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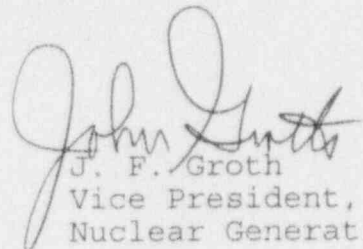
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U. S. Nuclear Regulatory Commission
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South Texas Project
Units 1 and 2
Docket Nos. STN 50-498; STN 50-499
1993 Annual Environmental & Annual Radiological
Environmental Operating Reports

Pursuant to the South Texas Project (STP) Unit 1 Operating License NPF-76, Unit 2 Operating License NPF-80 Appendix B, Environmental Protection Plan (Nonradiological), and Technical Specification 6.9.1.3, attached is the 1993 Annual Environmental & Annual Radiological Environmental Operating Reports.

If you have any questions, please contact Mr. S. M. Head at (512) 972-7136 or me at (512) 972-8664.


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Attachment: 1993 Annual Environmental & Annual Radiological
Environmental Operating Reports

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Houston Lighting & Power Company
South Texas Project Electric Generating Station

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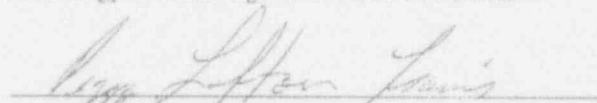
South Texas Project Electric Generating Station

Completed By
Technical Services Department
In Accordance with
Technical Specifications
for NRC Licenses
NPF-76 & NPF-80
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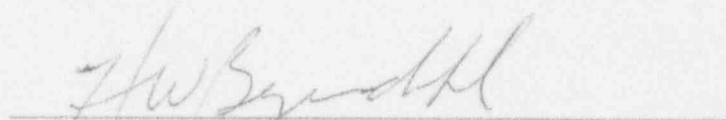


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South Texas Project Electric Generating Station

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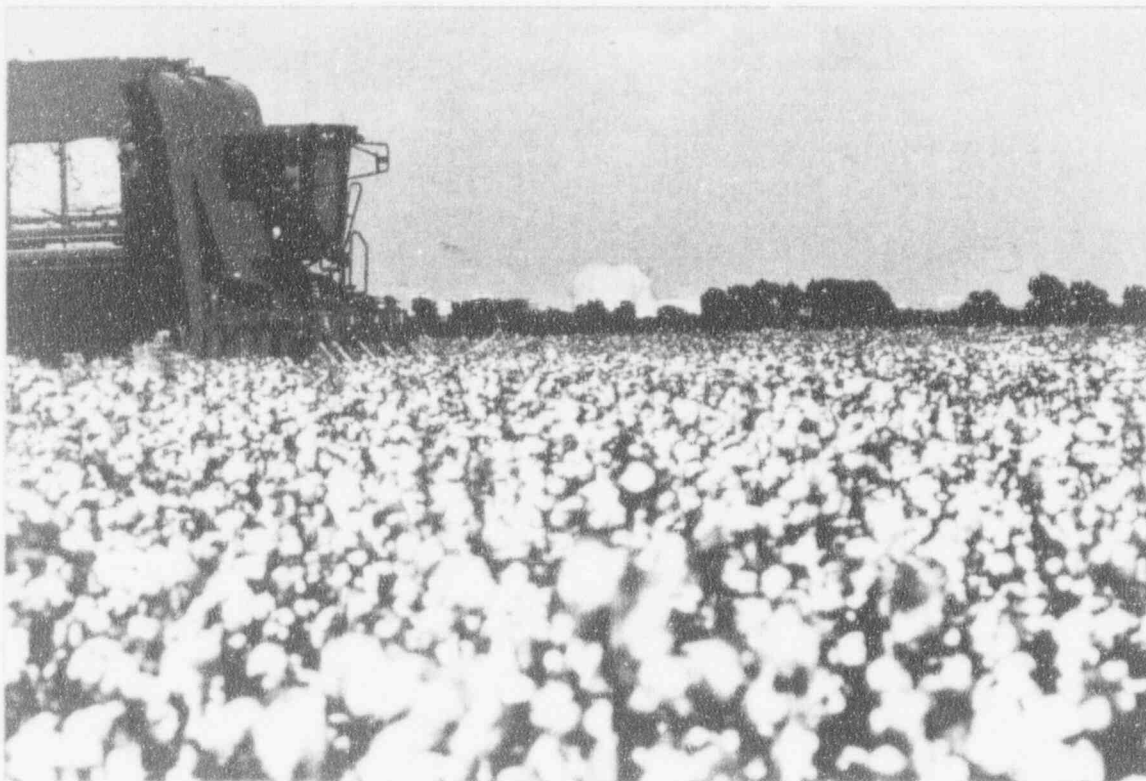
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Site and Area Description

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South Texas Project Electric Generating Station

The South Texas Project Electric Generating Station (the South Texas Project) is located on 12,300 acres in Matagorda County, Texas, approximately 15 miles southwest of Bay City along the west bank of the Colorado River. The South Texas Project is jointly owned by Houston Lighting & Power Company (HL&P), Central Power & Light Company, the City of Austin, and the City of San Antonio. HL&P is the designated Project Manager for the owners and is responsible for implementation of all environmental programs.

The South Texas Project consists of two 1250 megawatt Westinghouse Corporation pressurized water reactors (PWR). Unit 1 received a low-power testing license on August 21, 1987, obtained initial criticality on March 8, 1988 and was declared commercially operational by HL&P management on August 25, 1988. Unit 2 received a low-power testing license on December 16, 1988, obtained initial criticality on March 12, 1989 and was declared commercially operational on June 19, 1989. Both units together produce enough electricity to serve half-a-million homes.

How the South Texas Project Works

Fossil-fueled and nuclear-powered generating plants operate on the same principle. Fuel is used to produce heat to convert water into high-pressure steam. The steam is directed through a turbine to spin a generator. In a fossil fuel plant, the heat is produced by burning coal, lignite, oil or natural gas in a boiler. In a nuclear plant, the reactor replaces the boiler and the "fissioning" or splitting of uranium atoms inside the reactor produces heat.



The fuel for a nuclear reactor is uranium. It is formed into cylindrical pellets, each about the size of the end of your little finger. One pellet has the energy potential of about a ton of coal. Millions of these pellets are stacked in fuel rods that are arranged into assemblies that make up the core of the reactor. The use of uranium allows us to conserve natural gas, oil and coal.

A nuclear plant starts operating when control rods in the core are withdrawn, enabling the fissioning process to begin. Water flowing around the fuel rods picks up heat from the fuel, and the hot water is piped to large heat exchangers called steam generators. The water is pressurized so it will not boil. This is why the South Texas Project's reactors are called "pressurized water reactors."

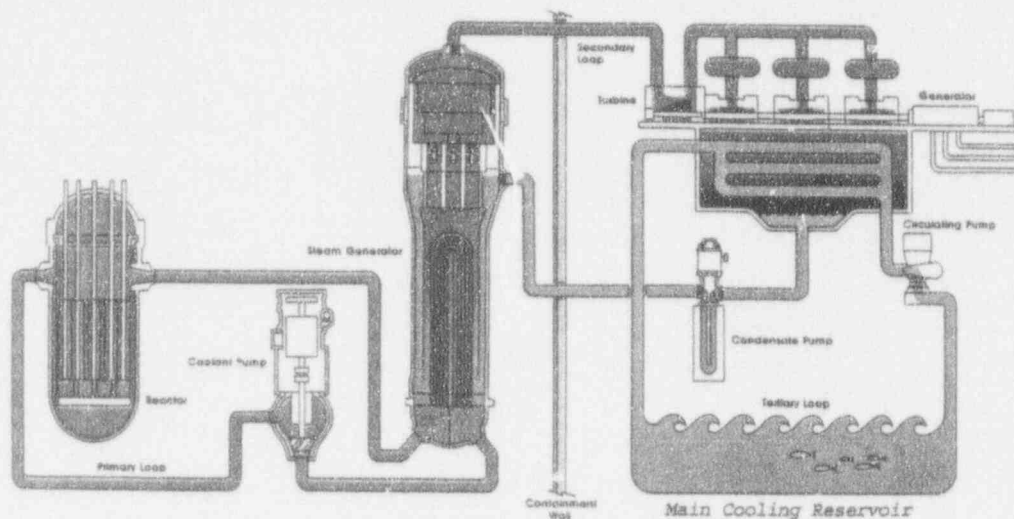


Figure 1, Simplified Drawing of the South Texas Project

This hot, pressurized water heats a separate supply of water in the steam generators to produce steam that is directed through the blades of a turbine generator to produce electricity. The steam then goes to a condenser where cooling water from the reservoir turns the steam back into water. The water is then pumped back to the steam generator for reuse. Figure 1 is a simple diagram of the plant water systems.

No other industry is operated more carefully than the nuclear power industry. During the South Texas Project's construction, inspectors for the firms building the plant, the owners and the federal government, assured the construction conformed to the engineering design.

Multiple control systems ensure the safe operation of the South Texas Project's reactors. These systems provide plant operators with complete control of the speed of the nuclear reaction and the ability to halt the reaction at any time. This unique plant is the only nuclear power facility in the country constructed with three independent and redundant safety systems. All other U.S. nuclear plants have only two.

In addition to its safety systems, the South Texas Project has many built in physical barriers that would prevent the release of radioactive materials in the unlikely event of an accident. The most visible and imposing barriers are the 4 foot thick concrete steel reinforced containment buildings (the two dome-like structures). These massive structures rest on 18 foot thick concrete and steel foundations. Inside, each reactor vessel is surrounded by two concrete shield walls, one 7 feet thick and the other 3-1/2 feet thick. Then there is the reactor vessel itself, where the nuclear reaction takes place. Its steel walls vary in thickness from approximately 4 to 6 inches.

The Site

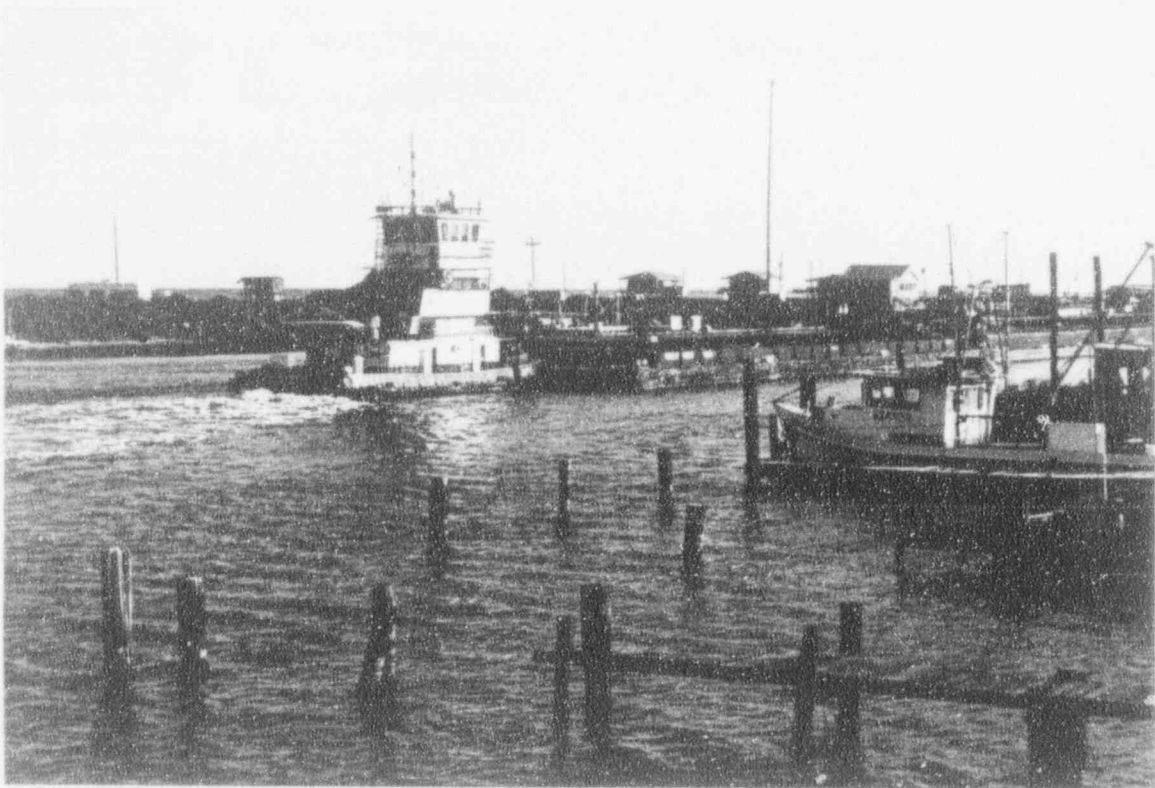
Sixty-five (65) acres of the South Texas Project is occupied by the two power plants. Plant facilities include a 7,000 acre main cooling reservoir and a 47 acre cooling pond. Many smaller bodies of water onsite include Kelly Lake, drainage ditches, sloughs and depressions. Most of the land east of the cooling reservoir is leased for cattle grazing. Approximately 1,700 acres remain in a more natural state as a lowland habitat. The surrounding area is characterized by coastal plain with farmland and pasture predominating. Local relief of the area is characterized by flat land, approximately twenty-three feet above sea level.

The economic base for this area is agricultural related. Therefore, most of the land near the site is used for the production of five major agricultural crops: beef, rice, milo, soybeans and cotton. In addition to the agriculture industry, there is commercial fishing in the lower Colorado River, East and West Matagorda Bays, Intracoastal Waterway and the Gulf of Mexico. Currently shrimp, oysters, and crab are the target commercial fish while fin fishes have been less important commercially in recent years.

Although the surrounding area is heavily cultivated, significant amounts of woodlands, thicket, brush, fields, marsh and open water exist to support wildlife. The area lies in the southern region of the central flyway and is host to an abundance of migratory birds. The local estuary environments provide the necessary habitat for a variety of fish types to complete their life cycles. Recreational hunting and fishing is also done in the area.

The South Texas Project's plant site has been declared a wildlife habitat. Many species of animals call the site home. Our neighbors include American alligators; a family of osprey, cousins to the eagle; and several hundred deer. In winter, literally hundreds of thousands of waterfowl, principally Canadian geese, have found that the plant's 7,000 acre cooling reservoir provides a good resting place during their migration.

The climate of the region is subtropical maritime, with continental influence. It is characterized by short mild winters and long hot and humid summers. The annual monthly temperature is approximately sixty-eight degrees. Rainfall is usually abundant throughout the year with a annual average rainfall of approximately forty-two inches. The prevailing wind direction is from south-southeast from spring to fall, shifting to north-northeast during the winter months.



Environmental Summary

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South Texas Project Electric Generating Station

The South Texas Project Electric Generating Station (the South Texas Project) has been committed to protecting the environment since project inception. Management objectives of the South Texas Project reflect this commitment. A staff of professional site environmental personnel who are responsible for developing and implementing site environmental protection programs and monitoring the site's environmental compliance status are employed by the South Texas Project. Support and technical assistance to the South Texas Project is provided by the corporate environmental staff of Houston Lighting & Power Company (HL&P). The corporate environmental staff also serves as a liaison with regulatory agencies regarding nonradiological environmental issues. The South Texas Project coordinates communications with the Nuclear Regulatory Commission.

Each year the South Texas Project prepares a detailed report on the implementation of the South Texas Project Environmental Protection Plan. This Annual Environmental Operating Report describes nonradiological environmental conditions and compliance monitoring programs at the South Texas Project from January 1 through December 31, 1993. Environmental compliance monitoring for the South Texas Project is conducted by HL&P personnel in accordance with federal and state regulations and applicable plant procedures. The 1993 report shows that the South Texas Project promptly responded to areas of concern, addressed new and changing regulations, and maintained high standards of environmental compliance throughout 1993.

The South Texas Project is prepared for future environmental challenges. These include specific waste minimization targeting, expansion of recycling programs, and maintaining compliance with rapidly evolving environmental legislation. In keeping with project management's commitment to environmental protection, the South Texas Project continues to implement an aggressive environmental compliance program. Management goals, site procedures, self auditing programs, employee training and communications enable the plant to master these challenges. These efforts have launched the South Texas Project into the forefront of environmental protection. Environmental excellence is and continues to be a foundation of operations at the South Texas Project.



Environmental Operating Report

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ENVIRONMENTAL CONDITIONS

Environmental conditions at the South Texas Project are extensively monitored by HL&P personnel. The corporate Environmental Department and the site Nuclear Assurance Department conducted separate internal audits of site environmental programs and procedures in 1993. A plant environmental specialist from the Texas Utilities Comanche Peak Steam Electric Station participated in the annual Nuclear Assurance audit of site environmental programs. Also in 1993, members of the Texas Natural Resource Conservation Commission¹ conducted a wastewater systems inspection at the site. The South Texas Project's compliance status with applicable environmental laws and site-specific environmental programs is discussed in this section.

MAIN COOLING RESERVOIR

Under normal plant operating conditions, cooling water for the plant is diverted from and returned to the Main Cooling Reservoir. The Main Cooling Reservoir is a 7,000 acre, above grade, off-channel reservoir impounding 202,600 acre-feet of water at a maximum operating level of 49 feet MSL. Reservoir makeup water is withdrawn intermittently from the adjacent Colorado River. The ultimate heat sink is the Essential Cooling Pond that is a 46.9 acre, below grade, off-channel reservoir impounding 388 acre-feet of water at a maximum operating level of 26 feet MSL. Water right Permit No. 3233, as amended, issued by the Texas Water Rights Commission (predecessor to the Texas Water Commission) authorizes the maintenance of these reservoirs, impoundment of water in the reservoirs diverted from the Colorado River and circulation, diversion, and use of water from the reservoirs for industrial purposes in the operation of the plant. This permit limits the rate of diversion from the Colorado River. Other documents describing the South Texas Project water rights and with which the South Texas Project complies include Certificate of Adjudication 14-5437 issued by the Texas Water Commission, Contractual Permit No. CP-327, as amended, and a contract between HL&P and the Lower Colorado River Authority. The South Texas Project diverted 22,302 acre-feet from the Colorado River in 1993 for the Main Cooling Reservoir fill operations. The highest Main Cooling Reservoir elevation for 1993 was 45 feet which is within normal operating levels. Permanent repairs to two surface slides identified on the northeast and southern embankments of the Main Cooling Reservoir were completed in 1993. Otherwise, the structural conditions of the reservoir remained satisfactory and unchanged in 1993.

¹In September of 1993, the Texas Air Control Board and the Texas Water Commission were consolidated into the Texas Natural Resource Conservation Commission with regulatory oversight for protecting air, water and land resources in Texas from pollution. Portions of the Texas Department of Health were previously consolidated with the Texas Water Commission in March of 1992. For consistency, this report uses the "Texas Natural Resource Conservation Commission" designation throughout for all of 1993.

AQUATIC AND ECOLOGICAL MONITORING

The South Texas Project location falls within the Texas Land Resource Area designation as coastal prairie and can be divided into two broad ecological areas based on topography, soils, and vegetation. The bottomland area is a swampy, marshy area that occupies approximately nine percent of the total site near the Colorado River. This area provides an important habitat for birds and herptiles. A spoil impoundment constructed in 1972 by the U.S. Army Corps of Engineers is included in this area. The upland area comprises the remaining ninety percent of the site and offers limited habitat for mammals and several groups of birds. HL&P personnel regularly monitor the site environs for changing conditions. Ecological conditions onsite in 1993 remained unchanged and satisfactory.

Throughout the construction phase and on into plant operations, the South Texas Project has continued to monitor populations of important wildlife species to detect population changes. Survey results indicated that the site provided high quality habitat for a wide range of animals to live. Today, the site continues to attract extensive wildlife populations, offering a refuge for resident species as well as seasonal migrants.

During informal bird surveys conducted by HL&P personnel in 1993, several bird species listed on the state and federal threatened or endangered list were observed on site. These include the bald eagle, peregrine falcon, wood stork, white-faced ibis, wood ibis and white-tailed hawk. Additional bird species were observed through limited informal surveys of the site's diverse habitats. An apparent increase in bald eagle sitings occurred.

Intensive bird nesting continues throughout the lowland habitat, particularly in a heron rookery around the perimeter of Kelly Lake. Nesting activity on the internal Y-dike of the Main Cooling Reservoir, first recorded in 1986, has steadily increased. Special precautions are taken each spring to protect nesting areas on the internal dike's slopes and roadways.



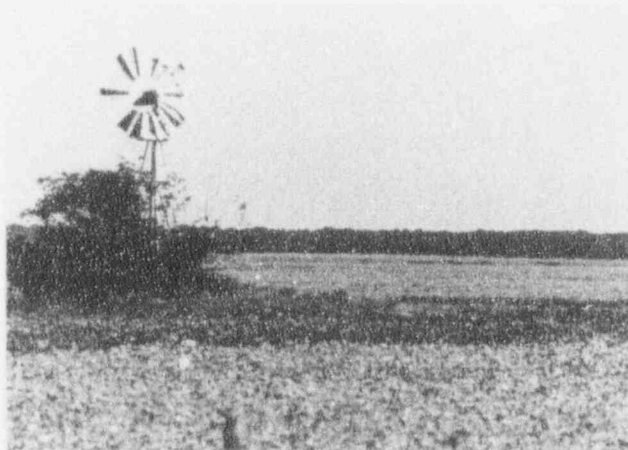
The alligator population in the Main Cooling Reservoir and the surrounding wetland habitats appeared stable in 1993. In addition, a healthy population of white-tailed deer continues to be observed.

The primary reason the site attracts such a variety of wildlife is its high quality, diverse habitat. Approximately 1,400 acres of prime lowland habitat located between the Colorado River and the east bank of the Main Cooling Reservoir offers a significant source of year-round water. These natural resource areas, in concert with numerous additional wetland and grassland areas, offer all the ingredients necessary to sustain the extensive wildlife population at the South Texas Project.

Neither the U.S. Environmental Protection Agency nor the State of Texas required specific site aquatic monitoring studies under the authority of the Clean Water Act for the time period of this report.

AIR QUALITY COMPLIANCE

Air emission sources at the South Texas Project fall under the scope of air pollution regulations promulgated under the Texas Clean Air Act and the Federal Clean Air Act and the numerous associated amendments. The purpose of these regulations is to safeguard air resources from pollution by controlling or abating air pollution and emissions. Regulated emission sources at the South Texas Project include fossil-fueled boilers and emergency diesel generators, emissions resulting from onsite fire-fighting training, and asbestos removal from renovation and demolition projects. Asbestos removal is also strictly regulated by the Occupational Safety and Health Protection Administration for worker protection.



Fossil-fueled Emission Sources

The South Texas Project uses two oil-fired auxiliary steam boilers to furnish steam for deaerator startup, turbine gland seals, and radioactive liquid waste processing when steam is not available from the nuclear steam supply. The auxiliary boilers are permitted to operate under U.S. Environmental Protection Agency Permit No. PSD-TX-209 and Texas Natural Resource Conservation Commission Permit No. R-7410. The boilers were not operated for other than maintenance purposes in 1993.

In addition to the two auxiliary steam boilers at the South Texas Project, there are sixteen diesel generators located onsite. These diesels are designed to provide emergency power to various plant systems or buildings in case of loss of power. These generators are exempt from Texas Natural Resource Conservation Commission licensing under Standard Exemption No. 5 as they are internal combustion engine driven generator sets used only for emergency service.

Fire-fighting Activities

The South Texas Project conducts onsite training of selected employees on proper fire-fighting techniques. Most onsite instruction consists of training on the proper use of a fire extinguisher. Advance notification of fire fighting training sessions is provided to the Matagorda County Health Department and the Texas Natural Resource Conservation Commission. Other than routine training activities, no reportable events occurred in 1993.

Asbestos Removal

Advance notification is provided to the Texas Natural Resource Conservation Commission of the scheduled demolition of buildings onsite and also for the removal of certain coatings containing fixed asbestos. Buildings are inspected for the presence of asbestos prior to demolition. Regulations governing asbestos removal are found in the U.S. Environmental Protection Agency **National Emission Standards for Hazardous Air Pollutants**. Demobilization of construction phase structures at the South Texas Project was essentially completed in 1992. Asbestos surveys conducted in 1993 in accordance with U.S. Environmental Protection Agency regulations identified the presence of asbestos in some floor tile and mastic, roofing materials, and some caulking sealants. These were removed and shipped for disposal in accordance with applicable regulations. Removal of coatings with some fixed amounts of asbestos continued in 1993 in accordance with guidance provided by the Texas Department of Health.

WATER QUALITY COMPLIANCE

Water usage and wastewater treatment at the South Texas Project are regulated under the federal **Safe Drinking Water Act**, the **Clean Water Act**, and the **Texas Water Quality Act**. Collectively, these acts provide regulations for safeguarding public drinking water supplies and maintaining the integrity of state and federal waters. The South Texas Project uses surface water and groundwater for industrial uses. Groundwater supplies onsite drinking water. Cooling water for plant activities uses surface water from the Main Cooling Reservoir and the Essential Cooling Pond, while five onsite water wells supply groundwater. These water wells supply potable water for the plant, makeup water for the Essential Cooling Pond, service water, firewater, and water for other onsite industrial uses.

Reports identifying ground and surface water use are submitted annually to the Texas Natural Resource Conservation Commission. Monthly Discharge Monitoring Reports are submitted to the Texas Natural Resource Conservation Commission and the U.S. Environmental Protection Agency for wastewater discharges. Monthly reports are also submitted to the Texas Natural Resource Conservation Commission regarding drinking water quality. These reports contain sample dates and analytical results.

Drinking water is routinely monitored for bacteriological contamination, volatile organic compounds, pesticides, herbicides, heavy metals, and radioactivity to ensure the health and safety of site workers. In 1993, operation of the potable water systems was maintained by the Plant Operations and Facilities Management Departments and monitored--daily, weekly, or quarterly as applicable--by chemistry and environmental personnel. In two unrelated events, the Texas Natural Resource Conservation Commission issued letters of violation to the South Texas Project for exceeding coliform maximum contaminant levels. The first letter issued in May of 1993 was related to the Nuclear Support Center/Nuclear Training Facility potable water system and the second letter in September of 1993 was related to the Construction Potable Water System. Both cases were attributed to low levels of residual chlorine in the systems. The first occasion involved low flow in portions of the system and the second involved an injection pump failure.

On both occasions, the site implemented immediate corrective actions to return the systems to compliant conditions and to prevent recurrence. Subsequent water quality remained satisfactory.

The **Federal Clean Water Act**, as amended in 1987, requires permits for storm water discharges associated with industrial activity from a point source. Associated regulations required development of a site-specific Storm Water Pollution Prevention Plan which was implemented in October of 1993. Requirements of the Storm Water Pollution Prevention Plan are intended to ensure that potential pollution sources at the site are thoroughly evaluated and that appropriate measures designed to prevent or control the discharge of pollutants in storm water runoff are selected and implemented.



Wastewater discharges are monitored for pH, total suspended solids, oil and grease content, chlorine concentrations, temperature, fecal coliform levels, and/or biological oxygen demand as required by permit. Wastewater operations in 1993 were conducted by the Chemical Operations section and Facilities Management Department and monitored weekly, or more frequently if required or warranted, by chemistry and environmental personnel.

Wastewater Treatment Compliance Status

The South Texas Project currently has eight wastewater outfalls, one of which is not yet activated. The seven active outfalls include sanitary waste discharges, discharge from the Neutralization Basin of the Nonradioactive Chemical Waste Treatment System, and discharge from the Oily Waste Treatment System. One outfall, from the Main Cooling Reservoir (Outfall 001), is not yet activated. Outfall 001 (Cooling Pond Discharge) and Outfall 002 (Construction Sanitary Waste Treatment System) discharge to the Colorado River. No discharges from these two outfalls took place in 1993. All other outfalls are internal and discharge to the Main Cooling Reservoir. The compliance status for each outfall in 1993 is included in the following descriptions.

OUTFALL 001 (COOLING POND DISCHARGE). The South Texas Project cooling pond discharge system transports water by gravity from the Main Cooling Reservoir to the Colorado River. Outfall 001 is not yet activated. No reportable environmental conditions were associated with this outfall in 1993.

OUTFALL 002 (CONSTRUCTION SANITARY WASTE TREATMENT SYSTEM). Outfall 002 represents a 60,000 gallon per day sewage treatment facility that discharges

to a tidal segment of the lower Colorado River. Effluent is chlorinated prior to discharge in accordance with the applicable permit requirements. Late in 1989, as capacity needs decreased, this treatment system was removed from service. No reportable environmental conditions were associated with this outfall in 1993.

OUTFALL 101 (NEUTRALIZATION BASIN). The Neutralization Basin is a low volume waste treatment system that collects nonradioactive liquid waste consisting primarily of demineralizer regenerate, as well as the effluent from Outfall 501, for treatment prior to discharge to the Main Cooling Reservoir. No reportable environmental conditions were associated with this outfall in 1993.

OUTFALL 201 (OILY WASTE TREATMENT SYSTEM). Outfall 201 represents a floor drainage treatment facility that discharges approximately 15,000 to 30,000 gallon per day to the Main Cooling Reservoir. Oily wastewater from normal equipment leakoff is processed and effluent is pumped to the Main Cooling Reservoir. Separated oil is transferred to a storage tank for offsite disposal. There were no reportable environmental conditions associated with this outfall in 1993.

OUTFALL 301 (EAST SANITARY WASTE TREATMENT SYSTEM). The East Sanitary Waste Treatment System is a 15,000 gallon per day sewage treatment facility which discharges to the Main Cooling Reservoir. This treatment system was removed from service in mid-1989 due to decreased capacity needs. No reportable environmental conditions were associated with this outfall in 1993.

OUTFALL 401 (WEST SANITARY WASTE TREATMENT SYSTEM). The West Sanitary Waste Treatment System is a 60,000 gallon per day sewage treatment facility which discharges to the Main Cooling Reservoir. Two reported environmental conditions occurred at this treatment system in 1993. These two conditions resulted from an upset condition of the treatment system in January of 1993.

On January 26, 1993, total suspended solids analysis results exceeded the permit limit due apparently to the inability of the biological portion of the treatment system to adjust to the sudden temperature drop experienced immediately prior to the system upset. Due to the high total suspended solids value obtained on this date, the daily average for total suspended solids on Outfall 401 for the month of January 1993 was also exceeded.

OUTFALL 501 (METAL CLEANING WASTE). Wastewater generated from flushing and chemical cleaning of piping and equipment is collected in the Inorganics or Organics Basin (Outfall 501) and routed to the Neutralization Basin (Outfall 101). After applicable iron, copper, and pH requirements are met, the wastewater is discharge to the Main Cooling Reservoir. No reportable environmental conditions were associated with this outfall in 1993.

OUTFALL 601 (TRAINING FACILITY SANITARY WASTE TREATMENT SYSTEM). The Outfall 601 sewage treatment facility is a 60,000 gallon per day capacity unit that discharges to the Main Cooling Reservoir. No reportable environmental conditions occurred at this treatment system during 1993.

The South Texas Project informed the U.S. Environmental Protection Agency and the Texas Natural Resource Conservation Commission of three unauthorized discharges in 1993. One was an offsite release of approximately 1,200 gallons of processed sanitary effluent that occurred on loss of electrical power at the West Sanitary Waste Treatment System. The second was an offsite release of saturated brine from a broken line that entered the storm drain system. An unauthorized discharge of approximately 20,000 gallons of processed sanitary effluent from the Training Sanitary Waste Treatment System due to the malfunction of one of the effluent pumps was the third. The discharged effluent of each sanitary waste treatment system had been fully processed and analytical results indicated that the effluent was compliant with wastewater discharge permit parameter requirements on both occasions. Each of these reported conditions was an isolated incident reported by HL&P and corrected upon discovery. No adverse impact to the environment occurred. None of these incidents presented a recurring problem in 1993.



The South Texas Project is committed to being a leader in environmental protection. A review of the compliance data for 1992 indicates that the site's aggressive campaign to reduce the number of environmental permit parameter noncompliances was highly successful with a 71% reduction in 1993. The reduction in reportable environmental conditions for the past four years attests to the success of corrective actions implemented to date to ensure compliant operations of the South Texas Project wastewater treatment systems. The South Texas Project is committed to continuing this positive trend.

SOLID WASTE MANAGEMENT COMPLIANCE

Solid waste management procedures for chemical, hazardous, and nonhazardous wastes generated at the South Texas Project ensure that wastes are properly disposed of in accordance with applicable federal, state, and local environmental and health regulations. By regulation, solid waste includes solid, semi-solid, liquid, and gaseous waste material. Nonradioactive wastes generated at the South Texas Project are regulated primarily by the U.S. Environmental Protection Agency under the **Resource Conservation and Recovery Act** and its amendments, the **Comprehensive Environmental Response, Compensation, and Liability Act** and by the Texas Natural Resource Conservation Commission under the **Texas Solid Waste Disposal Act**.

The Texas Natural Resource Conservation Commission regulates the collection, handling, storage, and disposal of solid wastes including hazardous wastes. Transportation of waste materials is regulated by the U.S. Department of Transportation.

The South Texas Project is registered with the Texas Natural Resource Conservation Commission as a large quantity generator of industrial solid wastes including hazardous wastes. Texas Natural Resource Conservation Commission regulations require that industrial solid wastes generated at the South Texas Project be identified to the Commission. These wastes are identified in the Texas Natural Resource Conservation Commission Notice of Registration No. 30651 issued for the South Texas Project. The registration is revised whenever there is a change in waste management practices at the site. As a registered large quantity generator of hazardous waste, the South Texas Project is limited to a maximum storage period of 90 days for hazardous waste. The **Resource Conservation and Recovery Act** and **Texas Solid Waste Disposal Act** also mandate other requirements for large quantity generators, such as the use of proper storage and shipping containers, labels, manifests, reports, personnel training, a spill control plan and an accident contingency plan. Plant environmental personnel conduct routine inspections of waste storage and accumulation areas to ensure compliance with the regulations. Plant personnel also inspect areas throughout the site to ensure wastes are not stored or accumulated inappropriately. Quarterly solid waste audits are conducted at the site by corporate environmental personnel. Waste handling and disposal activities are summarized and documented in the 1993 Annual Waste Summary for the South Texas Project submitted to the Texas Natural Resource Conservation Commission.

Hazardous Material Response

The South Texas Project expanded basic hazardous material training to approximately 1,200 personnel in 1993. This basic training is for employees whose duties may entail involvement with hazardous materials or hazardous wastes, either under normal or emergency conditions. In addition, the site conducted spill response training for the onsite spill response team.

The **Comprehensive Environmental Response, Compensation, and Liability Act** created a federal authority and source of funding for responding to spills and other releases of hazardous materials, pollutants, or contaminants into the environment. As a result of this Act, reportable quantities were established for several hundred chemicals. Spills exceeding these parameters must be reported to the U.S. Environmental Protection Agency. Two releases of sodium hypochlorite were reported to the U.S. Environmental Protection Agency and the Texas Natural Resource Conservation Commission in



1993. On each occasion the leaks were into a berm or diked area, the spill response team responded and the releases were contained onsite. Cleanup was completed and conditions restored to normal.

Nonradioactive Waste Management and Recycling Activities

Nonradioactive solid waste that is not shipped for recycling is shipped for disposal. Municipal-type trash is transported to the county landfill for disposal while construction-related non-combustible, inert debris is placed in the onsite landfill as specified on the South Texas Project's solid waste notice of registration.

The **Resource Conservation and Recovery Act** encourages the recycling, recovery, or reuse of waste when possible to reduce the amount of waste being disposed of in landfills. The South Texas Project ships waste oil, waste diesel fuel, waste antifreeze solution and waste solvent for fuel blending and thermal energy recovery. Lead-acid batteries are returned, when possible, to the original manufacturer for recycle or are shipped to a registered battery recycler. This reduces the volume of hazardous waste that might otherwise have been generated. An extensive site paper recycling program results in the collection of several tons of paper each year. Plant personnel continue to explore areas where recycling activities may be expanded or initiated.

UNDERGROUND STORAGE TANKS

The **Resource Conservation and Recovery Act** also regulates the removal of underground storage tanks and establishes standards for new tanks and for those that remain below ground. An underground storage tank includes the tank system and its piping. These requirements which include notification, leak detection and monitoring requirements, performance standards for new tanks, financial coverage, and reporting requirements were implemented to prevent damage to the environment from leaking tank contents.

The last three remaining underground storage tanks at the South Texas Project were permanently removed from service and closed in 1993. These were replaced with aboveground storage tanks. No underground storage tanks remain in service at the South Texas Project.

SARA TITLE III COMPLIANCE

The **Comprehensive Environmental Response, Compensation, and Liability Act** was amended and enhanced in 1986 to establish new programs for addressing emergency preparedness and community right-to-know. This amendment is known as the **Superfund Amendment and Reauthorization Act (SARA)**. The South Texas Project conducts site wide inspections to identify and record hazardous products and chemicals onsite as required by the **Superfund Amendment and Reauthorization Act** and the **Texas Hazard Communication Act**. Annual reports are submitted to the Texas Department of Health by March 1 for the preceding calendar year.

CHEMICAL CONTROL

The Expendable Materials Program was established at the South Texas Project to evaluate those chemicals and products that have the potential to come in contact with plant components. Disposal requirements for each of these chemicals or products are evaluated prior to approval and are clearly outlined on the evaluation form. Approved chemicals and products are listed in the STPEGS Expendable Materials Manual which is easily consulted for the proper disposal requirements of that particular material. Standard plant procedures establish disposal requirements. Alternate evaluation methods are available for those materials that fall outside the scope of the Expendable Materials Program.

Restrictions regarding the storage of product drums and gas cylinders are also proceduralized at the South Texas Project. No more than the amount of material necessary to perform a job is allowed to remain within the Protected Area unless prior authorization is obtained. Plant personnel conduct routine inspections to ensure that unauthorized chemicals are not stored within the Protected Area unless in use. These restrictions aid in minimizing the amount of nonradioactive waste generated at the South Texas Project.



ENVIRONMENTAL PROTECTION PLAN STATUS

The Environmental Protection Plan was issued in March of 1989 to provide for the protection of nonradiological environmental values during operation of the South Texas Project. This section reviews Environmental Protection Plan noncompliances identified by the plant and associated corrective actions to prevent recurrence. Potential nonconformities are quickly addressed when identified to maintain operations in an environmentally acceptable manner. Internal reviews, audits, and inspections conducted in 1993 documented that the plant is in compliance with the Environmental Protection Plan.

This section also reviews nonroutine reports submitted by plant personnel and any activities that involved a potentially significant unreviewed environmental question. A proposed change, test or experiment is deemed to involve an unreviewed environmental question if it concerns: (1) a matter that may result in a significant increase in any adverse environmental impact previously evaluated in the Final Environmental Statement related to the Operation of South Texas Project, Units 1 and 2 (Docket Nos. 50-498 and 50-499), environmental impact appraisals, or in any decisions of the Atomic Safety and Licensing Board; or (2) a significant change in effluents or power level; or (3) a matter, not previously reviewed and evaluated in the documents specified in (1) above, which may have a significant adverse environmental impact. No unreviewed environmental questions were identified in 1993.

Events that require reports to Federal, State, or local agencies other than the Nuclear Regulatory Commission are reported in accordance with those reporting requirements. The Nuclear Regulatory Commission is provided with a copy of such reports when it is submitted to the other agency. If a report is not required by an outside agency for a nonroutine event, then a thirty-day report to the Nuclear Regulatory Commission is required in accordance with the Environmental Protection Plan. No thirty-day reports were required in 1993. Nonroutine reports submitted in 1993 by the South Texas Project are discussed earlier in this report.



Radiological Environmental Summary

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South Texas Project Electric Generating Station

The purpose of the Radiological Environmental Monitoring Program (REMP) is to verify that the South Texas Project is operating within its design parameters and to assure plant effluents do not result in a significant radiological dose to individuals off-site. This objective is accomplished by thoroughly evaluating known and predictable relationships between the plant and the environment while performing additional evaluations where unique relationships may exist. Approximately 2,100 analyses of air, water, sediments, vegetation, and meat products were performed during 1993.

There were a few items of interest identified by the REMP during 1993. All of these items were related to the operation and extended outages of the units. Below is a short discussion for each of these items.

During Unit Two refueling activities, an elevated particulate release occurred. A positive value was measured for the weekly gamma isotopic of air particulate filters collected during this time. This measurement was the only air sample that could be directly related to plant operations. The activity was well below any of the required lower limits of detection and there was no significant increase in the weekly beta analysis. Also, the quarterly composite gamma analysis of the air particulate filters was below all of the lower limits of detection.

Tritium concentration in the Main Cooling Reservoir (MCR) decreased during 1993. This was due to both of the units being in extended outages. The measured concentration continues to be well below the predicted values as described in the Updated Final Safety Analysis Report (UFSAR).

An increase in the tritium concentration in the West Branch of the Colorado River was noted. (The West Branch of the Colorado River is an on-site indicator sampling station.) The increase is thought to be due to the decrease in the rainfall during the time the sample was taken. Water in the river is usually higher and is diluted with rain water. Tritium activity originates from the main cooling reservoir's relief wells and is well below any of the reporting criteria. The tritium level will continue to be monitored.

There was a positive tritium measurement in a sample from a drainage ditch located north of the power plants. The ditch is located between the switchyard and the protected area fence. The tritium is believed to originate from the essential cooling water pond located to the east of the ditch.

Operation of the South Texas Project continues to have no significant radiological impact upon the area. All radiological doses received by the general public from plant operations are well below all regulatory limits. Plants and animals analyzed from the off-site sampling stations continue to show no radiological contribution from plant operation.



Radiological Environmental Operating Report

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South Texas Project Electric Generating Station

PROGRAM DESCRIPTION

The South Texas Project initiated a comprehensive and fully implemented pre-operational Radiological Environmental Monitoring Program (REMP) in July 1985. That program terminated on March 7, 1988 when the operational program was implemented.

Critical pathway analysis requires that samples be taken from aquatic, atmospheric, and terrestrial environments. These samples are obtained for evaluation of potential radiation dose to man. Sample types are based on established pathways and from experience gained at other existing nuclear facilities. A special study was also performed by Houston Lighting & Power in conjunction with Texas A&M University to evaluate site-specific wildlife sample types. Sample locations were determined after considering site meteorology, Colorado River hydrology, local demography and land use. Sampling locations are further evaluated and modified according to field and analysis experience.

Sampling locations may be referred to as an indicator or control station. Indicator stations are locations on or off the site that may be influenced by plant discharges during plant operation. Control stations are locations where plant influence is not expected. Though most samples analyzed are accompanied by a control sample, it should be noted that this practice is not always possible or meaningful with all media types. Fluctuations in the concentration of radionuclides and direct radiation exposure at indicator stations are evaluated in relation to the control stations. Indicator stations are compared to characteristics identified during the pre-operational REMF to monitor for radiological effects from plant operation.

Several sample collection methods are used to implement the program. Figure 1 includes two maps that identify permanent sample stations. Figure 2 illustrates the zones used when collection locations are not permanent sample stations. Sample stations shown on Figure 1 are described in Table 2.

REMP DESIGNATED SAMPLE LOCATION MAP



Figure 2

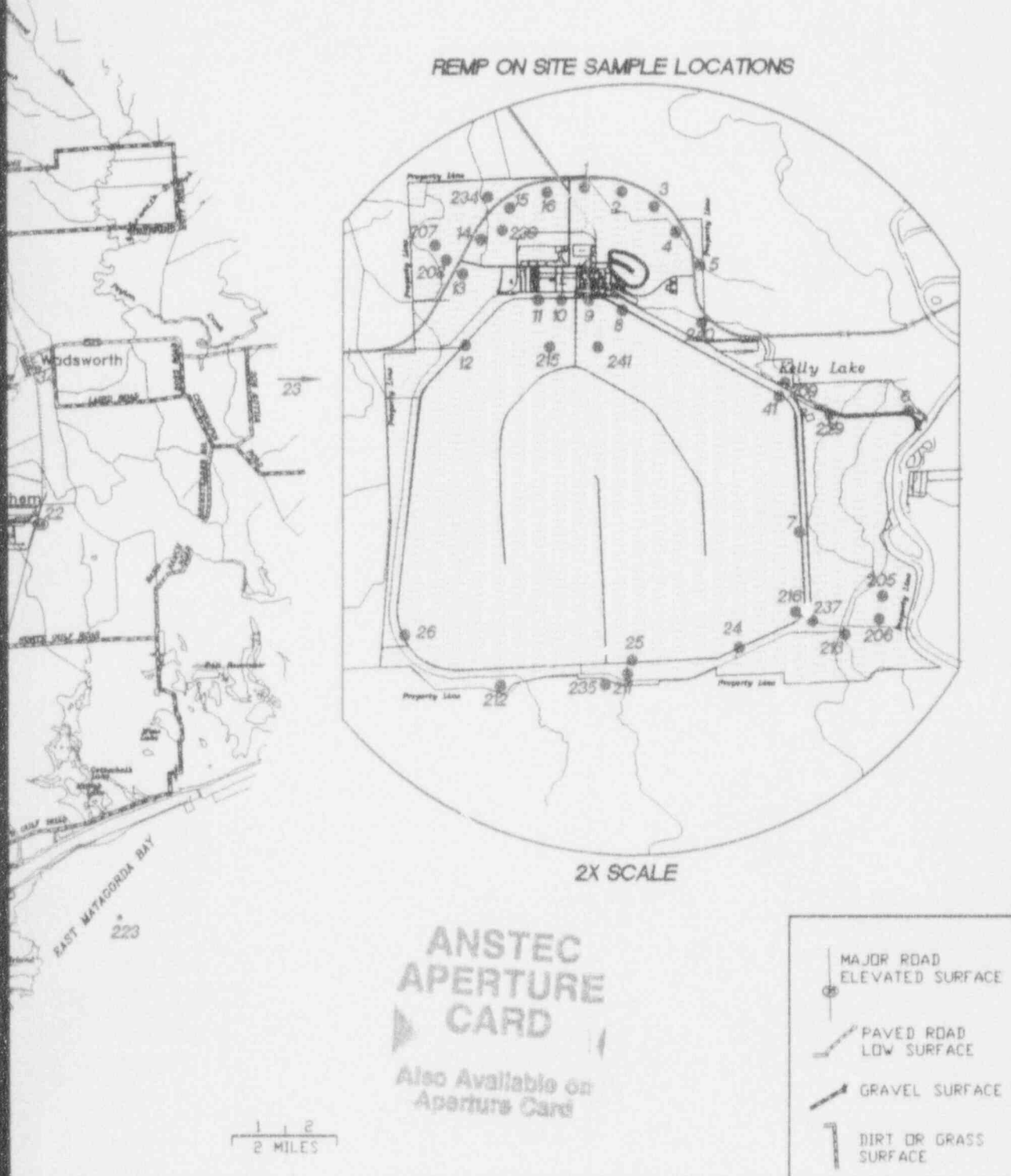
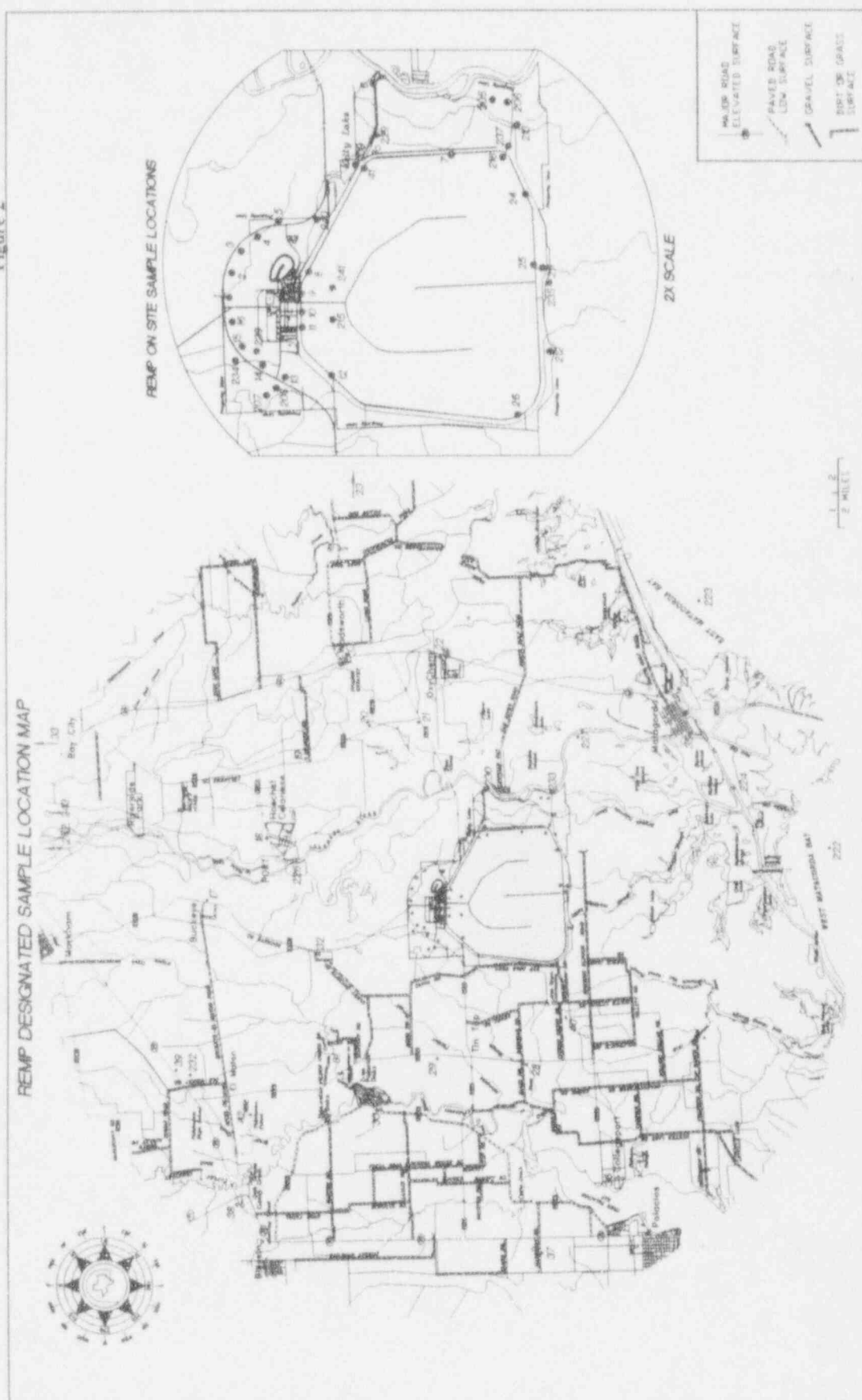


Figure 2



REMP ZONE LOCATION MAP

1 2
0 2 MILES

MAJOR ROAD
ELEVATED SURFACE

PAVED ROAD
LOW SURFACE

GRAVEL SURFACE

DIRT OR GRASS
SURFACE

ANALYSIS OF RESULTS AND TRENDS

The environs of the South Texas Project continues to indicate no significant radiological contribution from plant operation. Analytical values from offsite indicator sample stations continue to trend with the control stations. Tritium and sediment samples from the MCF trended downward in 1993. The downward trend was due to the extended outages for both units. Most of the other onsite indicator samples continued to increase in measured values at their expected rates.

Positive measurements in three routine analyses varied from the trends of previous years. A positive measurement was found in a weekly gamma analysis of air particulate samples. This was found to be the result of outage activities in Unit Two. Surface water samples from the West Branch of the Colorado River indicated a large increase in values. The increase in activity is thought to be caused by the decrease in rainfall during the sampling times. Tritium activity enters the West Branch of the Colorado River by runoff of water from the MCR relief wells. Therefore, the amount of rain water in the river influences the amount of tritium present. All values are below any of the state or NRC reporting levels.

One sample from a drainage ditch north of the plants indicated positive tritium. This was the third routine analysis that varied from previous years. The value was just over the lower limit of detection for tritium in water samples. The source of the tritium is believed to be the essential cooling water pond located north-east of the plants.

Average monthly beta activity from three onsite indicator stations and a single control station for air particulate samples have been compared historically from 1988 through 1993, see Figure 4. The average of the onsite indicators trends closely with the offsite control values. The comparison illustrates that plant operation is not having an impact on air particulate activity even at the key indicator stations (#001, #015, #016). (These stations are located near the plant and are in a leeward direction.)



The annual average gross beta activity in air particulate samples for each of the nine stations in relation to wind direction is illustrated by Figure 5. There were no significant differences between indicator stations and control stations. All of the mean values were between 0.0186 and 0.0205 pCi/ cubic meter. All of the values are consistent with previous years, showing very little deviations. The action level shown on Figure 5 is a value used by the REMP to start an investigation into possible causes and is not based upon any state or federal guideline.

Direct gamma radiation in relation to wind direction as measured by thermoluminescent dosimeters (TLD) is depicted in Figure 6. The data from the key indicator stations (#001, #015, #016) shows no influence from plant operations. For comparison, the average citizen in the United States receives approximately 60- 75 mR/ quarter from natural sources. These natural sources include building materials for houses, solar radiation, television sets, and radon gases within their residence or work location. The action level indicated on Figure 6 is a level used by the REMP to start an investigation into possible causes and is not based upon any state or federal guideline. Values from indicator stations trend very closely to the values of the control stations.

Data from the tritium concentrations in eight composite surface water samples is shown in Figure 7 for 1988 through 1993. The specific locations for the sample points can be found in Table 2. The tritium concentration in the MCR decreased during 1993. This was due to both of the units being in extended outages. Based upon previous years' experience, the MCR should reach an equilibrium at a level below the predicted 21,000 pCi/ L stated in the UFSAR.

Tritium enters the sloughs and ditches by way of the MCR relief well system. The activity at these locations is considerably less than in the MCR and is variable depending on how much run-off (rain) has occurred. As a results of decreased rainfall during the sample time, the positive measurements in the West Branch of the Colorado River (Station 213) increased during 1993. The highest measurement was 2,195 pCi/L which is below the reporting level of 30,000 pCi/L.

All of the required and all but seven of the scheduled REMP samples were collected in 1993. Four of the samples that were not collected was due to complete power failure for the entire sampling period. The other samples were missed due to vegetation not being available to sample. The samples that were missed did not cause a sampling deviation.

Most of the samples collected required more than one analysis. A few analyses performed on these samples did not meet their required lower limits of detection (LLD). However, most of the analyses that did not meet the required LLD were duplicate samples. There were only two samples that did not meet their required LLD's and did not have duplicate samples.

A required air iodine control station sample was the first sample that did not meet the required LLD. The sampling station had a power outage during the collection period. Therefore the sample had a low sample volume which prevented the analysis from attaining the required LLD's.

The second sample was a surface water sample from the Colorado River. The sample was collected by the Lower Colorado River Water Authority and there was a delay in getting the sample from them. Alternate methods of collection and better communication has been established to prevent this from reoccurring.

ODCM MODELS AND REMP RESULTS

During 1993 two parameters were measured which allow a check of the liquid and gaseous effluent models. The prolonged period of inactivity for both units of the South Texas Project permitted the MCR tritium concentrations to diminish. The rate of the tritium concentration decrease provides an estimate of the tritium loss rate from the MCR. Also, an air particulate measurement at station #001 indicated detectable cobalt which corresponded to a plant release.

The Offsite Dose Calculation Manual (ODCM) contains a model which describes the rate at which liquid effluents released to the MCR eventually enter runoff from a hydrostatic relief well



system associated with the MCR. The current model contains two rate constants, one for nonvolatile nuclides and one for tritium. The tritium loss rate constant assumes that a combination of seepage into the ground water and evaporation will remove tritium from the MCR. Rain and makeup from the Colorado River compensate to maintain the operating level of about 150,000 acre-feet. The sharply reduced release rate of tritium to the MCR in 1993 resulted in a decline in tritium concentrations as shown in Figure 7, station #216. If the decrease from

January to December is assumed to represent a rate of decrease, the rate of decrease should represent the tritium loss rate of the ODCM model.

The tritium loss rate calculated from the data of Figure 7 suggests a rate of decrease of about -0.646 per year or about twice as fast as the -0.318 per year used in the ODCM model. This larger loss rate must be due to either a higher seepage rate or a higher evaporation rate than used in the ODCM model. Since the relief well flow rates offer an indication of the seepage rate and have proven to be slightly lower than the hydrological models predict, the data suggest higher evaporative losses than the model provides. With the higher evaporative rate, less tritium is being released by seepage. Since offsite dose is calculated with the liquid release pathways only, the dose calculated with the ODCM model is an over estimation of tritium dose. Therefore the doses calculated with the ODCM models are conservative for offsite dose due to tritium in the MCR.

During March of 1993, a slightly elevated airborne particulate concentration was detected in the Unit Two reactor containment building. During this time the reactor containment building was being ventilated through the unit vent. The air sample collected at the unit vent during this period of time also indicated slightly elevated concentrations of cobalt. The average release rate over the time period was 0.0092 and 0.0034 $\mu\text{Ci/sec}$ (Co-58 and Co-60 respectively). The sector average depleted X/Q calculated in accordance with the ODCM was $2.6 \text{ E-}5 \text{ sec/cubic meter}$ (at

a distance of about 1400 meters). The atmospheric transport model of the ODCM predicts the average concentration at REMP station #001 to be 2.4 E-7 and 8.7 E-8 uCi/cubic meter. The activity collected by the station during the release should be about 3.3 E-6 and 1.2 E-6 uCi. The station collected 2.0 E-6 and 9.0 E-7 uCi. This agrees well with the atmospheric transport model and our effluent and environmental measurements. The total effective dose equivalent from inhaling airborne particulate material at this concentration is about 0.00007 mrem. (The annual limit for the total effective dose equivalent is 100 mrem.)



Figure 4

HISTORICAL COMPARISON OF AVERAGE MONTHLY BETA ACTIVITY FROM INDICATOR AND CONTROL AIR SAMPLES 1988 - 1993

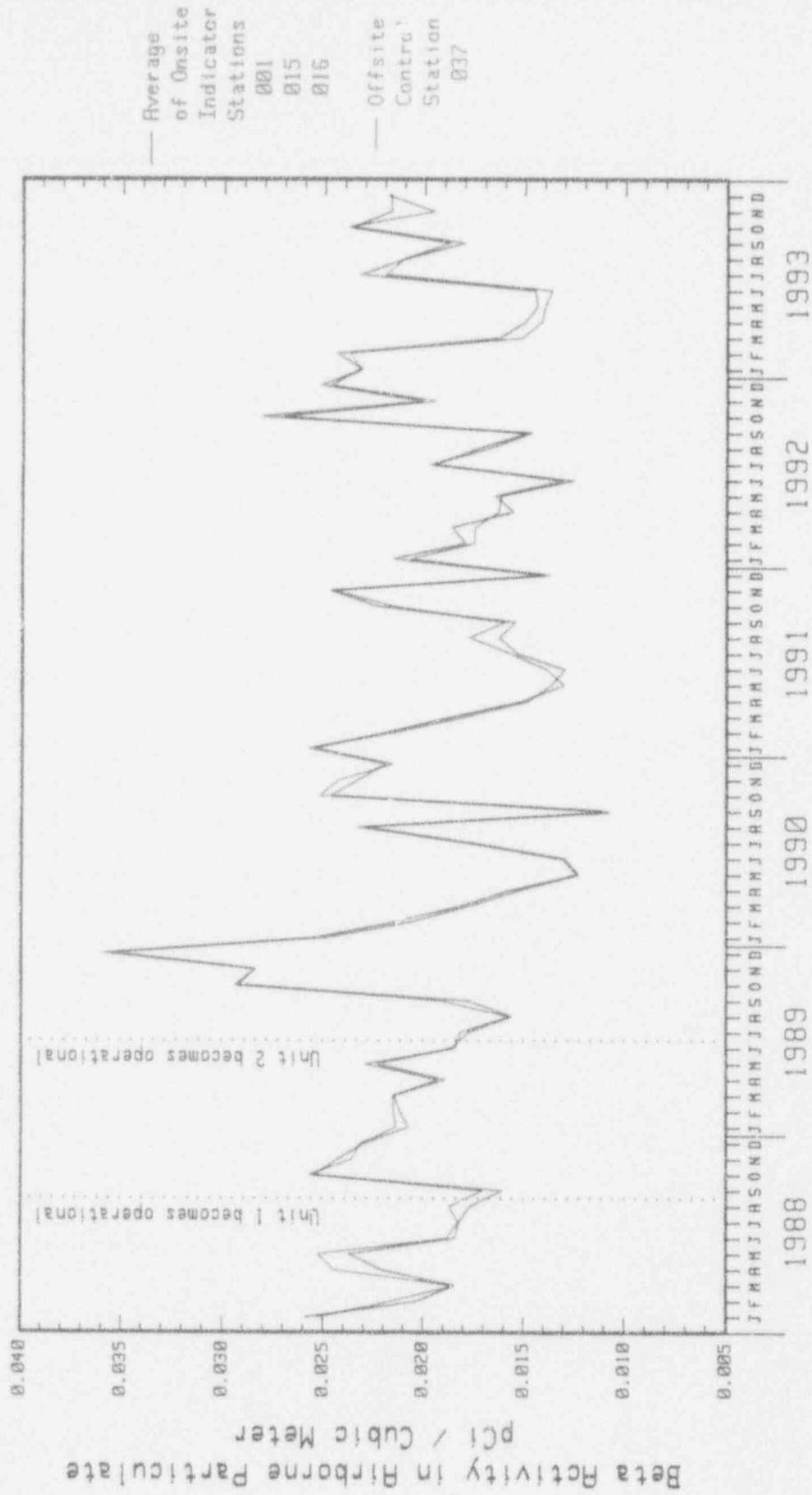
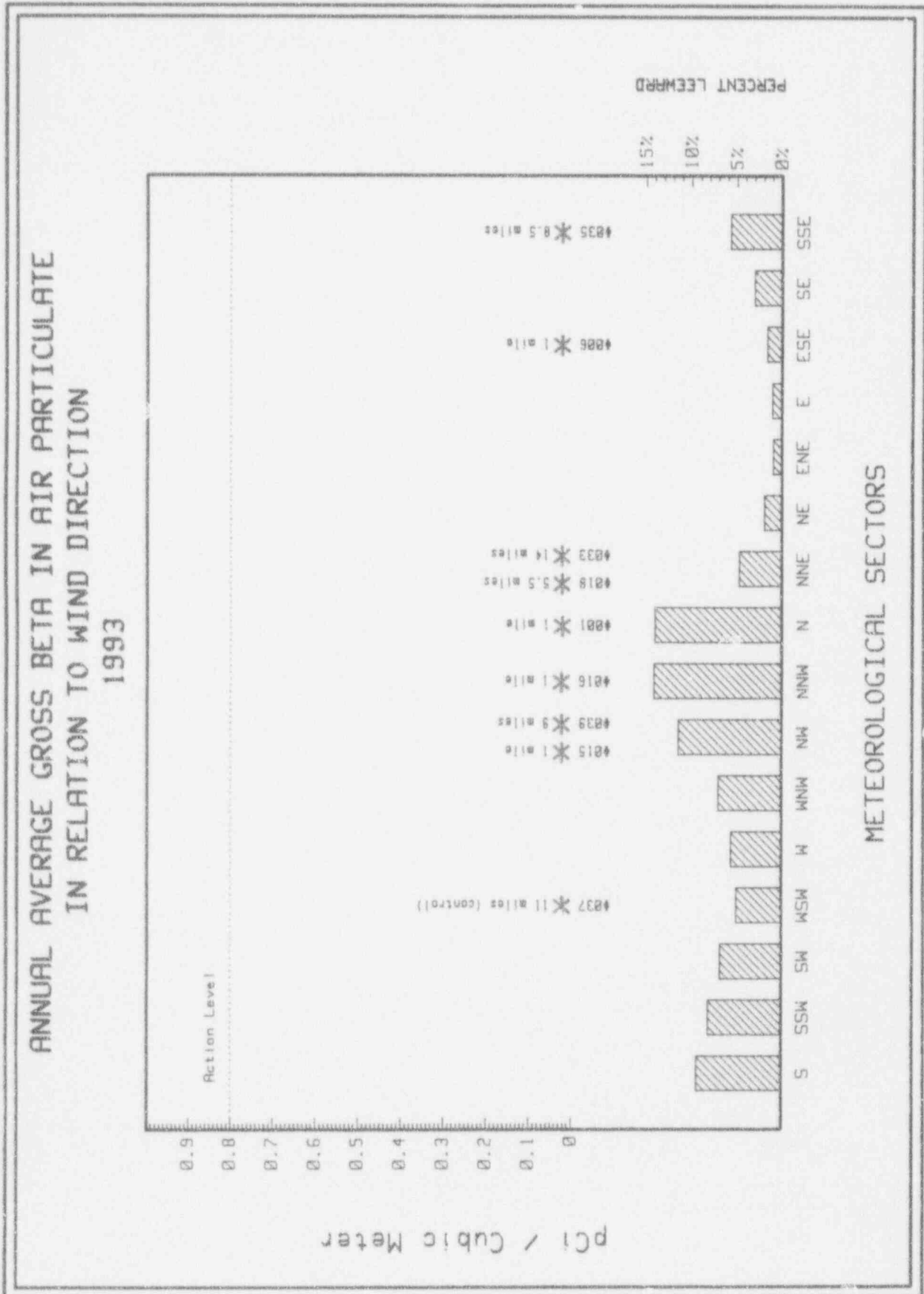


Figure 5



DIRECT GAMMA RADIATION IN RELATION TO WIND DIRECTION 1993

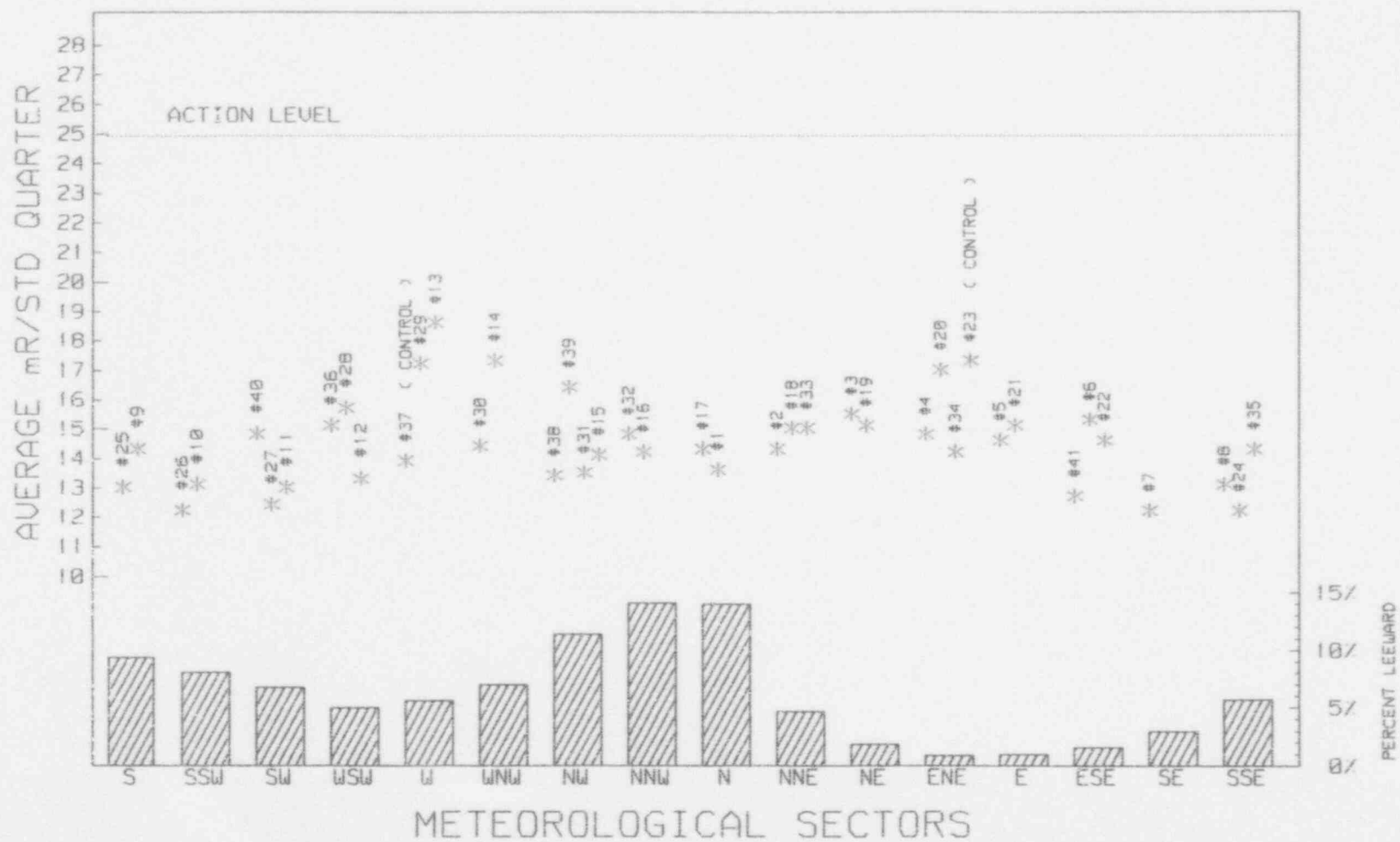
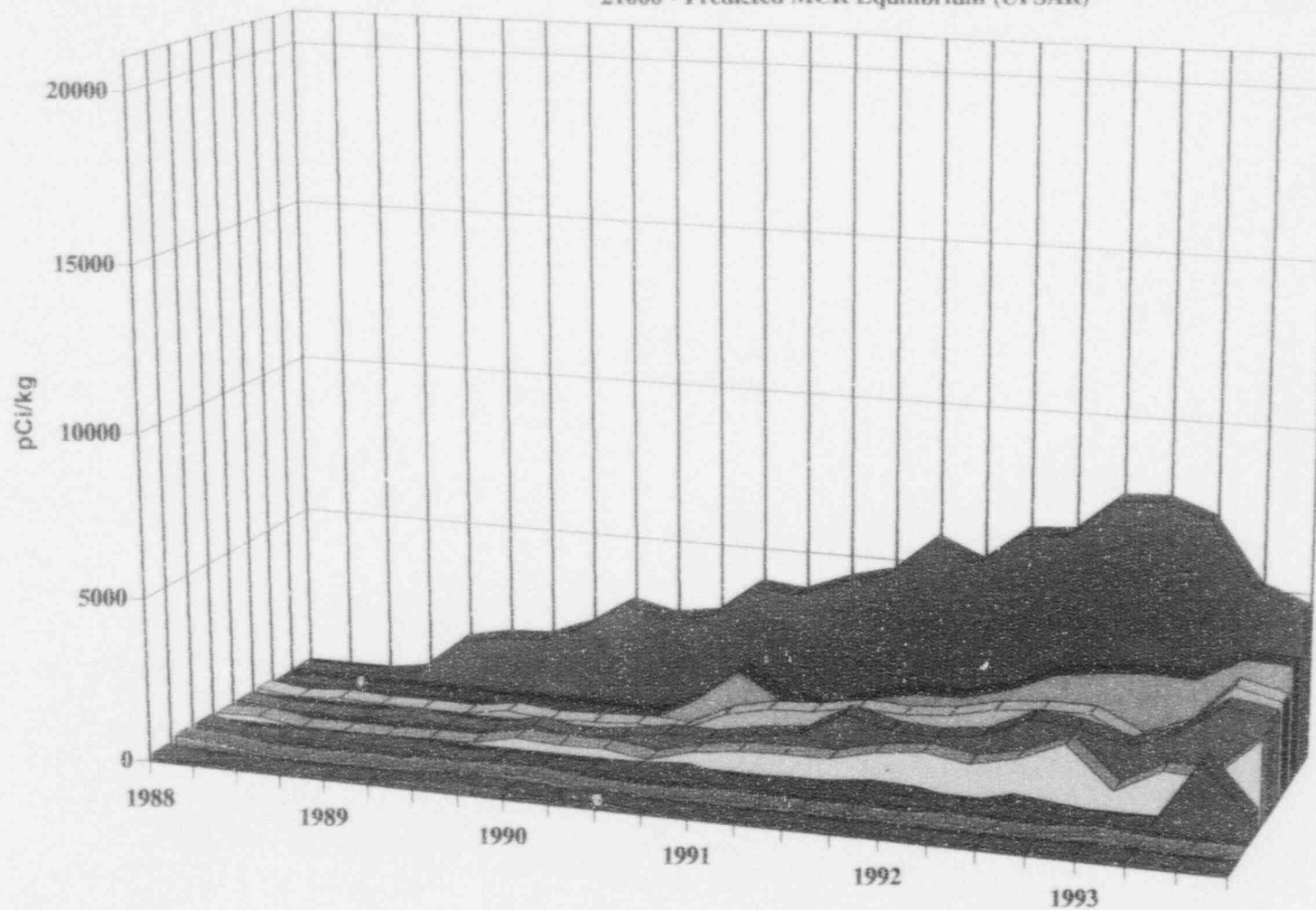


Figure 6

Historical Comparison of Tritium Activity in Surface Water 1988-1993

21000 - Predicted MCR Equilibrium (UFSAR)



- River Sample Upstream of Plant (Offsite)
- River Sample Downstream of Plant (Offsite)
- West Branch of River (Onsite)
- Little Robbins Slough (Onsite)
- East Branch Little Robbins Slough (Onsite)
- Ditch NE of MCR (Onsite)
- MCR Blowdown Channel (Onsite)
- MCR (Onsite)

Figure 7

LAND USE CENSUS

The Annual Land Use Census serves as an opportunity to assess the REMP and determine if program modifications are needed. This ensures that the REMP surveillance activities are relevant and are based upon current conditions. Information gathered for the census was obtained by telephone, direct contact, or through observations. Information was obtained from area residents as well as local, state, and government agencies. Additional sources included contact with utility personnel and observations made while performing routine REMP activities.

The census was completed in September 1993. No changes to the REMP were required due to the findings and observations made during the census. Two findings were investigated to determine if any changes were needed.

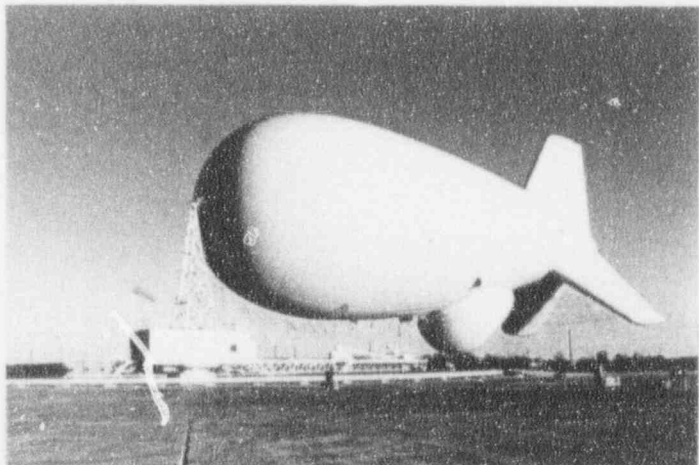
The first finding dealt with animals that were thought to be goats, located in the Citrus Grove area. If goats were present, changes to the REMP would have been required if the goat milk was being produced for human consumption. The owners were contacted and they identified the animals as an exotic type of sheep, therefore no action is required.

Establishment of a permanent Colorado River water sampler in Bay City was the second finding. This was a cooperative agreement with the Lower Colorado River Authority (LCRA). Sample collection is now being coordinated with the LCRA.

These were all of the finding that required investigation. Listed below are observations made during the census.

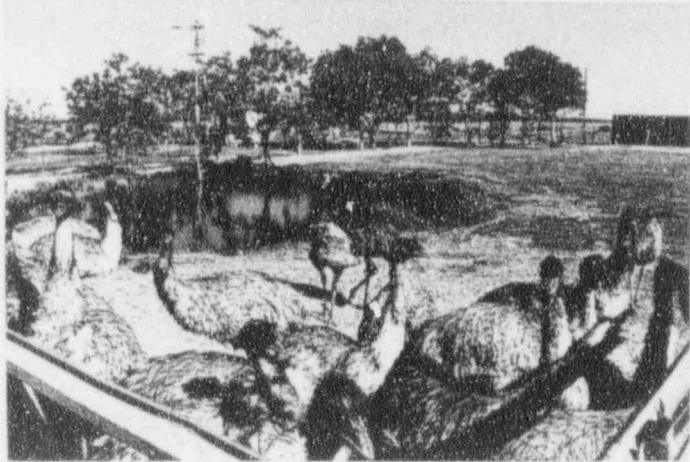
Observations

- * The federal government is operating a radar blimp station approximately eight miles southeast of the South Texas Project. The blimp facility typically employs twenty-five personnel and is being used by the federal government to monitor drug smuggling operations in the area.



- * Hoechst Celanese Petrochemical Plant, which typically employs 350 personnel, is located approximately four and a half miles north-northeast of the South Texas Project.

- * OxyChem Petrochemical Plant, which typically employs 150 personnel, is located approximately six miles east of the South Texas Project.
- * Riverside Park, which typically employs ten personnel, is located approximately six and a half miles north of the South Texas Project. Riverside Park is a municipal golf and recreation park that is being operated by the City of Bay City.
- * Agricultural and ranching practices have remained virtually the same in 1993. The only change noted in these practices is the raising of emus in the surrounding areas. One small emu ranch is located just inside of the five-mile zone while there are larger emu ranches within a ten-mile zone of the South Texas Project.

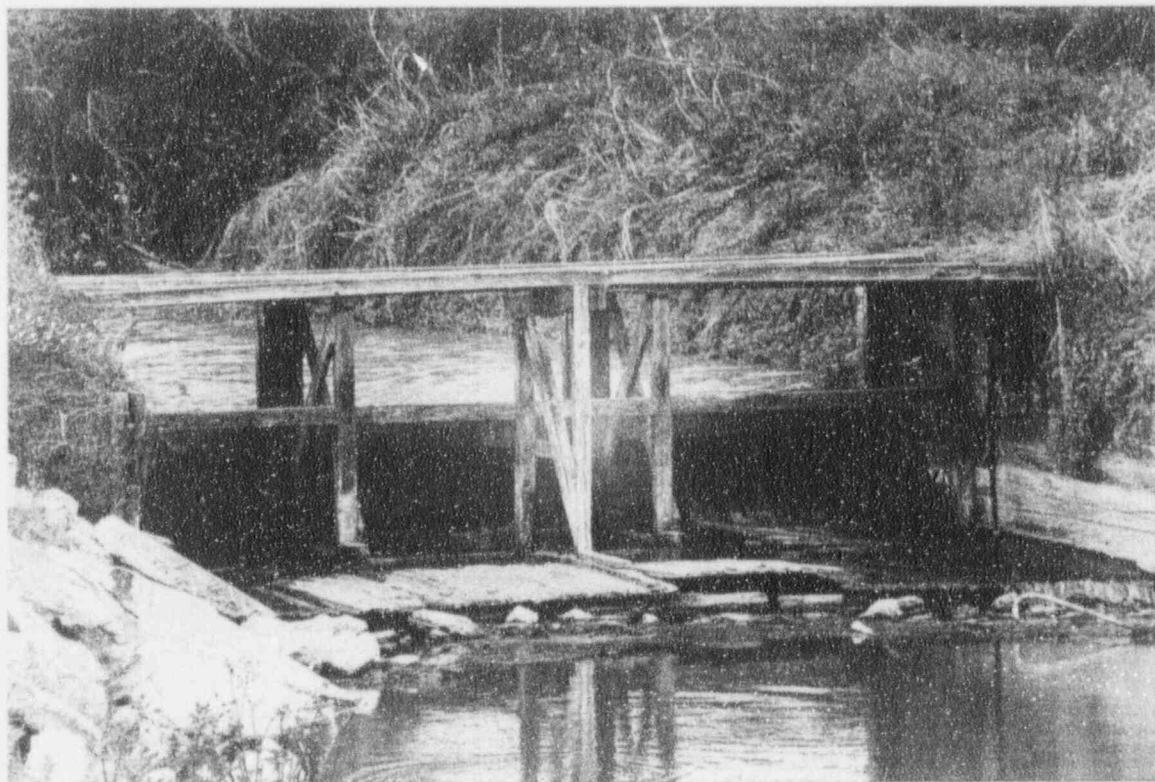


- * Location of the nearest residents is tabled below.

Sector	Distance (approx. miles)	Location
ESE	3.5	Selkirk Island
SE	3.5	Selkirk Island
°SSE	°4.3	°Savage Ranch
SW	4.5	Citrus Grove
WSW	2.5	FM 521
W	4.5	FM 1095
WNW	4.0	Ashby-Buckeye Rd.
NW	4.5	Wondirk Rd.
NNW	3.5	Reynolds Ranch (FM 1468)
N	3.5	Reynolds Ranch (FM 1468)

°New resident for this sector within the five-mile radius.

- * Broadleaf vegetation sampling is performed at the site boundary in the three most leeward sectors and at a control location instead of a garden census. Broadleaf vegetation samples taken also satisfy the collection requirement when milk samples are not available.
- * No commercial dairy operates in Matagorda County and there is no reliable source of milk within the five-mile zone.
- * There were no commercial vegetables farms located within the five mile zone.
- * The Army Corps of Engineers has plans to develop artificial reefs in West Matagorda Bay.
- * A community grocery store and gas station has been opened again in the area of Tin Top, located approximately four and a half miles west of the South Texas Project.
- * Irrigation practices have remained consistent with the past years. There is no agricultural use of river water downstream of the South Texas Project. Production acreage percentages for Matagorda County have not changed significantly from past years.



QUALITY ASSURANCE

Quality assurance for the Radiological Laboratory (RL) is measured and assessed by four distinct methods.

1. Houston Lighting & Power Nuclear Assurance Department.
 - o Performs periodic surveillance of specific REMP activities throughout the year.
 - o Performs an annual comprehensive audit of the REMP.
 - o Provides for an independent technical review by a technical specialist.
2. Radiological Laboratory Quality Assurance Program.
 - o Routine instrument control checks including calibrations and calibration verification.
 - o Annual testing and analysis.
 - o Intralaboratory quality control analyses.
 - o Internal assessments.
3. Interlaboratory Measurement Assurance Programs.
 - o Participation in the U.S. Environmental Protection Agency (USEPA) Intercomparison Studies Program.
 - o Participation in the U.S. Citizens for Energy Awareness/National Institute of Standards and Technology (USCEA/NIST) Measurement Assurance Program for the Nuclear Industry.
 - o Participation in the Battelle Pacific Northwest Laboratories' Measurement Assurance Program.
 - o Participation in an interutility measurement assurance program.
4. Periodic reviews by outside organizations or agencies (e.g. NRC, ANI, etc.).
 - o Perform programmatic content and effectiveness reviews in order to assure license compliance and establish the degree of compliance with select operational guidelines.

The assessment process determined the radiological environmental program has sufficient depth to accurately monitor the plant's influence on the radiological quality of the environment. The program complies with licensing and regulatory requirements. The provisions to initiate corrective action to prevent or limit departures from the requirements are effective.

Radioanalytical capabilities of the Radiological Laboratory (RL) are demonstrated by periodic

testing of environmental media similar to the analyses required by the REMP. Two acceptable laboratory measurement assurance programs specifically designed to measure environmental radioanalytical capabilities are Battelle Pacific Northwest Laboratories Direct Radiation Testing Program and the United States Environmental Protection Agency (USEPA) Interlaboratory Comparison Program. A fifteen percent acceptance criteria for accuracy in addition to the acceptance criteria of the respective programs has been applied to determine an agreement criteria. Figure 8 illustrates the RL performance in quality control activities.

The RL continues to perform at an outstanding level in these programs. RL values were in agreement with all of the values of Battelle during 1993. Two analyses during 1993 were not in agreement with the values of the USEPA. The first analysis that was in disagreement was due to differences in calibration nuclides. A single nuclide in a mixture of nuclides was the second item of disagreement. Overall performance of the RL is consistent with previous years and compares favorably with other participants.

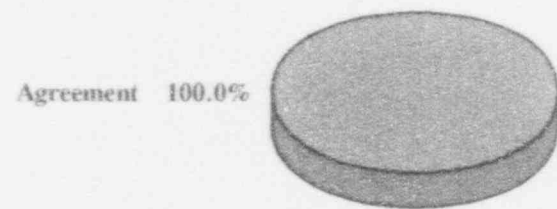
The RL also participates in two measurement assurance programs (MAP). They are the United States Committee for Energy Awareness/ National Institute of Standards and Technology (USCEA/ NIST) and Yankee Atomic Inter- Utility MAP. Agreement criteria for the USCEA/ NIST is $\pm 10\%$ of the known values and the agreement criteria for the Inter- Utility MAP is equivalent to the USEPA.

Performance in the measurement assurance programs was consistent with previous years. Agreement with USCEA/ NIST was 93.3% for 1993. There was a single analysis that was in disagreement. This was a new analysis for the RL and the difference was due to calibration nuclides. In the Inter- Utility MAP, there was also only one nuclide in a mixture of several nuclides analysis that did not meet the agreement criteria. Calibrations are in progress to correct for these deviations.

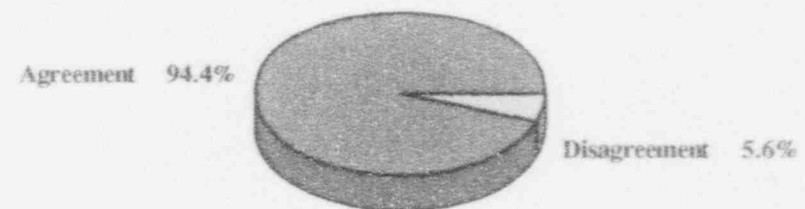
Six performance objectives have been identified to ensure a successful REMP surveillance program. They include analytical accuracy, analytical precision, analysis sensitivity, timeliness of sample analysis, scheduled collection and analysis, and percent quality control samples analyzed. The performance objectives have been summarized and the performance results are found in Figure 9, 1993 RL Performance Objective Summary.

All of the performance objectives are consistent with the performance of previous years. The performance objective for achieving a fifteen percent accuracy for Inter- and Intra-laboratory quality control samples was 97.9%. The performance objective for achieving fifteen percent precision for Replicate Inter- and Intra-laboratory Quality Control Samples was 99.5%. The performance objective of analyzing REMP samples in order to meet their required sensitivities was 99.9%. REMP samples were analyzed within thirty days of receipt 98.8% of the time. All of the required REMP samples were collected and analyzed in 1993. Quality control sample load was 29.7% 1993.

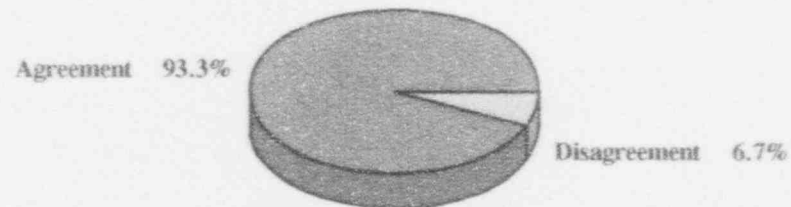
1993 Radiological Laboratory Quality Assurance Program Performance



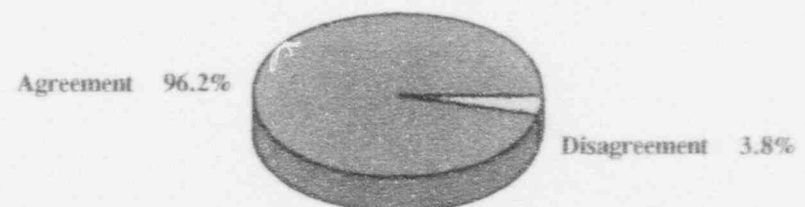
Battelle Environmental TLD



USEPA



USCEA/ NIST



Inter- Utility MAP

1993 PERFORMANCE OBJECTIVES SUMMARY

Performance Objective	Performance
$\pm 15\%$ Accuracy for Inter- and Intralaboratory Quality Control Samples	97.9%
$\pm 15\%$ Precision for Replicate Inter- and Intralaboratory Quality Control Samples	99.5%
Analyze REMP Samples in Order to Meet Required Sensitivities	99.9%
Perform the Analysis of REMP Samples Within 30 Days of Sample Receipt	98.8%
Collect and analyze required REMP samples as scheduled	100%
Maintain a minimum of 20% quality control sample load which will include field duplicates and splits, reagent blanks, blinds, etc.	29.7%



Addendum of Tables

1993

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South Texas Project Electric Generating Station

TABLE 1
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM
(MINIMUM REQUIRED)

EXPOSURE: DIRECT RADIATION

40 TOTAL SAMPLING STATIONS

Sample Media, Number, Approximate Location and Distance of Sample Stations from Containment.	Routine Sampling Mode	Nominal Collection Frequency	Analysis Type	Minimum Analysis Frequency
<p>Exposure Media: TLD</p> <p>16- Located in all 16 meteorological sectors, 1 mile.</p> <p>16- Located in all 16 meteorological sectors, 4-6 miles.</p> <p>6- Located in special interest areas (e.g. school, population centers), within 14 miles.</p> <p>2- Control stations located in areas of minimal wind direction (W,ENE), 10-15 miles.</p>	Continuously	Quarterly	Gamma	Quarterly

TABLE 1
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM
(MINIMUM REQUIRED)

EXPOSURE: AIRBORNE

5 TOTAL SAMPLING STATIONS

Sample Media, Number, Approximate Location, and Distance of Sample Stations from Containment.	Routine Sampling Mode	Nominal Collection Frequency	Analysis Type	Minimum Analysis Frequency
<u>Charcoal and Particulate Filters</u> 3- Located at the exclusion zone, N, NNW, NW Sectors, 1 mile. 1- Located in Bay City, 14 miles. 1- Control Station, located in a minimal wind direction (W), 11 miles.	Continuously	Weekly	Charcoal: I-131 Particulate: Gross Beta & Gamma- Isotopic	Weekly Weekly Quarterly Composite

TABLE 1
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM
(MINIMUM REQUIRED)

EXPOSURE: WATERBORNE

13 TOTAL SAMPLING STATIONS

Sample Media, Number And Approximate Location of Sample Stations	Routine Sampling Mode	Nominal Collection Frequency	Analysis Type	Minimum Analysis Frequency
<u>Surface</u> 1- Located in MCR at point of MCR blowdown to Colorado River. 1- Located above the site on the Colorado River not influenced by plant discharge. 1- Located downstream from blowdown entrance into the Colorado River, 2 miles. 1- Located near site boundary, Little Robbins Slough. 1- Located near site boundary, East Fork of Little Robbins Slough 1- Located near site boundary, West Branch of Colorado River 1- Located in drainage ditch north of MCR that empties into the Colorado River upstream of MCR pumping facilities.	Composite (grab if not available) Grab	Monthly Semiannually	Gamma-Isotopic & Tritium Gamma-Isotopic & Tritium	Monthly Quarterly Composite As collected
<u>Ground</u> 1- Located at well downgradient in the shallow aquifer.	Grab	Quarterly	Gamma-Isotopic & Tritium	As collected

TABLE 1
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM
(MINIMUM REQUIRED)

EXPOSURE: WATERBORNE

13 TOTAL SAMPLING STATIONS

Sample Media, Number And Approximate Location of Sample Stations	Routine Sampling Mode	Nominal Collection Frequency	Analysis Type	Minimum Analysis Frequency
<u>Drinking Water</u> 1- Located on site. 1- Located at a control station.	Grab	Monthly	Gamma-Isotopic & Gross Beta	Monthly
<u>Sediment</u> 1- Located above the site on the Colorado River, not influenced by plant discharge. 1- Located downstream from blowdown entrance into the Colorado River. 1- Located in MCR.	Grab	Semi-annually	Tritium Gamma-Isotopic	Quarterly Composites As collected

TABLE 1
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM
(MINIMUM REQUIRED)

EXPOSURE: INGESTION

8 TOTAL SAMPLING STATIONS

Sample Media, Number And Approximate Location of Sample Stations	Routine Sampling Mode	Nominal Collection Frequency	Analysis Type	Minimum Analysis Frequency
Milk *	Grab	Semi-monthly on pasture, monthly at other times.	Gamma-Isotopic & Low Level I-131	As collected
Broadleaf Vegetation 3- Located at the exclusion zone, N, NW, and NNW sectors. 1- Located in a minimal wind direction.	Grab	Monthly during growing season (When available)	Gamma-Isotopic	As collected
Agricultural Products **				

* Limited source of sample in vicinity of STPEGS. (Attempts will be made to obtain samples when available.)

** No sample stations have been identified in the vicinity of the site. Presently no agricultural land is irrigated by water into which liquid plant wastes will be discharged. Agricultural products will be considered if these conditions change.

TABLE 1
ENVIRONMENTAL MONITORING PROGRAM
(MINIMUM REQUIRED)

EXPOSURE: INGESTION

8 TOTAL SAMPLING STATIONS

Sample Media, Number And Approximate Location of Sample Stations	Routine Sampling Mode	Nominal Collection Frequency	Analysis Type	Minimum Analysis Frequency
<u>Terrestrial & Aquatic Animals (edible portions)</u> 1- Representing commercially and/or recreational important species in vicinity of STPEGS that maybe influenced by plant operation. 1- Same or analogous species in area not influenced by STPEGS.* 1- Same or analogous species in the MCR.	Grab	Sample in season or semi-annually if not seasonal	Gamma-Isotopic	As collected
<u>Domestic Meat</u> 1- Represents domestic stock fed on crops grown exclusively within 10 miles of the plant.	Grab	Annually	Gamma-Isotopic	As collected

* Applied to aquatic samples only.

NOTE: Collection frequency may vary to accommodate sample media availability, equipment availability, and/or weather conditions.

TABLE 2
SAMPLE SUBMISSION CODE INFORMATION

AI	AIRBORNE RADIOIODINE	ML	(MIXED LIQUID) AERATION TANK
AL	ALGAE	ml	(WATER PORTION OF ML)
AP	AIRBORNE PARTICULATE	M1	BEEF MEAT
AS	(ASH SLUDGE) ASH TANK	M2	POULTRY MEAT
as	(WATER PORTION OF AS)	M3	WILD SWINE
BE	WILD BLACKBERRIES	M4	DOMESTIC SWINE
B1	RESIDENT DABBLER DUCK	M5	EGGS
B2	RESIDENT DIVER DUCK	M6	GAME DEER
B3	MIGRATORY DABBLER DUCK	M7	ALLIGATOR
B4	MIGRATORY DIVER DUCK	M8	RABBIT
B5	GOOSE	N1	PECANS
B6	DOVE	N2	ACORNS
B7	QUAIL	OY	OYSTER
B8	PIGEON	PK	PLANKTON
CC	CRUSTACEAN CRAB	RA	ROOTED AQUATIC VEGETATION
CS	CRUSTACEAN SHRIMP	R4	TURNIP
C1	CRAB SHELL	SB	SOYBEAN
DR	DIRECT RADIATION	SO	SOIL
FD	FOOD	SS	SHORELINE SEDIMENT
F1	FISH - PISCIVOROUS	UR	URINE
F2	FISH - CRUSTACEAN & INSECT FEEDERS	VB	BROADLEAF VEGETATION
F3	FISH - PLANTIVORES & DETRITUS FEEDERS	VC	CORN
L1	BANANA LEAVES	VP	PASTURE GRASS
L2	CANA LEAVES	VR	RICE
L3	LETTUCE	VS	GRAIN SORGHUM
L4	TURNIP GREENS	WD	DRINKING WATER
L5	CABBAGE	WG	GROUND WATER
L6	COLLARD GREENS	WR	RAIN WATER
MC	COW MILK	WS	SURFACE WATER
MG	GOAT MILK		

TABLE 2
SAMPLE SUBMISSION CODE INFORMATION

MEDIA CODE	STATION CODE	VECTOR	LOCATION DESCRIPTION
DR AI AP VB VP SO	001	1 mile N	FM 521
DR	002	1 mile NNE	FM 521
DR	003	1 mile NE	Fm 521
DR	004	1 mile ENE	FM 521
DR	005	1 mile E	STPEGS Visitor Center - FM 521
DR AI AP SO	006	3.5 miles ESE	Near MCR makeup pumping facility
DR	007	3.5 miles SE	MCR Dike
DR	008	0.5 mile SSE	MCR Dike
DR	009	0.25 mile S	MCR Dike
DR	010	0.25 mile SSW	MCR Dike
DR	011	0.5 mile SW	MCR Dike
DR	012	1 mile WSW	MCR Dike
DR	013	1 mile W	FM 521
DR	014	1 mile WNW	FM 521
DR AI AP VB SO VP	015	1 mile NW	FM 521
DR AI AP VB SO VP	016	1 mile NNW	FM 521
DR	017	6 miles N	Buckeye - FM 1468
DR AI AP SO	018	5.5 miles NNE	Hoescht Celanese Plant - FM 3057
DR	019	5 miles NE	FM 2668

- ◆ This station may be used to obtain the required aquatic samples.
- ◆ This station is not found on maps.
- ★ Control Station

Station codes printed in bold identify offsite locations.

TABLE 2
SAMPLE SUBMISSION CODE INFORMATION

MEDIA CODE	STATION CODE	VECTOR	LOCATION DESCRIPTION
DR	020	5 miles ENE	FM 2668
DR	021	5 miles E	FM 521
DR	022	7 miles ESE	Cain Chemical Plant, TX 60
DR	★▲023	16 miles ENE	Intersection of FM 521 and FM 2540
DR	024	4 miles SSE	MCR Dike
DR	025	4 miles S	MCR Dike
DR	026	4 miles SSW	MCR Dike
DR	▲027	2.5 miles SW	MCR Dike
DR	028	5 miles WSW	FM 1095
DR SO	029	4.5 miles W	FM 1095
DR	030	6 miles WNW	Tres Palacious Oaks, FM 2853
DR	031	5.6 miles NW	Wilson Creek Road
DR	032	3.5 miles NNW	FM 1468
DR AI AP SO	▲033	14 miles NNE	Bay City
DR	034	8 miles ENE	Wadsworth
DR AI AP SO	035	8.5 miles SSE	Matagorda
DR	036	10 miles WSW	College Port
DR AI AP VB VP SO	★037	11 miles W	Palacious Substation
DR	038	11 miles NW	Blessing
DR AI AP SO	039	9 miles NW	El Maton

◆ This station may be used to obtain the required aquatic samples.

▲ This station is not found on maps.

★ Control Station

Station codes printed in bold identify offsite locations.

TABLE 2
SAMPLE SUBMISSION CODE INFORMATION

MEDIA CODE	STATION CODE	VECTOR	LOCATION DESCRIPTION
DR	040	4.5 miles SW	Citrus Grove
DR	041	2.6 miles ESE	MCR Dike
DR	042	8.2 miles NW	FM 459 at Tidehaven Intermediate School
DR	♣094	N/A	REMP Storage Building (TLD Control)
DR	♣095	N/A	REMP Storage Building (TLD Control)
DR	♣096	N/A	Storage Control
DR	♣097	N/A	Storage Control
DR	♣098	N/A	Travel Control
DR	♣099	N/A	Travel Control
WG	205	4 miles SE	Well #446A, 0.5 mile north of MCR blowdown canal (30' deep)
WG	206	4 miles SE	Well #446, 0.5 mile north of MCR blowdown canal (75' deep)
WG	★207	1.5 miles W	Well #603A, 0.25 mile west of TX 521 (75' deep)
WG	★208	1.5 miles W	Well #603B, 0.25 mile west of TX 521 (150' deep)
WS	209	2 miles E	Kelly Lake

♦ This station may be used to obtain the required aquatic samples.

♣ This station is not found on maps.

★ Control Station

Station codes printed in bold identify offsite locations.

TABLE 2
SAMPLE SUBMISSION CODE INFORMATION

MEDIA CODE	STATION CODE	VECTOR	LOCATION DESCRIPTION
WD	▲210	N/A	Approved drinking water supply from STPEGS
WS SS	211♦	3.5 miles S	E. Branch Little Robbins Slough
WS SS	212♦	3.5 miles S	Little Robbins Slough
WS SS	213	3 miles SE	W. Branch Colorado River
F (1,2, or 3)	▲214	2 miles E	MCR Makeup Water Discharge
SS	215	1 mile SW	MCR Circulating Water Discharge
WS SS	216	3 miles SSE	MCR blowdown
WS SS F(1,2,or 3) CC	▲217♦	N/A	Location between the mouth of Colorado River and river marker #1
WS F(1,2,or 3) CC	▲218♦	N/A	Location between Colorado River Marker #1 and Marker #27
WS F (1, 2, or 3) CC	▲219♦	N/A	Location between Colorado River Marker #27 and Highway 521 overpass
WS F (1, 2, or 3)	★▲220♦	N/A	Location between Highway 521 overpass and Bay City Dam
SS F (1, 2, or 3) WS	★▲221	N/A	Location on Colorado River above Bay City Dam
F (1, 2, or 3) CC CS OY	222♦	> 10 miles	West Matagorda Bay
F (1, 2, or 3)	223♦	> 10 miles	East Matagorda Bay
F (1, 2, or 3)	224♦	> 10 miles	West Intracoastal Canal

♦ This station may be used to obtain the required aquatic samples.

▲ This station is not found on maps.

★ Control Station

Station codes printed in bold identify offsite locations.

TABLE 2
SAMPLE SUBMISSION CODE INFORMATION

MEDIA CODE	STATION CODE	VECTOR	LOCATION DESCRIPTION
F (1, 2, or 3)	225♦	> 10 miles	East Intercoastal Canal
WS	★226	5.5 miles NNE	Colorado River at Hoescht Celanese Plant
WS SS	227	6 miles SE	West bank of Colorado River 1.5 miles downstream of STPEGS across from channel marker #22
WD	★▲228	14 miles NNE	Bay City Public water supply
WS SS	229	1 mile SE	Drainage ditch NE of MCR
SS	230♦	3.5 miles ESE	Junction of Colorado River & drainage ditch (#229)
SO	▲231	11 miles WSW	Soil in vegetation plot at station #37
SO	232	9 miles NW	Farmland behind station #39
SS, WS	233♦	4.3 miles SE	Junction of Colorado River & MCR blowdown channel
SO	234	1 mile NW	Farm across from station #15
WG	235	3.8 miles S	Well B-3 directly across from MCR
B8	▲236	N/A	STPEGS Protected Area
WS	237	3.7 miles SE	MCR blowdown channel
WG	▲238	3.7 miles S	MCR relief well (east side of south wall)
WG	★239	1 mile NW	MCR relief well B-1B, near station #15

- ♦ This station may be used to obtain the required aquatic samples.
- ▲ This station is not found on maps.
- ★ Control Station

Station codes printed in bold identify offsite locations.

TABLE 2
SAMPLE SUBMISSION CODE INFORMATION

MEDIA CODE	STATION CODE	VECTOR	LOCATION DESCRIPTION
WS SO SS	240	1 mile E	Drainage ditch NNE of the MCR originating in the protected area
F (1, 2, or 3) CC	241	< 1 mile S	MCR circulating water intake
SS WS	★♣242	> 10 miles NNE	Junction of Colorado River and Highway 35
WS	243	> 10 miles N	Colorado River upstream of Bay City Dam at the LCRA pumping station
WG	♣244	3.7 miles SSW	MCR relief wells (west side of south wall)
F (1, 2, or 3) CC	300	< 1 mile S	STPEGS Main Cooling Reservoir
SS F(1,2,or 3) CC	♣301-631	< 1 mile S	Grids located in main cooling reservoir. One SS shall be taken at any of the grids 304, 305, 312-314, 323-326 and another one at any of the grids 364-566 or 584-586.

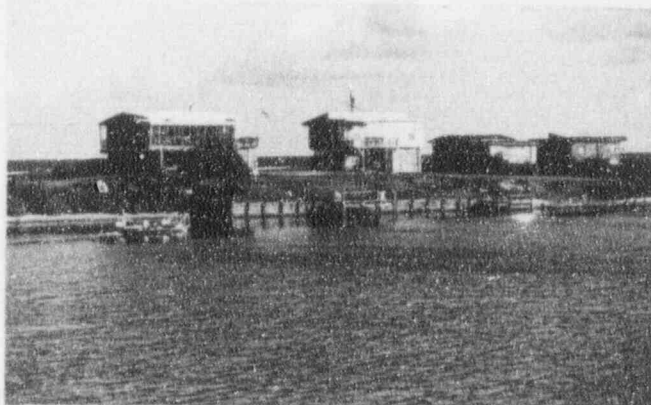
- ◆ This station may be used to obtain the required aquatic samples.
- ♣ This station is not found on maps.
- ★ Control Station

Station codes printed in bold identify offsite locations.

1993 REMP Analysis Summary

An analysis summary for all of the required REMP samples is given in Table 3. There are some analyses included in the summary that are not required. The table has been formatted to resemble an NRC industry standard. Modifications have been made for the sole purpose of reading ease.

Media type is printed at the top left of each page, and the units of measurement are printed at the top right. The first column lists the activity or specific radionuclide for which each sample was analyzed. Total analyses performed for the indicated nuclide/ the total number of nonroutine samples analyzed is given in the second column. (A nonroutine measurement is a sample indicating a value greater than the Reporting Levels for Radioactivity Concentrations in Environmental Samples.) The "LOWER LIMIT OF DETECTION" column lists two values. The first value is the average achieved Lower Limit of Detection (LLD) for each analysis and the second is the LLD requirement for Detection Capabilities for Environmental Sample Analysis. Not all of the listed analyses or radionuclides have required LLD's. Typically, the achieved LLD's are significantly lower than the required.



A set of statistical parameters are listed for each radionuclide in the remaining columns. The parameters contain information from the indicator locations, the location having the highest annual mean, and information from the control stations. For each of these groups of data, the following is calculated:

- o The mean value (including negative values and values below the LLD).
- o The number of analyses whose values were greater than the LLD/ the total number of analyses.
- o The lowest and highest values for the analysis.

TABLE 3
1993 REMP ANALYSIS SUMMARY

MEDIUM: Drinking Water

UNITS: pCi/Kg

ANALYSIS TYPE	TOTAL ANALYSES/ NONROUTINE MEASUREMENTS	LOWER LIMIT OF DETECTION *	INDICATOR LOCATIONS MEAN (f) ** RANGE	LOCATION WITH HIGHEST ANNUAL MEAN LOCATION INFORMATION	MEAN (f) ** RANGE	CONTROL LOCATIONS MEAN (f) ** RANGE
Beta	26/ 0	1.8E+00 4.0E+00	7.1E+00 (10 / 14) (1.4E+00 + 5.5E+01)	On Site (#210)	7.1E+00 (10 / 14) (1.4E+00 + 5.5E+01)	3.2E+00 (9 / 12) (2.8E-01 + 7.1E+00)
H-3	8/ 0	3.0E+02 3.0E+03	-6.3E+01 (0 / 4) (-1.3E+02 + 1.0E+02)	14 miles NNE (#228)	-3.4E+01 (0 / 4) (-1.2E+02 + 4.8E+01)	-3.4E+01 (0 / 4) (-1.2E+02 + 4.8E+01)
I-131	24/ 0	1.5E+01 ---	-1.7E+00 (0 / 12) (-1.1E+01 + 1.4E+01)	On Site (#210)	-1.7E+00 (0 / 12) (-1.1E+01 + 1.4E+01)	-3.0E+00 (0 / 12) (-1.7E+01 + 4.1E+00)
Cs-134	24/ 0	1.8E+00 1.5E+01	-1.6E+00 (0 / 12) (-5.5E+00 + 1.2E-01)	14 miles NNE (#228)	-1.5E+00 (0 / 12) (-3.8E+00 + 5.2E-01)	-1.5E+00 (0 / 12) (-3.8E+00 + 5.2E-01)
Cs-137	24/ 0	2.0E+00 1.8E+01	-3.5E-01 (0 / 12) (-1.6E+00 + 6.8E-01)	14 miles NNE (#228)	-2.8E-02 (0 / 12) (-7.2E-01 + 1.3E+00)	-2.8E-02 (0 / 12) (-7.2E-01 + 1.3E+00)
Mn-54	24/ 0	1.9E+00 1.5E+01	-1.8E-01 (0 / 12) (-2.6E+00 + 1.1E+00)	14 miles NNE (#228)	-5.8E-02 (0 / 12) (-1.2E+00 + 5.9E-01)	-5.8E-02 (0 / 12) (-1.2E+00 + 5.9E-01)
Fe-59	24/ 0	4.6E+00 3.0E+01	-5.9E-01 (0 / 12) (-4.2E+00 + 2.3E+00)	On Site (#210)	-5.9E-01 (0 / 12) (-4.2E+00 + 2.3E+00)	-6.9E-01 (0 / 12) (-3.7E+00 + 2.2E+00)
Co-58	24/ 0	2.2E+00 1.5E+01	-2.5E-01 (0 / 12) (-2.3E+00 + 8.2E-01)	14 miles NNE (#228)	2.2E-01 (0 / 12) (-2.0E+00 + 1.4E+00)	2.2E-01 (0 / 12) (-2.0E+00 + 1.4E+00)
Co-60	24/ 0	1.9E+00 1.5E+01	5.5E-02 (0 / 12) (-6.0E-01 + 8.6E-01)	14 miles NNE (#228)	3.9E-01 (0 / 12) (-8.6E-01 + 1.3E+00)	3.9E-01 (0 / 12) (-8.6E-01 + 1.3E+00)
Zn-65	24/ 0	3.8E+00 3.0E+01	-1.8E+00 (0 / 12) (-4.5E+00 + 2.8E-01)	14 miles NNE (#228)	-1.1E+00 (0 / 12) (-3.3E+00 + 8.7E-01)	-1.1E+00 (0 / 12) (-3.3E+00 + 8.7E-01)
Zr-95	24/ 0	4.3E+00 1.5E+01	-7.8E-01 (0 / 12) (-3.2E+00 + 2.1E+00)	14 miles NNE (#228)	-6.9E-01 (0 / 12) (-4.3E+00 + 9.0E-01)	-6.9E-01 (0 / 12) (-4.3E+00 + 9.0E-01)
Nb-95	24/ 0	2.7E+00 1.5E+01	-7.3E-01 (0 / 12) (-1.8E+00 + 5.6E-01)	14 miles NNE (#228)	-2.3E-01 (0 / 12) (-2.2E+00 + 9.7E-01)	-2.3E-01 (0 / 12) (-2.2E+00 + 9.7E-01)
Ba-140	24/ 0	2.2E+01 1.0E+03	-3.8E+00 (0 / 12) (-1.5E+01 + 4.8E+00)	14 miles NNE (#228)	-6.2E-01 (0 / 12) (-1.3E+01 + 1.0E+01)	-6.2E-01 (0 / 12) (-1.3E+01 + 1.0E+01)
La-140	24/ 0	6.5E+00 1.5E+01	-1.9E-01 (0 / 12) (-3.4E+00 + 4.8E+00)	On Site (#210)	-1.9E-01 (0 / 12) (-3.4E+00 + 4.8E+00)	-2.1E-01 (0 / 12) (-4.2E+00 + 3.0E+00)

* AVERAGE MEASURED LLD AND REQUIRED LLD VALUES. (--- USED WHEN THERE IS NO REQUIREMENT.)

** (f) NUMBER OF POSITIVE MEASUREMENTS / TOTAL MEASUREMENTS AT SPECIFIED LOCATIONS.

TABLE 3
1993 REMP ANALYSIS SUMMARY

MEDIUM: Ground Water

UNITS: pCi/Kg

ANALYSIS TYPE	TOTAL ANALYSES/ NONROUTINE MEASUREMENTS	LOWER LIMIT OF DETECTION *	INDICATOR LOCATIONS MEAN (f) ** RANGE	LOCATION WITH HIGHEST ANNUAL MEAN LOCATION INFORMATION	MEAN (f) ** RANGE	CONTROL LOCATIONS MEAN (f) ** RANGE
H-3	14/ 0	2.9E+02 3.0E+03	9.9E+02 (5 / 14) (-1.1E+02 - 4.2E+03)	3.7 miles S (#238)	3.3E+03 (4 / 4) (2.8E+03 - 4.2E+03)	no samples
I-131	14/ 0	1.4E+01 ---	-4.0E+00 (0 / 14) (-2.1E+01 - 1.5E+00)	<1 mile S (#245)	1.2E+00 (0 / 1) (1.2E+00 - 1.2E+00)	no samples
Cs-134	14/ 0	1.8E+00 1.5E+01	-1.8E+00 (0 / 14) (-5.2E+00 - 2.6E-01)	<1 mile S (#245)	-1.2E+00 (0 / 1) (-1.2E+00 - 1.2E+00)	no samples
Cs-137	14/ 0	2.0E+00 1.8E+01	-1.7E-01 (0 / 14) (-1.4E+00 - 1.0E+00)	<1 mile S (#245)	5.8E-01 (0 / 1) (5.8E-01 - 5.8E-01)	no samples
Mn-54	14/ 0	1.9E+00 1.5E+01	-3.1E-02 (0 / 14) (-1.4E+00 - 8.2E-01)	<1 mile S (#245)	1.9E-01 (0 / 1) (1.9E-01 - 1.9E-01)	no samples
Fe-59	14/ 0	4.7E+00 3.0E+01	-5.3E-02 (0 / 14) (-2.6E+00 - 2.4E+00)	3.7 miles SSW (#244)	1.3E+00 (0 / 1) (1.3E+00 - 1.3E+00)	no samples
Co-58	14/ 0	2.1E+00 1.5E+01	-3.4E-01 (0 / 14) (-1.4E+00 - 6.7E-01)	<1 mile S (#245)	1.0E-01 (0 / 1) (1.0E-01 - 1.0E-01)	no samples
Co-60	14/ 0	2.0E+00 1.5E+01	8.9E-02 (0 / 14) (-1.3E+00 - 1.6E+00)	3.7 miles S (#238)	5.6E-01 (0 / 4) (-8.2E-01 - 1.6E+00)	no samples
Zn-65	14/ 0	3.7E+00 3.0E+01	-1.8E+00 (0 / 14) (-6.3E+00 - 1.5E-01)	3.8 miles S (#235)	-8.7E-01 (0 / 8) (-2.4E+00 - 9.5E-02)	no samples
Zr-95	14/ 0	4.5E+00 1.5E+01	-1.1E+00 (0 / 14) (-6.8E+00 - 1.5E+00)	3.8 miles S (#235)	-5.2E-01 (0 / 8) (-2.7E+00 - 1.5E+00)	no samples
Nb-95	14/ 0	2.8E+00 1.5E+01	-1.5E-01 (0 / 14) (-1.5E+00 - 1.4E+00)	<1 mile S (#245)	1.1E-01 (0 / 1) (1.1E-01 - 1.1E-01)	no samples
Ba-140	14/ 0	2.2E+01 1.0E+03	-1.4E+00 (0 / 14) (-1.8E+01 - 5.7E+00)	<1 mile S (#245)	4.5E+00 (0 / 1) (4.5E+00 - 4.5E+00)	no samples
La-140	14/ 0	6.0E+00 1.5E+01	-5.9E-01 (0 / 14) (-6.2E+00 - 2.0E+00)	3.7 miles S (#238)	1.1E+00 (0 / 4) (0.0E+00 - 1.7E+00)	no samples

* AVERAGE MEASURED LLD AND REQUIRED LLD VALUES. (--- USED WHEN THERE IS NO REQUIREMENT.)

** (f) NUMBER OF POSITIVE MEASUREMENTS / TOTAL MEASUREMENTS AT SPECIFIED LOCATIONS.

TABLE 3
1993 REMP ANALYSIS SUMMARY

MEDIUM: Surface Water

UNITS: pCi/Kg

ANALYSIS TYPE	TOTAL ANALYSES/ NONROUTINE MEASUREMENTS	LOWER LIMIT OF DETECTION *	INDICATOR LOCATIONS MEAN (f) ** RANGE	LOCATION WITH HIGHEST ANNUAL MEAN LOCATION INFORMATION	MEAN (f) ** RANGE	CONTROL LOCATIONS MEAN (f) ** RANGE
H-3	47/ 0	2.9E+02 3.0E+03	1.8E+03 (31 / 43) (-1.8E+02 - 7.8E+03)	3 miles SSE (#216)	6.3E+03 (4 / 4) (4.8E+03 - 7.8E+03)	-3.2E+01 (0 / 4) (-1.2E+02 - 6.3E+01)
I-131	78/ 0	7.0E+01 ---	-4.3E+01 (0 / 70) (-2.3E+03 - 2.1E+01)	6 miles SE (#227)	1.4E+00 (0 / 10) (-9.5E+00 - 2.1E+01)	-5.1E+00 (0 / 8) (-2.9E+01 - 1.6E+00)
Cs-134	78/ 0	1.5E+00 1.5E+01	-1.9E+00 (0 / 70) (-3.7E+01 - 2.1E+02)	1 mile E (#240)	-1.1E+00 (0 / 5) (-1.3E+00 - 7.2E-01)	-1.1E+00 (0 / 8) (-2.2E+00 - 1.6E-01)
Cs-137	78/ 0	1.7E+00 1.8E+01	-6.5E-02 (0 / 70) (-1.3E+00 - 1.2E+00)	2 miles E (#209)	4.9E-01 (0 / 3) (0.0E+00 - 1.3E+00)	-1.2E-01 (0 / 8) (-2.0E+00 - 1.7E+00)
Mn-54	78/ 0	1.5E+00 1.5E+01	-1.1E-01 (0 / 70) (-1.4E+00 - 1.5E+00)	3.5 miles S (#212)	2.4E-01 (0 / 5) (-3.2E-01 - 1.1E+00)	-4.2E-01 (0 / 8) (-1.8E+00 - 2.3E-01)
Fe-59	78/ 0	4.2E+00 3.0E+01	-2.1E-01 (0 / 70) (-6.4E+00 - 4.9E+00)	3.7 miles SE (#237)	8.1E-01 (0 / 4) (-2.7E-01 - 3.4E+00)	-2.1E-01 (0 / 8) (-2.7E+00 - 1.3E+00)
Co-58	78/ 0	1.9E+00 1.5E+01	-2.3E-01 (0 / 70) (-3.3E+00 - 1.9E+00)	4.3 miles SE (#233)	3.2E-01 (0 / 4) (-1.1E-01 - 1.0E+00)	-4.0E-01 (0 / 8) (-2.6E+00 - 6.4E-01)
Co-60	78/ 0	1.6E+00 1.5E+01	5.2E-02 (0 / 70) (-2.1E+00 - 1.1E+00)	3.7 miles SE (#237)	4.6E-01 (0 / 4) (1.9E-01 - 8.3E-01)	2.4E-01 (0 / 8) (-2.8E-01 - 6.0E-01)
Zn-65	78/ 0	3.2E+00 3.0E+01	-1.3E+00 (0 / 70) (-2.0E+01 - 9.9E-01)	3.7 miles SE (#237)	-3.4E-01 (0 / 4) (-5.8E-01 - 2.1E-01)	-1.2E+00 (0 / 8) (-2.1E+00 - 2.7E-01)
Zr-95	78/ 0	3.8E+00 1.5E+01	-6.9E-01 (0 / 70) (-5.2E+00 - 2.6E+00)	3 miles SE (#213)	1.5E-01 (0 / 5) (-1.5E+00 - 2.0E+00)	-2.7E-01 (0 / 8) (-1.8E+00 - 7.0E-01)
Nb-95	78/ 0	2.6E+00 1.5E+01	-2.9E-01 (0 / 70) (-3.4E+00 - 1.4E+00)	3.5 miles S (#211)	2.5E-01 (0 / 5) (-8.7E-01 - 1.2E+00)	1.4E-01 (0 / 8) (-1.9E+00 - 2.0E+00)
Ba-140	78/ 0	4.2E+01 1.0E+03	-2.7E+01 (0 / 70) (-1.6E+03 - 2.0E+01)	6 miles SE (#227)	3.6E+00 (0 / 10) (-5.1E+00 - 1.7E+01)	-1.0E+00 (0 / 8) (-3.4E+01 - 1.4E+01)
La-140	78/ 0	1.3E+01 1.5E+01	-3.8E+00 (0 / 70) (-1.6E+02 - 6.1E+00)	1 mile E (#240)	2.0E+00 (0 / 5) (4.2E-01 - 4.8E+00)	-2.7E-01 (0 / 8) (-2.7E+00 - 2.8E+00)

* AVERAGE MEASURED LLD AND REQUIRED LLD VALUES. (--- USED WHEN THERE IS NO REQUIREMENT.)

** (f) NUMBER OF POSITIVE MEASUREMENTS / TOTAL MEASUREMENTS AT SPECIFIED LOCATIONS.

TABLE 3

1993 REMP ANALYSIS SUMMARY

MEDIUM: Rain Water

UNITS: pci/Kg

ANALYSIS TYPE	TOTAL ANALYSES/ NONROUTINE MEASUREMENTS	LOWER LIMIT OF DETECTION *	INDICATOR LOCATIONS MEAN (f) ** RANGE	LOCATION WITH HIGHEST ANNUAL LOCATION INFORMATION MEAN (f) ** RANGE	CONTROL LOCATIONS MEAN (f) ** RANGE
H-3	8/ 0	2.9E+02 3.0E+03	1.0E+02 (0 / 4) (8.4E+01 -- 1.2E+02)	1 mile NNW (#016) 1.0E+02 (0 / 4) (8.4E+01 -- 1.2E+02)	3.0E+01 (0 / 4) (-2.8E+01 -- 1.6E+02)
I-131	8/ 0	1.1E+01 ---	-6.4E-01 (0 / 4) (-3.9E+00 -- 2.6E+00)	1 mile NNW (#016) -6.4E-01 (0 / 4) (-3.9E+00 -- 2.6E+00)	-3.0E+00 (0 / 4) (-8.1E+00 -- 5.8E-01)
Cs-134	8/ 0	1.8E+00 1.5E+01	-1.1E+00 (0 / 4) (-2.1E+00 -- 7.6E-01)	11 miles W (#037) -7.8E-01 (0 / 4) (-1.4E+00 -- 5.6E-01)	-7.8E-01 (0 / 4) (-1.4E+00 -- 5.6E-01)
Cs-137	8/ 0	1.9E+00 1.8E+01	-4.9E-01 (0 / 4) (-1.3E+00 -- 4.2E-01)	11 miles W (#037) -1.2E-01 (0 / 4) (-4.7E-01 -- 5.1E-01)	-1.2E-01 (0 / 4) (-4.7E-01 -- 5.1E-01)
Mn-54	8/ 0	1.9E+00 1.5E+01	2.5E-01 (0 / 4) (-4.4E-01 -- 7.4E-01)	1 mile NNW (#016) 2.5E-01 (0 / 4) (-4.4E-01 -- 7.4E-01)	-8.2E-02 (0 / 4) (-4.6E-01 -- 2.2E-01)
Fe-59	8/ 0	4.3E+00 3.0E+01	-8.4E-01 (0 / 4) (-2.2E+00 -- 6.1E-01)	11 miles W (#037) 4.1E-01 (0 / 4) (7.2E-01 -- 9.2E-01)	4.1E-01 (0 / 4) (7.2E-01 -- 9.2E-01)
Co-58	8/ 0	2.0E+00 1.5E+01	-3.6E-01 (0 / 4) (-1.0E+00 -- 3.0E-01)	11 miles W (#037) 1.4E-01 (0 / 4) (-2.8E-01 -- 4.8E-01)	1.4E-01 (0 / 4) (-2.8E-01 -- 4.8E-01)
Co-60	8/ 0	1.7E+00 1.5E+01	-3.3E-01 (0 / 4) (-8.2E-01 -- 1.4E-01)	11 miles W (#037) -1.5E-01 (0 / 4) (-3.5E-01 -- 2.4E-01)	-1.5E-01 (0 / 4) (-3.5E-01 -- 2.4E-01)
Zn-65	8/ 0	3.7E+00 3.0E+01	-2.0E+00 (0 / 4) (-3.2E+00 -- 7.2E-01)	11 miles W (#037) -1.0E+00 (0 / 4) (-1.3E+00 -- 5.7E-01)	-1.0E+00 (0 / 4) (-1.3E+00 -- 5.7E-01)
Zr-95	8/ 0	4.1E+00 1.5E+01	-2.2E+00 (0 / 4) (-3.0E+00 -- 1.5E+00)	11 miles W (#037) -9.6E-01 (0 / 4) (-2.0E+00 -- 2.5E-01)	-9.6E-01 (0 / 4) (-2.0E+00 -- 2.5E-01)
Nb-95	8/ 0	2.4E+00 1.5E+01	-9.8E-01 (0 / 4) (-1.7E+00 -- 8.9E-02)	11 miles W (#037) -4.9E-01 (0 / 4) (-9.3E-01 -- 1.1E-01)	-4.9E-01 (0 / 4) (-9.3E-01 -- 1.1E-01)
Ba-140	8/ 0	1.8E+01 1.0E+03	-4.1E+00 (0 / 4) (-2.1E+01 -- 3.5E+00)	11 miles W (#037) 6.4E-01 (0 / 4) (-5.2E+00 -- 7.7E+00)	6.4E-01 (0 / 4) (-5.2E+00 -- 7.7E+00)
La-140	8/ 0	5.2E+00 1.5E+01	1.3E-01 (0 / 4) (-1.0E+00 -- 8.5E-01)	1 mile NNW (#016) 1.3E-01 (0 / 4) (-1.0E+00 -- 8.5E-01)	-1.8E+00 (0 / 4) (-5.4E+00 -- 3.6E-01)

* AVERAGE MEASURED LLD AND REQUIRED LLD VALUES. (--- USED WHEN THERE IS NO REQUIREMENT.)

** (f) NUMBER OF POSITIVE MEASUREMENTS / TOTAL MEASUREMENTS AT SPECIFIED LOCATIONS.

TABLE 3
1993 REMP ANALYSIS SUMMARY

MEDIUM: Sediment

UNITS: pCi/Kg dry wt

ANALYSIS TYPE	TOTAL ANALYSES/ NONROUTINE MEASUREMENTS	LOWER LIMIT OF DETECTION *	INDICATOR LOCATIONS MEAN (f) ** RANGE	LOCATION WITH HIGHEST ANNUAL MEAN LOCATION INFORMATION	MEAN (f) ** RANGE	CONTROL LOCATIONS MEAN (f) ** RANGE
I-131	24/ 0	1.4E+02 ---	5.3E+00 (0 / 22) (-8.9E+01 -- 7.2E+01)	1 mile SE (#229)	5.3E+01 (0 / 3) (3.5E+01 -- 7.2E+01)	2.6E+01 (0 / 2) (1.9E+01 -- 3.3E+01)
Cs-134	24/ 0	1.0E+01 1.5E+02	-1.8E+02 (0 / 22) (-2.7E+02 -- 6.2E+01)	1 mile E (#240)	-7.3E+01 (0 / 2) (-8.5E+01 -- 6.2E+01)	-2.1E+02 (0 / 2) (-2.7E+02 -- 1.4E+02)
Cs-137	24/ 0	1.2E+01 1.8E+02	2.7E+01 (16 / 22) (-4.6E+00 -- 1.4E+02)	3.5 miles S (#212)	9.0E+01 (2 / 2) (4.1E+01 -- 1.4E+02)	2.0E+01 (1 / 2) (1.1E+01 -- 2.9E+01)
Mn-54	24/ 0	3.2E+01 ---	2.8E+00 (0 / 22) (-2.3E+00 -- 8.6E+00)	3.5 miles S (#211)	7.9E+00 (0 / 2) (7.2E+00 -- 8.6E+00)	5.5E+00 (0 / 2) (3.9E+00 -- 7.2E+00)
Fe-59	24/ 0	3.3E+01 ---	-4.7E-01 (0 / 22) (-2.3E+01 -- 2.5E+01)	3.5 miles S (#212)	1.1E+01 (0 / 2) (-2.4E+00 -- 2.5E+01)	2.8E-01 (0 / 2) (-2.2E+00 -- 2.8E+00)
Co-58	24/ 0	1.3E+01 ---	1.6E+00 (0 / 22) (-4.5E+00 -- 1.2E+01)	1 mile SW (#215)	6.5E+00 (0 / 2) (1.2E+00 -- 1.2E+01)	5.3E+00 (0 / 2) (1.3E+00 -- 9.4E+00)
Co-60	24/ 0	1.0E+01 ---	1.3E+01 (3 / 22) (-4.8E+00 -- 1.5E+02)	1 mile SW (#215)	1.2E+02 (2 / 2) (8.9E+01 -- 1.5E+02)	3.2E-01 (0 / 2) (-1.3E-01 -- 7.7E-01)
Zn-65	24/ 0	2.5E+01 ---	-1.3E+02 (0 / 22) (-2.0E+02 -- 4.9E+01)	1 mile E (#240)	-5.7E+01 (0 / 2) (-6.5E+01 -- 4.9E+01)	-1.5E+02 (0 / 2) (-1.9E+02 -- 9.8E+01)
Zr-95	24/ 0	3.1E+01 ---	-1.8E+02 (0 / 22) (-2.8E+02 -- 3.3E+01)	1 mile E (#240)	-4.2E+01 (0 / 2) (-5.0E+01 -- 3.3E+01)	-1.7E+02 (0 / 2) (-1.9E+02 -- 1.5E+02)
Nb-95	24/ 0	1.9E+01 ---	-2.9E+01 (0 / 22) (-5.6E+01 -- 1.5E+01)	1 mile E (#240)	-1.6E+01 (0 / 2) (-1.6E+01 -- 1.5E+01)	-3.3E+01 (0 / 2) (-3.6E+01 -- 3.0E+01)
Ba-140	24/ 0	1.9E+02 ---	2.6E+01 (0 / 22) (-1.0E+02 -- 1.5E+02)	3 miles SE (#213)	1.0E+02 (0 / 2) (4.9E+01 -- 1.5E+02)	7.3E+01 (0 / 2) (6.4E+01 -- 8.1E+01)
La-140	24/ 0	5.4E+01 ---	1.7E+01 (0 / 22) (-7.0E+00 -- 5.8E+01)	1 mile SE (#229)	4.5E+01 (0 / 3) (3.7E+01 -- 5.8E+01)	2.0E+01 (0 / 2) (1.0E+01 -- 3.1E+01)

* AVERAGE MEASURED LLD AND REQUIRED LLD VALUES. (--- USED WHEN THERE IS NO REQUIREMENT.)

** (f) NUMBER OF POSITIVE MEASUREMENTS / TOTAL MEASUREMENTS AT SPECIFIED LOCATIONS.

TABLE 3

1993 REMP ANALYSIS SUMMARY

MEDIUM: Banana Leaves

UNITS: pCi/Kg wet wt

ANALYSIS TYPE	TOTAL ANALYSES/ NONROUTINE MEASUREMENTS	LOWER LIMIT OF DETECTION *	INDICATOR LOCATIONS MEAN (f) ** RANGE	LOCATION WITH HIGHEST ANNUAL MEAN LOCATION INFORMATION	MEAN (f) ** RANGE	CONTROL LOCATIONS MEAN (f) ** RANGE
I-131	19/ 0	2.5E+01 6.0E+01	1.5E+00 (0 / 9) (-5.6E+00 ~ 1.4E+01)	1 mile N (#001)	4.4E+00 (0 / 2) (-5.0E+00 ~ 1.4E+01)	-7.1E-01 (0 / 10) (-1.4E+01 ~ 2.0E+01)
Cs-134	19/ 0	2.2E+00 6.0E+01	-1.7E+00 (0 / 9) (-3.1E+00 ~ -1.5E-01)	1 mile N (#001)	-1.1E+00 (0 / 2) (-2.1E+00 ~ -1.5E-01)	-1.7E+00 (0 / 10) (-5.0E+00 ~ -4.3E-01)
Cs-137	19/ 0	2.6E+00 8.0E+01	6.7E-02 (0 / 9) (-8.6E-01 ~ 2.5E+00)	1 mile N (#001)	1.0E+00 (0 / 2) (-4.5E-01 ~ 2.5E+00)	4.1E-01 (0 / 10) (-6.1E-01 ~ 1.6E+00)
Mn-54	19/ 0	2.8E+00 ---	-2.7E-03 (0 / 9) (-8.5E-01 ~ 2.3E+00)	1 mile N (#001)	8.0E-01 (0 / 2) (-6.6E-01 ~ 2.3E+00)	-6.2E-01 (0 / 10) (-2.9E+00 ~ 9.4E-01)
Fe-59	19/ 0	1.0E+01 ---	5.1E-02 (0 / 9) (-7.7E+00 ~ 6.9E+00)	1 mile NW (#015)	8.1E-01 (0 / 4) (-7.2E+00 ~ 3.9E+00)	3.6E-01 (0 / 10) (-9.1E+00 ~ 7.1E+00)
Co-58	19/ 0	3.3E+00 ---	1.9E-01 (0 / 9) (-8.2E-01 ~ 1.6E+00)	1 mile N (#001)	1.1E+00 (0 / 2) (6.3E-01 ~ 1.6E+00)	-5.3E-01 (0 / 10) (-2.9E+00 ~ 1.2E+00)
Co-60	19/ 0	3.1E+00 ---	1.3E-01 (0 / 9) (-4.4E-01 ~ 9.3E-01)	1 mile N (#001)	3.9E-01 (0 / 2) (-1.4E-01 ~ 9.3E-01)	3.3E-01 (0 / 10) (-3.2E+00 ~ 1.4E+00)
Zn-65	19/ 0	8.3E+00 ---	-2.9E+00 (0 / 9) (-6.1E+00 ~ -7.5E-01)	1 mile NW (#016)	-2.2E+00 (0 / 3) (-3.2E+00 ~ -1.5E+00)	-3.3E+00 (0 / 10) (-1.1E+01 ~ 6.1E-01)
Zr-95	19/ 0	6.2E+00 ---	-4.3E-01 (0 / 9) (-3.6E+00 ~ 1.4E+00)	1 mile NW (#015)	-1.5E-01 (0 / 4) (-3.6E+00 ~ 1.4E+00)	-1.4E+00 (0 / 10) (-7.5E+00 ~ 3.0E+00)
Nb-95	19/ 0	4.3E+00 ---	-9.8E-02 (0 / 9) (-1.9E+00 ~ 2.6E+00)	1 mile N (#001)	1.6E+00 (0 / 2) (1.1E+00 ~ 2.0E+00)	-5.9E-01 (0 / 10) (-2.4E+00 ~ 6.3E-01)
Ba-140	19/ 0	3.6E+01 ---	4.0E-01 (0 / 9) (-2.5E-01 ~ 2.5E+01)	1 mile N (#001)	1.1E+01 (0 / 2) (6.5E+00 ~ 1.6E+01)	7.3E-01 (0 / 10) (-1.8E+01 ~ 3.0E+01)
La-140	19/ 0	6.5E+00 ---	2.7E-01 (0 / 9) (-4.4E+00 ~ 3.4E+00)	1 mile NW (#015)	1.9E+00 (0 / 4) (0.0E+00 ~ 3.4E+00)	8.2E-01 (0 / 10) (-9.7E-01 ~ 3.2E+00)

* AVERAGE MEASURED LLD AND REQUIRED LLD VALUES. (--- USED WHEN THERE IS NO REQUIREMENT.)
 ** (f) NUMBER OF POSITIVE MEASUREMENTS / TOTAL MEASUREMENTS AT SPECIFIED LOCATIONS.

TABLE 3
1993 REMP ANALYSIS SUMMARY

MEDIUM: Cane Leaves

UNITS: pCi/Kg wet wt

ANALYSIS TYPE	TOTAL ANALYSES/ NONROUTINE MEASUREMENTS	LOWER LIMIT OF DETECTION *	INDICATOR LOCATIONS MEAN (f) ** RANGE	LOCATION WITH HIGHEST ANNUAL MEAN LOCATION INFORMATION	MEAN (f) ** RANGE	CONTROL LOCATIONS MEAN (f) ** RANGE
I-131	8/ 0	2.8E+01 6.0E+01	3.0E+00 (0 / 5) (-3.7E+00 -- 1.2E+01)	1 mile NNW (#016)	3.6E+00 (0 / 3) (-3.7E+00 -- 1.2E+01)	-4.5E+00 (0 / 3) (-1.4E+01 -- 1.7E+00)
Cs-134	8/ 0	2.0E+00 6.0E+01	-8.8E-01 (0 / 5) (-1.6E+00 -- 3.5E-01)	1 mile NW (#015)	-4.7E-01 (0 / 2) (-5.8E-01 -- 3.5E-01)	-1.2E+00 (0 / 3) (-2.6E+00 -- 1.0E-01)
Cs-137	8/ 0	2.3E+00 8.0E+01	4.7E-01 (0 / 5) (-5.2E-01 -- 1.1E+00)	1 mile NNW (#016)	5.2E-01 (0 / 3) (-5.2E-01 -- 1.1E+00)	-5.6E-02 (0 / 3) (-3.1E-01 -- 3.9E-01)
Mn-54	8/ 0	2.5E+00 ---	-6.7E-01 (0 / 5) (-1.2E+00 -- 3.8E-01)	11 miles W (#037)	2.8E-01 (0 / 3) (-1.9E-01 -- 1.1E+00)	2.8E-01 (0 / 3) (-1.9E-01 -- 1.1E+00)
Fe-59	8/ 0	9.9E+00 ---	-2.4E-01 (0 / 5) (-3.0E+00 -- 2.8E+00)	1 mile NW (#015)	9.6E-01 (0 / 2) (-5.6E-01 -- 2.5E+00)	-1.1E+00 (0 / 3) (-2.5E+00 -- 1.6E-01)
Co-58	8/ 0	3.1E+00 ---	5.9E-01 (0 / 5) (-7.7E-01 -- 2.7E+00)	1 mile NNW (#016)	1.2E+00 (0 / 3) (-1.2E-01 -- 2.7E+00)	-5.9E-01 (0 / 3) (-1.1E+00 -- 2.6E-01)
Co-60	8/ 0	2.8E+00 ---	7.3E-01 (0 / 5) (-4.1E-01 -- 1.7E+00)	1 mile NNW (#016)	9.8E-01 (0 / 3) (-4.1E-01 -- 1.7E+00)	2.3E-01 (0 / 3) (-3.5E-01 -- 8.6E-01)
Zn-65	8/ 0	7.5E+00 ---	-2.0E+00 (0 / 5) (-2.6E+00 -- 1.1E+00)	1 mile NW (#015)	-1.9E+00 (0 / 2) (-2.2E+00 -- 1.6E+00)	-2.0E+00 (0 / 3) (-4.9E+00 -- 5.8E-02)
Zr-95	8/ 0	5.3E+00 ---	-2.4E-01 (0 / 5) (-1.5E+00 -- 1.9E+00)	1 mile NW (#015)	-1.3E-01 (0 / 2) (-1.0E+00 -- 7.4E-01)	-5.3E-01 (0 / 3) (-1.7E+00 -- 2.0E-01)
Nb-95	8/ 0	4.0E+00 ---	-1.1E+00 (0 / 5) (-3.7E+00 -- 2.2E+00)	11 miles W (#037)	5.5E-01 (0 / 3) (-9.4E-02 -- 9.9E-01)	5.5E-01 (0 / 3) (-9.4E-02 -- 9.9E-01)
Ba-140	8/ 0	3.8E+01 ---	-2.0E+00 (0 / 5) (-1.3E+01 -- 1.4E+01)	1 mile NW (#015)	5.3E-01 (0 / 2) (-1.3E+01 -- 1.4E+01)	-3.4E+00 (0 / 3) (-1.8E+01 -- 8.8E+00)
La-140	8/ 0	6.9E+00 ---	6.9E-01 (0 / 5) (-1.6E+00 -- 2.1E+00)	1 mile NW (#015)	1.8E+00 (0 / 2) (1.4E+00 -- 2.1E+00)	-3.3E-01 (0 / 3) (-3.5E+00 -- 2.9E+00)

* AVERAGE MEASURED LLD AND REQUIRED LLD VALUES. (--- USED WHEN THERE IS NO REQUIREMENT.)

** (f) NUMBER OF POSITIVE MEASUREMENTS / TOTAL MEASUREMENTS AT SPECIFIED LOCATIONS.

TABLE 3
1993 REMP ANALYSIS SUMMARY

MEDIUM: Turnip Greens

UNITS: pCi/Kg wet wt

ANALYSIS TYPE	TOTAL ANALYSES/ NONROUTINE MEASUREMENTS	LOWER LIMIT OF DETECTION *	INDICATOR LOCATIONS MEAN (f) ** RANGE	LOCATION WITH HIGHEST ANNUAL MEAN LOCATION INFORMATION RANGE	CONTROL LOCATIONS MEAN (f) ** RANGE
I-131	5/ 0	1.4E+01 6.0E+01	-6.2E+00 (0 / 4) (-1.1E+01 -- 4.5E-01)	11 miles W (#037)	1.2E+00 (0 / 1) (1.2E+00 -- 1.2E+00)
Cs-134	5/ 0	2.1E+00 6.0E+01	-2.6E+00 (0 / 4) (-7.0E+00 -- -6.8E-01)	1 mile N (#001)	-6.8E-01 (0 / 1) (-6.8E-01 -- -6.8E-01)
Cs-137	5/ 0	2.6E+00 8.0E+01	-2.0E-01 (0 / 4) (-9.2E-01 -- 1.9E-01)	11 miles W (#037)	4.2E-01 (0 / 1) (4.2E-01 -- 4.2E-01)
Mn-54	5/ 0	2.8E+00 ---	1.1E+00 (0 / 4) (2.5E-01 -- 2.7E+00)	1 mile NW (#015)	1.9E+00 (0 / 2) (1.0E+00 -- 2.7E+00)
Fe-59	5/ 0	8.5E+00 ---	-5.9E+00 (0 / 4) (-1.8E+01 -- 1.3E+00)	1 mile N (#001)	1.3E+00 (0 / 1) (1.3E+00 -- 1.3E+00)
Co-58	5/ 0	3.1E+00 ---	-9.2E-01 (0 / 4) (-1.8E+00 -- 3.6E-01)	11 miles W (#037)	7.7E-01 (0 / 1) (7.7E-01 -- 7.7E-01)
Co-60	5/ 0	3.0E+00 ---	-5.9E-01 (0 / 4) (-7.2E-01 -- -4.4E-01)	11 miles W (#037)	1.7E+00 (0 / 1) (1.7E+00 -- 1.7E+00)
Zn-65	5/ 0	8.1E+00 ---	-2.9E+00 (0 / 4) (-5.8E+00 -- -2.1E-01)	1 mile N (#001)	-2.8E-01 (0 / 1) (-2.8E-01 -- -2.8E-01)
Zr-95	5/ 0	5.5E+00 ---	-2.0E+00 (0 / 4) (-5.6E+00 -- 1.4E+00)	11 miles W (#037)	1.2E+00 (0 / 1) (1.2E+00 -- 1.2E+00)
Nb-95	5/ 0	3.6E+00 ---	-2.3E+00 (0 / 4) (-6.4E+00 -- 1.7E-01)	11 miles W (#037)	-4.0E-01 (0 / 1) (-4.0E-01 -- -4.0E-01)
Ba-140	5/ 0	2.5E+01 ---	-5.1E+00 (0 / 4) (-1.9E+01 -- 9.9E+00)	11 miles W (#037)	2.6E+00 (0 / 1) (2.6E+00 -- 2.6E+00)
La-140	5/ 0	5.0E+00 ---	-4.6E-01 (0 / 4) (-2.2E+00 -- 1.5E+00)	11 miles W (#037)	9.8E-01 (0 / 1) (9.8E-01 -- 9.8E-01)

* AVERAGE MEASURED LLD AND REQUIRED LLD VALUES. (--- USED WHEN THERE IS NO REQUIREMENT.)
** (f) NUMBER OF POSITIVE MEASUREMENTS / TOTAL MEASUREMENTS AT SPECIFIED LOCATIONS.

TABLE 3
1993 REMP ANALYSIS SUMMARY

MEDIUM: Collard Greens

UNITS: pCi/Kg wet wt

ANALYSIS TYPE	TOTAL ANALYSES/ NONROUTINE MEASUREMENTS	LOWER LIMIT OF DETECTION *	INDICATOR LOCATIONS MEAN (f) ** RANGE	LOCATION WITH HIGHEST ANNUAL MEAN LOCATION INFORMATION	MEAN (f) ** RANGE	CONTROL LOCATIONS MEAN (f) ** RANGE
I-131	14/ 0	1.9E+01 6.0E+01	-4.7E-02 (0 / 12) (-1.7E+01 + 7.2E+00)	11 miles W (#037)	5.8E+00 (0 / 2) (-5.0E+00 + 1.7E+01)	5.8E+00 (0 / 2) (-5.0E+00 + 1.7E+01)
Cs-134	14/ 0	1.5E+00 6.0E+01	-2.1E+00 (0 / 12) (-3.6E+00 + -8.9E-01)	11 miles W (#037)	-1.2E+00 (0 / 2) (-1.3E+00 + -1.1E+00)	-1.2E+00 (0 / 2) (-1.3E+00 + -1.1E+00)
Cs-137	14/ 0	1.8E+00 8.0E+01	2.5E-01 (0 / 12) (-4.8E-01 + 1.4E+00)	1 mile NNW (#016)	5.2E-01 (0 / 3) (1.8E-01 + 7.8E-01)	4.0E-01 (0 / 2) (2.4E-01 + 5.6E-01)
Mn-54	14/ 0	1.9E+00 ---	9.0E-02 (0 / 12) (-1.3E+00 + 1.0E+00)	11 miles W (#037)	7.6E-01 (0 / 2) (2.3E-01 + 1.3E+00)	7.6E-01 (0 / 2) (2.3E-01 + 1.3E+00)
Fe-59	14/ 0	6.9E+00 ---	3.9E-01 (0 / 12) (-3.8E+00 + 4.2E+00)	1 mile NW (#015)	2.7E+00 (0 / 2) (1.3E+00 + 4.2E+00)	1.8E+00 (0 / 2) (-3.1E-01 + 7.0E+00)
Co-58	14/ 0	2.3E+00 ---	-2.0E-01 (0 / 12) (-1.1E+00 + 6.9E-01)	1 mile NW (#015)	5.4E-01 (0 / 2) (3.9E-01 + 6.9E-01)	-8.2E-01 (0 / 2) (-1.4E+00 + -2.5E-01)
Co-60	14/ 0	2.1E+00 ---	9.7E-02 (0 / 12) (-1.2E+00 + 1.1E+00)	1 mile N (#001)	3.1E-01 (0 / 7) (-4.3E-01 + 1.0E+00)	4.9E-02 (0 / 2) (-9.0E-01 + 1.0E+00)
Zn-65	14/ 0	5.5E+00 ---	-1.2E+00 (0 / 12) (-4.0E+00 + 3.4E+00)	1 mile NNW (#016)	-4.8E-01 (0 / 3) (-9.1E-01 + -5.3E-01)	-1.6E+00 (0 / 2) (-2.8E+00 + -2.7E-01)
Zr-95	14/ 0	4.5E+00 ---	-5.5E-01 (0 / 12) (-2.5E+00 + 1.8E+00)	11 miles W (#037)	2.3E+00 (0 / 2) (1.8E+00 + 2.9E+00)	2.3E+00 (0 / 2) (1.8E+00 + 2.9E+00)
Nb-95	14/ 0	3.1E+00 ---	-4.4E-01 (0 / 12) (-1.6E+00 + 1.1E+00)	11 miles W (#037)	1.1E+00 (0 / 2) (2.1E-01 + 2.1E+00)	1.1E+00 (0 / 2) (2.1E-01 + 2.1E+00)
Ba-140	14/ 0	2.7E+01 ---	-2.5E+00 (0 / 12) (-1.6E+01 + 7.3E+00)	11 miles W (#037)	1.0E+01 (0 / 2) (8.4E+00 + 1.2E+01)	1.0E+01 (0 / 2) (8.4E+00 + 1.2E+01)
La-140	14/ 0	5.4E+00 ---	2.6E-01 (0 / 12) (-2.2E+00 + 3.5E+00)	1 mile N (#001)	9.2E-01 (0 / 7) (-4.7E-01 + 3.5E+00)	7.1E-02 (0 / 2) (-1.7E+00 + 1.8E+00)

* AVERAGE MEASURED LLD AND REQUIRED LLD VALUES. (--- USED WHEN THERE IS NO REQUIREMENT.)
** (f) NUMBER OF POSITIVE MEASUREMENTS / TOTAL MEASUREMENTS AT SPECIFIED LOCATIONS.

TABLE 3

1993 REMP ANALYSIS SUMMARY

MEDIUM: Turnip Roots

UNITS: pCi/Kg wet wt

ANALYSIS TYPE	TOTAL ANALYSES/ NONROUTINE MEASUREMENTS	LOWER LIMIT OF DETECTION *	INDICATOR LOCATIONS MEAN (f) ** RANGE	LOCATION WITH HIGHEST ANNUAL MEAN LOCATION INFORMATION	MEAN (f) ** RANGE	CONTROL LOCATIONS MEAN (f) ** RANGE
I-131	3/ 0	1.0E+01 6.0E+01	-3.1E+00 (0 / 2) (-4.4E+00 --1.8E+00)	1 mile N (#001)	-1.8E+00 (0 / 1) (-1.8E+00 --1.8E+00)	-1.9E+01 (0 / 1) (-1.9E+01 --1.9E+01)
Cs-134	3/ 0	8.7E-01 6.0E+01	-4.1E-01 (0 / 2) (-5.8E-01 --2.4E-01)	1 mile N (#001)	-2.4E-01 (0 / 1) (-2.4E-01 --2.4E-01)	-1.6E+00 (0 / 1) (-1.6E+00 --1.6E+00)
Cs-137	3/ 0	1.0E+00 8.0E+01	7.5E-02 (0 / 2) (4.5E-02 -- 1.1E-01)	1 mile NNW (#016)	1.1E-01 (0 / 1) (1.1E-01 -- 1.1E-01)	-1.4E+00 (0 / 1) (-1.4E+00 --1.4E+00)
Mn-54	3/ 0	1.4E+01 ---	1.1E+01 (0 / 2) (6.7E+00 -- 1.6E+01)	1 mile NNW (#016)	1.6E+01 (0 / 1) (1.6E+01 -- 1.6E+01)	-1.3E+00 (0 / 1) (-1.3E+00 --1.3E+00)
Fe-59	3/ 0	3.7E+00 ---	-1.1E-01 (0 / 2) (-1.6E-01 --6.6E-02)	1 mile N (#001)	-6.6E-02 (0 / 1) (-6.6E-02 --6.6E-02)	-6.8E+00 (0 / 1) (-6.8E+00 --6.8E+00)
Co-58	3/ 0	1.3E+00 ---	-4.7E-01 (0 / 2) (-6.7E-01 --2.8E-01)	1 mile N (#001)	-2.8E-01 (0 / 1) (-2.8E-01 --2.8E-01)	-1.1E+00 (0 / 1) (-1.1E+00 --1.1E+00)
Co-60	3/ 0	1.2E+00 ---	-2.9E-01 (0 / 2) (-4.0E-01 --1.7E-01)	1 mile N (#001)	-1.7E-01 (0 / 1) (-1.7E-01 --1.7E-01)	-2.5E-01 (0 / 1) (-2.5E-01 --2.5E-01)
Zn-65	3/ 0	3.1E+00 ---	-8.7E-02 (0 / 2) (-1.2E-01 --5.1E-02)	1 mile N (#001)	-5.1E-02 (0 / 1) (-5.1E-02 --5.1E-02)	-4.6E+00 (0 / 1) (-4.6E+00 --4.6E+00)
Zr-95	3/ 0	2.4E+00 ---	6.2E-01 (0 / 2) (3.6E-01 -- 8.7E-01)	1 mile NNW (#016)	8.7E-01 (0 / 1) (8.7E-01 -- 8.7E-01)	-4.4E+00 (0 / 1) (-4.4E+00 --4.4E+00)
Nb-95	3/ 0	1.8E+00 ---	7.9E-02 (0 / 2) (4.7E-02 -- 1.1E-01)	1 mile NNW (#016)	1.1E-01 (0 / 1) (1.1E-01 -- 1.1E-01)	-1.0E+00 (0 / 1) (-1.0E+00 --1.0E+00)
Ba-140	3/ 0	1.6E+01 ---	6.0E+00 (0 / 2) (3.4E+00 -- 8.5E+00)	1 mile NNW (#016)	8.5E+00 (0 / 1) (8.5E+00 -- 8.5E+00)	2.5E-01 (0 / 1) (2.5E-01 -- 2.5E-01)
La-140	3/ 0	3.7E+00 ---	8.7E-01 (0 / 2) (5.1E-01 -- 1.2E+00)	1 mile NNW (#016)	1.2E+00 (0 / 1) (1.2E+00 -- 1.2E+00)	-3.0E+00 (0 / 1) (-3.0E+00 --3.0E+00)

* AVERAGE MEASURED LLD AND REQUIRED LLD VALUES. (--- USED WHEN THERE IS NO REQUIREMENT.)

** (f) NUMBER OF POSITIVE MEASUREMENTS / TOTAL MEASUREMENTS AT SPECIFIED LOCATIONS.

TABLE 3

1993 REMP ANALYSIS SUMMARY

MEDIUM: Pasture Grass Vegetation

UNITS: pCi/Kg wet wt

ANALYSIS TYPE	TOTAL ANALYSES/ NONROUTINE MEASUREMENTS	LOWER LIMIT OF DETECTION *	INDICATOR LOCATIONS MEAN (f) ** RANGE	LOCATION WITH HIGHEST ANNUAL MEAN LOCATION INFORMATION	MEAN (f) ** RANGE	CONTROL LOCATIONS MEAN (f) ** RANGE
I-131	8/ 0	3.6E+01 ---	-7.8E+00 (0 / 4) (-3.2E+01 - 5.4E+00)	1 mile NNW (#016)	5.4E+00 (0 / 1) (5.4E+00 - 5.4E+00)	-9.5E+00 (0 / 4) (-2.4E+01 - 4.1E+00)
Cs-134	8/ 0	4.3E+00 6.0E+01	-4.1E+00 (0 / 4) (-7.8E+00 - -2.2E+00)	1 mile NNW (#016)	-2.2E+00 (0 / 1) (-2.2E+00 - -2.2E+00)	-3.5E+00 (0 / 4) (-5.5E+00 - -1.9E+00)
Cs-137	8/ 0	5.0E+00 8.0E+01	5.2E-02 (0 / 4) (-8.7E-01 - 2.4E+00)	1 mile NW (#015)	3.6E-01 (0 / 3) (-8.3E-01 - 2.4E+00)	-1.1E+00 (0 / 4) (-3.9E+00 - 1.5E+00)
Mn-54	8/ 0	5.2E+00 ---	5.1E-01 (0 / 4) (-4.0E-01 - 1.4E+00)	1 mile NW (#015)	8.1E-01 (0 / 3) (-1.5E-01 - 1.4E+00)	-1.7E-01 (0 / 4) (-2.8E+00 - 1.9E+00)
Fe-59	8/ 0	1.7E+01 ---	5.5E+00 (0 / 4) (2.5E+00 - 8.4E+00)	1 mile NNW (#016)	6.6E+00 (0 / 1) (6.6E+00 - 6.6E+00)	4.7E-01 (0 / 4) (-9.4E+00 - 1.3E+01)
Co-58	8/ 0	5.7E+00 ---	4.3E-01 (0 / 4) (-1.1E+00 - 3.6E+00)	1 mile NW (#015)	7.1E-01 (0 / 3) (-1.1E+00 - 3.6E+00)	-1.1E+00 (0 / 4) (-3.2E+00 - -3.9E-01)
Co-60	8/ 0	5.5E+00 ---	-1.1E+00 (0 / 4) (-2.3E+00 - 5.6E-02)	11 miles W (#037)	1.7E+00 (0 / 4) (2.0E-01 - 3.3E+00)	1.7E+00 (0 / 4) (2.0E-01 - 3.3E+00)
Zn-65	8/ 0	1.3E+01 ---	-4.6E+00 (0 / 4) (-1.3E+01 - 2.1E-01)	1 mile NNW (#016)	-3.7E+00 (0 / 1) (-3.7E+00 - -3.7E+00)	-1.5E+01 (0 / 4) (-2.7E+01 - -1.5E+00)
Zr-95	8/ 0	1.2E+01 ---	-7.1E-01 (0 / 4) (-3.7E+00 - 2.4E+00)	1 mile NNW (#016)	2.4E+00 (0 / 1) (2.4E+00 - 2.4E+00)	-7.1E+00 (0 / 4) (-2.0E+01 - 2.1E+00)
Nb-95	8/ 0	7.1E+00 ---	-1.5E+00 (0 / 4) (-2.5E+00 - -4.8E-01)	1 mile NNW (#016)	-4.8E-01 (0 / 1) (-4.8E-01 - -4.8E-01)	-3.7E+00 (0 / 4) (-9.7E+00 - 7.0E-01)
Ba-140	8/ 0	5.3E+01 ---	-4.2E+00 (0 / 4) (-1.1E+01 - 5.3E+00)	1 mile NW (#015)	-2.1E+00 (0 / 3) (-5.8E+00 - 5.3E+00)	-1.1E+01 (0 / 4) (-5.7E+01 - 2.1E+01)
La-140	8/ 0	1.3E+01 ---	-5.4E-02 (0 / 4) (-1.9E+00 - 1.4E+00)	1 mile NNW (#016)	9.0E-01 (0 / 1) (9.0E-01 - 9.0E-01)	-1.3E-01 (0 / 4) (-4.8E+00 - 6.4E+00)

* AVERAGE MEASURED LLD AND REQUIRED LLD VALUES. (--- USED WHEN THERE IS NO REQUIREMENT.)

** (f) NUMBER OF POSITIVE MEASUREMENTS / TOTAL MEASUREMENTS AT SPECIFIED LOCATIONS.

TABLE 3

1993 REMP ANALYSIS SUMMARY

MEDIUM: Migratory Dabbler Duck

UNITS: pCi/Kg wet wt

ANALYSIS TYPE	TOTAL ANALYSES/ NONROUTINE MEASUREMENTS	LOWER LIMIT OF DETECTION *	INDICATOR LOCATIONS MEAN (f) ** RANGE	LOCATION WITH HIGHEST ANNUAL MEAN LOCATION INFORMATION MEAN (f) ** RANGE	CONTROL LOCATIONS MEAN (f) ** RANGE
I-131	1/ 0	4.6E+03 ---	-1.5E+03 (0 / 1) (-1.5E+03 --1.5E+03)	2-4 miles SE-SS (#262) -1.5E+03 (0 / 1) (-1.5E+03 --1.5E+03)	no samples
Cs-134	1/ 0	4.3E+01 1.3E+02	-2.6E+01 (0 / 1) (-2.6E+01 --2.6E+01)	2-4 miles SE-SS (#262) -2.6E+01 (0 / 1) (-2.6E+01 --2.6E+01)	no samples
Cs-137	1/ 0	5.3E+01 1.5E+02	1.3E+01 (0 / 1) (1.3E+01 -- 1.3E+01)	2-4 miles SE-SS (#262) 1.3E+01 (0 / 1) (1.3E+01 -- 1.3E+01)	no samples
Mn-54	1/ 0	4.5E+01 1.3E+02	7.9E+00 (0 / 1) (7.9E+00 -- 7.9E+00)	2-4 miles SE-SS (#262) 7.9E+00 (0 / 1) (7.9E+00 -- 7.9E+00)	no samples
Fe-59	1/ 0	2.0E+02 2.6E+02	5.6E+01 (0 / 1) (5.6E+01 -- 5.6E+01)	2-4 miles SE-SS (#262) 5.6E+01 (0 / 1) (5.6E+01 -- 5.6E+01)	no samples
Co-58	1/ 0	7.1E+01 1.3E+02	5.8E+00 (0 / 1) (5.8E+00 -- 5.8E+00)	2-4 miles SE-SS (#262) 5.8E+00 (0 / 1) (5.8E+00 -- 5.8E+00)	no samples
Co-60	1/ 0	5.4E+01 1.3E+02	2.7E+01 (0 / 1) (2.7E+01 -- 2.7E+01)	2-4 miles SE-SS (#262) 2.7E+01 (0 / 1) (2.7E+01 -- 2.7E+01)	no samples
Zn-65	1/ 0	8.8E+01 2.6E+02	-9.9E+01 (0 / 1) (-9.9E+01 --9.9E+01)	2-4 miles SE-SS (#262) -9.9E+01 (0 / 1) (-9.9E+01 --9.9E+01)	no samples
Zr-95	1/ 0	1.8E+02 ---	2.5E+01 (0 / 1) (2.5E+01 -- 2.5E+01)	2-4 miles SE-SS (#262) 2.5E+01 (0 / 1) (2.5E+01 -- 2.5E+01)	no samples
Nb-95	1/ 0	1.3E+02 ---	4.3E+01 (0 / 1) (4.3E+01 -- 4.3E+01)	2-4 miles SE-SS (#262) 4.3E+01 (0 / 1) (4.3E+01 -- 4.3E+01)	no samples
Ba-140	1/ 0	2.7E+03 ---	-3.7E+02 (0 / 1) (-3.7E+02 --3.7E+02)	2-4 miles SE-SS (#262) -3.7E+02 (0 / 1) (-3.7E+02 --3.7E+02)	no samples
La-140	1/ 0	1.0E+03 ---	0.0E+00 (0 / 1) (0.0E+00 -- 0.0E+00)	2-4 miles SE-SS (#262) 0.0E+00 (0 / 1) (0.0E+00 -- 0.0E+00)	no samples

* AVERAGE MEASURED LLD AND REQUIRED LLD VALUES. (--- USED WHEN THERE IS NO REQUIREMENT.)

** (f) NUMBER OF POSITIVE MEASUREMENTS / TOTAL MEASUREMENTS AT SPECIFIED LOCATIONS.

TABLE 3
1993 REMP ANALYSIS SUMMARY

MEDIUM: Goose

UNITS: pCi/Kg wet wt

ANALYSIS TYPE	TOTAL ANALYSES/ NONROUTINE MEASUREMENTS	LOWER LIMIT OF DETECTION *	INDICATOR LOCATIONS MEAN (f) ** RANGE	LOCATION WITH HIGHEST ANNUAL MEAN LOCATION INFORMATION	ANNUAL MEAN (f) ** RANGE	CONTROL LOCATIONS MEAN (f) ** RANGE
I-131	4/ 0	1.8E+03 ---	-2.3E+02 (0 / 4) (-4.8E+02 -- 3.6E+00)	0-2 miles NW-NN (#221)	-5.9E+01 (0 / 2) (-1.1E+02 -- 3.6E+00)	no samples
Cs-134	4/ 0	1.4E+01 1.3E+02	-7.0E+00 (0 / 4) (-1.3E+01 -- 1.2E+00)	0-2 miles NW-NN (#221)	-1.4E+00 (0 / 2) (-1.7E+00 -- 1.2E+00)	no samples
Cs-137	4/ 0	1.5E+01 1.5E+02	-2.2E+00 (0 / 4) (-9.5E+00 -- 3.1E+00)	0-2 miles NW-NN (#221)	1.7E+00 (0 / 2) (3.0E-01 -- 3.1E+00)	no samples
Mn-54	4/ 0	3.6E+01 1.3E+02	1.3E+01 (0 / 4) (-1.3E+01 -- 4.8E+01)	0-2 miles NW-NN (#221)	2.3E+01 (0 / 2) (-2.4E+00 -- 4.8E+01)	no samples
Fe-59	4/ 0	7.9E+01 2.6E+02	3.3E+01 (0 / 4) (-4.4E+00 -- 1.1E+02)	2-4 miles SW-WS (#242)	6.9E+01 (0 / 2) (2.5E+01 -- 1.1E+02)	no samples
Co-58	4/ 0	2.6E+01 1.3E+02	-1.9E+00 (0 / 4) (-1.1E+01 -- 6.8E+00)	0-2 miles NW-NN (#221)	-1.7E+00 (0 / 2) (-2.4E+00 -- 9.1E-01)	no samples
Co-60	4/ 0	1.6E+01 1.3E+02	-2.8E+00 (0 / 4) (-1.7E+01 -- 5.3E+00)	0-2 miles NW-NN (#221)	1.8E-01 (0 / 2) (-1.2E+00 -- 1.5E+00)	no samples
Zn-65	4/ 0	3.5E+01 2.6E+02	-1.4E+01 (0 / 4) (-5.2E+01 -- 4.1E+00)	0-2 miles NW-NN (#221)	-1.9E-01 (0 / 2) (-3.8E-01 -- 0.0E+00)	no samples
Zr-95	4/ 0	5.5E+01 ---	-3.2E+01 (0 / 4) (-1.3E+02 -- 3.3E+00)	0-2 miles NW-NN (#221)	2.3E+00 (0 / 2) (1.4E+00 -- 3.3E+00)	no samples
Nb-95	4/ 0	4.3E+01 ---	-8.1E+00 (0 / 4) (-2.3E+01 -- 5.3E-01)	0-2 miles NW-NN (#221)	-2.1E+00 (0 / 2) (-4.7E+00 -- 5.3E-01)	no samples
Ba-140	4/ 0	9.7E+02 ---	-2.8E+02 (0 / 4) (-1.1E+03 -- 9.6E+01)	0-2 miles NW-NN (#221)	6.5E+01 (0 / 2) (3.4E+01 -- 9.6E+01)	no samples
La-140	4/ 0	3.4E+02 ---	1.2E+01 (0 / 4) (-6.5E+01 -- 9.8E+01)	2-4 miles SW-WS (#242)	1.7E+01 (0 / 2) (-6.5E+01 -- 9.8E+01)	no samples

* AVERAGE MEASURED LLD AND REQUIRED LLD VALUES. (--- USED WHEN THERE IS NO REQUIREMENT.)
** (f) NUMBER OF POSITIVE MEASUREMENTS / TOTAL MEASUREMENTS AT SPECIFIED LOCATIONS.

TABLE 3
1993 REMP ANALYSIS SUMMARY

MEDIUM: Dove

UNITS: pCi/Kg wet wt

ANALYSIS TYPE	TOTAL ANALYSES/ NONROUTINE MEASUREMENTS	LOWER LIMIT OF DETECTION *	INDICATOR LOCATIONS MEAN (f) ** RANGE	LOCATION WITH HIGHEST ANNUAL MEAN LOCATION INFORMATION	MEAN (f) ** RANGE	CONTROL LOCATIONS MEAN (f) ** RANGE
I-131	1/ 0	3.4E+03 ---	-2.0E+03 (0 / 1) (-2.0E+03 --2.0E+03)	0-2 miles NW-NN (#221)	-2.0E+03 (0 / 1) (-2.0E+03 --2.0E+03)	no samples
Cs-134	1/ 0	3.2E+01 1.3E+02	-2.6E+01 (0 / 1) (-2.6E+01 --2.6E+01)	0-2 miles NW-NN (#221)	-2.6E+01 (0 / 1) (-2.6E+01 --2.6E+01)	no samples
Cs-137	1/ 0	4.0E+01 1.5E+02	6.2E+00 (0 / 1) (6.2E+00 -- 6.2E+00)	0-2 miles NW-NN (#221)	6.2E+00 (0 / 1) (6.2E+00 -- 6.2E+00)	no samples
Mn-54	1/ 0	3.8E+01 1.3E+02	-2.1E+01 (0 / 1) (-2.1E+01 --2.1E+01)	0-2 miles NW-NN (#221)	-2.1E+01 (0 / 1) (-2.1E+01 --2.1E+01)	no samples
Fe-59	1/ 0	1.6E+02 2.6E+02	-7.9E+01 (0 / 1) (-7.9E+01 --7.9E+01)	0-2 miles NW-NN (#221)	-7.9E+01 (0 / 1) (-7.9E+01 --7.9E+01)	no samples
Co-58	1/ 0	5.3E+01 1.3E+02	-2.2E+01 (0 / 1) (-2.2E+01 --2.2E+01)	0-2 miles NW-NN (#221)	-2.2E+01 (0 / 1) (-2.2E+01 --2.2E+01)	no samples
Co-60	1/ 0	4.0E+01 1.3E+02	-8.5E+00 (0 / 1) (-8.5E+00 --8.5E+00)	0-2 miles NW-NN (#221)	-8.5E+00 (0 / 1) (-8.5E+00 --8.5E+00)	no samples
Zn-65	1/ 0	9.8E+01 2.6E+02	-8.1E+00 (0 / 1) (-8.1E+00 --8.1E+00)	0-2 miles NW-NN (#221)	-8.1E+00 (0 / 1) (-8.1E+00 --8.1E+00)	no samples
Zr-95	1/ 0	1.4E+02 ---	1.4E+01 (0 / 1) (1.4E+01 -- 1.4E+01)	0-2 miles NW-NN (#221)	1.4E+01 (0 / 1) (1.4E+01 -- 1.4E+01)	no samples
Nb-95	1/ 0	1.1E+02 ---	3.2E+01 (0 / 1) (3.2E+01 -- 3.2E+01)	0-2 miles NW-NN (#221)	3.2E+01 (0 / 1) (3.2E+01 -- 3.2E+01)	no samples
Ba-140	1/ 0	2.2E+03 ---	-4.8E+02 (0 / 1) (-4.8E+02 --4.8E+02)	0-2 miles NW-NN (#221)	-4.8E+02 (0 / 1) (-4.8E+02 --4.8E+02)	no samples
La-140	1/ 0	6.3E+02 ---	-5.1E+01 (0 / 1) (-5.1E+01 --5.1E+01)	0-2 miles NW-NN (#221)	-5.1E+01 (0 / 1) (-5.1E+01 --5.1E+01)	no samples

* AVERAGE MEASURED LLD AND REQUIRED LLD VALUES. (--- USED WHEN THERE IS NO REQUIREMENT.)
** (f) NUMBER OF POSITIVE MEASUREMENTS / TOTAL MEASUREMENTS AT SPECIFIED LOCATIONS.

TABLE 3

1993 REMP ANALYSIS SUMMARY

MEDIUM: Piscivorous Fish

UNITS: pCi/Kg wet wt

ANALYSIS TYPE	TOTAL ANALYSES/ NONROUTINE MEASUREMENTS	LOWER LIMIT OF DETECTION *	INDICATOR LOCATIONS MEAN (f) ** RANGE	LOCATION WITH HIGHEST LOCATION INFORMATION	ANNUAL MEAN (f) ** RANGE	CONTROL LOCATIONS MEAN (f) ** RANGE
I-131	6/ 0	2.6E+02 ---	-7.2E+01 (0 / 4) (-3.1E+02 → 4.5E+01)	1 mile SW (#215)	-1.2E+01 (0 / 2) (-4.0E+01 → 1.5E+01)	-2.4E+01 (0 / 2) (-2.7E+01 → -2.0E+01)
Cs-134	6/ 0	1.5E+01 1.3E+02	-4.7E+00 (0 / 4) (-9.4E+00 → -1.5E+00)	1 mile SW (#215)	-4.0E+00 (0 / 2) (-6.3E+00 → -1.7E+00)	-1.9E+01 (0 / 2) (-2.7E+01 → -1.0E+01)
Cs-137	6/ 0	1.4E+01 1.5E+02	1.9E+01 (3 / 4) (7.9E+00 → 2.4E+01)	1 mile SW (#215)	2.3E+01 (2 / 2) (2.2E+01 → 2.4E+01)	-3.5E+00 (0 / 2) (-8.2E+00 → 1.2E+00)
Mn-54	6/ 0	1.4E+01 1.3E+02	7.9E-01 (0 / 4) (-3.9E+00 → 7.8E+00)	3 miles SSE (#216)	3.0E+00 (0 / 2) (-1.9E+00 → 7.8E+00)	-1.5E+00 (0 / 2) (-4.8E+00 → 1.9E+00)
Fe-59	6/ 0	4.5E+01 2.6E+02	-8.8E-01 (0 / 4) (-9.1E+00 → 3.1E+00)	>10 miles N-NNE (#216)	1.3E+01 (0 / 2) (7.3E+00 → 1.8E+01)	1.3E+01 (0 / 2) (7.3E+00 → 1.8E+01)
Co-58	6/ 0	1.9E+01 1.3E+02	3.2E+00 (0 / 4) (1.4E+00 → 4.5E+00)	1 mile SW (#215)	3.4E+00 (0 / 2) (2.3E+00 → 4.4E+00)	-3.8E-01 (0 / 2) (-3.5E+00 → 2.7E+00)
Co-60	6/ 0	1.6E+01 1.3E+02	2.8E+00 (0 / 4) (-7.5E+00 → 1.0E+01)	3 miles SSE (#216)	8.0E+00 (0 / 2) (5.5E+00 → 1.0E+01)	-1.4E+00 (0 / 2) (-5.0E+00 → 2.2E+00)
Zn-65	6/ 0	3.2E+01 2.6E+02	-1.3E+01 (0 / 4) (-2.5E+01 → 1.4E+00)	3 miles SSE (#216)	-7.3E+00 (0 / 2) (-1.6E+01 → 1.4E+00)	-1.8E+01 (0 / 2) (-2.3E+01 → -1.4E+01)
Zr-95	6/ 0	3.8E+01 ---	-1.0E+01 (0 / 4) (-2.7E+01 → 9.4E+00)	>10 miles N-NNE (#216)	-1.4E+00 (0 / 2) (-2.5E+01 → 2.2E+01)	-1.4E+00 (0 / 2) (-2.5E+01 → 2.2E+01)
Nb-95	6/ 0	2.7E+01 ---	7.1E+00 (0 / 4) (-3.9E+00 → 1.8E+01)	1 mile SW (#215)	7.2E+00 (0 / 2) (3.1E+00 → 1.1E+01)	-4.9E+00 (0 / 2) (-1.1E+01 → 8.1E-01)
Ba-140	6/ 0	3.0E+02 ---	3.3E+01 (0 / 4) (-6.0E+01 → 1.3E+02)	3 miles SSE (#216)	3.4E+01 (0 / 2) (-6.0E+01 → 1.3E+02)	8.3E+00 (0 / 2) (-2.9E+01 → 4.5E+01)
La-140	6/ 0	9.3E+01 ---	-1.7E+01 (0 / 4) (-2.5E+01 → -7.3E+00)	>10 miles N-NNE (#216)	2.5E+01 (0 / 2) (5.0E+01 → 5.0E+01)	2.5E+01 (0 / 2) (5.0E+01 → 5.0E+01)

* AVERAGE MEASURED LLD AND REQUIRED LLD VALUES. (--- USED WHEN THERE IS NO REQUIREMENT.)

** (f) NUMBER OF POSITIVE MEASUREMENTS / TOTAL MEASUREMENTS AT SPECIFIED LOCATIONS.

TABLE 3

1993 REMP ANALYSIS SUMMARY

MEDIUM: Arthropodivorous Fish

UNITS: pCi/Kg wet wt

ANALYSIS TYPE	TOTAL ANALYSES/ NONROUTINE MEASUREMENTS	LOWER LIMIT OF DETECTION *	INDICATOR LOCATIONS MEAN (f) ** RANGE	LOCATION WITH HIGHEST ANNUAL MEAN LOCATION INFORMATION	MEAN (f) ** RANGE	CONTROL LOCATIONS MEAN (f) ** RANGE
I-131	4/ 0	8.4E+02 ---	-8.5E+01 (0 / 4) (-3.3E+02 -- 4.7E+02)	>10 miles (#222)	1.3E+02 (0 / 2) (-2.1E+02 -- 4.7E+02)	no samples
Cs-134	4/ 0	2.1E+01 1.3E+02	-1.9E+01 (0 / 4) (-2.2E+01 -- 1.5E+01)	>10 miles (#222)	-1.8E+01 (0 / 2) (-2.0E+01 -- 1.5E+01)	no samples
Cs-137	4/ 0	2.5E+01 1.5E+02	6.1E+00 (0 / 4) (-4.7E+00 -- 1.2E+01)	<1 mile S (#300)	8.7E+00 (0 / 2) (8.3E+00 -- 9.0E+00)	no samples
Mn-54	4/ 0	2.2E+01 1.3E+02	-8.0E+00 (0 / 4) (-1.9E+01 -- 0.0E+00)	>10 miles (#222)	-3.2E+00 (0 / 2) (-6.4E+00 -- 0.0E+00)	no samples
Fe-59	4/ 0	8.1E+01 2.6E+02	-7.7E+00 (0 / 4) (-4.4E+01 -- 4.6E+01)	>10 miles: (#222)	9.4E+00 (0 / 2) (-2.8E+01 -- 4.6E+01)	no samples
Co-58	4/ 0	3.1E+01 1.3E+02	-1.2E+01 (0 / 4) (-2.7E+01 -- 5.1E+00)	>10 miles (#222)	-7.7E+00 (0 / 2) (-1.0E+01 -- 5.1E+00)	no samples
Co-60	4/ 0	2.4E+01 1.3E+02	-1.2E+00 (0 / 4) (-1.5E+01 -- 7.7E+00)	>10 miles (#222)	7.2E+00 (0 / 2) (6.7E+00 -- 7.7E+00)	no samples
Zn-65	4/ 0	5.6E+01 2.6E+02	-1.5E+01 (0 / 4) (-4.0E+01 -- 4.1E+00)	>10 miles (#222)	-1.2E+01 (0 / 2) (-1.6E+01 -- 8.5E+00)	no samples
Zr-95	4/ 0	5.3E+01 ---	-2.2E+01 (0 / 4) (-5.7E+01 -- 8.2E+00)	>10 miles (#222)	6.2E+00 (0 / 2) (4.2E+00 -- 8.2E+00)	no samples
Nb-95	4/ 0	4.9E+01 ---	-4.8E+00 (0 / 4) (-3.7E+01 -- 3.2E+01)	>10 miles (#222)	1.0E+01 (0 / 2) (-1.2E+01 -- 3.2E+01)	no samples
Ba-140	4/ 0	7.4E+02 ---	-2.5E+02 (0 / 4) (-3.2E+02 -- 1.2E+02)	>10 miles (#222)	-2.1E+02 (0 / 2) (-3.1E+02 -- 1.2E+02)	no samples
La-140	4/ 0	2.3E+02 ---	-6.1E+01 (0 / 4) (-1.2E+02 -- 1.7E+01)	>10 miles (#222)	-8.5E+00 (0 / 2) (-1.7E+01 -- 1.7E+01)	no samples

* AVERAGE MEASURED LLD AND REQUIRED LLD VALUES. (--- USED WHEN THERE IS NO REQUIREMENT.)

** (f) NUMBER OF POSITIVE MEASUREMENTS / TOTAL MEASUREMENTS AT SPECIFIED LOCATIONS.

TABLE 3

1993 REMP ANALYSIS SUMMARY

MEDIUM: Planktivorous Fish

UNITS: pCi/Kg wet wt

ANALYSIS TYPE	TOTAL ANALYSES/ NONROUTINE MEASUREMENTS	LOWER LIMIT OF DETECTION *	INDICATOR LOCATIONS MEAN (f) ** RANGE	LOCATION WITH LOCATION INFORMATION	HIGHEST ANNUAL MEAN MEAN (f) ** RANGE	CONTROL LOCATIONS MEAN (f) ** RANGE
I-131	1/ 0	1.0E+02 ---	-2.0E+01 (0 / 1) (-2.0E+01 --2.0E+01)	<1 mile S (#300)	-2.0E+01 (0 / 1) (-2.0E+01 --2.0E+01)	no samples
Cs-134	1/ 0	5.0E+00 1.3E+02	-2.4E-01 (0 / 1) (-2.4E-01 --2.4E-01)	<1 mile S (#300)	-2.4E-01 (0 / 1) (-2.4E-01 --2.4E-01)	no samples
Cs-137	1/ 0	3.8E+00 1.5E+02	4.9E+00 (1 / 1) (4.9E+00 --4.9E+00)	<1 mile S (#300)	4.9E+00 (1 / 1) (4.9E+00 --4.9E+00)	no samples
Mn-54	1/ 0	5.5E+00 1.3E+02	2.5E+00 (0 / 1) (2.5E+00 --2.5E+00)	<1 mile S (#300)	2.5E+00 (0 / 1) (2.5E+00 --2.5E+00)	no samples
Fe-59	1/ 0	1.9E+01 2.6E+02	1.2E+01 (0 / 1) (1.2E+01 --1.2E+01)	<1 mile S (#300)	1.2E+01 (0 / 1) (1.2E+01 --1.2E+01)	no samples
Co-58	1/ 0	6.6E+00 1.3E+02	8.6E-01 (0 / 1) (8.6E-01 --8.6E-01)	<1 mile S (#300)	8.6E-01 (0 / 1) (8.6E-01 --8.6E-01)	no samples
Co-60	1/ 0	5.0E+00 1.3E+02	-2.3E-01 (0 / 1) (-2.3E-01 --2.3E-01)	<1 mile S (#300)	-2.3E-01 (0 / 1) (-2.3E-01 --2.3E-01)	no samples
Zn-65	1/ 0	1.2E+01 2.6E+02	-3.8E+00 (0 / 1) (-3.8E+00 --3.8E+00)	<1 mile S (#300)	-3.8E+00 (0 / 1) (-3.8E+00 --3.8E+00)	no samples
Zr-95	1/ 0	9.4E+00 ---	-7.2E+00 (0 / 1) (-7.2E+00 --7.2E+00)	<1 mile S (#300)	-7.2E+00 (0 / 1) (-7.2E+00 --7.2E+00)	no samples
Nb-95	1/ 0	8.2E+00 ---	-2.1E+00 (0 / 1) (-2.1E+00 --2.1E+00)	<1 mile S (#300)	-2.1E+00 (0 / 1) (-2.1E+00 --2.1E+00)	no samples
P-140	1/ 0	1.2E+02 ---	7.0E+01 (0 / 1) (7.0E+01 --7.0E+01)	<1 mile S (#300)	7.0E+01 (0 / 1) (7.0E+01 --7.0E+01)	no samples
La-140	1/ 0	3.4E+01 ---	4.3E+00 (0 / 1) (4.3E+00 --4.3E+00)	<1 mile S (#300)	4.3E+00 (0 / 1) (4.3E+00 --4.3E+00)	no samples

* AVERAGE MEASURED LLD AND REQUIRED LLD VALUES. (--- USED WHEN THERE IS NO REQUIREMENT.)
 ** (f) NUMBER OF POSITIVE MEASUREMENTS / TOTAL MEASUREMENTS AT SPECIFIED LOCATIONS.

TABLE 3
1993 REMP ANALYSIS SUMMARY

MEDIUM: Crustacean Shrimp

UNITS: pCi/Kg wet wt

ANALYSIS TYPE	TOTAL ANALYSES/ NONROUTINE MEASUREMENTS	LOWER LIMIT OF DETECTION *	INDICATOR LOCATIONS MEAN (f) ** RANGE	LOCATION WITH HIGHEST ANNUAL MEAN LOCATION INFORMATION	MEAN (f) ** RANGE	CONTROL LOCATIONS MEAN (f) ** RANGE
I-131	1/ 0	3.6E+02 ---	1.5E+01 (0 / 1) (1.5E+01 -- 1.5E+01)	>10 miles (#222)	1.5E+01 (0 / 1) (1.5E+01 -- 1.5E+01)	no samples
Cs-134	1/ 0	2.3E+01 1.3E+02	-2.0E+01 (0 / 1) (-2.0E+01 -- -2.0E+01)	>10 miles (#222)	-2.0E+01 (0 / 1) (-2.0E+01 -- -2.0E+01)	no samples
Cs-137	1/ 0	2.4E+01 1.5E+02	-7.5E+00 (0 / 1) (-7.5E+00 -- -7.5E+00)	>10 miles (#222)	-7.5E+00 (0 / 1) (-7.5E+00 -- -7.5E+00)	no samples
Mn-54	1/ 0	2.6E+01 1.3E+02	6.2E-01 (0 / 1) (6.2E-01 -- 6.2E-01)	>10 miles (#222)	6.2E-01 (0 / 1) (6.2E-01 -- 6.2E-01)	no samples
Fe-59	1/ 0	8.2E+01 2.6E+02	1.1E+01 (0 / 1) (1.1E+01 -- 1.1E+01)	>10 miles (#222)	1.1E+01 (0 / 1) (1.1E+01 -- 1.1E+01)	no samples
Co-58	1/ 0	3.1E+01 1.3E+02	3.1E+00 (0 / 1) (3.1E+00 -- 3.1E+00)	>10 miles (#222)	3.1E+00 (0 / 1) (3.1E+00 -- 3.1E+00)	no samples
Co-60	1/ 0	2.5E+01 1.3E+02	1.9E+00 (0 / 1) (1.9E+00 -- 1.9E+00)	>10 miles (#222)	1.9E+00 (0 / 1) (1.9E+00 -- 1.9E+00)	no samples
Zn-65	1/ 0	5.7E+01 2.6E+02	-3.4E+01 (0 / 1) (-3.4E+01 -- -3.4E+01)	>10 miles (#222)	-3.4E+01 (0 / 1) (-3.4E+01 -- -3.4E+01)	no samples
Zr-95	1/ 0	5.6E+01 ---	-1.9E+01 (0 / 1) (-1.9E+01 -- -1.9E+01)	>10 miles (#222)	-1.9E+01 (0 / 1) (-1.9E+01 -- -1.9E+01)	no samples
Hb-95	1/ 0	4.3E+01 ---	-2.3E+01 (0 / 1) (-2.3E+01 -- -2.3E+01)	>10 miles (#222)	-2.3E+01 (0 / 1) (-2.3E+01 -- -2.3E+01)	no samples
Ba-140	1/ 0	4.0E+02 ---	-7.1E+01 (0 / 1) (-7.1E+01 -- -7.1E+01)	>10 miles (#222)	-7.1E+01 (0 / 1) (-7.1E+01 -- -7.1E+01)	no samples
La-140	1/ 0	1.7E+02 ---	-4.1E+01 (0 / 1) (-4.1E+01 -- -4.1E+01)	>10 miles (#222)	-4.1E+01 (0 / 1) (-4.1E+01 -- -4.1E+01)	no samples

* AVERAGE MEASURED LLD AND REQUIRED LLD VALUES. (--- USED WHEN THERE IS NO REQUIREMENT.)

** (f) NUMBER OF POSITIVE MEASUREMENTS / TOTAL MEASUREMENTS AT SPECIFIED LOCATIONS.

TABLE 3
1993 REMP ANALYSIS SUMMARY

MEDIUM: Oyster

UNITS: pci/Kg wet wt

ANALYSIS TYPE	TOTAL ANALYSES/ NONROUTINE MEASUREMENTS	LOWER LIMIT OF DETECTION *	INDICATOR LOCATIONS MEAN (f) ** RANGE	LOCATION WITH HIGHEST ANNUAL MEAN LOCATION INFORMATION MEAN (f) ** RANGE	CONTROL LOCATIONS MEAN (f) ** RANGE
I-131	1/ 0	3.3E+02 ---	-1.5E+02 (0 / 1) (-1.5E+02 --1.5E+02)	>10 miles (#222) -1.5E+02 (0 / 1) (-1.5E+02 --1.5E+02)	no samples
Cs-134	1/ 0	2.3E+01 1.3E+02	-2.8E+01 (0 / 1) (-2.8E+01 --2.8E+01)	>10 miles (#222) -2.8E+01 (0 / 1) (-2.8E+01 --2.8E+01)	no samples
Cs-137	1/ 0	2.8E+01 1.5E+02	0.0E+00 (0 / 1) (0.0E+00 -- 0.0E+00)	>10 miles (#222) 0.0E+00 (0 / 1) (0.0E+00 -- 0.0E+00)	no samples
Mn-54	1/ 0	2.8E+01 1.3E+02	0.0E+00 (0 / 1) (0.0E+00 -- 0.0E+00)	>10 miles (#222) 0.0E+00 (0 / 1) (0.0E+00 -- 0.0E+00)	no samples
Fe-59	1/ 0	8.0E+01 2.6E+02	-2.1E+01 (0 / 1) (-2.1E+01 --2.1E+01)	>10 miles (#222) -2.1E+01 (0 / 1) (-2.1E+01 --2.1E+01)	no samples
Co-58	1/ 0	3.5E+01 1.3E+02	0.0E+00 (0 / 1) (0.0E+00 -- 0.0E+00)	>10 miles (#222) 0.0E+00 (0 / 1) (0.0E+00 -- 0.0E+00)	no samples
Co-60	1/ 0	3.4E+01 1.3E+02	-7.5E+00 (0 / 1) (-7.5E+00 --7.5E+00)	>10 miles (#222) -7.5E+00 (0 / 1) (-7.5E+00 --7.5E+00)	no samples
Zn-65	1/ 0	6.7E+01 2.6E+02	-3.3E+00 (0 / 1) (-3.3E+00 --3.3E+00)	>10 miles (#222) -3.3E+00 (0 / 1) (-3.3E+00 --3.3E+00)	no samples
Zr-95	1/ 0	8.2E+01 ---	-1.5E+01 (0 / 1) (-1.5E+01 --1.5E+01)	>10 miles (#222) -1.5E+01 (0 / 1) (-1.5E+01 --1.5E+01)	no samples
Nb-95	1/ 0	4.8E+01 ---	-2.1E+01 (0 / 1) (-2.1E+01 --2.1E+01)	>10 miles (#222) -2.1E+01 (0 / 1) (-2.1E+01 --2.1E+01)	no samples
Ba-140	1/ 0	5.0E+02 ---	-1.1E+02 (0 / 1) (-1.1E+02 --1.1E+02)	>10 miles (#222) -1.1E+02 (0 / 1) (-1.1E+02 --1.1E+02)	no samples
La-140	1/ 0	1.6E+02 ---	-1.2E+01 (0 / 1) (-1.2E+01 --1.2E+01)	>10 miles (#222) -1.2E+01 (0 / 1) (-1.2E+01 --1.2E+01)	no samples

* AVERAGE MEASURED LLD AND REQUIRED LLD VALUES. (--- USED WHEN THERE IS NO REQUIREMENT.)
** (f) NUMBER OF POSITIVE MEASUREMENTS / TOTAL MEASUREMENTS AT SPECIFIED LOCATIONS.

TABLE 3

1993 REMP ANALYSIS SUMMARY

MEDIUM: Wild Swine

UNITS: pCi/Kg wet wt

ANALYSIS TYPE	TOTAL ANALYSES/ NONROUTINE MEASUREMENTS	LOWER LIMIT OF DETECTION *	INDICATOR LOCATIONS MEAN (f) ** RANGE	LOCATION WITH LOCATION INFORMATION	HIGHEST ANNUAL MEAN MEAN (f) ** RANGE	CONTROL LOCATIONS MEAN (f) ** RANGE
1-131	1/0	6.4E+02 ---	-4.3E+02 (0 / 1) (-4.3E+02 --4.3E+02)	2-4 miles SE-SS (#262)	-4.3E+02 (0 / 1) (-4.3E+02 --4.3E+02)	no samples
Cs-134	1/0	1.9E+01 1.3E+02	-1.7E+01 (0 / 1) (-1.7E+01 --1.7E+01)	2-4 miles SE-SS (#262)	-1.7E+01 (0 / 1) (-1.7E+01 --1.7E+01)	no samples
Cs-137	1/0	2.1E+01 1.5E+02	-3.9E+00 (0 / 1) (-3.9E+00 --3.9E+00)	2-4 miles SE-SS (#262)	-3.9E+00 (0 / 1) (-3.9E+00 --3.9E+00)	no samples
Mn-54	1/0	2.1E+01 1.3E+02	-8.6E+00 (0 / 1) (-8.6E+00 --8.6E+00)	2-4 miles SE-SS (#262)	-8.6E+00 (0 / 1) (-8.6E+00 --8.6E+00)	no samples
Fe-59	1/0	7.8E+01 2.6E+02	9.4E+00 (0 / 1) (9.4E+00 --9.4E+00)	2-4 miles SE-SS (#262)	9.4E+00 (0 / 1) (9.4E+00 --9.4E+00)	no samples
Co-58	1/0	2.8E+01 1.3E+02	-1.6E+01 (0 / 1) (-1.6E+01 --1.6E+01)	2-4 miles SE-SS (#262)	-1.6E+01 (0 / 1) (-1.6E+01 --1.6E+01)	no samples
Co-60	1/0	2.2E+01 1.3E+02	-1.0E+01 (0 / 1) (-1.0E+01 --1.0E+01)	2-4 miles SE-SS (#262)	-1.0E+01 (0 / 1) (-1.0E+01 --1.0E+01)	no samples
Zn-65	1/0	5.0E+01 2.6E+02	-3.7E+01 (0 / 1) (-3.7E+01 --3.7E+01)	2-4 miles SE-SS (#262)	-3.7E+01 (0 / 1) (-3.7E+01 --3.7E+01)	no samples
Zr-95	1/0	6.8E+01 ---	-2.2E+01 (0 / 1) (-2.2E+01 --2.2E+01)	2-4 miles SE-SS (#262)	-2.2E+01 (0 / 1) (-2.2E+01 --2.2E+01)	no samples
Nb-95	1/0	4.5E+01 ---	-4.4E+00 (0 / 1) (-4.4E+00 --4.4E+00)	2-4 miles SE-SS (#262)	-4.4E+00 (0 / 1) (-4.4E+00 --4.4E+00)	no samples
Ba-140	1/0	5.8E+02 ---	-3.5E+02 (0 / 1) (-3.5E+02 --3.5E+02)	2-4 miles SE-SS (#262)	-3.5E+02 (0 / 1) (-3.5E+02 --3.5E+02)	no samples
La-140	1/0	1.9E+02 ---	-2.0E+01 (0 / 1) (-2.0E+01 --2.0E+01)	2-4 miles SE-SS (#262)	-2.0E+01 (0 / 1) (-2.0E+01 --2.0E+01)	no samples

* AVERAGE MEASURED LLD AND REQUIRED LLD VALUES. (---) USED WHEN THERE IS NO REQUIREMENT. (.)

** (f) NUMBER OF POSITIVE MEASUREMENTS / TOTAL MEASUREMENTS AT SPECIFIED LOCATIONS.

TABLE 3
1993 REMP ANALYSIS SUMMARY

MEDIUM: Game Deer

UNITS: pCi/Kg wet wt

ANALYSIS TYPE	TOTAL ANALYSES/ NONROUTINE MEASUREMENTS	LOWER LIMIT OF DETECTION *	INDICATOR LOCATIONS MEAN (f) ** RANGE	LOCATION WITH HIGHEST ANNUAL MEAN LOCATION INFORMATION	MEAN (f) ** RANGE	CONTROL LOCATIONS MEAN (f) ** RANGE
I-131	1/ 0	1.3E+03 ---	-1.2E+02 (0 / 1) (-1.2E+02 -- 1.2E+02)	2-4 miles SE-SS (#Z62)	-1.2E+02 (0 / 1) (-1.2E+02 -- 1.2E+02)	no samples
Cs-134	1/ 0	1.7E+01 1.3E+02	-2.1E+01 (0 / 1) (-2.1E+01 -- 2.1E+01)	2-4 miles SE-SS (#Z62)	-2.1E+01 (0 / 1) (-2.1E+01 -- 2.1E+01)	no samples
Cs-137	1/ 0	1.9E+01 1.5E+02	-5.5E+00 (0 / 1) (-5.5E+00 -- 5.5E+00)	2-4 miles SE-SS (#Z62)	-5.5E+00 (0 / 1) (-5.5E+00 -- 5.5E+00)	no samples
Mn-54	1/ 0	2.1E+01 1.3E+02	1.2E+01 (0 / 1) (1.2E+01 -- 1.2E+01)	2-4 miles SE-SS (#Z62)	1.2E+01 (0 / 1) (1.2E+01 -- 1.2E+01)	no samples
Fe-59	1/ 0	8.2E+01 2.6E+02	2.4E+01 (0 / 1) (2.4E+01 -- 2.4E+01)	2-4 miles SE-SS (#Z62)	2.4E+01 (0 / 1) (2.4E+01 -- 2.4E+01)	no samples
Co-58	1/ 0	2.9E+01 1.3E+02	4.3E+00 (0 / 1) (4.3E+00 -- 4.3E+00)	2-4 miles SE-SS (#Z62)	4.3E+00 (0 / 1) (4.3E+00 -- 4.3E+00)	no samples
Co-60	1/ 0	1.5E+01 1.3E+02	-1.1E+01 (0 / 1) (-1.1E+01 -- 1.1E+01)	2-4 miles SE-SS (#Z62)	-1.1E+01 (0 / 1) (-1.1E+01 -- 1.1E+01)	no samples
Zn-65	1/ 0	4.2E+01 2.6E+02	-1.3E+01 (0 / 1) (-1.3E+01 -- 1.3E+01)	2-4 miles SE-SS (#Z62)	-1.3E+01 (0 / 1) (-1.3E+01 -- 1.3E+01)	no samples
Zr-95	1/ 0	6.7E+01 ---	1.4E+01 (0 / 1) (1.4E+01 -- 1.4E+01)	2-4 miles SE-SS (#Z62)	1.4E+01 (0 / 1) (1.4E+01 -- 1.4E+01)	no samples
Nb-95	1/ 0	4.8E+01 ---	5.6E+00 (0 / 1) (5.6E+00 -- 5.6E+00)	2-4 miles SE-SS (#Z62)	5.6E+00 (0 / 1) (5.6E+00 -- 5.6E+00)	no samples
Ba-140	1/ 0	1.1E+03 ---	3.4E+02 (0 / 1) (3.4E+02 -- 3.4E+02)	2-4 miles SE-SS (#Z62)	3.4E+02 (0 / 1) (3.4E+02 -- 3.4E+02)	no samples
La-140	1/ 0	3.2E+02 ---	1.3E+02 (0 / 1) (1.3E+02 -- 1.3E+02)	2-4 miles SE-SS (#Z62)	1.3E+02 (0 / 1) (1.3E+02 -- 1.3E+02)	no samples

* AVERAGE MEASURED LLD AND REQUIRED LLD VALUES. (--- USED WHEN THERE IS NO REQUIREMENT.)

** (f) NUMBER OF POSITIVE MEASUREMENTS / TOTAL MEASUREMENTS AT SPECIFIED LOCATIONS.

TABLE 3

1993 REMP ANALYSIS SUMMARY

MEDIUM: Rabbit

UNITS: pCi/Kg wet wt

ANALYSIS TYPE	TOTAL ANALYSES/ NONROUTINE MEASUREMENTS	LOWER LIMIT OF DETECTION *	INDICATOR LOCATIONS MEAN (f) ** RANGE	LOCATION WITH HIGHEST ANNUAL MEAN MEAN (f) ** RANGE	CONTROL LOCATIONS MEAN (f) ** RANGE
I-131	1/ 0	3.3E+02 ---	7.8E+00 (0 / 1) (7.8E+00 -- 7.8E+00)	0-2 miles NW-NW (#221)	no samples
Cs-134	1/ 0	7.6E+00 ---	-5.3E+00 (0 / 1) (-5.3E+00 -- 5.3E+00)	0-2 miles NW-NW (#221)	no samples
Cs-137	1/ 0	9.3E+00 ---	3.3E+00 (0 / 1) (3.3E+00 -- 3.3E+00)	0-2 miles NW-NW (#221)	no samples
Mn-54	1/ 0	1.0E+01 ---	3.5E+00 (0 / 1) (3.5E+00 -- 3.5E+00)	0-2 miles NW-NW (#221)	no samples
Fe-59	1/ 0	3.8E+01 ---	7.0E+00 (0 / 1) (7.0E+00 -- 7.0E+00)	0-2 miles NW-NW (#221)	no samples
Co-58	1/ 0	1.3E+01 ---	-7.1E+00 (0 / 1) (-7.1E+00 -- 7.1E+00)	0-2 miles NW-NW (#221)	no samples
Co-60	1/ 0	1.0E+01 ---	1.5E+00 (0 / 1) (1.5E+00 -- 1.5E+00)	0-2 miles NW-NW (#221)	no samples
Zn-65	1/ 0	2.4E+01 ---	0.0E+00 (0 / 1) (0.0E+00 -- 0.0E+00)	0-2 miles NW-NW (#221)	no samples
Zr-95	1/ 0	2.8E+01 ---	1.3E+01 (0 / 1) (1.3E+01 -- 1.3E+01)	0-2 miles NW-NW (#221)	no samples
Nb-95	1/ 0	1.9E+01 ---	-7.6E+00 (0 / 1) (-7.6E+00 -- 7.6E+00)	0-2 miles NW-NW (#221)	no samples
Ba-140	1/ 0	3.2E+02 ---	9.1E+00 (0 / 1) (9.1E+00 -- 9.1E+00)	0-2 miles NW-NW (#221)	no samples

* AVERAGE MEASURED LLD AND REQUIRED LLD VALUES. (--- USED WHEN THERE IS NO REQUIREMENT.)
 ** (f) NUMBER OF POSITIVE MEASUREMENTS / TOTAL MEASUREMENTS AT SPECIFIED LOCATIONS.

TABLE 3
1993 REMP ANALYSIS SUMMARY

MEDIUM: Airborne Particulate

UNITS: pCi/M³

ANALYSIS TYPE	TOTAL ANALYSES/ NONROUTINE MEASUREMENTS	LOWER LIMIT OF DETECTION *	INDICATOR LOCATIONS MEAN (f) ** RANGE	LOCATION WITH HIGHEST LOCATION INFORMATION	ANNUAL MEAN MEAN (f) ** RANGE	CONTROL LOCATIONS MEAN (f) ** RANGE
Ce-138	517/ 0	1.0E-03 1.0E-02	2.0E-02 (465 / 465) (7.2E-03 - 4.1E-02)	1 mile NNW (#016)	2.0E-02 (52 / 52) (8.2E-03 - 3.8E-02)	1.9E-02 (52 / 52) (7.9E-03 - 3.5E-02)
I-131	40/ 0	1.9E-02 ---	-2.6E-03 (0 / 36) (-2.6E-02 - 1.1E-02)	1 mile NNW (#016)	2.0E-03 (0 / 4) (-3.7E-03 - 5.8E-03)	-6.4E-05 (0 / 4) (-5.9E-03 - 2.8E-03)
Cs-134	40/ 0	1.9E-04 5.0E-02	-1.9E-04 (0 / 36) (-4.0E-04 - 5.4E-05)	1 mile NNW (#016)	-1.5E-04 (0 / 4) (-2.8E-04 - 5.7E-05)	-1.8E-04 (0 / 4) (-2.6E-04 - 8.9E-05)
Cs-137	40/ 0	2.0E-04 6.0E-02	-2.1E-05 (0 / 36) (-2.6E-04 - 1.2E-04)	5.5 miles NNE (#018)	3.1E-05 (0 / 4) (-9.3E-06 - 6.1E-05)	-4.7E-05 (0 / 4) (-9.3E-05 - 3.7E-05)
Mn-54	40/ 0	2.2E-04 ---	-1.7E-06 (0 / 36) (-1.5E-04 - 1.3E-04)	9 miles NW (#039)	5.6E-05 (0 / 4) (2.4E-05 - 1.3E-04)	2.7E-05 (0 / 4) (-1.0E-04 - 2.0E-04)
Fe-59	40/ 0	1.0E-03 ---	-1.0E-04 (0 / 36) (-1.5E-03 - 4.2E-04)	5.5 miles NNE (#018)	7.2E-05 (0 / 4) (-1.8E-04 - 2.1E-04)	-7.1E-05 (0 / 4) (-2.2E-04 - 1.4E-04)
Co-58	40/ 0	3.7E-04 ---	8.2E-06 (0 / 36) (-2.2E-04 - 2.5E-04)	5.5 miles NNE (#018)	9.9E-05 (0 / 4) (-1.4E-04 - 2.5E-04)	-5.5E-05 (0 / 4) (-2.4E-04 - 1.2E-04)
Co-60	40/ 0	2.2E-04 ---	1.2E-05 (0 / 36) (-1.6E-04 - 1.3E-04)	8.5 miles SSE (#035)	6.2E-05 (0 / 4) (-8.5E-06 - 1.3E-04)	8.8E-06 (0 / 4) (-6.2E-05 - 6.9E-05)
Zn-65	40/ 0	5.0E-04 ---	-1.7E-04 (0 / 36) (-5.3E-04 - 7.0E-05)	3.5 miles ESE (#006)	-6.4E-05 (0 / 8) (-2.8E-04 - 7.0E-05)	-2.9E-04 (0 / 4) (-4.4E-04 - 1.3E-04)
Zr-95	40/ 0	7.9E-04 ---	-1.5E-04 (0 / 36) (-9.5E-04 - 5.2E-04)	9 miles NW (#039)	1.4E-04 (0 / 4) (-4.2E-04 - 5.2E-04)	-6.1E-05 (0 / 4) (-7.6E-04 - 2.3E-04)
Nb-95	40/ 0	7.1E-04 ---	-4.6E-05 (0 / 36) (-7.1E-04 - 2.8E-04)	11 miles W (#037)	1.1E-04 (0 / 4) (-1.9E-04 - 4.0E-04)	1.1E-04 (0 / 4) (-1.9E-04 - 4.0E-04)
Ba-140	40/ 0	1.5E-02 ---	-1.2E-03 (0 / 36) (-1.3E-02 - 7.2E-03)	8.5 miles SSE (#035)	2.3E-03 (0 / 4) (-1.9E-03 - 6.0E-03)	5.3E-04 (0 / 4) (-6.7E-03 - 3.9E-03)
La-140	40/ 0	5.3E-03 ---	-3.3E-04 (0 / 36) (-4.4E-03 - 2.1E-03)	1 mile NNW (#016)	6.5E-04 (0 / 4) (-3.5E-04 - 1.9E-03)	-3.9E-04 (0 / 4) (-1.9E-03 - 1.8E-03)

* AVERAGE MEASURED LLD AND REQUIRED LLD VALUES. (--- USED WHEN THERE IS NO REQUIREMENT.)

** (f) NUMBER OF POSITIVE MEASUREMENTS / TOTAL MEASUREMENTS AT SPECIFIED LOCATIONS.

TABLE 3

1993 REMP ANALYSIS SUMMARY

MEDIUM: Air Iodine

UNITS: pCi/M³

ANALYSIS TYPE	TOTAL ANALYSES/ NONROUTINE MEASUREMENTS	LOWER LIMIT OF DETECTION *	INDICATOR LOCATIONS MEAN (f) ** RANGE	LOCATION WITH HIGHEST ANNUAL MEAN		CONTROL LOCATIONS MEAN (f) ** RANGE
				LOCATION INFORMATION	MEAN (f) ** RANGE	
I-131	517/ 0	9.0E-03 7.0E-02	-2.3E-03 (0 / 465) (-1.7E-02 - 1.5E-02)	1 mile NNW (#016)	-9.2E-04 (0 / 52) (-7.2E-03 - 3.8E-03)	-4.7E-03 (0 / 52) (-4.7E-02 - 3.6E-03)

* AVERAGE MEASURED LLD AND REQUIRED LLD VALUES. (--- USED WHEN THERE IS NO REQUIREMENT.)

** (f) NUMBER OF POSITIVE MEASUREMENTS / TOTAL MEASUREMENTS AT SPECIFIED LOCATIONS.

TABLE 3

1993 REMP ANALYSIS SUMMARY

MEDIUM: Immersion Dose by TLD

UNITS: mR/STD Quarter

ANALYSIS TYPE	TOTAL ANALYSES/ NONROUTINE MEASUREMENTS	LOWER LIMIT OF DETECTION	INDICATOR LOCATIONS MEAN (f) ** RANGE	LOCATION WITH HIGHEST ANNUAL MEAN LOCATION INFORMATION	MEAN (f) ** RANGE	CONTROL LOCATIONS MEAN (f) ** RANGE
Gamma	182/ 0	* 7.0E-02	1.5E+01 (172 / 172) (1.2E+01 ~ 2.0E+01)	1 mile W (#013)	1.9E+01 (4 / 4) (1.8E+01 ~ 2.0E+01)	1.6E+01 (10 / 10) (1.3E+01 ~ 1.8E+01)

* AVERAGE MEASURED LLD AND REQUIRED LLD VALUES. (--- USED WHEN THERE IS NO REQUIREMENT.)

** (f) NUMBER OF POSITIVE MEASUREMENTS / TOTAL MEASUREMENTS AT SPECIFIED LOCATIONS.

