< 13.62	< 5.14
20050010	SWU	1/6/2005	< 5.43	< 4.97	< 8.70	< 5.70	< 11.64	< 4.32	< 5.22	< 5.86	< 4.45	< 4.32	< 7.13	< 7.13
20050342	SWU	4/6/2005	< 3.43	< 5.36	< 9.12	< 5.80	< 7.80	< 5.59	< 6.65	< 5.54	< 5.16	< 4.40	< 19.49	< 5.51
20050343	SWD	4/6/2005	< 4.66	< 3.07	< 8.81	< 3.06	< 8.84	< 4.94	< 5.58	< 3.92	< 4.67	< 4.97	< 13.10	< 6.07
20050679	SWU	7/7/2005	< 3.27	< 5.58	< 9.45	< 4.38	< 8.91	< 6.02	< 8.47	< 4.77	< 4.54	< 4.69	< 16.01	< 5.31
20050680	SWD	7/7/2005	< 5.59	< 4.13	< 9.17	< 6.87	< 10.32	< 4.97	< 10.76	< 4.28	< 5.31	< 6.07	< 18.27	< 6.45
20051063	SWU	10/5/2005	< 4.41	< 6.32	< 7.46	< 4.47	< 10.19	< 4.15	< 6.10	< 6.71	< 4.83	< 5.12	< 12.48	< 7.84
20051064	SWU DUP	10/5/2005	< 3.77	< 5.22	< 11.99	< 3.16	< 14.62	< 6.73	< 11.38	< 6.57	< 5.83	< 5.29	< 16.35	< 8.14
20051065	SWD	10/5/2005	< 4.16	< 6.04	< 7.79	< 5.75	< 12.01	< 5.38	< 6.70	< 5.71	< 3.72	< 5.86	< 17.30	< 5.16
20051066	SWD DUP	10/5/2005	< 2.87	< 3.91	< 6.37	< 4.86	< 8.78	< 4.52	< 6.55	< 4.46	< 4.20	< 5.22	< 12.86	< 3.92

LLD (pCi/l)			3000
LAB ID	**LOCATION**	**DATE**	**TRITIUM**
20050009	SWD	1/6/2005	< 562.39
20050010	SWU	1/6/2005	< 567.39
20050342	SWU	4/6/2005	< 586.81
20050343	SWD	4/6/2005	< 580.26
20050679	SWU	7/7/2005	< 562.72
20050680	SWD	7/7/2005	< 561.84
20051063	SWU	10/5/2005	< 578.55
20051064	SWU DUP	10/5/2005	< 566.38
20051065	SWD	10/5/2005	< 565.74
20051066	SWD DUP	10/5/2005	< 567.36

Table 4.1
Sample Type: **Groundwater**
Analysis: Gamma Isotopic and Tritium
Units: pCi/l

LLD (pCi/l)			15	15	30	15	30	15	30	15	15	18	60	15
LAB ID	**LOCATION**	**DATE**	**MN-54**	**C0-58**	**FE-59**	**CO-60**	**ZN-65**	**NB-95**	**ZR-95**	**I-131**	**CS-134**	**CS-137**	**BA-140**	**LA-140**
20050551	WU	6/8/2005	< 7.61	< 5.85	< 12.65	< 6.14	< 15.29	< 9.76	< 14.32	< 8.84	< 6.50	< 8.44	< 23.03	< 8.45
20050645	WD	6/29/2005	< 4.95	< 4.09	< 9.28	< 4.66	< 10.14	< 6.71	< 8.25	< 5.08	< 5.10	< 4.48	< 18.59	< 6.22
20051341	WD	12/8/2005	< 8.08	< 5.52	< 8.18	< 4.24	< 6.56	< 7.27	< 12.77	< 6.68	< 6.56	< 4.66	< 22.17	< 7.60
20051342	WU	12/8/2005	< 7.51	< 5.66	< 11.04	< 6.37	< 12.72	< 8.49	< 9.50	< 7.63	< 6.02	< 7.60	< 26.51	< 7.91

LLD (pCi/l)			3000
LAB ID	**LOCATION**	**DATE**	**TRITIUM**
20050551	WU	6/8/2005	< 569
20050645	WD	6/29/2005	< 560
20051341	WD	12/8/2005	< 588
20051342	WU	12/8/2005	< 588

Table 5.1
Sample Type: **Shoreline Sediment**
Analysis: Gamma Isotopic
Units: pCi/kg, dry

LLD (pCi/kg)		**150**	**180**
LAB ID	**DATE**	**CS-134**	**CS-137**
20050317	4/4/2005	< 25.18	< 25.31

Table 6.1
Sample Type: **Food Products**
Analysis: Gamma Isotopic
Units: pCi/kg, wet

LLD(pCi/kg, wet)			**60**	**60**	**80**
LAB ID	**LOCATION**	**DATE**	**I-131**	**CS-134**	**CS-137**
20050048	GN1	1/17/2005	< 31.13	< 31.44	< 22.51
20050140	GQC	2/16/2005	< 31.60	< 45.31	< 36.19
20050386	GN1	4/19/2005	< 48.78	< 59.33	< 46.25
20050471	GQC	5/17/2005	< 26.88	< 44.22	< 34.80
20050727	GN1	7/18/2005	< 46.74	< 39.42	< 55.38
20050851	GQC	8/17/2005	< 43.00	< 57.44	< 51.20
20051157	GN1	10/19/2005	< 44.60	< 59.49	< 35.08
20051265	GQC	11/15/2005	< 42.31	< 39.72	< 33.50

Table 7.1
Sample Type: **Fish**
Analysis: Gamma Isotopic
Units: pCi/kg, wet

LLD (pCi/kg)			**130**	**130**	**260**	**130**	**260**	**130**	**150**
LAB	**LOCATION**	**DATE**	**MN-54**	**C0-58**	**FE-59**	**CO-60**	**ZN-65**	**CS-134**	**CS-137**
20051332	FU	12/6/2005	< 14.27	< 14.03	< 47.43	< 26.36	< 37.99	< 18.26	< 14.95
20051333	FU DUP	12/6/2005	< 13.96	< 15.52	< 45.21	< 14.90	< 38.44	< 13.65	< 16.54
20051334	FD	12/6/2005	< 17.85	< 18.16	< 42.00	< 21.75	< 44.83	< 14.36	< 10.25
20051335	FD DUP	12/6/2005	< 22.73	< 19.05	< 37.62	< 24.29	< 48.39	< 18.01	< 15.01

Table 8.1
Sample Type: **Sediments (Special)**
Analysis: Gamma Isotopic
Units: pCi/kg, dry

LLD (pCi/kg)			**150**	**180**
LAB ID	**LOCATION**	**DATE**	**CS-134**	**CS-137**
20050208	EAST CREEK	3/7/2005	< 13.95	< 12.72
20050207	WEST CREEK	3/7/2005	< 13.05	< 13.82
20051444	WEST CREEK	5/10/2005	< 16.48	< 12.62
20051443	EAST CREEK	5/10/2005	< 18.00	< 14.94
20050769	WEST CREEK	7/26/2005	< 14.96	< 19.69
20050768	EAST CREEK	7/26/2005	< 13.09	< 14.69
20051415	WEST CREEK	12/28/2005	< 14.61	< 16.41
20051414	EAST CREEK	12/28/2005	< 14.73	< 14.83

Table 9.1
Sample Type: **Wastewater Treatment Plant Effluent (Special)**
Analysis: Gamma Isotopic
Units: pCi/l

LLD (pCi/l)		15	15	30	15	30	15	30	15	15	18	60	15
LAB ID	**DATE**	**MN-54**	**C0-58**	**FE-59**	**CO-60**	**ZN-65**	**NB-95**	**ZR-95**	**I-131**	**CS-134**	**CS-137**	**BA-140**	**LA-140**
20050075	1/27/2005	< 4.20	< 4.93	< 5.46	< 4.39	< 10.50	< 3.92	< 7.36	< 5.31	< 3.03	< 5.55	< 16.91	< 2.87
20050170	2/23/2005	< 5.14	< 2.52	< 7.93	< 6.35	< 9.52	< 4.53	< 8.24	< 4.25	< 5.15	< 4.26	< 7.92	< 7.88
20050318	3/30/2005	< 5.93	< 5.07	< 7.69	< 5.59	< 12.75	< 5.66	< 8.64	< 6.03	< 6.37	< 8.71	< 16.63	< 6.85
20050426	4/28/2005	< 4.73	< 5.06	< 9.53	< 3.80	< 11.73	< 4.61	< 10.66	< 5.76	< 5.62	< 5.55	< 13.55	< 5.01
20050510	5/25/2005	< 6.52	< 4.95	< 6.04	< 5.58	< 13.60	< 7.12	< 8.86	< 5.96	< 5.30	< 6.63	< 20.80	< 8.54
20050644	6/29/2005	< 5.35	< 5.22	< 9.08	< 5.34	< 10.09	< 4.29	< 8.89	< 4.05	< 5.35	< 4.90	< 16.59	< 7.30
20050767	7/27/2005	< 5.34	< 4.51	< 8.75	< 5.13	< 11.09	< 4.79	< 5.31	< 5.11	< 5.07	< 6.49	< 13.64	< 7.03
20050900	8/31/2005	< 4.80	< 4.88	< 8.94	< 6.54	< 11.38	< 3.52	< 9.59	< 5.50	< 5.21	< 6.48	< 16.17	< 7.74
20051014	9/28/2005	< 3.48	< 4.69	< 8.37	< 5.33	< 10.66	< 4.63	< 6.79	< 5.86	< 5.56	< 5.69	< 17.32	< 6.83
20051203	10/26/2005	< 6.51	< 4.94	< 10.20	< 4.73	< 8.05	< 2.80	< 11.03	< 5.53	< 6.93	< 4.13	< 16.73	< 4.80
20051308	11/30/2005	< 6.54	< 4.65	< 4.73	< 2.56	< 8.63	< 6.14	< 9.78	< 8.32	< 4.69	< 5.15	< 22.89	< 7.36
20051413	12/29/2005	< 4.77	< 3.69	< 9.70	< 3.81	< 8.83	< 4.64	< 5.67	< 4.73	< 4.54	< 5.56	< 18.27	< 5.12

Table 10.1
Sample Type: **Interlaboratory Comparison**
Analysis: Gross Beta, Iodine-131, Tritium, and Gamma Isotopic

Sample Type (units)	Analytics #	Date	Analysis	Known value[a]	RBS Value	RBS N-DEV[b]	RBS N-RANGE[c]
Charcoal Cartridge (pCi/filter)	E4570-125	6/9/2005	I-131	91.7	96.3	0.88	0.386
Water (pCi/liter)	E4569-125	6/9/2005	BETA	214	232	1.48	0.055
	E4568-125	6/9/2005	CR-51	330	347	0.89	0.251
			MN-54	136	140	0.55	0.217
			CO-58	69.7	81.3	2.89	0.678
			FE-59	158	165.7	0.84	0.262
			CO-60	169	191	2.25	0.384
			ZN-65	93.8	100	1.08	0.378
			I-131	104	95.7	-1.39	0.170
			CS-134	206	213	0.56	0.086
			CS-137	101	107	1.09	0.117
			CE-141	214	232	1.48	0.055
	E4719-125	9/15/2005	H-3	4190	4337	0.61	0.152
Air Filter (pCi/filter)	E4717-125	9/15/2005	BETA	95.8	94.2	-0.29	0.253
	E4720-125	9/15/2005	CR-51	237	209	-2.05	0.548
			MN-54	64.5	65.3	0.21	0.449
			CO-58	44.4	43.1	-0.51	0.931
			FE-59	42.7	44.7	0.81	0.332
			CO-60	117	112	-0.79	0.454
			ZN-65	86.6	89.6	0.60	0.498
			CS-134	85.7	80.2	-1.12	0.193
			CS-137	137	135	-0.29	0.302
			CE-141	164	153	-1.16	0.576
Sediment (pCi/gram)	E4718-125	9/15/2005	CR-51	0.455	0.467	0.47	0.091
			MN-54	0.124	0.155	4.28[d]	0.191
			CO-58	0.085	0.093	1.63	0.347
			FE-59	0.082	0.090	1.76	1.008
			CO-60	0.225	0.246	1.59	0.158
			ZN-65	0.166	0.187	2.19	0.676
			CS-134	0.164	0.183	1.97	0.396
			CS-137	0.364	0.418	2.55	0.097
			CE-141	0.314	0.355	2.24	0.150

Table 10.1
Sample Type: **Interlaboratory Comparison**
Analysis: Gamma Isotopic

Sample Type (units)	Analytics #	Date	Analysis	Known Value[a]	RBS Value	RBS N-DEV[b]	RBS N-RANGE[c]
Milk (pCi/liter)	E4571-125	6/9/2005	CR-51	303	254	-2.82	1.111
			MN-54	125	126.0	0.18	0.614
			FE-59	63.9	74.7	2.92	0.647
			CO-60	145	132.0	-1.51	0.407
			ZN-65	155.0	158.0	0.37	0.495
			I-131	86.9	83.3	-0.71	0.068
			CS-134	95.0	89.0	-1.09	0.373
			CS-137	189	184	-0.49	0.281
			CE-141	92.4	95.7	0.61	0.447

NOTES:

(a) The known value as determined by Analytics.
(b) The normalized deviation from the "known" value is computed from the deviation and the standard error of the mean; ±2.00 is 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) The results reported were out of the control limits.

Exceptions:

There was one result outside the control limits for accuracy in the 2005 Interlaboratory Comparison program participation studies. This result was in a gamma isotopic analysis of a sediment/soil sample. The result outside the control limits for accuracy was in the analysis of the nuclide Mn-54 in Analytics sample number E4718-125 of 9/15/2005. RBS normalized-deviation for the analysis was +4.28 with control limits of ±3.00. This high bias result is considered conservative and is considered as having no impact on past results of the program. Mn-54 results were all within control limits in other program samples for the year 2005; with normalized-deviations of 0.55 in a water sample analysis; 0.21 in an air filter sample analysis; and 0.18 in a milk sample analysis.

Review of trending information of Mn-54 results in sediment/soil samples indicates a steady high bias, with only one result for Mn-54 out of the control limits occuring in 1998. Reanalysis of the 2005 soil sample produced results very similar to the original averaged result.

Analytics was contacted concerning this high bias result of Mn-54. The only explanation received, and I quote was, "the effect of coincidence summing where the 834 keV gamma efficiency (of Mn-54) is lower due to coincidence summing of the 898 and 1836 keV gammas from Y-88. This would give a lower efficiency and therefore a higher value for Mn-54."