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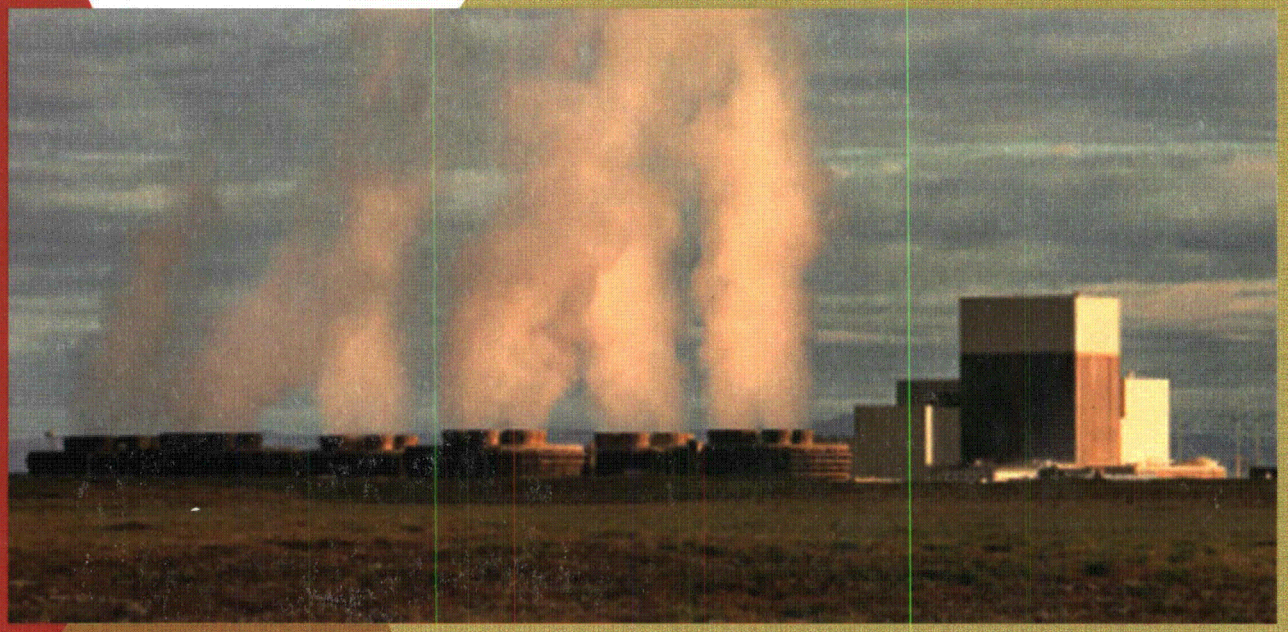
2012 ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT FOR THE COLUMBIA GENERATING STATION



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COLUMBIA GENERATING STATION

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

2012 ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

For Calendar Year 2012

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1.0 EXECUTIVE SUMMARY

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The primary purpose of the Energy Northwest Radiological Environmental Monitoring Program (REMP) is to evaluate the radiological impact that Columbia Generating Station (CGS) operation may have on the environment. Sampling is performed as specified in the Offsite Dose Calculation Manual (ODCM) and agreements made with the State of Washington Energy Facility Site Evaluation Council (EFSEC). Additional sampling is also performed to meet Nuclear Energy Institute (NEI) guidelines or as an Energy Northwest initiative. The program also serves to validate CGS effluent measurements and exposure pathway models and to provide a documented, historical record of CGS impact on the environment. This report serves to document and communicate the program results and findings for 2012.

A variety of environmental samples are routinely collected and analyzed by the REMP. The types of samples collected include air, water, soil, sediment, milk, fish, and garden produce. Additionally, the program continuously monitors direct radiation at numerous locations surrounding CGS. Analysis results are trended and compared to results from control locations, results obtained in previous operational and pre-operational periods, and regulatory limits.

The results contained in this report show that all identified radiological impact to the environment attributable to CGS operation was limited to areas within the CGS controlled area and was the result of recapture of CGS effluents. All routine sample results are consistent with the results obtained from control locations, results from the preoperational period, and historical results collected since CGS began commercial operation. All radioactive material identified outside the CGS controlled area was of natural origin or known to be present in the environment around CGS in the quantities identified. No radioactive material attributable to CGS operation was identified beyond the CGS controlled area. The results are consistent with and verify CGS effluent measurements and modeling of the exposure pathways.

Below is a summary of the 2012 results by exposure pathway:

Direct Radiation - No impact was identified at locations beyond the CGS controlled area. Within the controlled area, the only impact identified was at locations known to be influenced by the Independent Spent Fuel Storage Installation (ISFSI) or radiation from the turbine building during operation.

Airborne - No impact due to CGS operation was identified.

Waterborne - No impact was identified at surface/drinking water locations outside the CGS controlled area. Low level tritium was identified in storm drain water and is attributed to recapture of CGS effluents. The 2012 data supports the longer term observation that storm drain tritium may be influencing groundwater tritium at locations near the storm drain pond. Tritium identified in sanitary waste water is attributed to discharges made from facilities operated by the Department of Energy. Tritium activity identified in groundwater was at levels consistent with levels known to exist in Hanford groundwater. Radionuclide activity identified in river sediment is consistent with activity levels known to exist in Hanford area sediment and soils.

Ingestion - No impact was identified in any of the food sample results.

2.0 DEFINITIONS

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a priori: refers to a "before the fact" limit that represent the capabilities of a measurement system and not a limit for a particular measurement.

a posteriori: refers to an "after the fact" limit determined for a particular measurement and not a limit for a measurement system.

Airborne Activity Sampling: Continuous sampling of air through the collection of particulates and radionuclides on filter media. Periodic soil samples are collected for gamma isotopic analysis to provide information on deposition to the soil from airborne releases.

Alpha Particle (α): A charged particle emitted from the nucleus of an atom having a mass and charge equal in magnitude of a helium nucleus.

Becquerel (Bq): One disintegration per second. One picocurie (pCi) equals 0.037 becquerel.

Beta Particle (β): Charged particle emitted from the nucleus of an atom with a mass and charge equal in magnitude to that of an electron.

Blank Sample: A sample of the same media as the field sample being analyzed but without any radionuclide(s) being measured. It enables correction for the inherent sample background.

CGS: Columbia Generating Station, formerly referred to as WNP-2.

CGS Controlled Area: The area within a 1.2 mile radius of the CGS reactor building and a narrow corridor extending from CGS east to the Columbia River.

Composite Sample: A series of single collected portions (aliquots) analyzed as one sample. The aliquots making up the sample are collected at time intervals that are very short compared to the composite period.

Control Station: A sampling station in a location not likely to be affected by plant effluents due to its distance and/or direction from the Columbia Generating Station.

Counting Error: An estimate of the two-sigma uncertainty associated with the sample results based on respective count times.

$$+/- 2\sqrt{(SampleCPM/CountTime + BkgCPM/CountTime)}$$

Curie (Ci): A measure of radioactivity; equal to 3.7 x 10^{10} disintegrations per second, or 2.22 x 10^{12} disintegrations per minute.

Direct Radiation Monitoring: The measurement of radiation dose at various distances from the plant is assessed using thermoluminescent dosimeters and pressurized ionization chambers.

DOE: U.S. Department of Energy.

DOH: Washington State Department of Health.

EFSEC: Energy Facility Site Evaluation Council.

FFTF: Fast Flux Test Facility. This facility is referred to as the DOE 400 area throughout this report.

Flow Proportional Sampling: Sample collection volume or frequency determined as a function of the flow rate of the water being sampled.

Grab Sample: A single discrete sample drawn at one point in time.

IDC: Energy Northwest Industrial Development Complex, formerly referred to as the WNP-1 and WNP-4 sites.

Indicator Station: A sampling location that is likely to be affected by plant effluents due to its proximity and/or direction from the Columbia Generating Station.

Ingestion Pathway Monitoring: The ingestion pathway includes milk, fish, and garden produce. Also sampled (under special circumstances) are other media such as vegetation and animal products such as eggs and meat when additional information about particular radionuclides is needed.

ISFSI: Independent Spent Fuel Storage Installation.

Lower Limit of Detection (LLD): The smallest concentration of radioactive material in a sample that will yield a net count (above system background) that will be detected with 95% probability with a 5% probability of a false conclusion that a blank observation represents "real" signal.

Mean: The average, i.e., the sum of results divided by the number of results.

Microcurie: 3.7 x 10^4 disintegrations per second, or 2.22 x10^6 disintegrations per minute.

Milliroentgen (mR): 1/1000 Roentgen; a unit of exposure to X or gamma radiation.

MDA: Minimum Detectable Activity.

MDC: Minimum Detectable Concentration.

NEI: Nuclear Energy Institute

NIST: National Institute of Standards and Technology.

NPDES: National Pollutant Discharge Elimination System.

NRC: U.S. Nuclear Regulatory Commission.

ODCM: Offsite Dose Calculation Manual. Licensing document that contains the offsite radiological requirements.

Picocurie (pCi): 1 x 10^{-12} Curie or 2.22 disintegrations per minute; one millionth of a microcurie.

Radioiodine: Radioisotopes of iodine. For commercial nuclear reactors, iodine-131 to iodine-135 are the principle radioiodines of concern. Due to its longer half-life, iodine-131 is the most probable radioiodine identifiable in the environment.

REMP: Radiological Environmental Monitoring Program.

Range: The difference between the smallest and largest results.

Restricted Area: Any area to which access is controlled for purposes of protection of individuals from exposure to radiation and radioactive materials.

Roentgen: Unit of exposure to ionizing radiation in air.

Site Certification Agreement (SCA): The initial Columbia Generating Station licensing agreement with the State of Washington. The REMP sampling commitments in the SCA have been modified by EFSEC agreements.

Spiked Sample: A sample that has had a known quantity of radionuclide(s) added for the purposes of assessing analytical performance.

Standard Deviation: A measure of the scatter of a set of observations (or samples) around their mean value. Indicated by "σ".

Standard Error of the Mean: An estimate of the uncertainty associated with the mean of observation (or sample) averages. Also known as the standard deviation.

$$SE = \sqrt{\frac{S^2}{n}}$$

where S^2, the variance is

$$S_m^2 = \frac{1}{(n-1)} \sum^n (Xi - X)^2$$

SWTF: Sanitary Waste Treatment Facility. The sanitary waste processing facility for the Columbia Generating Station, the IDC, and the Department of Energy's 400 Area.

TEDA: triethylene diamine

Thermoluminescent Dosimeter (TLD): A TLD is a phosphor that stores energy from exposure to radiation and emits that energy in the form of light when heated.

3.0 INTRODUCTION

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3.1 Site Description

The Columbia Generating Station (CGS) is a 1230 MWe commercial nuclear power plant that achieved initial criticality on January 19, 1984. The plant is located in a sparsely populated shrub-steppe region within the Department of Energy (DOE) Hanford Site in southeastern Washington. The plant is approximately three miles west of the Columbia River and is surrounded on all sides by uninhabited desert land. The nearest large population centers are Richland, Pasco and Kennewick, which are 12 miles south, 18 miles southeast, and 21 miles southeast, respectively. The nearest privately owned lands are located approximately four miles east-northeast of the plant, across the Columbia River. The site has a bimodal wind pattern with winds primarily from the northwest and south. [1] The primary region of focus for REMP sampling is the farming region east of the plant.

Naturally occurring radionuclides exist in detectable quantities throughout the world and are seen in many of the samples collected for the REMP. Some examples of naturally occurring radionuclides that are frequently seen in samples are potassium-40, beryllium-7, actinium-228 (present as a decay product of radium-228), and radium-226. Additionally, some relatively long lived anthropogenic radioisotopes, such as strontium-90 and cesium-137, are also seen in some REMP samples; these radionuclides exist in measurable quantities throughout the world as a result of fallout from atmospheric nuclear weapons testing.[2, 3]

Due to the location of CGS on the Hanford Site, there are other sources of reactor produced radionuclides in close proximity to the plant. CGS is unique in the U.S. commercial nuclear power industry in this respect. Hanford related radionuclides, most notably tritium, are identified in some CGS REMP samples. Though the presence of these radionuclides in the vicinity of CGS are not necessarily reflective of CGS activity, changes in the levels of these radionuclides are monitored to assess any contribution that CGS may be making to the established background. The DOE has an active REMP program for the Hanford Site that overlaps the CGS REMP.

3.2 Program Background

The CGS REMP is designed to conform to the Nuclear Regulatory Commission (NRC) Regulatory Guides 4.1,[4] 4.8,[5] and the Radiological Assessment Branch Technical Position.[6] In addition, the REMP also meets the requirements of 10 CFR 72.44(d)(2) for coverage of the ISFSI.

The quality assurance aspects of the sampling program and the thermoluminescent dosimetry are conducted in accordance with Regulatory Guides 4.15[7] and 4.13.[8] The REMP also adheres to the requirements of the Washington Energy Facility Site Evaluation Council,[9] the Columbia Generating Station Technical Specifications,[10] and the Offsite Dose Calculation Manual.[11] These requirements cover the environmental sampling and sample analysis aspects of the program, and also the reporting and quality assurance requirements.

The preoperational phase of the program, which lasted from March 1978 until initial criticality in January 1984, provided a baseline of background environmental data. Variability in the background levels of radioactivity over time is due to differences in geologic composition, meteorological conditions, decay of nuclear testing fallout material in the environment, and seasonal changes. Variability in results may also have been introduced by changing analytical contractors and the use of different correction factors over the years.

The Energy Northwest Environmental Services Laboratory performed all routine REMP sampling and analyses in 2012. Thermoluminescent dosimeters (TLDs) used in the REMP were processed by Battelle Pacific Northwest National Laboratory and Mission Support Alliance.

In addition to evaluating the environmental concentrations against regulatory limits, the REMP may also compare results to state standards.[12, 13] The results may also be evaluated by comparing them to similar measurements made during the preoperational and previous operational periods and to the detection capabilities associated with the current methods of analysis.

3.3 Program Objectives

The REMP provides an independent mechanism for determining the levels of radioactivity in the plant environs in order to empirically quantify and qualify any radiological effect plant operation may be making on the environment. The program serves to ensure that any accumulation of radionuclides in the environment resulting from station operation will be identified promptly and before they become significant or exceed established limits.

While in-plant monitoring programs are used to ensure that 10 CFR 20[14] and 10 CFR 50[15] criteria for releases of radioactive effluents are met, the REMP further verifies that the measured concentrations of radioactive material and levels of radiation observed in the environment are not higher than expected based on CGS effluent measurements and modeling of the exposure pathways.

4.0 PROGRAM DESCRIPTION

4.0 PROGRAM DESCRIPTION

The ODCM contains the CGS licensing based sampling requirements for the REMP. Additional sampling requirements are specified in resolutions with the Washington State Energy Facility Site Evaluation Council (EFSEC) or are self-initiated in response to site specific or industry wide concerns. The sampling plan presented in Table 4-1 gives an overview of the REMP sampling routine, a summary of the sample locations, the specified collection frequency, and the types of analyses to be performed. The methods of sampling and sampling frequencies utilized in the program are mostly dictated by regulatory requirements. Factors such as nuclide half-lives and the major exposure pathways for the radionuclides potentially released from the plant have been taken into account in determining the sampling methodology.

4.1 Sample Locations

One hundred and twelve sampling locations (referred to as 'stations') are included in the monitoring program. More than one sample type may be collected at a sample station. One hundred and three indicator and three control stations are located within a 10-mile radius of CGS. Six additional stations are located beyond the ten mile radius of the plant, two are indicator locations and four are control locations. Sample stations are listed in Tables 4-1 and 4-2. Most station locations are shown in Figures 4-1 to 4-4.

The locations of most sample stations have been selected on the basis of an exposure pathway analysis. The exposure pathway analysis was based on factors such as weather patterns, anticipated emissions, likely receptors, and land use in the surrounding areas. Samples collected from stations located in areas that potentially could be influenced by CGS operation are used as indicators. Samples collected from locations that are not likely to be influenced by CGS operation serve as controls. Results from indicator stations are compared to the results from control stations and results obtained during the previous operational and preoperational years of the program in order to assess the impact CGS operation may be having on the environment.

4.2 Independent Spent Fuel Storage Installation (ISFSI)

The Independent Spent Fuel Storage Installation (ISFSI) is a fenced, secured area constructed to provide a storage location for spent nuclear fuel. The spent fuel is stored in HI-STORM dry storage casks which are placed on concrete pads inside the facility. The pads are 30-feet wide by 135-feet long and each pad can hold up to 18 casks. The ISFSI is located approximately 500 meters north-northwest of the reactor building. A third security fence was added to the ISFSI in 2010.

REMP monitoring of the ISFSI is performed using quarterly and annual TLDs placed at 10 different locations on the second of three security fences that surround the facility. In addition, two other TLD stations, Station 121 located approximately 200 meters north of the turbine building and Station 122 located approximately 100 meters north of the ISFSI, were installed to monitor ISFSI direct radiation. Figure 4-1 shows the ISFSI location in relation to CGS and the position of the 2 additional TLD locations. Figure 4-4 shows the location of the 10 TLD stations located around the ISFSI. This arrangement of TLDs in conjunction with the radiological surveys conducted by the CGS Radiation Protection Department serve as the radiological monitoring program for the ISFSI.

4.3 Land Use Census

A land use census for areas within five miles of CGS is performed annually. The objective of the land use census is to identify the locations of the nearest milk animal, residence, and garden greater than 500 ft^2 producing broadleaf vegetation. This information is used to determine whether any site located during the census has a calculated dose or dose commitment greater than the sites currently monitored for the same exposure pathway. If a new location with a higher dose commitment was found, routine sampling of that dose pathway would be initiated at that new site. The results of the 2012 land use census within five miles of CGS are presented in Table 4-3. No significant changes from the 2011 land use census were observed.

4.4 Sampling Methods

Energy Northwest personnel collect environmental samples in accordance with the program plan outlined in Table 4-1. Methods of sample collection and TLD handling are specified in REMP specific procedures. All routine REMP samples collected in 2012 were prepared for analysis at the Energy Northwest Environmental Services Laboratory located in Richland, WA. The section 4.4 subsections below give a general overview of the sampling methods used in the REMP. Generic descriptions of the REMP sample analysis methods are given in section 4.5.

4.4.1 Direct Radiation

Direct radiation dose levels are monitored with Harshaw Model 8807 thermoluminescent dosimeters (TLDs). The TLDs are placed in the field between three and five feet above the ground. TLDs are wrapped in aluminum foil and sealed in plastic bags to prevent damage. TLDs are exchanged on a quarterly basis.

The locations of the TLD stations are listed in Table 4-2 and are shown in Figures 4-1 through 4-4. Station 9A near Sunnyside, WA serves as a control for CGS TLDs. Station 119C serves as the control for Station 119B (the cooling system sediment disposal basin). The remaining TLDs deployed in the field serve as indicator TLDs.

The TLDs are arranged in a series of rings that encircle CGS. The innermost ring of TLD stations, which are located inside the CGS site boundary at distances that range from 0.3-0.8 miles from the reactor building centerline, are referred to as the "S" stations. The next ring of TLDs, referred to as the "near plant" stations, are located at distances ranging from 0.9 to 2.1 miles from the reactor building. The outer ring of TLDs are located at distances that range from a little under three miles to around ten miles. A MicroRem dose rate meter is available as a backup device and to take real time readings as needed.

4.4.2 Airborne - Particulate/Iodine

Weekly air particulate and radioiodine (Iodine 131) samples are obtained through the use of low volume (1.5 cfm), constant flow-rate sampling units located at 12 locations. The samples collected at Station 9A (Figure 4-3) are considered controls, the samples collected at the other locations (Figures 4-1, 4-2, and 4-3) are indicators. Air particulate samples are collected using 47mm diameter glass fiber filters, air iodine samples are collected using Radeco CP-100 TEDA impregnated charcoal cartridges. The air particulate filter and charcoal cartridge are placed in tandem, particulate filter first, in a holder that attaches to the air inlet of the sampler unit. The sampler units are placed in ventilated metal weatherproof housings mounted on elevated platforms at each air sample location. The filter media are changed

weekly. Four additional air sample monitor locations are available to monitor work at the DOE 618-11 burial site.

4.4.3 Water

Water sampling is performed to meet ODCM and State of Washington EFSEC requirements, comply with NEI guidelines, or as a CGS initiative. REMP water sampling can be categorized as follows:

- Intake-River/Drinking Water; two locations (Stations 26 and 29)
- Deep Groundwater; three locations (Stations 52, 31 and 32)
- Shallow Groundwater; eleven locations (MW-3 and MW-5 through MW-14)
- Plant Discharge Water; one location (Station 27)
- Storm Drain Water; one location (Station 101)
- Sanitary Wastewater; two locations (Stations 102A and 102B)

The sample at Station 26 is obtained using a composite sampler that draws water from the plant intake water system (TMU). The source of this water is the Columbia River. The station serves as a control location, as it is upstream of the plant discharge location, and also as a drinking water location as drinking water for CGS comes from this source. Station 29 is a composite sampler located at the Richland Water Treatment Plant located 11 miles downstream of the plant discharge. Station 29 is an indicator station for both river and drinking water.

The ODCM requirement for a downstream water sample "near but beyond the mixing zone" is conservatively met by Station 27, a composite sampler that collects water from the cooling tower discharge line just prior to final discharge into the Columbia River. This sample reflects the radioactivity present in the plant discharge prior to any river dilution, rather than the concentrations that would be found after dilution in the mixing zone. Composite samples from Stations 26, 27, and 29 are collected monthly and analyzed for gamma emitting radionuclides, gross beta, and tritium.

Three drinking water wells on Energy Northwest property are used to provide deep groundwater samples. These wells are greater than 400 feet deep and provide samples from the confined aquifer under CGS. Station 52 is a deep well located 0.1 mile north of the CGS reactor building. Station 31 and 32 are deep wells at the IDC (ENW Industrial Development Complex) located 1.2 miles down gradient from CGS. Water from Station 52 can be used as a backup source for drinking water and fire protection. The IDC wells supply water for drinking and fire protection at the IDC site. All of these wells are considered indicator locations. Quarterly grab samples are collected from each well and analyzed for gamma emitting radionuclides and tritium.

Station 101 is a composite sampler that collects a representative sample of water flowing into the storm drain pond located east of CGS. The main sources of water to the pond are discharges from the potable water and plant makeup water demineralizer treatment systems. Storm water runoff from the CGS site is also directed to this location. Water discharges from CGS that have been verified to meet radiological environmental discharge limits are another potential source of water to the storm drain pond. Water is collected monthly using a flow-proportional composite sampler and analyzed for gross beta, gamma emitting radionuclides, and tritium.

The Sanitary Waste Treatment Facility (SWTF) receives sanitary waste water from CGS, the IDC (ENW Industrial Development Complex), the Kootenai Building, and the DOE 400 area. Discharge standards and monitoring requirements for the SWTF are established in EFSEC Resolution No. 300.[16] Station 102A is a flow meter and composite sampler located on the DOE 400 area sewer line before it ties into the sewer lines coming from Energy Northwest facilities. Water used at the DOE 400 area is drawn from aquifers that are known to be contaminated with tritium as a result of past DOE activities on the Hanford Site, consequently, the water sampled at Station 102A has tritium concentrations normally around 2000 pCi/liter. Station 102B is a composite sampler that collects a representative sample of water flowing into the head works at the SWTF. The sample obtained here contains water from all the Energy Northwest facilities mentioned above and the DOE 400 area. Monthly samples are collected at both Stations 102A and 102B and analyzed for gross alpha, gross beta, tritium, and gamma emitting radionuclides.

Routine quarterly grab samples are taken as part of the REMP from 11 shallow groundwater monitoring wells surrounding CGS. The monitoring well locations are shown in Figure 4-1. The shallow groundwater wells are all less than 100 feet deep and allow samples to be obtained from the unconfined aquifer under CGS. None of the wells are used for drinking water. Sampling from these locations is performed to meet NEI 07-07 guidelines[17] and requirements in the CGS NPDES permit.

4.4.4 Soil

Annual soil samples are a requirement of EFSEC Resolution No. 332.[9] For 2012, two soil samples were collected from locations near CGS, two samples from farmland in Franklin County east of CGS, and one sample from a control location near Sunnyside, WA. Each sample was collected from an area of approximately one square foot to a depth of approximately one inch. About two kilograms of soil was collected for each sample. Soil samples are analyzed for gamma activity on a dry weight basis.

4.4.5 Sediment

River sediment samples are collected semiannually as required by the ODCM and EFSEC Resolution No. 332.[9] The upstream sediment sample location (Station 33) is approximately two miles upriver from the plant discharge. The downstream sample (Station 34) is collected approximately one mile downstream from the plant discharge. Each sample consists of approximately two kilograms of shallow surface sediment scooped from areas known to be underwater during high water periods and where the potential for sediment accumulation is likely. Sediment samples are dried in an oven and then analyzed for gamma emitting radionuclides on a dry weight basis.

Cooling system sediment samples are collected and analyzed whenever cooling system sediment is added to the disposal cells (Station 119B, Figure 4-1). Disposal of cooling system sediment is made in accordance with EFSEC Resolution No. 299.[18] Pre-disposal samples are collected and analyzed prior to transfer to ensure the material will be within the limits specified in the EFSEC resolution. Following transfer, the material is allowed to dry and a post-disposal sample is collected and analyzed.

4.4.6 Fish

Annual fish sampling is usually performed in the fall. Fish samples collected from the Columbia River (Station 30) serve as indicator samples, whereas fish collected on the Snake River (Station 38) serve as control samples. Only edible portions of the fish are used to prepare the samples for analysis. Fish samples are analyzed for gamma emitting radionuclides on a wet weight basis. Three species of fish are

collected; an anadromous species (salmon or steelhead), and two other species generally considered edible or potentially edible (typically carp, catfish, sucker, or whitefish). The same species are collected at each location. Electro-shocking and netting is used for most fish collection. Anadromous species are usually collected at fish hatcheries.

4.4.7 Milk

Milk samples are collected monthly during the fall and winter months (October through March). During the spring and summer months when cows are more likely to be grazing or on fresh feed, milk samples are collected twice per month. Raw milk samples are collected within a few hours of milking and the samples are normally prepared and analyzed within four days. Milk samples were collected in 2012 from two locations. Station 36 in Franklin County serves as the indicator location and is the only known dairy within a ten mile radius of CGS. Station 9B near Sunnyside, WA serves as the control location.

4.4.8 Garden Produce

Samples of local garden produce are collected monthly during the growing season when the produce is readily available. Three types of garden produce are typically collected; root crops, fruits, and leafy vegetables. Control samples (Station 9C) are usually obtained from the lower Yakima Valley. Indicator samples (Station 37) are primarily collected from areas downstream of the CGS discharge where crops are irrigated with Columbia River water. The Riverview area of Pasco is the principle collection location for fruit and root crops. Collection of leafy vegetables is primary made from locations that could potentially be influenced by CGS gaseous emissions. Vegetation samples may also be collected from locations closer to CGS; however none were collected in 2012. Garden and vegetable samples are typically puréed in a food processor and then analyzed for gamma emitting radionuclides on a wet weight basis. Only edible portions are used for analysis.

4.5 Sample Analyses

General descriptions of the procedures used to analyze REMP samples are provided in the following sections. All REMP TLDs were processed in the first and second quarters by Battelle at the Pacific Northwest National Laboratory (PNNL) and by Mission Support Alliance (MSA) in the third and fourth quarters. All routine REMP field samples were collected and analyzed by Energy Northwest Environmental Services. Samples are normally collected and analyzed within a short time period to ensure required detection sensitivities are met and to provide timely results. Sample count times are conservatively calculated to ensure required *a priori* LLDs are achieved. Table 4-4 lists the ODCM required LLDs and the nominal target LLD used in the Energy Northwest REMP program.

4.5.1 Analysis of TLDs

REMP TLDs are analyzed on a Harshaw Model 8800 hot gas reader. The reader is calibrated weekly and immediately prior to processing the environmental TLDs. The reader is calibrated with TLDs that have been given a known exposure from a cesium-137 source. Each group of environmental TLDs is processed with blank (freshly annealed) TLDs and spiked TLDs that have been given a known exposure. Exposure received by the field TLDs during transport is monitored with a set of 'trip' control dosimeters that accompany the field dosimeters to and from the field locations and while they are in storage. Another set of TLDs, the building controls, are used to determine the exposure of the TLDs at the storage

location. The TLD exposure during transport to and from the field was determined from the difference between the building control results and the trip control results. The facility used to process REMP TLDs was operated by Battelle (PNNL) until October 2012 when operation was transferred to Mission Support Alliance (MSA). All 2012 REMP TLDs were analyzed at the same facility using the same instrumentation and processes that has been used in past years.

4.5.2 Gross Beta Activity on Air Particulate Filters

Air particulate filters are counted directly in a gas flow proportional counter after a delay of several days to allow for the decay of radon and its progeny. Samples were counted using a Protean WPC-9550 instrument which allows automated sample counting and simultaneous alpha/beta determination. If gross beta activity is identified significantly above the mean of the control, gamma isotopic analysis is performed on the individual samples.

4.5.3 Measurement of Gamma Emitting Radionuclides

Gamma isotopic analysis allows identification and quantification of gamma-emitting radionuclides that may be attributable to CGS effluents. Shielded, high purity germanium (HPGe) detectors are used to assay environmental samples for gamma emitting radionuclides. All samples are counted in standardized, calibrated geometries.

- **Liquids** – Measured aliquots of the liquid samples are poured into appropriately sized Marinelli beakers or plastic canisters. Sample results are corrected for decay during the collection period if applicable. Results are reported in pCi/liter.

- **Solids** – Soil, sludge, and sediment samples are dried and if needed ground. Foodstuff, biota (fish), and vegetation, are chopped finely or pureed and then analyzed wet (no drying is done). For foodstuff (including fish), only the edible portion of the sample is used. Sample aliquots are placed in tared containers and weighed. Results are reported in pCi/kg.

- **Charcoal Cartridges** – Typically four charcoal cartridges are counted simultaneously using a cartridge holding jig that positions the cartridges in a standardized geometry to the side of the detector. Detector calibration files are maintained for both face count and side count positions. If radioiodines are identified in the assay of a group, each charcoal cartridge in the group is assayed separately. Results are corrected for decay during the sample collection period. Results are reported in pCi/m^3.

- **Air Particulate Filters** – At the end of each quarter, air particulate filters are composited on a station by station basis. The filters are stacked in a Petri dish and analyzed by gamma spectroscopy. Results are reported in pCi/m^3 and represent the total quarterly gamma activity collected at each station. Results are decay corrected to the midpoint of the sample collection period. If a radionuclide related to CGS operation is positively identified, the filters are separated and counted individually.

4.5.4 Gross Alpha and Gross Beta Activity in Water

A measured aliquot of each sample is evaporated to a small volume then quantitatively transferred to a ribbed, stainless steel planchet. Final evaporation is normally done under a heat lamp. Residue mass is determined by weighing the planchet before and after mounting the sample. The planchet is

counted for gross alpha and beta activity using a Protean WPC-9550 automatic gas flow proportional counter which allows automated sample counting and simultaneous alpha/beta determination. Results are corrected for sample self-absorption using the sample residue mass values. Results are reported in pCi/liter.

4.5.5 Tritium in Water

The sample is distilled, then 8.0mL of the distillate is mixed with 12.0mL of scintillation cocktail. The sample mixture is analyzed on a Packard Tri-Carb 2900TR automatic liquid scintillation counter. Results are reported in pCi/liter.

4.5.6 Strontium-89/90, Iron-55 and Nickel-63

These "hard to detect" analytes are not routinely analyzed as part of the CGS REMP. When needed, these analyses are performed under contract by Teledyne- Brown Environmental Services Laboratory located in Knoxville, TN using the vendor's standard analysis procedures.

4.5.7 Low Level Radioiodine in Milk and Water

Four liters of sample are first equilibrated with stable iodide carrier. Anion exchange resin is then added and mixed for a period sufficient to allow any iodine present in the sample to be captured by the resin. The resin is then isolated from the liquid sample and transferred to a small counting container. The radioiodine content is determined by gamma spectroscopy analysis. Results are reported in pCi/liter.

4.6 Data Analysis Methods

Counting results for low level samples are often within the counting error of the background determination; consequently results for these samples can be positive or negative values. Though most REMP analytical results are below the detection limit, an actual calculated value has been reported. In some cases the reported value is zero or a negative number. Reporting results in this manner is the preferred practice for low level environmental analyses as it gives an indication of positive or negative biases that may be present and prevents loss of individual results inherent in the use of "less than" (<) values. Also reported in most cases are the *a posteriori* MDA values. A nuclide is flagged as positively identified if its calculated value is greater than the MDA. A listing of the Energy Northwest nominal target LLDs (*a priori)* for each sample type is provided in Table 4-4; the ODCM required LLDs are also included for a comparison.

Data is trended following analysis for many of the sample types analyzed. For analyses such as gross beta on air particulate filters where results are normally above the detection limit, indicator results are plotted with the control results for better comparison. Analysis results that are normally below detection limits are plotted against historical data to monitor if trends may be evident.

Thermoluminescent dosimeter (TLD) data is presented in both units of mR/day and mR/standard quarter. TLD results in mR/day are calculated by taking the total exposure (in mR) determined for each TLD, correcting for storage background and any transit (or trip) exposure received during distribution and retrieval, then dividing by the number of days the TLD was in the field. The mR/standard quarter values are calculated by multiplying the mR/day value by 91.25 days (365/4). All TLD results are reported in units of exposure (Roentgen) and not in units of dose (Rem).

4.7 Changes to the Sampling Program in 2012

The CGS REMP agreement with the State of Washington was updated at the beginning of 2012 with EFSEC Resolution No. 332[9] replacing EFSEC Resolution No. 260. The new Resolution was issued to better reflect current monitoring program practices, clarify sampling and analysis requirements, and provide better alignment with the requirements specified in the CGS ODCM. Substantive changes included updating sample locations, removing the requirement for annual TLDs, expanding sampling of vegetation potentially impacted by gaseous emissions, and updating soil sampling locations. Changes specified in the new resolution were incorporated into the REMP sampling and analysis schedule during 2012. Sampling and analysis of shallow groundwater wells around CGS was continued as a routine part of the REMP. The small garden area designated as Station 102G near the CGS SWTF was not maintained in 2012 and no vegetation samples were obtained from this location. Sampling from this location was a CGS initiative and not a requirement of the ODCM or EFSEC resolutions. The operator of the facility supplying environmental TLDs to the REMP was changed in the 3rd quarter 2012 from Battelle PNNL to Mission Support Alliance. This change did not affect the services provided; the TLDs supplied to the REMP are of the same type and processed at the same facility using the same instrumentation, procedures, and quality control program that has been used since 1998.

TABLE 4-1
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SAMPLING PLAN

SAMPLE TYPE[a]	SAMPLE STATION [b] NUMBER	SAMPLE METHOD AND COLLECTION FREQUENCY[c]	TYPE AND FREQUENCY OF ANALYSIS
AIRBORNE			
Particulates and Radioiodine (6/12)[d]	1, 4-8, 9A, 21, 23, 40, 48, and 57	Continuous sampling; weekly collection.	Weekly air filters gross beta and iodine cartridge gamma isotopic. Quarterly air filter composite gamma isotopic.
DIRECT RADIATION			
TLD[g](34/79)	1-8, 9A, 10-25, 40-47, 49-51, 53-56, 58, 65, 71-90, 119B, 119C, 120-129, 136A-138A, 150-151.	Continuous monitoring, quarterly collection.	Radiation exposure monitoring processed on a quarterly frequency.
WATERBORNE			
River/Drinking Water[h] (3/3)	26, 27 and 29	Composite aliquots[i]; monthly collection.	Monthly gamma isotopic, gross beta, and tritium. Iodine-131[j] as required.
Storm Drain Water (0/1)	101	Composite aliquots[i], monthly collection.	Monthly gamma isotopic, tritium, and gross beta.
Sanitary Waste Treatment Facility Water (0/2)	102A, 102B	Composite aliquots[i], monthly collection.	Monthly gamma isotopic, gross beta, gross alpha, and tritium.
Ground Water (2/3)[k]	31, 32, and 52	Grab sample performed quarterly.	Quarterly gamma isotopic and tritium.
Ground Water Monitoring (0/11)[e]	MW-3, 5-14	Grab sample performed quarterly .	Quarterly gamma isotopic and tritium.
SOIL AND SEDIMENT			
Soil[f](0/5)	9A, 1, 21, 8, 43	Grab sample performed annually.	Annual gamma isotopic. Strontium-90[f] as required.
River Sediment (1/2)[l]	33 and 34	Grab sample performed semiannually.	Semiannual gamma isotopic.
Cooling System Sediment Disposal Area (0/2)	119B, 119C	Grab sample of dried sediment within 30 days of disposal date.	Gamma Isotopic. After disposal.
INGESTION			
Milk[m] (2/2)	9B, 36	Grab sample collected semimonthly during grazing season, monthly at other times.	Gamma isotopic, Iodine-131 each sample. Strontium-90.[n] as required
Fish[o] (2/2)	30, 38	Grab samples collected annually.	Gamma isotopic each sample.
Garden Produce[p] (1/2)	9C, 37	Grab samples collected monthly or at time of harvest.	Gamma isotopic each sample.

TABLE 4-1 FOOTNOTES:

(a) The fraction in parentheses for each sample type indicates the ratio of ODCM-required sample locations to the total number of sample locations currently being monitored in the surveillance program. Additional sampling is performed to meet EFSEC Resolution 332 requirements and as an ENW initiative.

(b) The underlined sample location designates a control station.

(c) Sample collection is performed at a frequency specified in the ODCM and EFSEC resolutions. Some sampling referenced in Table 4-1 is performed at CGS initiative. Sample deviations are permitted if samples are unobtainable due to hazardous conditions, seasonal availability, malfunction of automatic sampling equipment, or other legitimate reasons.

(d) The ODCM specifies six air sample locations and EFSEC Resolution 332 specifies nine. Not listed in Table 4-1 are four other air sample locations established to monitor remediation work at the DOE 618-11 burial ground. See Section 5.9.6 for details.

(e) Sampling is performed to meet NEI 07-07 guidelines and NPDES requirements.

(f) Soil samples are collected at five locations to satisfy EFSEC Resolution 332 requirements. This resolution also requires strontium-90 analysis be performed if gamma analysis results are greater than a specified threshold.

(g) TLD Stations 71-86 are not included among the 34 TLD stations required by the ODCM. Alternate designations for these stations are 1S-16S. EFSEC Resolution 332 requires 25 or more TLD stations to be located within a 10-mile radius of CGS. Other instruments, such as a pressurized ion chamber (PIC), may be used in place of or in addition to TLDs as per ODCM table 6.3.1-1 (b). CGS REMP maintains a uRem meter for this purpose.

(h) The term "river/drinking water" is used throughout this report because the drinking water is taken from the Columbia River. Station 26, CGS makeup water intake from the Columbia River is both an upstream water sample and the drinking water sample location. Station 29 is a downstream drinking water sample location. The Station 27 sample, which is drawn from the plant discharge line, is taken in place of a "downstream" water sample near but beyond the mixing zone. It reflects the radioactivity present in the plant discharge prior to any river dilution. EFSEC Resolution 332 requires samples from at least one downstream drinking water location and samples from the plant intake and discharge water systems.

(i) Composite samples are collected using automatic sampling equipment that collects samples based on a flow proportional or timed interval basis. If timed interval sampling is used, the interval period is short (e.g. hourly) relative to the compositing period (e.g. monthly).

(j) When the dose calculated via ODCM methodology for consumption of water exceeds 1 mrem per year, low level iodine-131 analyses are performed on the drinking water samples.

(k) Sampling from these locations fulfills ODCM table 6.3.1-1 3b requirements. EFSEC Resolution 332 requires sampling from at least one deep well used for fire protection and/or as a backup drinking water sources.

(l) Downstream sampling fulfills ODCM table 6.3.1-1 3d requirements. EFSEC Resolution 332 requires annual sediment samples upstream and downstream of the plant discharge.

(m) ODCM table 6.3.1-1 4a milk collection requirements cannot strictly be met due to the lack of milking animals near CGS. Milk samples are collected from the nearest dairy potentially impacted by CGS operation and also from a control location at the frequency specified in the ODCM. EFSEC Resolution 332 specifies sampling from at least one milk location within the 10-mile radius of CGS and also from a control location. Broadleaf vegetation can be sampled in lieu of milk if a representative milk sample is not available.

(n) ODCM table 6.3.1-1 (k) requires that if cesium-134 or cesium-137 is measured in an individual milk sample in excess of 30 pCi/liter, then a strontium-90 analysis will also be performed.

(o) Station 30 is the Columbia River and station 38 is the Snake River. If an impact is indicated, sampling will be conducted semiannually per ODCM table 6.3.1-1 (i). There are no species fished commercially in the Hanford Reach of the Columbia River. The most recreationally important species in the area are anadromous, which ascend rivers from the ocean for breeding. Anadromous fish species are normally obtained from hatcheries; Snake River samples are obtained from the Lyons Ferry Fish Hatchery, and Columbia River samples are obtained at the Ringold Fish Hatchery.

(p) Garden produce is obtained from farms or gardens that use Columbia River water for irrigation. One sample of a root crop, leafy vegetable, and a fruit is typically collected each sample period, when available. EFSEC Resolution 332 further specifies fruit and vegetable sampling from locations potentially impacted by CGS gaseous emissions.

TABLE 4-2
REMP SAMPLE STATIONS AND REQUIREMENTS

SECTOR[a]	STATION NUMBER[b]	DISTANCE MILES[c]	ODCM[d]	STATE[e]	OTHER[f]
N (1)	52	0.07	DGW	DGW	
	71(1S)	0.28			TLD
	47	0.70		TLD	
	57	0.70	AP/AI		
	18	1.16	TLD	TLD	
	53	7.54	TLD		
NNE (2)	72(2S)	0.32			TLD
	2	1.45	TLD	TLD	
	54	6.08	TLD		
NE (3)	73(3S)	0.54			TLD
	19	1.74	TLD	TLD	
	48	4.59	AP/AI	AP/AI	
	46	4.99	TLD		
	MW-9	0.22			SGW
ENE (4)	74(4S)	0.38			TLD
	21	1.45		TLD, SO	AP/AI
	20	1.93	TLD	TLD	
	11	3.16		TLD	
	33	3.44		SE	
	45	4.45	TLD		
	44	5.90	TLD		
	101	0.22			SW
	MW-7	0.30			SGW
	MW-8	0.26			SGW
	MW-11	0.10			SGW
E (5)	75(5S)	0.37			TLD
	22	2.08	TLD		
	10	3.16	TLD	TLD	
	26	3.19	SW, DW	SW	
	27	3.19	SW	DIS W	
	30[g]	3.5	FI	FI	
	43	5.16	TLD		
	151 (Site 4)	0.83			TLD
	MW-12	0.12			SGW
ESE (6)	76(6S)	0.42			TLD
	31	1.06	DGW	DGW	
	32	1.27		DGW	
	51	2.14	TLD		

TABLE 4-2 (cont.)
REMP SAMPLE STATIONS AND REQUIREMENTS

SECTOR[a]	STATION NUMBER[b]	DISTANCE MILES[c]	ODCM[d]	STATE[e]	OTHER[f]
ESE (6)(cont.)	23	3.03		TLD, AP/AI, SO	
	34	3.32	SE	SE	
	8	4.39	TLD, AP/AI	TLD, AP/AI	
	42	5.85	TLD		
	36	7.33	MI	MI	
	5	7.72	TLD		AP/AI
	38[g]	26	FI	FI	
	150 (Site 1)	0.90			TLD
SE (7)	77(7S)	0.57			TLD
	24	1.87	TLD	TLD	
	3	2.06		TLD	
	41	5.79	TLD		
	40	6.51	TLD, AP/AI	AP/AI	
	MW-14	0.58			SGW
SSE (8)	119C	0.28		TLD	
	120	0.32			TLD, SE
	102B	0.50		SFW	
	102D	0.50			SFW, SE
	102G	0.56			GP/VE
	78(8S)	0.81			TLD
	25	1.50	TLD	TLD	
	55	6.05	TLD		
	4	9.57	TLD, AP/AI	TLD, AP/AI	
	29	11.57	DW	DW	
	37[h]	16	GP	GP	
	MW-6	0.33			SGW
	MW-13	0.52			SGW
S (9)	119B	0.31		TLD, SE	
	102A	0.67		SFW	
	79(9S)	0.76			TLD
	1	1.25	TLD	TLD, AP/AI, SO	
	6	7.72	TLD	TLD, AP/AI	
	65	8.87			TLD
SSW (10)	80(10S)	0.83			TLD
	50	1.26	TLD	TLD	
	56	6.65	TLD		
	MW-3	0.31			SGW

TABLE 4-2 (cont.)
REMP SAMPLE STATIONS AND REQUIREMENTS

SECTOR[a]	STATION NUMBER[b]	DISTANCE MILES[c]	ODCM[d]	STATE[e]	OTHER[f]
SW (11)	13	1.26	TLD	TLD	
	81(11S)	0.74			TLD
	103A	0.63			VE
	90	0.62			TLD, AI/AP
	MW-5	0.43			SGW
WSW (12)	82(12S)	0.57			TLD
	14	1.26	TLD	TLD	
	9A	28.35	TLD, AP/AI	TLD, AP/AI, SO	
	9B	32.82	MI	MI	
	9C[i]	32		GP	
	89	0.23			TLD, AI/AP
	58	0.44			TLD
W (13)	83(13S)	0.52			TLD
	15	1.24	TLD	TLD	
WNW (14)	84(14S)	0.55			TLD
	16	1.21	TLD	TLD	
	7	2.83	TLD	TLD, AP/AI, SO	
	88	0.17			TLD, AI/AP
	MW-10	0.07			SGW
NW (15)	85 (15S)	0.43			TLD
	49	1.19	TLD	TLD	
	87	0.20			TLD, AI/AP
NNW (16)	121	0.12			TLD
	122	0.31			TLD
	123	0.29			TLD
	124	0.28			TLD
	125	0.28			TLD
	126	0.28			TLD
	127	0.26			TLD
	128	0.25			TLD
	129	0.17			TLD
	136A	0.29			TLD
	137A	0.24			TLD
	138A	0.17			TLD
	86 (16S)	0.31			TLD
	17	1.19	TLD	TLD	
	12	6.74		TLD	

TABLE 4-2 (cont.)
REMP SAMPLE STATIONS AND REQUIREMENTS

TABLE 4-2 SAMPLE TYPE KEY

AP/AI - Air Particulate/Air Iodine
Dis W - Discharge Water
GP - Garden/Orchard Produce
MI - Milk
SFW - Sanitation Facility Water
SW - Surface Water
VE – Vegetation
DW - Drinking Water
FI - Fish
DGW - Deep Ground Water
SE - Sediment
SO - Soil
TLD - Thermoluminescent Dosimeter
SGW – Shallow Ground Water

TABLE 4-2 FOOTNOTES:

(a) The area in the vicinity of CGS is separated into 16 sectors for reporting purposes. The 16 sectors cover 360 degrees in equal 22.5 degree sections, beginning with sector 1 (N) at 348.75 to 11.25 degrees and continuing clockwise through sector 16 (NNW).

(b) Alternate designations for station are given in parentheses; i.e., TLD Stations 71-86 are also referred to as 1S-16S.

(c) Distances are from GPS positions for each location as a radial distance from CGS reactor building.

(d) ODCM - Offsite Dose Calculation Manual Table 6.3.1-1 requirement.

(e) STATE - State of Washington EFSEC Resolution requirement.

(f) OTHER –Special study stations. TLD Stations 121 through 129 and 136A through 138A satisfy ISFSI monitoring requirements 10CFR72.44(d)(2). Sampling at MW locations performed to meet NEI 07-07 guidelines and NPDES requirements.

(g) Station 30 is the Columbia River at the vicinity of the plant discharge. Actual distance of fish collection locations from plant are variable, distance listed is approximation. Station 38 is the Snake River. Control resident fish are typically collected at variable locations in area below Ice Harbor Dam, distance listed is approximation. Control anadromous fish are typically collected at Lyons Ferry Fish Hatchery.

(h) Fruit and Vegetable indicator samples are typically collected from farms and gardens in the Riverview area of Pasco. Distance listed here is general distance of Riverview area to CGS. Note station 37 also refers to samples collected in Franklin County that could potentially be affected by CGS gaseous effluents.

(i) Station 9C is the designation given for control fruits and vegetables. Distance listed is general distance to the Sunnyside-Grandview area where the majority of the control fruits and vegetables are obtained.

TABLE 4-3
2012 FIVE MILE LAND USE CENSUS RESULTS

SECTOR[a]	NEAREST RESIDENT[b]	GARDEN[d] (>500 ft^2)	DAIRY ANIMALS	LIVESTOCK[b,c]
NE	4.50	none	none	none
ENE	3.88	none	none	4.95
E	4.64	none	none	4.64
ESE	4.26	none	none	4.49
SE	none	none	none	none

FOOTNOTES

(a) Within a five-mile radius of the plant, only the five sectors listed above contain activities related to land use census requirements. The other eleven sectors lay fully within the federally owned Hanford Site. Only those sectors containing potential land use census activities are presented here.

(b) Estimated distances in miles from CGS Reactor Building based on GPS readings. Actual locations are same as identified in previous years, distance values may differ from those reported in past due to updated GPS data.

(c) 25 to 30 beef cattle were identified in a pasture in the ENE sector. The western edge of the pasture is just within the 5 mile radius. Additional feed appears to be provided at this location. 5 cows, 1 pony, and some chickens were observed in a small fenced area near a residence in the E sector. The animals were observed to be fed hay. A single horse was observed in the ESE sector. There is no pasture at this location and the horse appear to be fed hay.

(d) Though no gardens > 500 ft2 were identified, commercial agriculture is extensively practiced in some parts of the sectors identified in Table 4-3. Agricultural activities observed were primarily apple and soft fruit orchards, corn, alfalfa, and grape vineyards.

TABLE 4-4
COMPARISON OF LABORATORY NOMINAL LOWER LIMITS OF DETECTION WITH OFFSITE DOSE CALCULATION MANUAL REQUIREMENTS

MEDIA (UNITS)	ANALYSIS	ENERGY NORTHWEST LLDs[a]	ODCM REQUIRED LLDs
Air	Gross Beta	0.002	0.01
(pCi/m^3)	Cs-134	0.001	0.05
	Cs-137	0.001	0.06
	I-131	0.03	0.07
Water:	Gross Beta	2.4	4
(pCi/liter)	Tritium	300	2000[b]
	Sr-90	1	---
	Ni-63	5	---
	Fe-55	200	---
	I-131[c]	1	---
	Mn-54	7	15
	Fe-59	10	30
	Co-58	7	15
	Co-60	7	15
	Zn-65	10	30
	Zr-Nb-95	7	15
	Cs-134	7	15
	Cs-137	7	18
	Ba-La-140	10	15
Soil/Sediment:	Mn-54	20	---
(pCi/kg dry)	Co-60	20	---
	Zn-65	30	---
	Cs-134	20	150
	Cs-137	20	180
	Sr-90	10	---
Fish:	Mn-54	25	130
(pCi/kg wet)	Fe-59	100	260
	Co-58	35	130
	Co-60	25	130
	Zn-65	50	260
	Cs-134	30	130
	Cs-137	25	150
Milk:	I-31[c]	0.5	1
(pCi/liter)	Cs-134	7	15
	Cs-137	7	18
	Ba-La-140	10	15
	Sr-90	1	---
Garden Produce:	Cs-134	10	60
(pCi/kg wet)	Cs-137	10	80
	I-131	12	60

[a] These are the nominal target LLDs (a priori) for analyses performed in the Energy Northwest Environmental Services Laboratory and are based on conservative assumptions. These calculations included corrections for decay during the collection period and delay prior to analysis using factors that are normally encountered for the different media types. Actual LLDs (a posteriori) may be higher or lower for specific samples.

[b] If no drinking water pathway exists, a value of 3,000 pCi/liter may be used.

[c] This ENW Iodine-131 LLD achieved by anion resin separation and does not represent a direct analysis of the sample media.

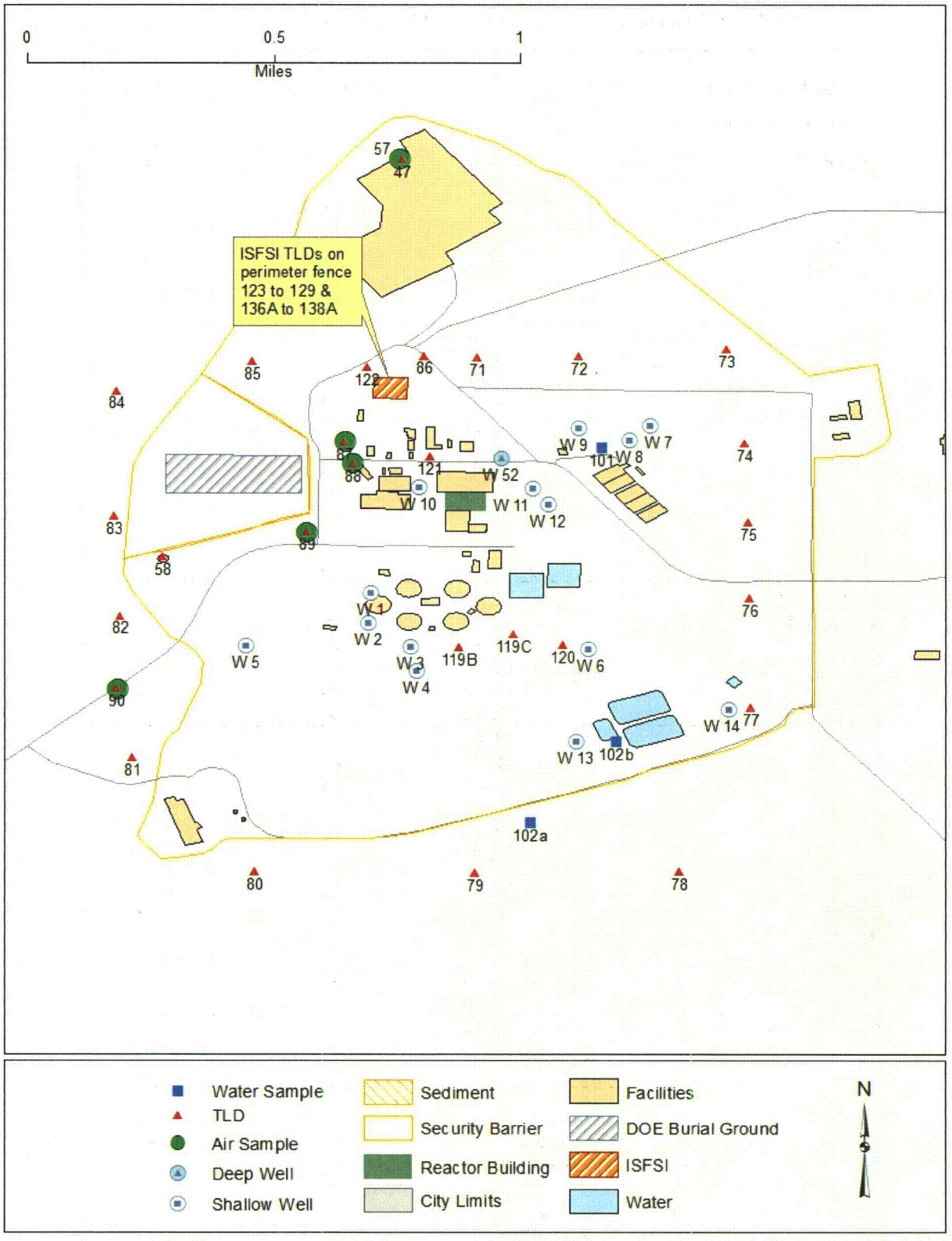

FIGURE 4-1 SELECT REMP SAMPLING LOCATIONS WITHIN 0.8 MILES OF CGS

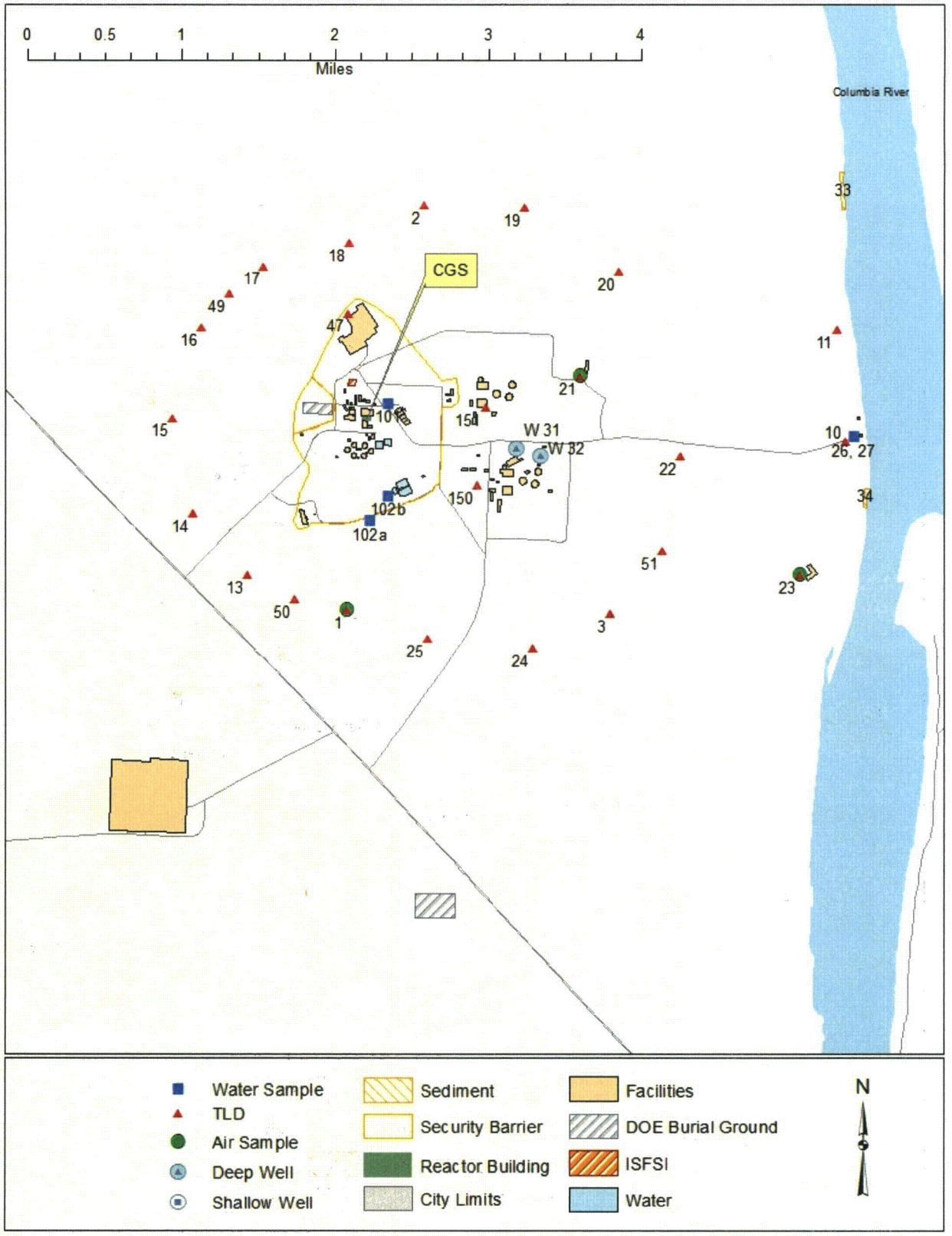

FIGURE 4-2 SELECT REMP SAMPLING LOCATIONS BETWEEN 0.8 AND 2.8 MILES

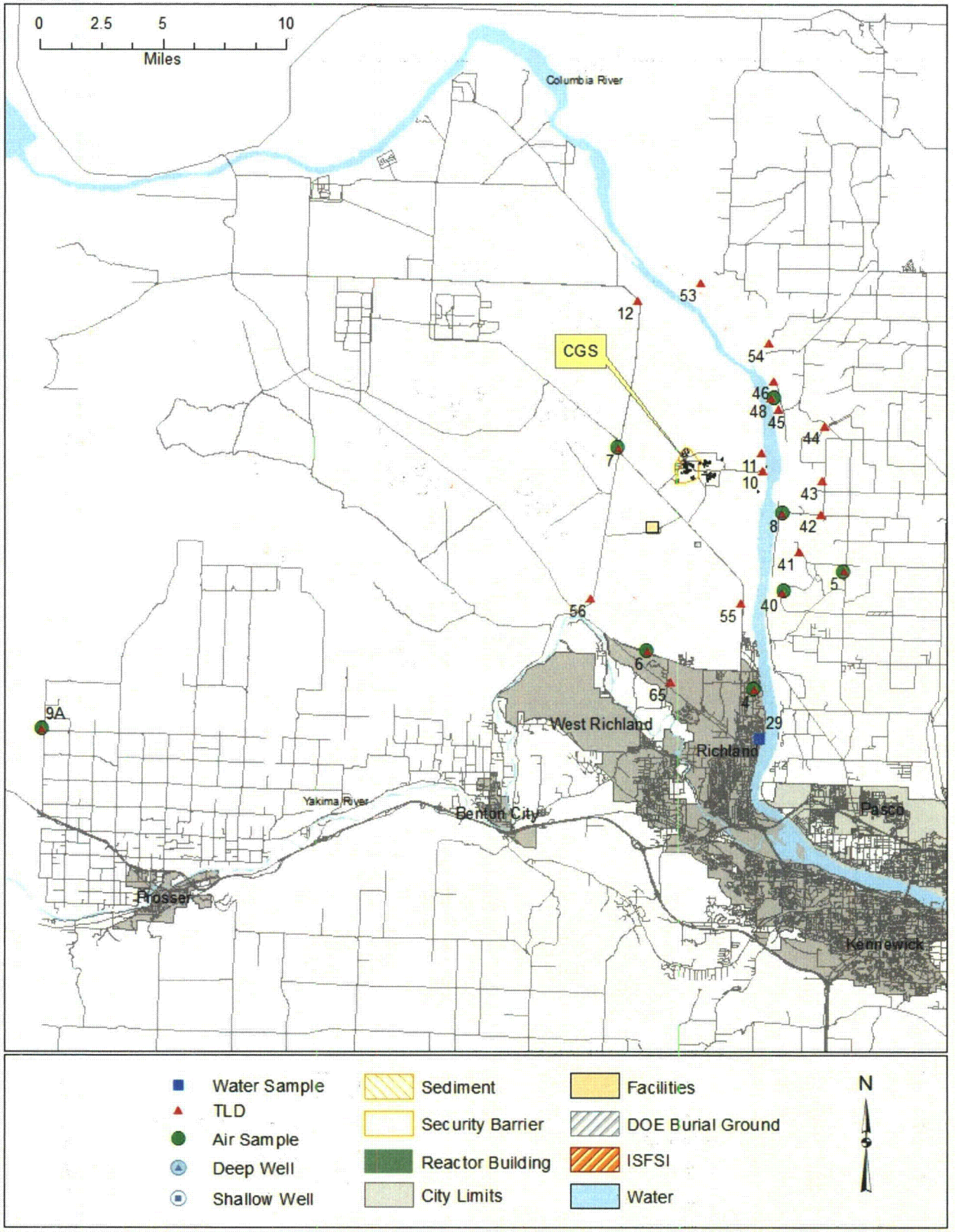

FIGURE 4-3 SELECT REMP SAMPLING LOCATIONS BEYOND 2.8 MILES

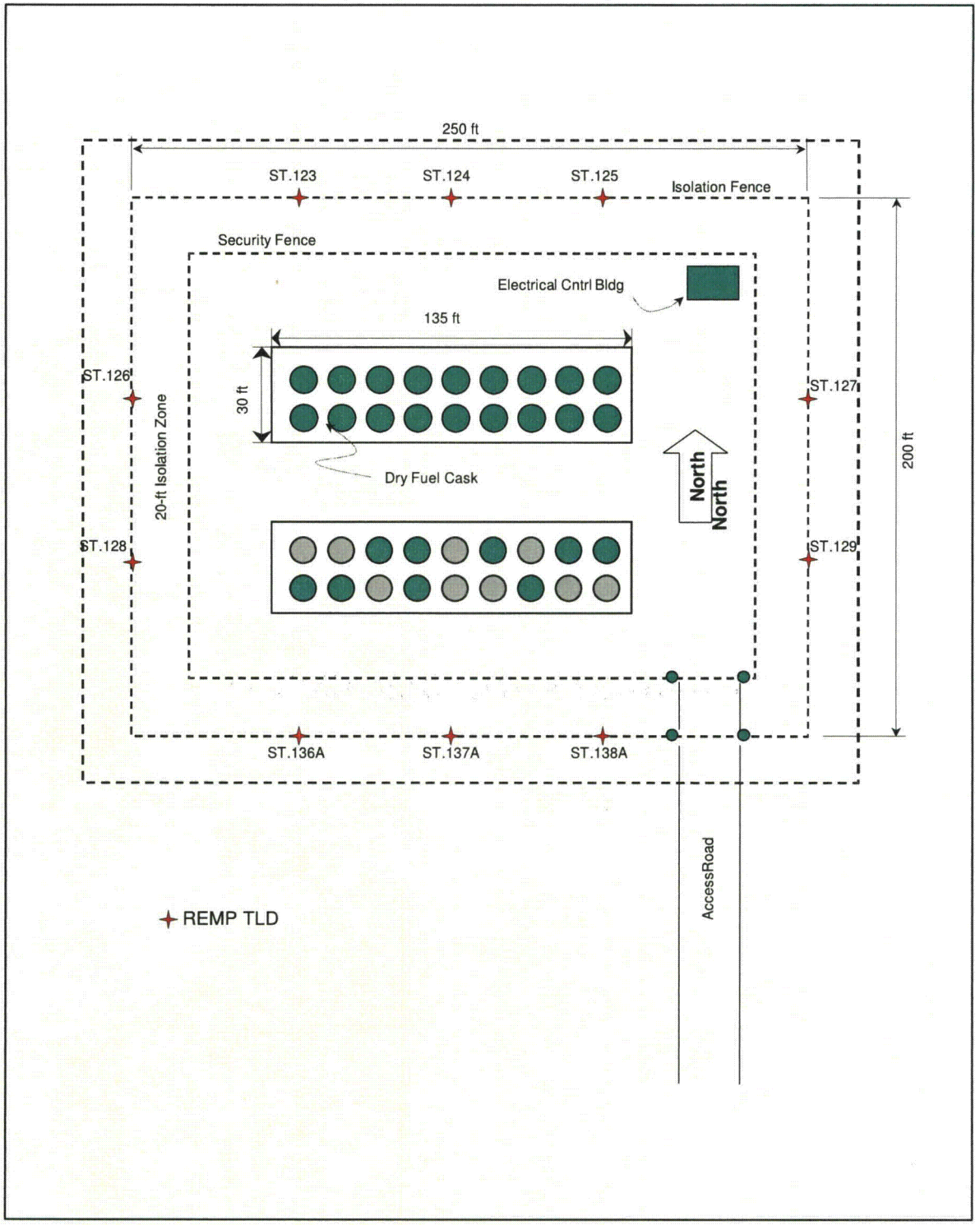

FIGURE 4-4 ISFSI TLD STATION LAYOUT

5.0 RESULTS AND DISCUSSION

5.0 RESULTS AND DISCUSSION

The Columbia Generating Station environmental TLDs were collected by Energy Northwest Environmental Services personnel and analyzed in the first and second quarters by Battelle at the Pacific Northwest National Laboratory (PNNL) and by Mission Support Alliance (MSA) in the third and fourth quarters. Select soil samples collected from the CGS Storm Drain Pond in September 2011 were analyzed for strontium-90, nickel-63, and iron-55 by Teledyne-Brown Engineering, Inc. All other CGS REMP samples were analyzed by the Energy Northwest Environmental Services Laboratory located in Richland, WA. Table 5-2 provides a summary of the ODCM required REMP sample and CGS groundwater monitoring analysis results in the format specified in Regulatory Guide 4.8. Results for naturally occurring radionuclides that are not related to CGS operations have not been included in the summary table. The lower limits of detection (LLDs) listed in Table 5-2 are the ODCM required detection limits and are not the method detection limits listed in Table 4-4. Analytical results for all REMP samples are presented in Appendix A of this volume and summarize the results in greater detail.

5.1 Direct Radiation

Direct radiation is monitored at 79 TLD locations surrounding CGS. TLDs are exchanged on a quarterly frequency at all locations. The 16 locations designated as "S" stations are located between 0.3 and 0.8 miles from the CGS reactor building and all are inside the property boundary, see Figure 4-1 for station locations. Figure 5-1 shows the 2012 "S" station mean quarterly TLD results separated into 16 geographical sectors around the plant. Figure 5-1 also shows the pre-operational mean and the high, low, and mean results in each sector for the 1984 - 2011 operational period for comparison. The 2012 results were less than or equal to the 1984-2011 operational mean in 13 of the 16 sectors. TLD results from the N, NNE, and NNW sectors are slightly higher than the other "S" station locations as a result of being physically closer to the ISFSI and the CGS turbine building. Excluding the NNW sector, the average deviation relative to the pre-operational period was -1.65%; in 2011 the average deviation was -3.6%. The NNW sector is the closest "S" station to the ISFSI and the higher result here is attributed to the stations close proximity to this facility.

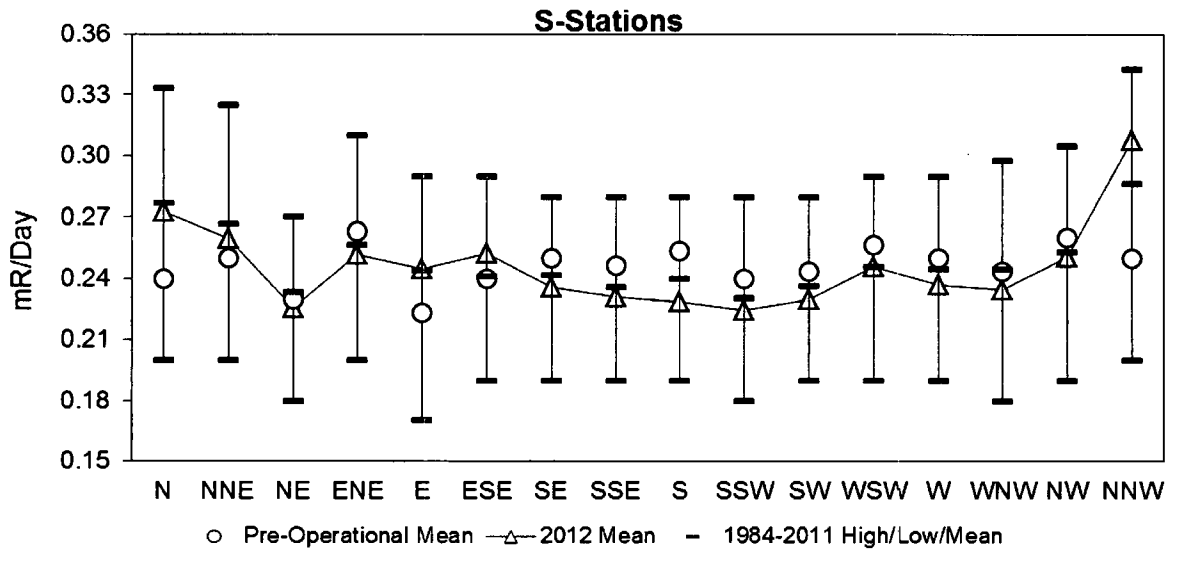

Figure 5-1 "S" Stations Quarterly TLDs 1984-2011 Hi/Low/Mean and 2012 Mean by Sector

The 19 locations designated as near plant stations are located at distances between 0.9 and 2.1 miles from the CGS reactor building, see Figure 4-2 for station locations. Figure 5-2 shows the exposure rates for the near plant TLD locations separated into sixteen geographical sectors around the plant. Figure 5-2 also shows the pre-operational mean and the high, low, and mean results in each sector for the 1984-2011 operational period for comparison. 2012 near plant TLD results were below the long term operational means in all 16 sectors and below or equal to the pre-operational mean in 15 of the 16 sectors. The average deviation relative to the pre-operational period was -3.2%, in 2011 the average deviation was -2.8%.

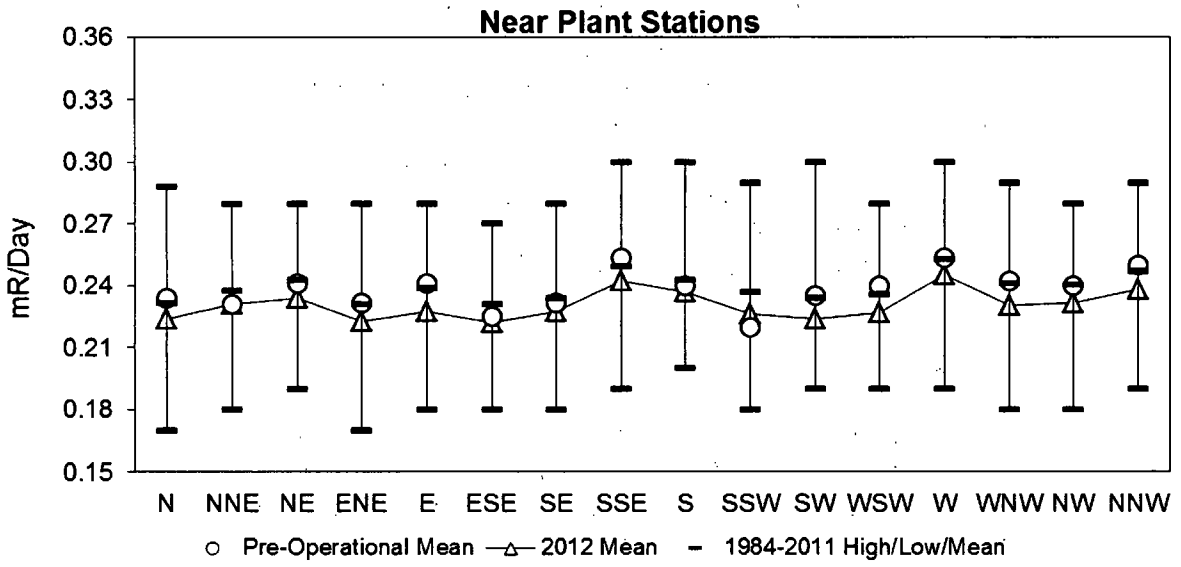

Figure 5-2 Near Plant Stations Quarterly TLDs 1984-2011 Hi/Low/Mean and 2012 Mean by Sector

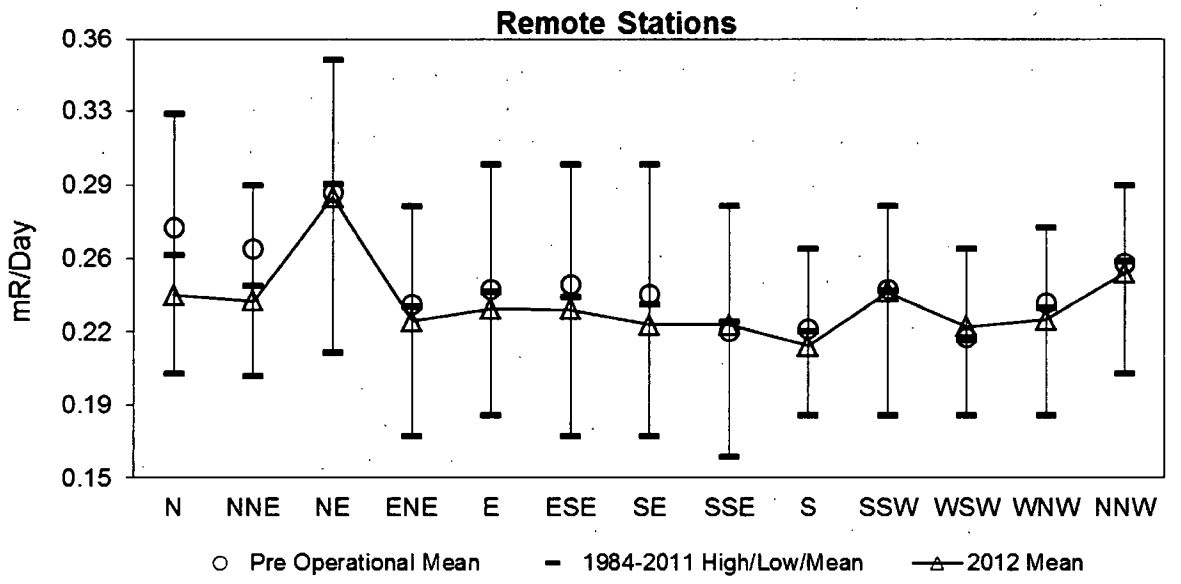

Figure 5-3 Remote Stations Quarterly TLDs 1984-2011 Hi/Low/Mean and 2012 Mean By Sector

The 22 TLD locations designated as remote locations are located between 2.83 and 28.35 miles from the CGS reactor building; see Figure 4-3 for station locations. Figure 5-3 shows the exposure rates for the remote TLD locations separated into geographical sectors around the plant. Figure 5-3 also shows the pre-operational mean and the high, low, and mean results by sector for the 1984-2011 operational period for comparison. 2012 remote TLD results were lower than the pre-operational mean in 11 of 13 sectors and lower than the operational period means in 12 of 13 sectors. Station 46 in the Wahluke Reserve (NE sector) remained the remote location with the highest exposure rate. This has been the case since the pre-operational measurement phase and is attributed to differences in the underlying rock and soil composition in this area. The 2012 average deviation relative to the pre-operational period was -3.5%, the average deviation in 2011 was -3.7%.

Offsite direct radiation monitoring results are consistent with previous years. The 2012 results indicate no measurable dose contribution due to plant operations at locations outside the CGS controlled area. Dose contributions inside the CGS controlled area are limited to those locations known to be influenced by the Independent Spent Fuel Storage Installation (ISFSI) and/or radiation from the turbine building during operation. Environmental radiation exposure rates for 2012, the pre-operational phase, and the long term operational phase are summarized in Tables 5-3. See also Appendix A, Tables A-1.1 and B-1.1 for 2012 quarterly TLD results. TLD results for special interest locations are discussed in further detail in Section 5.9.

5.2 Airborne Particulate/Iodine

Air samples are collected weekly from 11 sample stations located around CGS. Additionally, an air sample station located 28 miles WSW of CGS is used as a control for comparison. Air particulate filters are analyzed for gross beta and iodine cartridges for radioiodines on a weekly basis. Air filters are also composited and analyzed for gamma emitting nuclides quarterly.

The 2012 mean weekly particulate filter gross beta results for the five stations sampled weekly and located within three miles of CGS are plotted in Figure 5-4 (See also Appendix A, Tables A-2.1, A-2.2). Results for these near plant stations are within the range observed in previous years and closely follow the trend observed for the control location.

Figure 5-5 is a plot of the 2012 mean weekly particulate filter gross beta results for the 6 sample stations located between 3 and 9.6 miles from CGS (See also Appendix A, Tables A-2.1, A-2.2). The trend for the remote stations is similar to that seen with the near plant stations with all results within the range observed in previous years and trending closely to the control.

For both near and remote air station locations, greater variability in air gross beta results have historically been observed during fall and winter months due to weather induced background fluctuations. Gross beta levels typically increase during periods of inversion due to natural decay products being trapped near the earth surface. Gross beta results plotted over a period of several years typically show a cyclical pattern of fall and winter increases resulting from weather inversions. Gross beta results higher than the normal trend range were observed in 2012 during weeks 38 and 39. The increase is attributed to the presence of smoke in the atmosphere from wildfires burning in Eastern Washington during these time periods. Results higher than the control result were observed in week 40. The control filter for this week was observed to have had an abnormally high amount of dust loading which was not observed on any of the indicator filters.

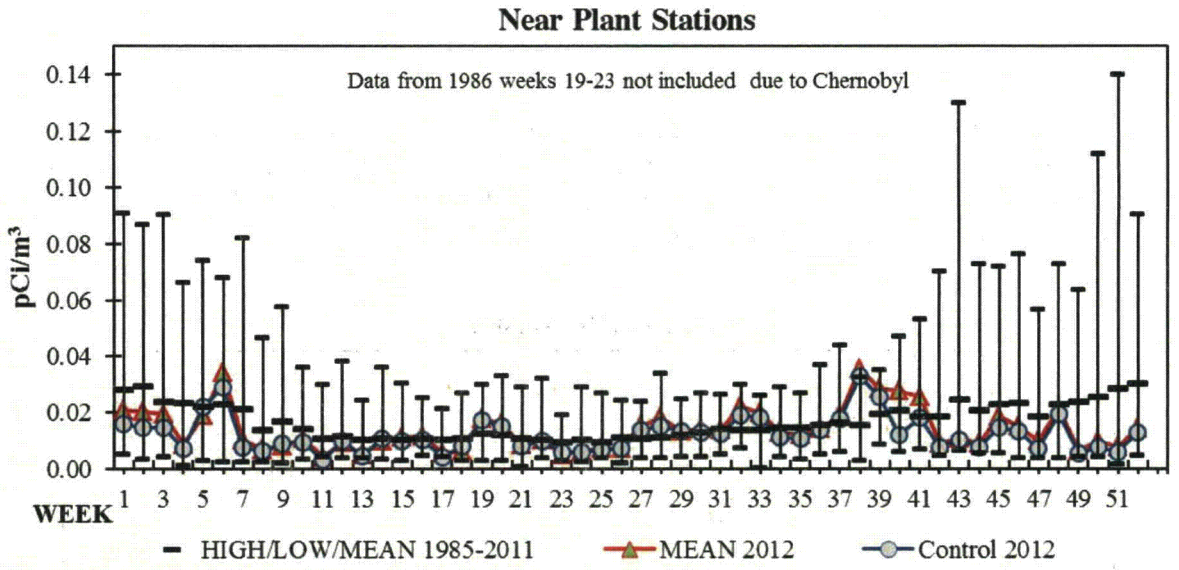

Figure 5-4 1985-2011 Weekly Hi/Low/Mean and 2012 Weekly Mean Gross Beta in Air - Near Plant Stations

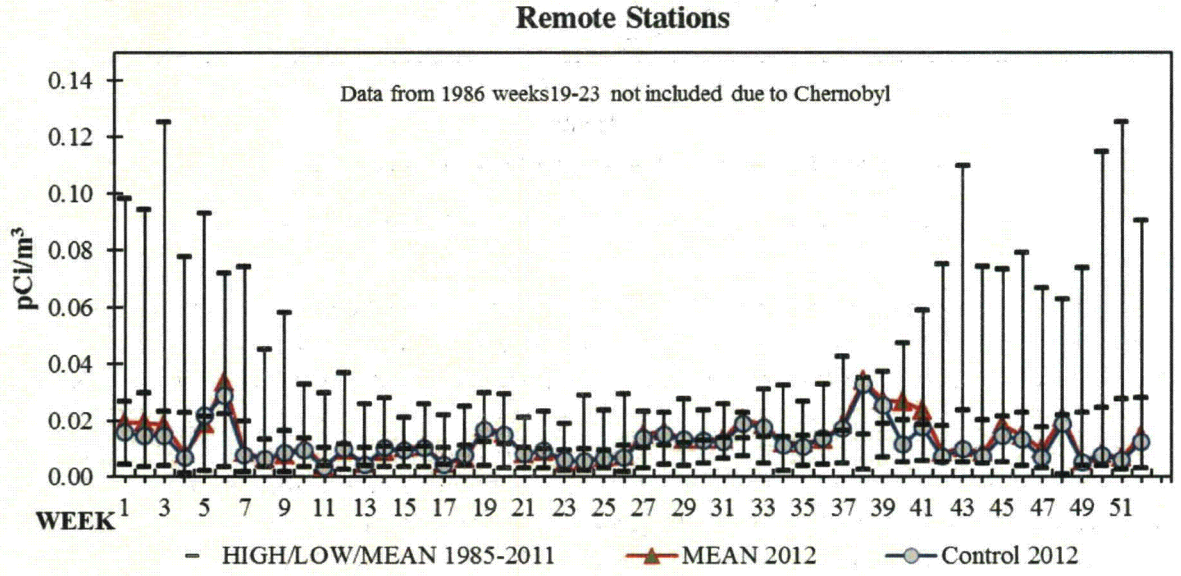

Figure 5-5 1985-2011 Weekly Hi/Low/Mean and 2012 Weekly Mean Gross Beta in Air - Remote Stations

The quarterly particulate filter gamma isotopic results identified the presence of only naturally occurring radionuclides (See Appendix A, Tables A-3.1, A-3.2). Be-7 was positively identified in all samples at both the indicator and control locations.

The 2012 weekly iodine cartridge isotopic results showed no indication of radioiodines in any of the samples. Results for iodine-131 were in all cases below the lower limit of detection. (See Appendix A, Tables A-4.1, A-4.2).

Based on these results, there is no evidence of any measurable environmental radiological air quality impact that can be attributed to CGS plant operation during 2012.

5.3 Water

5.3.1 Surface Water

Composite water samples are collected from 6 surface water locations monthly and analyzed for tritium, gross beta, and gamma emitters. The Station 26 sample for February covered only a 5 day run period due to a failed pump. A plot of the 2012 gross beta results for the plant intake, plant discharge, and river/drinking water stations are shown in Figure 5-6.

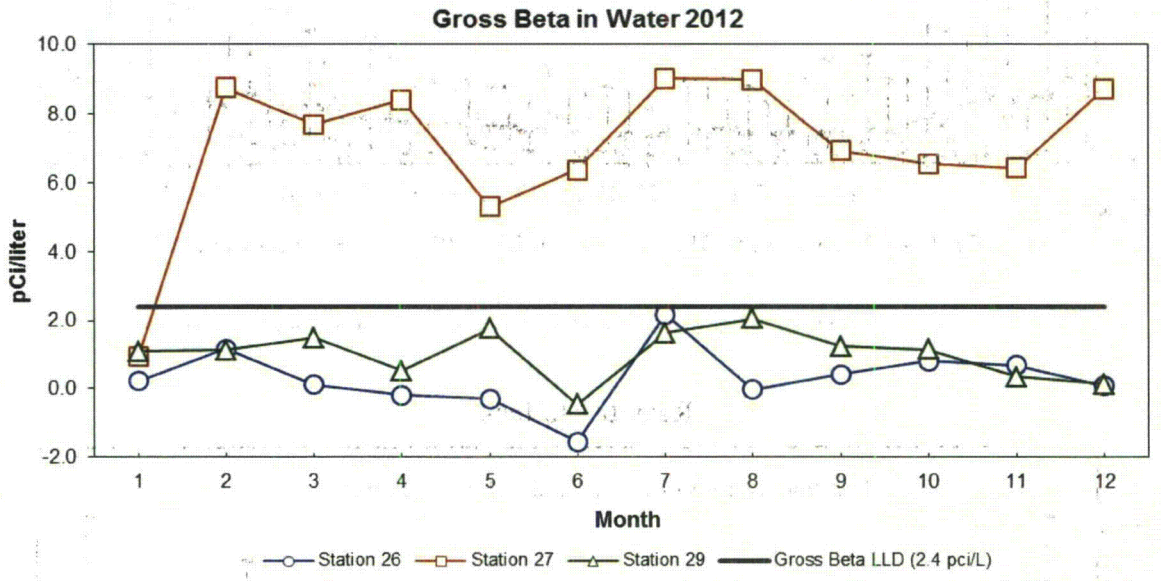

Figure 5-6 Gross Beta in River/Drinking (Stations 26 & 29) and Plant Discharge Water (Station 27) for 2012

All drinking and river water (Stations 26 and 29) gross beta results were below the analysis method *a priori* LLD (See Appendix A, Tables A-5.1, A-5.2). Gross beta levels in the plant discharge water (Station 27) were higher than the analysis level LLD in all but one sample. Positive results for this location are expected as natural radioactivity in the discharge water is concentrated due to evaporative loss and the scrubbing action of the cooling towers which incorporates atmospheric particulate material into the water. Historically, higher gross beta results at Station 27 have been observed during periods when CGS circulating water was maintained at higher levels of concentration. The discharge sample results are representative of the radioactivity present in plant discharge water before any mixing with river water occurs.

Tritium results for all plant intake, plant discharge, and river/drinking samples were below the analysis method *a priori* LLD. (See Appendix A, Tables A-6.1, A-6.2). This is consistent with results seen in previous years. Tritium results for the three sample locations are plotted in Figure 5-7.

Gamma spectroscopy results for all plant intake, plant discharge, and river/drinking samples showed no indication of any gamma-emitting radionuclides of interest being present (See Appendix A, Tables A-7.1, A-7.2).

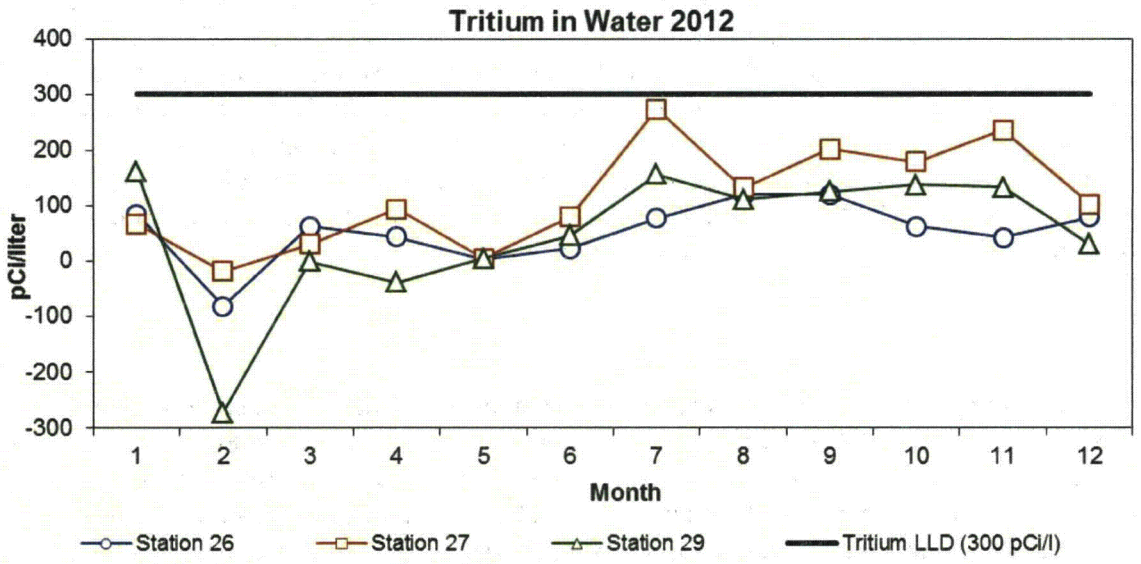

Figure 5-7 Tritium in River/Drinking (Stations 26 & 29) and Plant Discharge Water (Station 27) for 2012

There is no evidence of significant impact to the environment due to CGS plant operations in the plant intake, plant discharge, or river/drinking water results analyzed in 2012. Composite water samples are also taken from two sanitary waste sample locations and one storm drain location. Analysis results for these samples are discussed in further detail in Section 5.9.

5.3.2 Ground Water

Samples from 3 deep wells were collected quarterly to meet ODCM and EFSEC Resolution No. 332[9] requirements. Quarterly samples were also collected from eleven shallow groundwater monitoring wells located near CGS as part of the CGS groundwater monitoring program. All well samples were analyzed for tritium and gamma emitting radionuclides. Well locations sampled are shown in Figures 4-1 and 4-2.

Analytical results for the three deep water wells were consistent with results seen in previous years. No gamma emitting radionuclides related to CGS operation were identified in any of the samples (See Appendix A, Tables A-6.1, A-6.2, A-7.1, and A-7.2).

The CGS ground water monitoring program is conducted to meet the Nuclear Energy Institute (NEI) Groundwater Protection Initiative (NEI 07-07) [17] guidelines and to support NPDES licensing requirements. Eleven shallow wells are routinely used to sample water from the unconfined aquifer around the CGS site. None of these monitoring wells are used as a source of drinking water. CGS is unique in the commercial nuclear power industry in that it is located in an area where the unconfined aquifer under the site is known to be contaminated with tritium as a result of past DOE activities on the Hanford Site.[19] The CGS groundwater program is intended to assess any contribution CGS may be making to the known groundwater contamination issue.

Gamma Spectroscopy results for the eleven shallow monitoring wells did not identify any gamma emitting radionuclides of interest (See Appendix A, Tables B-10.1, and B-10.2). Tritium concentrations at these locations ranged from < LLD to 17,200 pCi/liter (See Appendix A, Table B-11.1). Tritium results from each well were consistent during the year and within the trend range

observed in previous years. A sample from MW-7 could not be obtained in the 4th quarter due to low water levels at this location. A possible correlation between tritium levels at the CGS storm drain pond and tritium levels at two groundwater monitoring locations near the storm drain pond (MW-7 and MW-8) was identified in 2011. Tritium data for 2012 showed a similar trend. Tritium activity in the storm drain pond is attributed to recapture of CGS effluents, see section 5.9.1 for more discussion. No other correlations between groundwater tritium and CGS operation was identified. With the exception of the MW-7 and MW-8 tritium results, there is no evidence that CGS operation made any measurable radiological impact on groundwater.

5.4 Soil

Gamma spectroscopy analysis was performed on soil samples from 5 different locations in 2012 (See Appendix A, Tables A-8.1, A-8.2). Two of the samples were from locations in Franklin County and one sample was from a control location. Naturally occurring radionuclides (potassium- 40 and bismuth-214) were identified in all samples and cesium-137 was identified in three of the samples, including the control location. The cesium-137 levels identified were similar to those seen in the past and within the concentration range that is considered normal background in Hanford area soils.[20,21,22] No indicator locations had cesium-137 concentrations high enough above the control location to require strontium-90 analysis.[9] The soil sample results do not indicate any measurable impact from CGS plant operation.

5.5 River Sediment

Gamma spectroscopy results of river sediment identified naturally occurring radionuclides (potassium-40, radium- 226, bismuth- 214) and cesium-137 (See Appendix A, Tables A-9.1, 9.2). Cesium-137 was detected in both upstream (Station 33) and downstream (Station 34) samples (relative to the cooling tower water discharge point). The downstream cesium-137 activity levels were similar to the levels identified in previous years and within the range known to be present in Hanford area sediment and soil.[21] Cesium-137 was not identified in any samples of plant cooling water discharged to the Columbia River. CGS has not made a radioactive discharge to the Columbia River since 1998. The sediment sample results do not indicate any measurable impact from CGS plant operation.

5.6 Fish

The gamma spectroscopy results of fish samples collected at both the indicator location (Columbia River) and the control location (Snake River) identified the presence of only naturally occurring radionuclides. (See Appendix A, Tables A-10.1, 10.2). These results are consistent with results seen in previous years.

5.7 Milk

No radioiodine activity was identified in any of the milk samples collected in 2012 (See Appendix A, Tables A-11.1, A-11.2). Gamma spectroscopy results of milk radionuclides other than radioiodine did not identify the presence of any radionuclides of interest. (See Appendix A, Tables A-12.1, A-12.2). Naturally occurring potassium-40 was identified in all milk samples.

5.8 Garden Produce

Gamma analysis was performed on fifteen different types of fruit, vegetable, and vegetation in 2012 (See Appendix A, Tables A-15.1, A-15.2, A-16.1, A-16.2, A-17.1, A-17.2). No radionuclides of interest were identified in any of the samples. Naturally occurring potassium-40 was identified in all samples.

5.9 Special Interest Stations

Sampling and analysis is performed at the locations covered in this section to comply with EFSEC requirements or is performed at CGS initiative. The storm drain pond and the Sanitary Waste Treatment Facility (SWTF) were incorporated into the routine sampling schedule in 1992. In 1995, the cooling tower sediment disposal area was added. TLDs were placed around the spray pond drain field (Station 120) in June 1995. TLD monitoring in the vicinity of the planned Independent Spent Fuel Storage Installation (ISFSI) was first performed in 1998 to collect background data and TLD monitoring was established on the ISFSI fence line after construction was completed in 2002. Additional air monitoring and TLDs stations were established in 2008/2009 to monitor remediation work at the DOE 618-11 burial ground west of CGS. Discussions of the results from each of the locations are given in the following sections.

5.9.1 Storm Drain Pond (Station 101)

The storm drain pond (NPDES Outfall 002) is located approximately 1500 feet northeast of CGS. Water is sent to the pond through an 18-inch diameter pipe that discharges into a 300-foot long earthen channel that leads to a 100-foot diameter pond. The pond is a shallow, unlined percolation/evaporation basin. Water at the storm drain outfall is sampled using a flow proportional automatic sampler to collect monthly composite samples. The storm drain pond area is fenced and access is restricted.

Monthly water samples were analyzed for gamma emitting radionuclides, tritium, and gross beta. Gamma spectroscopy results did not identify the presence of any gamma emitting radionuclides of interest (See Appendix A, Tables B-2.1, B-2.2). Gross beta was positively identified in one monthly sample at a level slightly above the analysis LLD (See Appendix A, Tables B-3.1, B-3.2). Tritium was detected in seven of the twelve samples (See Appendix A, Tables B-4.1, B-4.2). The samples with positive tritium activity were all from colder, wetter months which is consistent with results seen in previous years. The source of the tritium in these samples is believed to be from recapture of tritium from CGS effluents which is more likely to occur during cooler, rainier periods.

Select soil samples collected from the CGS storm drain pond area in September 2011 were analyzed for "hard to detect" radionuclides in 2012. Eleven soil samples were analyzed for strontium-90 and five for iron-55 and nickel-63. The samples were selected based on their gamma analysis results and identified radionuclide content. Analyses were performed by Teledyne-Brown Engineering Environmental Services Laboratory located in Knoxville, TN. Results for all hard to detect analyses were below the level of detection. No additional soil samples were collected or analyzed from the storm drain pond in 2012.

5.9.2 Sanitary Waste Treatment Facility (Station 102)

The Sanitary Waste Treatment Facility (SWTF) is located approximately 0.5 miles south-southeast of the CGS. The facility processes sanitary waste water from CGS, the ENW Industrial Development Complex (formerly referred to as WNP-1 and WNP-4), the Kootenai Building, and the DOE 400 Area. Station 102B receives water from all these locations; Station 102A receives water only from the DOE 400 Area. Discharge standards and monitoring requirements for the SWTF are established in EFSEC Resolution No. 300.[16]

The monthly composite gross alpha and beta results for the DOE 400 Area effluent (Station 102A) and the SWTF head works (Station 102B) were consistent with results seen in previous years. Low level gross beta was identified in all but one sample; gross alpha was not positively identified in any of the samples. (See Appendix A, Tables B-5.1, B-5.2, B-6.1, B-6.2).

Gamma spectroscopy results did not identify any gamma emitting radioisotopes of interest in any monthly 102A or 102B water samples in 2012 (See Appendix A, Tables B-7.1, B-7.2).

Tritium activity was identified in all twelve 102A and eleven of the twelve 102B samples (See Appendix A, Tables B-8.1, B-8.2). Tritium levels in the 102A samples were consistent indicating that the DOE 400 area obtained water from the same source throughout the year. The potable water used at the DOE 400 area is obtained from a groundwater well that is known to be contaminated with tritium as a result of past DOE activities on the Hanford site.[17] Tritium concentrations in the 102B samples were also fairly consistent with all results less than 2.5 times the LLD for this analysis. Tritium activity coming from the DOE 400 area is the main, and probably the sole source, of the tritium in the station 102B samples. Tritium levels in all sanitary waste samples remained well below the 20,000 pCi/liter action limits of EFSEC Resolution No. 300.[16]

SWTF water from stabilization pond B was discharged to ground in March 2012. Grab samples were taken at CGS initiative during discharge and analyzed for gamma isotopic content and tritium. No radioisotopes related to CGS operation were identified in the one gamma isotopic analysis performed. Of the five tritium grab samples analyzed, two had positive tritium results slightly above the LLD for the analysis. Tritium results ranged from 244 to 382 pCi/l with an average tritium content of 312 pCi/l. A total of 1.3 million gallons of SWTF water was discharged to ground in March 2012.

5.9.3 Cooling System Sediment Disposal Area (Station 119)

EFSEC Resolution No. 299[18] authorizes the onsite disposal of sediments from plant cooling systems containing low levels of radionuclides. The disposal area for these sediments is located just south of the CGS cooling towers. EFSEC Resolution No. 299[18] requires direct radiation monitoring using quarterly TLDs in the vicinity of the disposal cells and the collection and analysis of a dry composite sediment sample from the disposal cell within thirty days following each cleaning to confirm that the disposal criteria outlined in the resolution have not been exceeded.

Cleaning of the CGS cooling towers was performed in June and October 2012. Disposal of the material removed resulted in an estimated 47.2 cubic meters of dry sediment being placed in the disposal cell. No other cooling system sediment disposals were made during the year. Figure 5-8 summarizes the estimated quantity of radionuclides that were placed in the disposal area in 2012. For those isotopes listed in the

table that were not positively identified, the MDA value obtained from the sample analysis was used in the table calculations. As such, the total activity reported is a conservative estimate.

All results were well below the disposal concentration limits specified in EFSEC Resolution No. 299.[18] Cesium-137 is routinely identified in cooling system sediment disposal samples. The cesium-137 levels identified in 2012 were lower than observed in previous years and within the range normally seen in Hanford area soils. Cesium-134 was positively identified at low levels in the June post disposal sample. This isotope was identified in all 2011 cooling tower sediment samples and its presence attributed to the trans-Pacific transport of airborne releases from Dai-Ichi, Fukushima following the March 11, 2011 Tohoku earthquake. The source of the cesium-134 identified in June 2012 is also believed to be from Fukushima and not CGS operation.

	2012 Cooling System Sediment Disposal Data			
	Disposal Date	June 2012	October 2012	
	Pit ID:	2007 Pit	2007 Pit	
	Mass, kg	29,473	11,141	
	Density, g/cc	0.97	0.67	
Nuclide	Limit (pCi/kg)	Analytical Result (pCi/kg)	Analytical Result (pCi/kg)	Total Curies
Co-60	5.00E+03	< 3.13E+01	<3.29E+01	<1.29E-06
Mn-54	3.00E+04	< 2.63E+01	<3.69E+01	< 1.19E-06
Zn-65	5.00E+04	< 6.79E+01	< 5.58E+01	< 2.62E-06
Cs-134	1.00E+04	7.24E+01	< 3.94E+01	2.57E-06
Cs-137	2.00E+04	1.56E+02	1.35E+02	6.10E-06
				1.38E-05

Figure 5-8 Cooling System Sediment Activity Levels For Disposals Made In 2012

Measurements of direct radiation at the disposal pit area was taken using TLDs. Two locations were used, an indicator location next to the collection area (Station 119B) and a control location approximately 100 yards to the east (Station 119C). The mean quarterly TLD results agree well with results from previous operational years. The negligible difference between the indicator and the control TLDs indicate that there was no measureable dose contribution above background due to material in the disposal cells. (See Tables 5.3 and Appendix A, Tables B-1.1).

5.9.4 Spray Pond Drain Field (Station 120)

There were no discharges to the Spray Pond Drain Field (NPDES Outfall 003) in 2012. The TLD results at Station 120 in 2012 are in agreement with those seen in previous operational years (See Table 5-3 and Appendix A, Tables B-1.1).

5.9.5 Independent Spent Fuel Storage Installation

The Independent Spent Fuel Storage Installation (ISFSI) is a fenced, secured area north northwest of CGS. Ten TLD stations, stations 123-129 and stations 136A-138A, are located on the second of three security fences that surround the ISFSI. TLD station 122 is just north of the ISFSI between the ISFSI and the plant access road. TLD station 121 is located approximately 0.1 mile north of the plant between the Transformer Yard and the ISFSI. Refer to Figure 4-4 for ISFSI TLD locations. Radiological exposure rates inside the ISFSI security fence line are elevated and access to the area requires radiological dosimetry and security notification. In addition to the TLD monitoring program, quarterly radiological surveys of the ISFSI are conducted by the CGS Radiation Protection Department. No new spent fuel or additional storage casks were added to the ISFSI during 2012. As shown in Figure 5-9, exposure rates at the ISFSI fence line have followed a downward trend since 2008. Station 122 TLD results show a similar pattern with the long term trend for this location correlating to the overall ISFSI TLD trend but at a lower level. Station 121 TLD trend results show large decreases during period when CGS was shut down; this location has historically been influenced more by turbine building radiation levels than by the ISFSI (See Table 5-3 and Appendix A, Tables B-1.1, B-1.2).

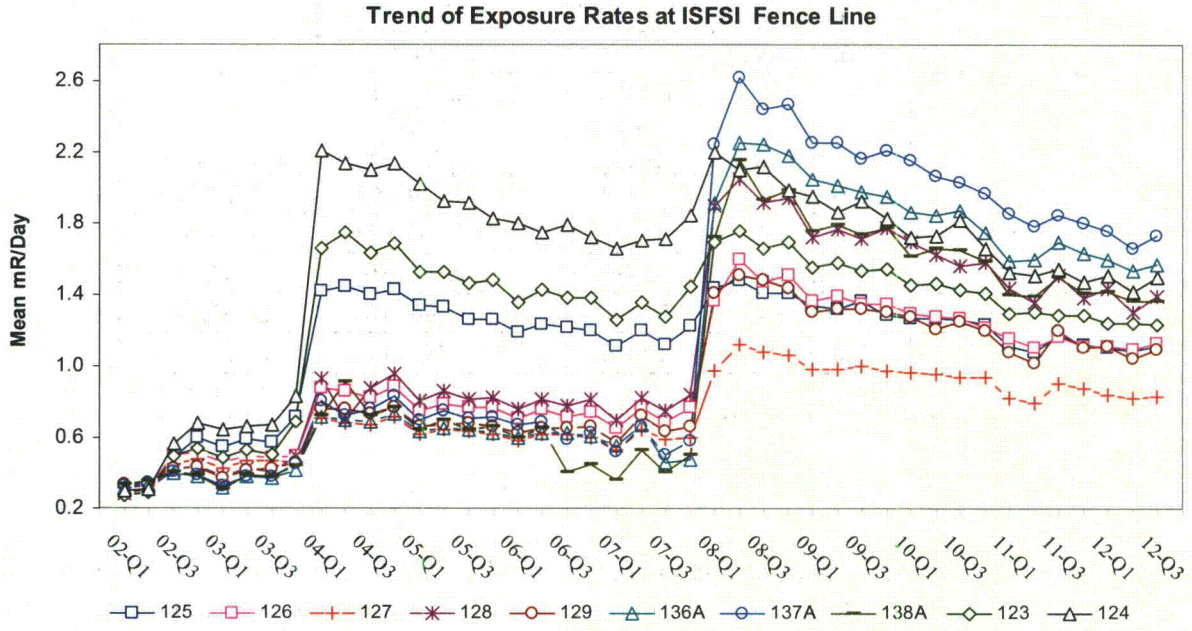

Figure 5-9 ISFSI TLD Trend at CGS

5.9.6 Additional Air Sample and TLD Locations

Four air sample locations (Stations 87-90) and 5 TLD stations (Stations 58, 87-90) were established in 2008/2009 in order to monitor air quality and direct radiation during remediation work at the DOE 618-11 burial ground located just west of CGS (See Figure 4-1). No air samples were taken from these locations in 2012 as no work was performed at the 618-11 site that had the potential of impacting CGS. Quarterly TLDs were exchanged at all five locations in 2012. Three of the TLD stations (stations 87-89) had results higher than background due to the stations close proximity to the turbine building (See Appendix A, Table B–1.1).

5.10 2012 Sample Deviations

A summary of REMP sample deviations encountered during 2012 is listed below in Table 5-1a. All known deviations from the sampling schedule (i.e. sample was not obtained) or analyses where the ODCM specified lower limit of detection was not achieved are included. For locations where composite or continuous samples are collected, any known period greater than 24 hours during which samples were not collected have been included. Not all locations listed in Table 5-1a are required by the ODCM or EFSEC resolutions. Table 5-1b lists information regarding air sample station sampling requirements.

TABLE 5-1a
REMP Sample Deviations for 2012

SAMPLE MEDIA	DATE	LOCATION	CR ID	PROBLEM / COMMENTS
Air Sampler	1/4/12 to 1/6/12	Station 23	255888	Station OOS for ~ 50 hours due to power outage. Station back in service when power restored. Sufficient sample volume obtained to meet LLD.
Air Sampler	1/17/12 to 1/2412	Station 57	256684	Station OOS due to planned power outage, pump did not restart when power restored. Station back in service after fuse replaced. No sample collected, LLD requirement not met.
Air Sampler	1/17/12 to 1/24/12	Station 7	256685	Pump found off with blown fuse, Station OOS. Station back in service after fuse replaced. No sample collected, LLD requirement not met.
Air Sampler	2/1/12 to 2/2/12	Station 57	257121	Pump found off with blown fuse following power outage, Station OOS for ~ 25 hours. Fuse replaced, pump restarted. Sufficient sample volume obtained to meet LLD.
Air Sampler	3/20/12 to 4/10/12	Station 5	260421 260948 261432	Station found OOS due to blown pump fuse or inoperable pump 3 weeks in a row. Fuse or pump replaced and station restored to operability following each failure. No valid sample collected or LLD requirement met for 3 week period.
Air Sampler	3/20/12 to 4/10/12	Station 21	263060	Pump found off after scheduled power outage, Station OOS for ~ 48 hours. Pump replaced. Sufficient sample volume obtained to meet LLD.
Air Sampler	7/31/12 to 8/2/12	Station 57	268233	Station OOS for ~ 51 hours due to planned power outage. Station verified back in service when power restored. Sufficient sample volume obtained to meet LLD.
Air Sampler	11/13/12 to 11/16/12	Station 23	274321	Station OOS for ~ 76 hours due to planned power outage. Station verified back in service when power restored. Sufficient sample volume obtained to meet LLD.
Air Sampler	12/28/12 to 1/2/13	Station 4	276565	Pump found off with blown fuse, Station OOS for ~ 120 hours. Pump replaced. No sample collected, LLD requirement not met.

TABLE 5-1a (cont) REMP Sample Deviations for 2012				
SAMPLE MEDIA	DATE	LOCATION	CR ID	PROBLEM / COMMENTS
Water	2/5/12 to 2/29/12	Station 26	257838 258202	No water was supplied to sample rack due to failure of supply pump. Supply pump repaired and water flow reestablished. Operations procedure revised to identify sample rack as ODCM requirement.
Water	3/19/12 to 3/22/12	Station 27	260177	Sample rack OOS for ~ 52 hours due to electrical outage. Sample rack verified operational following power restoration.
Water	10/29/12 to 11/1/12	Station 27	273557	Sample rack OOS for ~ 73 hours due to planned electrical outage. Sample rack verified operational following power restoration
TLD	12/31/12	All TLD Locations	275659	4th quarter 2012 TLDs left in field longer than 1 quarter (3 months) due to delay obtaining next quarter TLDs from vendor. New TLDs obtained and TLDs exchanged in late January 2013. Contract issues causing delay resolved.

Table 5-1b below shows the percent time in service for the 12 air sample locations. The table shows that overall availability was greater than 97% for all ODCM and EFSEC locations.

TABLE 5-1b CGS REMP Air Sample Percent in Service Time for 2012			
Station ID	ODCM Required	EFSEC Required	Percent Time in Service
1		x	99.9%
4	x	x	97.7%
5			94.1%
6		x	99.9%
7		x	98.0%
8	x	x	99.8%
9	x	x	99.9%
21			98.6%
23		x	98.4%
40	x	x	99.9%
48	x	x	99.8%
57	x		97.7%

TABLE 5-2

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

COLUMBIA GENERATING STATION **DOCKET NO. 50-397**

Benton County, Washington **Calendar Year 2012**

Medium: Environmental Direct Radiation (TLD) **Units: mR/std. quarter**

Analysis Type	Total Analyses Performed	Lower Limit of Detection (LLD)	Indicator Locations Mean (f)[a] Range	Location With Highest Annual Mean		Control Locations Mean (f)[a] Range	Number of Nonroutine Measurements
				Location Information	Mean (f)[a] Range		
TLD Quarterly	228	---	21.42 (224 / 224) (17.95-28.81)	86 NNW 0.3 miles	28.06 (4/4) (27.22-28.81)	20.29 (4/4) (19.89-20.96)	0

a. (f) is the number of positive measurements / total measurements at specified location.

Reference Appendix A, Tables A-1.1, A-1.2

TABLE 5-2 (cont)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

COLUMBIA GENERATING STATION **DOCKET NO. 50-397**

Benton County, Washington **Calendar Year 2012**

Medium: ISFSI Direct Radiation (TLD) **Units: mR/std. quarter**

Analysis Type	Total Analyses Performed	Lower Limit of Detection (LLD)	Indicator Locations Mean (f)[a] Range	Location With Highest Annual Mean		Control Locations Mean (f)[a] Range	Number of Nonroutine Measurements
				Location Information	Mean (f)[a] Range		
TLD Quarterly	40	---	118.3 (40 / 40) (74.9-164.4)	137A NNW 0.24 miles	158.6 (4 / 4) (151.8-164.4)	--- (0 / 0)	0

a. (f) is the number of positive measurements / total measurements at specified location.

Reference Appendix A, Tables B-1.1, B-1.2

ISFSI TLDs are Stations 123 to 129 and 136A to138A

TABLE 5-2 (cont)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

COLUMBIA GENERATING STATION **DOCKET NO. 50-397**

Benton County, Washington **Calendar Year 2012**

Medium: Air Particulate/Air Radioiodine **Units: pCi/m^3**

Analysis Type	Total Analyses Performed	Lower Limit of Detection (LLD)[b]	Indicator Locations Mean (f)[a] Range	Location With Highest Annual Mean		Control Locations Mean (f)[a] Range	Number of Nonroutine Measurements
				Location Information	Mean (f)[a] Range		
Gross Beta	618	0.01	0.0135 (566/566) (0.00293-0.0381)	7 WNW2.83 miles	0.0139 (51/51) (0.00423 - 0.0381)	0.012(52/52) (0.00329 - 0.033)	0
I-131	618	0.07	--- (0 / 566)	---	---	--- (0 / 52)	0
Cs-134	48	0.05	--- (0 / 44)	---	---	--- (0 / 4)	0
Cs-137	48	0.06	--- (0 / 44)	---	---	--- (0 / 4)	0

a. (f) is the number of positive measurements / total measurements at specified location.

b. These are the ODCM specified LLDs, actual method LLDs will be lower. See Table 4-4.

Reference Appendix A, Tables A-2.1, A-2.2, Tables A-3.1, A-3.2, and Tables A-4.1, A-4.2.

TABLE 5-2 (cont)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

COLUMBIA GENERATING STATION **DOCKET NO. 50-397**

Benton County, Washington **Calendar Year 2012**

Medium: Water-River/Drinking **Units: pCi/L**

Analysis Type	Total Analyses Performed	Lower Limit of Detection (LLD)[c]	Indicator Locations Mean (f)[a] Range	Location With Highest Annual Mean		Control Locations Mean (f)[a] Range	Number of Nonroutine Measurements
				Location Information	Mean (f)[a] Range		
Gross Beta	24	4.0	0.658 (1 / 24)[(b)] (-1.55-2.17)	26 E 3.19 miles	0.304 (1 / 12) (-1.55-2.17)	0.304 (1 / 12) (-1.55-2.17)	0
H-3	8	2000	--- (0 / 8)[(b)]	---	---	--- (0 / 4)	0
Mn-54	24	15	--- (0 / 24)[(b)]	---	---	--- (0 / 12)	0
Fe-59	24	30	--- (0 / 24)[(b)]	---	---	--- (0 / 12)	0
Co-58	24	15	--- (0 / 24)[(b)]	---	---	--- (0 / 12)	0
Co-60	24	15	--- (0 / 24)[(b)]	---	---	--- (0 / 12)	0
Zn-65	24	30	--- (0 / 24)[(b)]	---	---	--- (0 / 12)	0
Zr/Nb-95	24	15	--- (0 / 24)[(b)]	---	---	--- (0 / 12)	0
Cs-134	24	15	--- (0 / 24)[(b)]	---	---	--- (0 / 12)	0
Cs-137	24	18	--- (0 / 24)[(b)]	---	---	--- (0 / 12)	0
Ba/La-140	24	15	--- (0 / 24)[(b)]	---	---	--- (0 / 12)	0

a. (f) is the number of positive measurements / total measurements at specified location.

b. This includes the control sample for this group; the control (Station 26) is also a drinking water sample.

c. These are the ODCM specified LLDs, actual method LLDs will be lower. See Table 4-4.

Reference Appendix A, Tables A-5.1,A-5.2, Tables A-6.1, A-6.2, and Tables A-7.1, A-7.2

TABLE 5-2 (cont)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

COLUMBIA GENERATING STATION **DOCKET NO. 50-397**

Benton County, Washington **Calendar Year 2012**

Medium: Water-Discharge **Units: pCi/L**

Analysis Type	Total Analyses Performed	Lower Limit of Detection (LLD)[b]	Indicator Locations Mean (f)[a] Range	Location With Highest Annual Mean		Control Locations Mean (f)[a] Range	Number of Nonroutine Measurements
				Location Information	Mean (f)[a] Range		
Gross Beta	12	4.0	7.01 (11 / 12) (0.948-9.02)	27 E 3.2 miles	7.01 (11 / 12) (0.948-9.02)	---(0 / 0)	0
H-3	4	2000	--- (0/ 4)	---	---	--- (0 / 0)	0
Mn-54	12	15	--- (0 / 12)	---	---	--- (0 / 0)	0
Fe-59	12	30	--- (0 / 12)	---	---	--- (0 / 0)	0
Co-58	12	15	--- (0 / 12)	---	---	--- (0 / 0)	0
Co-60	12	15	--- (0 / 12)	---	---	--- (0 / 0)	0
Zn-65	12	30	--- (0 / 12)	---	---	--- (0 / 0)	0
Zr/Nb-95	12	15	--- (0 / 12)	---	---	--- (0 / 0)	0
Cs-134	12	15	--- (0 / 12)	---	---	--- (0 / 0)	0
Cs-137	12	18	--- (0 / 12)	---	---	--- (0 / 0)	0
Ba/La-140	12	15	--- (0 / 12)	---	---	--- (0 / 0)	0

a. (f) is the number of positive measurements / total measurements at specified location.

b. These are the ODCM specified LLDs, actual method LLDs will be lower. See Table 4-4.

Reference Appendix A, Tables A-5.1,A-5.2, Tables A-6.1, A-6.2, and Tables A-7.1, A-7.2

TABLE 5-2 (cont)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

COLUMBIA GENERATING STATION **DOCKET NO. 50-397**

Benton County, Washington **Calendar Year 2012**

Medium: Water- Deep Ground **Units: pCi/L**

Analysis Type	Total Analyses Performed	Lower Limit of Detection (LLD)[b]	Indicator Locations Mean (f)[a] Range	Location With Highest Annual Mean		Control Locations Mean (f)[a] Range	Number of Nonroutine Measurements
				Location Information	Mean (f)[a] Range		
H-3	12	2000	--- (0 / 12)	---	---	--- (0 / 0)	0
Mn-54	12	15	--- (0 / 12)	---	---	--- (0 / 0)	0
Fe-59	12	30	--- (0 / 12)	---	---	--- (0 / 0)	0
Co-58	12	15	--- (0 / 12)	---	---	--- (0 / 0)	0
Co-60	12	15	--- (0 / 12)	---	---	--- (0 / 0)	0
Zn-65	12	30	--- (0 / 12)	---	---	--- (0 / 0)	0
Zr/Nb-95	12	15	--- (0 / 12)	---	---	--- (0 / 0)	0
Cs-134	12	15	--- (0 / 12)	---	---	--- (0 / 0)	0
Cs-137	12	18	--- (0 / 12)	---	---	--- (0 / 0)	0
Ba/La-140	12	15	--- (0 / 12)	---	---	--- (0 / 0)	0

a. (f) is the number of positive measurements / total measurements at specified location.

b. These are the ODCM specified LLDs, actual method LLDs will be lower. See Table 4-4.

Reference Appendix A, Tables A-6.1, A-6.2, and Tables A-7.1, A-7.2

TABLE 5-2 (cont)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

COLUMBIA GENERATING STATION **DOCKET NO. 50-397**

Benton County, Washington **Calendar Year 2012**

Medium: Water- Shallow Ground **Units: pCi/L**

Analysis Type	Total Analyses Performed	Lower Limit of Detection (LLD)[b]	Indicator Locations Mean (f)[a] Range	Location With Highest Annual Mean		Control Locations Mean (f)[a] Range	Number of Nonroutine Measurements
				Location Information	Mean (f)[a] Range		
H-3	43	2000	3671.3 (37 / 43) (116-17,200)	MW-5 SW 0.43 miles	16,400 (4 / 4) (15,700-17,200)	— (0 / 0)	0
Mn-54	43	15	— (0 / 43)	—	—	— (0 / 0)	0
Fe-59	43	30	— (0 / 43)	—	—	— (0 / 0)	0
Co-58	43	15	— (0 / 43)	—	—	— (0 / 0)	0
Co-60	43	15	— (0 / 43)	—	—	— (0 / 0)	0
Zn-65	43	30	— (0 / 43)	—	—	— (0 / 0)	0
Zr/Nb-95	43	15	— (0 / 43)	—	—	— (0 / 0)	0
Cs-134	43	15	— (0 / 43)	—	—	— (0 / 0)	0
Cs-137	43	18	— (0 / 43)	—	—	— (0 / 0)	0
Ba/La-140	43	15	— (0 / 43)	—	—	— (0 / 0)	0

a. (f) is the number of positive measurements / total measurements at specified location.

b. These are the ODCM specified LLDs, actual method LLDs will be lower. See Table 4-4.

Reference Appendix A, Tables B-10.1, B-10.2, and B-11.1.

TABLE 5-2 (cont)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

COLUMBIA GENERATING STATION **DOCKET NO. 50-397**

Benton County, Washington **Calendar Year 2012**

Medium: River Sediment **Units: pCi/kg**

Analysis Type	Total Analyses Performed	Lower Limit of Detection (LLD) [b]	Indicator Locations Mean (f)[a] Range	Location With Highest Annual Mean		Control Locations Mean (f)[a] Range	Number of Nonroutine Measurements
				Location Information	Mean (f)[a] Range		
Cs-134	4	150	--- (0 / 2)	---	---	--- (0 / 2)	0
Cs-137	4	180	115 (2 / 2) (94.7-135)	34 ESE 3.32 Miles	115 (2 / 2) (94.7-135)	130 (1 / 2) (22.4-237)	0
Co-60	4	---	--- (0 / 2)	---	---	--- (0 / 2)	0

a. (f) is the number of positive measurements / total measurements at specified location.

b. These are the ODCM specified LLDs, actual method LLDs will be lower. See Table 4-4.

Reference Appendix A, Tables A-9.1, A-9.2.

TABLE 5-2 (cont)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

COLUMBIA GENERATING STATION **DOCKET NO. 50-397**

Benton County, Washington **Calender Year 2012**

Medium: Roots **Units: pCi/kg**

Analysis Type	Total Analyses Performed	Lower Limit of Detection (LLD)[b]	Indicator Locations Mean (f)[a] Range	Location With Highest Annual Mean		Control Locations Mean (f)[a] Range	Number of Nonroutine Measurements
				Location Information	Mean (f)[a] Range		
I-131	5	60	--- (0 / 4)	---	---	--- (0 / 1)	0
Cs-134	5	60	--- (0 / 4)	---	---	--- (0 / 1)	0
Cs-137	5	80	--- (0 / 4)	---	---	--- (0 / 1)	0

a. (f) is the number of positive measurements / total measurements at specified location.

b. These are the ODCM specified LLDs, actual method LLDs will be lower. See Table 4-4.

Reference Appendix A, Tables A-15.1, A-15.2.

TABLE 5-2 (cont)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

COLUMBIA GENERATING STATION **DOCKET NO. 50-397**

Benton County, Washington **Calendar Year 2012**

Medium: Fruits **Units: pCi/kg**

Analysis Type	Total Analyses Performed	Lower Limit of Detection (LLD)[b]	Indicator Locations Mean (f)[a] Range	Location With Highest Annual Mean		Control Locations Mean (f)[a] Range	Number of Nonroutine Measurements
				Location Information	Mean (f)[a] Range		
I-131	10	60	--- (0 / 9)	---	---	--- (0 / 1)	0
Cs-134	10	60	--- (0 / 9)	---	---	--- (0 / 1)	0
Cs-137	10	80	--- (0 / 9)	---	---	--- (0 / 1)	0

a. (f) is the number of positive measurements / total measurements at specified location.

b. These are the ODCM specified LLDs, actual method LLDs will be lower. See Table 4-4.

Reference Appendix A, Table A-16.1, A-16.2.

TABLE 5-2 (cont)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

COLUMBIA GENERATING STATION **DOCKET NO. 50-397**

Benton County, Washington **Calendar Year 2012**

Medium: Vegetables and Vegetation **Units: pCi/kg**

Analysis Type	Total Analyses Performed	Lower Limit of Detection (LLD)[b]	Indicator Locations Mean (f)[a] Range	Location With Highest Annual Mean		Control Locations Mean (f)[a] Range	Number of Nonroutine Measurements
				Location Information	Mean (f)[a] Range		
I-131	13	60	--- (0 / 12)	---	---	--- (0 / 1)	0
Cs-134	13	60	--- (0 / 12)	---	---	--- (0 / 1)	0
Cs-137	13	80	--- (0 / 12)	---	---	--- (0 / 1)	0

a. (f) is the number of positive measurements / total measurements at specified location.

b. These are the ODCM specified LLDs, actual method LLDs will be lower. See Table 4-4.

Reference Appendix A, Table A-17.1, A-17.2.

TABLE 5-2 (cont)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

COLUMBIA GENERATING STATION **DOCKET NO. 50-397**

Benton County, Washington **Calendar Year 2012**

Medium: Fish **Units: pCi/kg**

Analysis Type	Total Analyses Performed	Lower Limit of Detection (LLD)[b]	Indicator Locations Mean (f)[a] Range	Location With Highest Annual Mean		Control Locations Mean (f)[a] Range	Number of Nonroutine Measurements
				Location Information	Mean (f)[a] Range		
Mn-54	6	130	--- (0 / 3)	---	---	--- (0 / 3)	0
Fe-59	6	260	--- (0 / 3)	---	---	--- (0 / 3)	0
Co-58	6	130	--- (0 / 3)	---	---	--- (0 / 3)	0
Co-60	6	130	--- (0 / 3)	---	---	--- (0 / 3)	0
Zn-65	6	260	--- (0 / 3)	---	---	--- (0 / 3)	0
Cs-134	6	130	--- (0 / 3)	---	---	--- (0 / 3)	0
Cs-137	6	150	--- (0 / 3)	---	---	--- (0 / 3)	0

a. (f) is the number of positive measurements / total measurements at specified location.

b. These are the ODCM specified LLDs, actual method LLDs will be lower. See Table 4-4.

Reference Appendix A, Table A-10.1, A-10.2.

TABLE 5-2 (cont)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

COLUMBIA GENERATING STATION **DOCKET NO. 50-397**

Benton County, Washington **Calendar Year 2012**

Medium: Milk **Units: pCi/L**

Analysis Type	Total Analyses Performed	Lower Limit of Detection (LLD)[b]	Indicator Locations Mean (f)[a] Range	Location With Highest Annual Mean		Control Locations Mean (f)[a] Range	Number of Nonroutine Measurements
				Location Information	Mean (f)[a] Range		
I-131	36	1.0	--- (0 / 18)	---	---	--- (0 / 18)	0
Cs-134	36	15	--- (0 / 18)	---	---	--- (0 / 18)	0
Cs-137	36	18	--- (0 / 18)	---	---	--- (0 / 18)	0
Ba/La-140	36	15	--- (0 / 18)	---	---	--- (0 / 18)	0

a. (f) is the number of positive measurements / total measurements at specified location.

b. These are the ODCM specified LLDs, actual method LLDs will be lower. See Table 4-4.

Reference Appendix A, Tables A-11.1, A-11.2, Tables A-12.1, A-12.2.

TABLE 5-3
QUARTERLY TLD DATA SUMMARY WITH COMPARISON TO PREOPERATIONAL AND OPERATIONAL PERIODS

Results in mR/Standard Quarter

	Pre-Operational				Operational to 2011				2012 Operational			
Station	Min	Max	Std Dev	MEAN	Min	Max	Std Dev	MEAN	min	max	Std Dev	MEAN
1	19.16	23.73	2.07	21.90	18.25	27.38	1.69	22.14	21.08	22.39	0.61	21.65
2	17.34	22.81	2.09	21.10	16.43	25.55	1.58	21.66	20.85	21.57	0.33	21.09
3	18.25	21.90	1.46	20.42	16.43	24.64	1.71	20.89	19.74	20.41	0.28	20.04
4	15.51	23.73	2.65	19.96	14.60	22.81	1.69	19.57	18.87	20.34	0.70	19.30
5	18.25	22.81	1.74	20.76	16.43	23.73	1.67	20.06	19.34	19.81	0.20	19.57
6	18.25	21.90	1.50	20.19	16.43	23.73	1.58	20.20	18.83	20.00	0.51	19.30
7	19.16	22.81	1.69	21.33	16.43	24.64	1.74	21.11	19.97	20.98	0.45	20.59
8	21.90	25.55	1.50	23.84	15.51	27.38	1.99	23.27	22.81	23.63	0.39	23.06
9	15.51	21.90	2.00	19.85	16.43	23.73	1.69	19.74	19.89	20.96	0.48	20.29
10	19.16	22.81	1.38	20.99	16.43	24.64	1.67	20.99	19.87	20.70	0.40	20.11
11	19.16	22.81	1.38	21.44	16.43	24.64	1.49	21.55	21.26	21.45	0.09	21.37
12	20.99	24.64	1.60	23.04	18.25	26.46	1.73	23.15	22.38	22.87	0.22	22.65
13	19.16	22.81	1.54	21.44	17.34	27.38	1.80	21.35	20.16	20.56	0.19	20.42
14	19.16	24.64	2.07	21.90	17.34	25.55	1.52	21.49	20.01	21.01	0.46	20.69
15	20.99	25.55	1.37	23.15	17.34	27.38	1.71	23.08	21.46	23.59	0.89	22.37
16	20.08	23.73	1.52	22.13	16.43	26.46	1.82	21.98	20.59	22.05	0.68	21.05
17	19.16	23.73	1.62	22.81	17.34	26.46	1.62	22.54	21.18	22.00	0.39	21.76
18	20.08	23.73	1.27	22.13	16.43	25.55	1.68	22.03	20.45	21.95	0.64	21.33
19	20.08	23.73	1.24	22.01	17.34	25.55	1.59	22.18	21.06	21.68	0.26	21.37
20	19.16	23.73	1.76	21.44	17.34	25.55	1.65	21.82	20.47	21.77	0.60	21.14
21	19.16	21.90	1.25	20.68	15.51	23.73	1.44	20.35	18.74	20.24	0.64	19.52
22	19.16	23.73	1.58	22.01	16.43	25.55	1.50	21.77	20.15	21.43	0.54	20.78
23	20.08	23.73	1.49	21.60	17.34	25.55	1.64	21.17	19.93	21.59	0.69	20.67
24	20.99	23.73	1.09	21.90	17.34	50.50	3.24	22.12	20.42	22.63	0.90	21.51
25	20.99	24.64	1.46	23.15	17.34	27.38	1.93	22.78	20.89	23.15	0.94	22.12
40	17.34	21.90	1.70	19.94	15.51	24.64	1.76	20.08	17.95	19.72	0.79	19.10
41	20.08	25.55	2.00	23.73	17.34	27.38	2.06	22.46	20.96	21.96	0.47	21.66
42	20.08	23.73	1.61	22.36	17.34	26.46	1.95	22.02	20.24	21.53	0.53	20.95
43	20.99	24.64	1.49	23.12	16.43	27.38	2.15	22.62	21.38	23.43	0.96	22.04
44	19.16	22.81	1.34	21.12	15.51	24.64	1.97	20.83	19.66	20.76	0.51	20.06
45	19.16	22.81	1.37	21.25	16.43	25.55	1.81	21.21	19.62	21.00	0.58	20.19
46	22.81	28.29	2.10	26.10	19.16	31.94	2.17	26.51	25.41	26.43	0.57	25.92
47	17.34	20.99	1.73	19.85	15.51	26.28	1.73	20.25	19.18	20.37	0.55	19.58
49	21.90	21.90	-	21.90	16.43	25.55	1.57	21.95	20.76	21.74	0.43	21.13
50	20.08	20.08	-	20.08	16.43	26.46	1.77	21.63	20.03	21.50	0.64	20.65
51	19.16	21.90	1.18	20.53	16.43	24.64	1.64	21.11	19.86	20.72	0.36	20.25
53	24.64	24.64	-	24.64	18.25	29.57	2.05	23.42	21.15	22.64	0.67	21.67
54	23.73	23.73	-	23.73	18.18	26.46	2.01	22.09	21.15	21.98	0.38	21.42
55	20.99	20.99	-	20.99	16.43	25.55	1.52	21.45	21.04	21.77	0.31	21.45
56	21.90	21.90	-	21.90	16.43	25.55	1.76	21.89	20.71	23.14	1.08	21.80
58	-	-	-	-	18.07	20.53	0.68	19.22	18.69	19.63	0.42	19.05
65	-	-	-	-	17.73	22.72	1.23	19.91	19.22	20.38	0.51	19.65

TABLE 5-3 (cont)
QUARTERLY TLD DATA SUMMARY WITH COMPARISON TO PREOPERATIONAL AND OPERATIONAL PERIODS

Results in mR/Standard Quarter

	Pre-Operational				Operational to 2011				2012 Operational			
Station	Min	Max	Std Dev	MEAN	Min	Max	Std Dev	MEAN	min	max	Std Dev	MEAN
71(1S)	20.08	22.81	1.58	21.90	18.25	30.39	2.49	25.28	24.25	25.67	0.62	24.90
72(2S)	21.90	23.73	0.91	22.81	18.25	29.65	1.99	24.35	22.94	24.34	0.58	23.67
73(3S)	20.08	21.90	0.91	20.99	16.43	24.64	1.56	21.28	19.62	21.37	0.82	20.59
74(4S)	23.73	24.64	0.53	24.03	18.25	28.29	1.90	23.40	22.66	23.45	0.35	22.95
75(5S)	19.16	21.90	1.39	20.38	15.51	26.46	1.89	22.29	21.69	22.66	0.44	22.30
76(6S)	20.99	22.81	0.91	21.90	17.34	26.46	1.69	22.01	21.53	24.48	1.54	23.05
77(7S)	21.90	23.73	0.91	22.81	17.34	25.55	1.61	22.04	21.13	21.89	0.31	21.53
78(8S)	21.90	23.73	1.05	22.51	17.34	25.55	1.59	21.53	20.72	21.53	0.35	21.08
79(9S)	22.81	23.73	0.53	23.12	17.34	25.55	1.65	21.88	20.83	20.91	0.03	20.88
80(10S)	20.99	22.81	0.91	21.90	16.43	25.55	1.76	21.01	20.31	20.86	0.27	20.47
81(11S)	20.08	23.73	1.90	22.20	17.34	25.55	1.54	21.54	20.36	21.63	0.55	20.99
82(12S)	21.90	24.64	1.39	23.42	17.34	26.46	1.57	22.42	21.60	23.58	0.84	22.40
83(13S)	21.90	23.73	0.91	22.81	17.34	26.46	1.87	22.32	21.40	21.80	0.18	21.63
84(14S)	20.99	22.81	1.05	22.20	16.43	27.17	1.78	22.29	20.88	21.98	0.46	21.37
85(15S)	21.90	24.64	1.58	23.73	17.34	27.83	1.90	23.10	21.81	23.80	0.84	22.89
86(16S)	21.90	23.73	0.91	22.81	18.25	31.28	2.63	26.09	27.22	28.81	0.70	28.06
87	-	-	-	-	19.34	33.28	5.08	28.18	27.48	34.34	3.16	30.91
88	-	-	-	-	17.05	31.67	4.69	26.55	23.64	25.84	1.04	24.57
89	-	-	-	-	19.25	29.38	3.28	25.86	25.23	26.68	0.64	26.11
90	-	-	-	-	18.37	20.48	0.58	19.08	18.26	18.75	0.20	18.54
119B	-	-	-	-	19.24	25.64	1.49	22.12	21.63	22.95	0.60	22.21
119Ctrl	-	-	-	-	19.53	26.55	1.42	21.81	21.94	22.80	0.40	22.22
120East	-	-	-	-	19.78	31.12	1.86	22.46	21.23	22.63	0.59	21.88
121 (ISFSI)	-	-	-	-	19.52	130.27	24.43	76.50	70.70	84.21	6.13	77.75
122 (ISFSI)	-	-	-	-	19.62	42.49	7.44	30.66	35.22	35.61	0.17	35.41
123 (ISFSI)	-	-	-	-	24.99	160.33	40.21	117.18	112.94	117.88	2.38	114.31
124 (ISFSI)	-	-	-	-	26.89	201.05	51.04	145.96	129.88	137.60	3.42	134.71
125 (ISFSI)	-	-	-	-	26.46	135.52	30.85	102.82	99.32	101.82	1.14	100.84
126 (ISFSI)	-	-	-	-	26.00	145.68	33.35	83.53	99.42	103.21	1.55	101.28
127 (ISFSI)	-	-	-	-	28.97	102.08	20.41	65.13	74.91	79.37	2.05	76.46
128 (ISFSI)	-	-	-	-	25.64	187.25	49.97	97.44	119.08	130.96	5.01	126.05
129 (ISFSI)	-	-	-	-	30.16	138.08	34.22	78.04	94.69	101.08	2.96	99.06
136A (ISFSI)	-	-	-	-	28.99	205.64	64.07	97.49	139.73	148.91	3.85	144.50
137A (ISFSI)	-	-	-	-	29.47	238.74	73.24	107.89	151.77	164.36	5.31	158.65
138A (ISFSI)	-	-	-	-	28.28	196.68	55.77	89.58	124.75	129.96	2.71	127.20
Site 1	-	-	-	-	11.92	20.19	1.53	18.12	17.74	19.04	0.65	18.42
Site 4	-	-	-	-	17.02	32.44	3.02	18.96	17.67	19.31	0.76	18.81

Table 5-3 Notes:

The preoperational mean is from 1982-1983 data. Station 65 was added in 1997.

Stations 119B, 119Ctrl, and 120 were added in 1995. Stations 121 and 122 were added in 1998 for the ISFSI.

Stations 123-129 and 136A-138A were added in the 2nd quarter of 2002. Stations Site 1 and Site 4 were added in 2006.

Stations 58 and 87 to 90 were added in 2008 to monitor remediation work at DOE 618-11 burial site.

6.0 QUALITY ASSURANCE AND QUALITY CONTROL

6.0 QUALITY ASSURANCE AND QUALITY CONTROL

The REMP is designed to meet the quality assurance (QA) and quality control (QC) criteria of the NRC Regulatory Guide 4.15[7] and 10 CFR 50 Appendix B[15]. The contractors used for sample analysis, Energy Northwest Environmental Services, Battelle PNNL, and Mission Support Alliance, maintain quality control programs to ensure that analytical results are accurate, precise, and defensible. The following sections summarize the quality assurance and quality control aspects of the TLD, sample collection, and sample analysis components of the REMP.

6.1 Quality Control for the Energy Northwest Environmental TLD Program

The Quality Control program for the Energy Northwest REMP TLDs covers the preparation, transportation, deployment, collection, storage, processing, and evaluation.

From the time the TLDs are annealed to the time they are placed in the field, they are stored and transported with control TLDs. Two sets of control TLDs are used, the building controls and the transportation (trip) controls. The building controls monitor the exposure that the TLDs receive while being transported to and from the TLD vendor and while in storage awaiting deployment and analysis. The trip controls accompany the field TLDs when transported to and from the vendor and also during deployment and collection in the field. The building controls and trip controls are stored in a low background lead shield while the field TLDs are deployed. If the trip control results are greater than the building control results, the difference between the two is subtracted from the field dosimeters to account for exposure during transit.

Reader QC dosimeters serve as checks that the dosimeter reader calibration is satisfactory and that the TLDs were processed correctly. These TLDs are annealed and then given a known exposure (typically 100 mR) to a cesium-137 source. The number of QC dosimeters used during each processing is generally 10% of the number of field dosimeters. Evaluation of the 2012 reader QC dosimeter results indicated satisfactory agreement for all periods. The quarterly average reader QC results are presented in Table 6-1.

TLDs designated as spikes are prepared by the Energy Northwest Radiation Protection Department by exposing the TLDs to a calibrated source to produce a known exposure. The spiked dosimeters are submitted and processed with the field dosimeters to further verify the accuracy and precision of the environmental TLD results. Quarterly spikes receive a target exposure of 22 mR. Evaluation of the 2012 spiked dosimeter results indicated satisfactory agreement for all periods. Spiked TLD results are presented in Table 6-1.

6.2 Quality Control for the Environmental Sample Program

Quality control for the environmental sample program encompasses both the sample collection and sample analysis processes. Results are reviewed for correctness, reasonableness, and data entry errors. Sample results that are suspect are normally investigated. A crosscheck program utilizing blind samples supplied by an outside vendor is maintained for all sample media routinely analyzed.

6.2.1 Sample Collection Quality Control

Duplicate samples are collected and submitted for analysis when practical. The duplicate samples are used to assess the repeatability of the sample collection process and the precision of the analytical method.

6.2.2 Laboratory Instruments Quality Control

Analytical Balances - Analytical balances used in the laboratory for sample preparations are calibrated every six months. Performance checks are performed prior to use and span the range of intended use. Performance check results are documented on the sample preparation forms and kept with the analytical results.

Analytical Instruments – Analytical instruments used for determining radioactive emissions in samples are calibrated for efficiency annually using standard reference material traceable to the National Institute of Standards and Technology (NIST). Below is a summary of the routine QC practices for the different analytical instruments.

- Gas-flow Proportional Counter: Background and performance checks are performed daily when in use. Control charts are maintained with two and three-sigma limits specified; the checks must fall within the two-sigma warning limits prior to use. Mid-batch QC and end of batch performance checks are typically performed.
- Gamma Spectrometers: Performance checked daily for efficiency, energy per channel relationship, peak resolution, and background when in use. The checks are performed and plotted for both a low and high energy peak. Efficiency checks are held within two-sigma control limits. Long duration background checks are performed quarterly. Low level batch QC check is typically analyzed with each set of samples.
- Liquid Scintillation Counter: Background and performance checks are performed daily when in use. A performance check standard of the same matrix as the samples is analyzed and results trended. A control chart with acceptance limits specified is maintained. A low level batch QC check is typically analyzed with each set of samples.

6.2.3 Sample Batch Quality Control

Sample batch analysis is normally performed with sample blanks and known-addition samples (or spiked samples) included. The type of known addition sample used is dictated by the sample media being analyzed, the primary analytes of interest, and the method being used. The following is a summary of sample batch QC activities.

Iodine-131 Cartridges - At least one known-addition sample was analyzed with each batch. In most cases, a charcoal cartridge of the same type used for sample collection but spiked with barium-133 is used. The 356 keV peak of barium-133 serves as a proxy for the 364 keV peak of iodine-131. Samples from the control location serve as blanks.

Gross Beta Filters - At least one unused blank air particulate filter and at least one known-addition air particulate filter was analyzed with each batch.

Aqueous Samples – In most cases, samples collected from the control locations were analyzed as blanks. A known-addition sample is typically analyzed with each batch of samples.

Gross Alpha/Beta in Water - Blank samples were prepared from reagent grade water and analyzed with each batch of samples. One known addition sample and one replicate sample is normally analyzed with each batch.

Tritium in Water – A blank and a low level known addition sample are typically analyzed with each batch. A replicate sample was prepared and analyzed inside of each batch in most cases.

6.3 Laboratory Intercomparison Program Participation and Results

Participation in cross check intercomparison studies is mandatory for laboratories performing analyses of CGS REMP samples. Intercomparison studies provide a consistent and effective means to evaluate the accuracy and precision of analyses performed by a laboratory. Study results should fall within specified control limits. Results that fall outside the control limits are investigated and corrective action taken.

The Energy Northwest Environmental Services Laboratory participated in three proficiency testing studies involving radioactive measurements provided by Environmental Resource Associates (ERA) during 2012. The Laboratory's intercomparision program was further supplemented by additional cross check media provided by ERA. The Laboratory's intercomparison program results for 2012 are shown in Table 6-2. All 2012 Laboratory intercomparison program results were within acceptable limits. Participation in the ERA studies serves to meet the intercomparision program requirements specified in the ODCM

In addition to the studies noted above, the CGS REMP maintains a split sample program with the State of Washington Department of Health. Split samples are sent to a State of Washington Lab on a scheduled frequency where they are independently analyzed. This program provides an additional check on the accuracy and precision of the results reported in this document.

6.4 Laboratory Quality Control Program Problems and Improvements

An investigation of the extraction method used to quantify iodine-131 in milk was performed as part of the RAD 90 ERA study in an effort to improve the low bias the Lab has historically had for this analysis. Additional sample material was obtained and testing involving the use of carrier solution concentrations and mixing was undertaken. It was found that carrier concentrations were not critical but that the anion resin needed to be thoroughly suspended in the milk during mixing for optimum recovery yield. Procedural guidance was revised to ensure adequate mixing.

TABLE 6-1
2012 ENVIRONMENTAL SPIKED DOSIMETER RESULTS

PERIOD	SPIKE ID	KNOWN EXPOSURE (mR)	REPORTED EXPOSURE (mR)	BIAS (%)
1st Quarter	ENW Spike	22	21.8	- 0.9%
	ENW Spike	22	21.1	-4.1%
	ENW Spike	22	21.3	-3.2%
	PNNL Avg. Reader	100	97.9	-2.1%
2nd Quarter	ENW Spike	22	21.0	-4.5%
	ENW Spike	22	21.7	-1.4%
	ENW Spike	22	21.6	-1.8%
	PNNL Avg. Reader	100	99.9	-0.1%
3rd Quarter	ENW Spike	22	21.8	-0.9%
	ENW Spike	22	21.9	-0.5%
	ENW Spike	22	21.6	-1.8%
	PNNL Avg. Reader	100	99.7	0.9%
4th Quarter	ENW Spike	22	21.3	-3.2%
	ENW Spike	22	21.5	-2.3%
	ENW Spike	22	21.7	-1.4%
	PNNL Avg. Reader	100	101.0	1.0%

TABLE 6-2
ENW REMP PROGRAM CROSS CHECK PERFORMANCE RESULTS

ERA MRAD-16 Results Spring 2012					
Standard/Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation
Air Filter Radionuclides					
Americium-241	pCi/Filter	77.5	68.8	42.4 - 93.1	Acceptable
Cesium-134	pCi/Filter	594	656	417 - 814	Acceptable
Cesium-137	pCi/Filter	1349	1130	849 - 1480	Acceptable
Cobalt-60	pCi/Filter	946	880	681 - 1100	Acceptable
Manganese-54	pCi/Filter	< 10	< 50.0	0.00 - 50.0	Acceptable
Zinc-65	pCi/Filter	1142	897	642 - 1240	Acceptable
Air Filter Gross Alpha/Beta					
Gross Alpha	pCi/Filter	79	77.8	26.1 - 121	Acceptable
Gross Beta	pCi/Filter	44	52.5	33.2 - 76.5	Acceptable
Water Radionuclides					
Americium-241	pCi/L	124	135	91.0 - 181	Acceptable
Cesium-134	pCi/L	542	609	447 - 700	Acceptable
Cesium-137	pCi/L	1267	1250	1060 - 1500	Acceptable
Cobalt-60	pCi/L	864	875	760 - 1020	Acceptable
Manganese-54	pCi/L	< 10	< 100	0.00 - 100	Acceptable
Zinc-65	pCi/L	811	749	624 - 945	Acceptable
Water Gross Alpha/Beta					
Gross Alpha	pCi/L	101	103	36.6 - 160	Acceptable
Gross Beta	pCi/L	32.5	43.7	25.0 - 64.7	Acceptable
Water Tritium					
Tritium	pCi/L	8736	9150	6130 - 13000	Acceptable
Soil Radionuclides					
Actinium-228	pCi/kg	1258	1570	1010 - 2180	Acceptable
Americium-241	pCi/kg	982	938	549 - 1220	Acceptable
Bismuth-212	pCi/kg	826	1550	413 - 2280	Acceptable
Bismuth-214	pCi/kg	1112	1100	665 - 1590	Acceptable
Cesium-134	pCi/kg	2132	2180	1420 - 2620	Acceptable
Cesium-137	pCi/kg	9254	8770	6720 - 11300	Acceptable
Cobalt-60	pCi/kg	3681	3500	2370 - 4820	Acceptable
Lead-212	pCi/kg	1233	1510	992 - 2110	Acceptable
Lead-214	pCi/kg	1151	1110	647 - 1650	Acceptable
Manganese-54	pCi/kg	< 75	< 1000	0.00 - 1000	Acceptable
Potassium-40	pCi/kg	10755	11600	8470 - 15600	Acceptable
Zinc-65	pCi/kg	4042	3650	2910 - 4850	Acceptable

TABLE 6-2 (cont)
ENW REMP PROGRAM CROSS CHECK PERFORMANCE RESULTS

ERA MRAD-17 Results Fall 2012					
Standard/Analyte	**Units**	**Reported Value**	**Assigned Value**	**Acceptance Limits**	**Performance Evaluation**
Air Filter Radionuclides					
Americium-241	pCi/Filter	65	67.1	41.4 - 90.8	Acceptable
Cesium-134	pCi/Filter	383	429	273 - 532	Acceptable
Cesium-137	pCi/Filter	930	793	596 - 1040	Acceptable
Cobalt-60	pCi/Filter	554	521	403 - 651	Acceptable
Manganese-54	pCi/Filter	< 10	< 50.0	0.00 - 50.0	Acceptable
Zinc-65	pCi/Filter	878	692	496 - 955	Acceptable
Air Filter Gross Alpha/Beta					
Gross Alpha	pCi/Filter	86.3	87.5	29.3 - 136	Acceptable
Gross Beta	pCi/Filter	55.3	62.7	39.6 - 91.4	Acceptable
Water Radionuclides					
Americium-241	pCi/L	89	91.8	61.8 - 123	Acceptable
Cesium-134	pCi/L	784	876	643 - 1010	Acceptable
Cesium-137	pCi/L	2091	2040	1730 - 2440	Acceptable
Cobalt-60	pCi/L	1241	1260	1090 - 1470	Acceptable
Manganese-54	pCi/L	< 12	< 100	0.00 - 100	Acceptable
Zinc-65	pCi/L	944	879	733 - 1110	Acceptable
Water Gross Alpha/Beta					
Gross Alpha	pCi/L	77.2	76.9	27.3 - 119	Acceptable
Gross Beta	pCi/L	44.9	62.6	35.8 - 92.7	Acceptable
Water Tritium					
Tritium	pCi/L	18775	18700	12500 - 26700	Acceptable
Soil Radionuclides					
Actinium-228	pCi/kg	1344	1240	795 - 1720	Acceptable
Americium-241	pCi/kg	716	728	426 - 946	Acceptable
Bismuth-212	pCi/kg	946	1240	330 - 1820	Acceptable
Bismuth-214	pCi/kg	1201	1290	777 - 1860	Acceptable
Cesium-134	pCi/kg	1963	1980	1290 - 2380	Acceptable
Cesium-137	pCi/kg	3746	3470	2660 - 4460	Acceptable
Cobalt-60	pCi/kg	4549	4310	2910 - 5930	Acceptable
Lead-212	pCi/kg	1216	1240	812 - 1730	Acceptable
Lead-214	pCi/kg	1365	1290	753 - 1920	Acceptable
Manganese-54	pCi/kg	< 100	< 1000	0.00 - 1000	Acceptable
Potassium-40	pCi/kg	10588	12300	8980 - 16500	Acceptable
Zinc-65	pCi/kg	3239	2880	2290 - 3830	Acceptable

TABLE 6-2 (cont)
ENW REMP PROGRAM CROSS CHECK PERFORMANCE RESULTS

2012 ERA Crosscheck Result Iodine-131 Charcoal Cartridge						
Sample ID	**Analysis**	**Units**	**Result**	**Ref Value**	**Acceptance Limits**	**Performance Evaluation**
04041203A	Iodine-131	pCi/Filter	190.3	178	137 – 235	Acceptable
09141205A	Iodine-131	pCi/Filter	387	333	257 - 440	Acceptable

2012 ERA RAD Results Iodine-131 in Milk						
Sample ID	**Analysis**	**Units**	**Result**	**Ref Value**	**Acceptance Limits**	**Performance Evaluation**
RAD-90	Iodine-131	pCi/L	22.2	26.5	22.0 – 31.2	Acceptable

7.0 REFERENCES

7.0 REFERENCES

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2. Nuclear Regulatory Commission Fact Sheet "Fact Sheet on Radiation Monitoring at Nuclear Power Plants and the "Tooth Fairy" Issue", NRC Library, www.nrc.gov/reading-rm/doc-collections/fact-sheets/.

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4. U.S. Nuclear Regulatory Commission, "Programs For Monitoring Radioactivity in the Environs of Nuclear Power Plants," Regulatory Guide 4.1, Revision 1, April 1975.

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6. U.S. Nuclear Regulatory Commission, "An Acceptable Radiological Environmental Monitoring Program," Assessment Branch Technical Position Revision 1, November 1979.

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20. PNNL, 2009, "Hanford Site Environmental Monitoring Report for Calendar Year 2008", PNNL-18427, Pacific Northwest National Laboratory, Richland, WA

21. US DOE, 2012, "Hanford Site Environmental Monitoring Report for Calendar Year 2011", DOE/RL-2011-119 Rev 0, US Dept. of Energy, Richland, WA

22. US DOE, 1995, "Hanford Site Background: Evaluation of Existing Soil Radionuclide Data", DOE/RL-95-55, US Dept. of Energy, Richland, WA.

8.0 ERRATA

8.0 ERRATA

Revisions to the Columbia Generating Station's 2011 Annual Radiological Environmental Operating Report are listed below.

In Appendix A, Table A-7.1, the header description for Station 29 incorrectly listed this location as a River/Drinking Control. The correct description should have been River/Drinking Indicator.

In Appendix A, Table B-13.1, incorrect collection period dates were listed for Stations 89 and 90. The corrected data is listed below.

TABLE B-13.1

GROSS BETA ON AIR PARTICULATE FILTERS - OTHER LOCATIONS

Results in pCi per Cubic Meter

Collection Period			Station 89 Result		Station 89 Error	Station 90 Result		Station 90 Error
02/22/11	-	03/01/11	1.07E-02	±	4.16E-04	8.94E-03	±	4.37E-04
03/01/11	-	04/05/11	1.03E-02	±	1.80E-04	1.14E-02	±	1.80E-04
04/05/11	-	05/03/11	9.35E-03	±	1.98E-04	9.73E-03	±	1.98E-04
05/03/11	-	06/07/11	9.41E-03	±	1.75E-04	9.52E-03	±	1.80E-04
06/28/11	-	07/05/11	8.37E-03	±	2.21E-04	8.75E-03	±	2.29E-04
07/05/11	-	08/02/11	9.86E-03	±	2.45E-04	9.45E-03	±	2.54E-04

APPENDIX A

2012 ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT COLUMBIA GENERATING STATION

DATA TABLES A and B

Covers Sample Collection Period Starting January 2012 Through December 2012

RADIOLOGICAL
ENVIRONMENTAL
MONITORING PROGRAM

Prepared by:

Energy Northwest - Environmental Services Staff
Richland, WA

APPENDIX A - TABLE OF CONTENTS
TABLE A: ROUTINE RESULTS

APPENDIX A - TABLE OF CONTENTS

TABLE B: SPECIAL INTEREST SAMPLE RESULTS

FORWARD

Since mid-1984, the results of the REMP analyses have been presented as net results calculated from total counts minus the observed background counts of the detection method. Counting results for low level samples are often within the counting error of the background determination; consequently results can range from negative to positive values in these samples. Though most of the analytical results presented in this Appendix are below the detection limit, listing the actual calculated value, even when it is negative or below the detection limit, prevents positive biases and loss of individual results inherent in the use of "less than" (<) values. It is recommended practice to report radiological environmental data in this manner.

Most results listed in this Appendix are accompanied by a plus or minus ($\pm$) error value. In most cases the error value represents the two sigma counting uncertainty determined for that particular analysis. These error values are in the same units as the listed activity values. The two sigma error value represents the range that a recount of the same sample would be expected to fall within 95% of the time, based on the statistics encountered in the original count.

Also included in most cases are the analysis specific, minimum detectable activity (MDA) values. Though similar in concept to the LLD, these values are based on the statistics encountered in the specific sample count itself and not a blank determination. As such, they are a *a posteriori* (after the fact) determination where the LLD is a *a priori* (before the fact) determination. These values were included as they represent the level of activity that would have needed to be present in the sample for a positive identification to be made.

TABLE A-1.1

2012 QUARTERLY TLD RESULTS

Results in milli-Roentgen (mR) per Standard Quarter

Station ID	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Quarterly Sum
1	21.21	21.08	21.90	22.39	86.58
2	20.85	20.88	21.57	21.08	84.38
3	19.74	20.03	19.98	20.41	80.16
4	18.97	19.02	18.87	20.34	77.19
5	19.60	19.51	19.34	19.81	78.27
6	18.83	19.07	19.29	20.00	77.19
7	20.55	19.97	20.84	20.98	82.35
8	22.92	22.81	23.63	22.86	92.22
9	20.02	20.30	20.96	19.89	81.16
10	19.87	19.87	20.02	20.70	80.45
11	21.26	21.43	21.45	21.34	85.47
12	22.38	22.87	22.78	22.57	90.60
13	20.54	20.16	20.43	20.56	81.68
14	20.79	20.01	20.95	21.01	82.76
15	21.46	22.22	22.21	23.59	89.47
16	20.84	20.59	20.72	22.05	84.19
17	21.88	21.18	22.00	21.98	87.03
18	21.33	20.45	21.59	21.95	85.31
19	21.06	21.32	21.41	21.68	85.47
20	20.81	20.47	21.52	21.77	84.57
21	19.30	18.74	19.79	20.24	78.06
22	20.15	20.61	20.94	21.43	83.13
23	19.93	21.59	20.46	20.72	82.70
24	20.42	21.43	21.56	22.63	86.05
25	20.89	22.42	22.00	23.15	88.46
40	19.24	19.50	17.95	19.72	76.41
41	21.83	21.89	20.96	21.96	86.64
42	21.53	20.24	21.02	21.01	83.80
43	21.38	21.93	23.43	21.41	88.16
44	19.66	20.11	19.72	20.76	80.25
45	19.62	20.09	20.06	21.00	80.77
46	25.41	25.44	26.43	26.40	103.68
47	19.54	19.23	19.18	20.37	78.32
49	20.95	20.76	21.06	21.74	84.51
50	20.03	20.78	20.30	21.50	82.61
51	20.30	20.14	19.86	20.72	81.02
53	21.54	21.15	22.64	21.35	86.68
54	21.98	21.25	21.15	21.32	85.70
55	21.58	21.39	21.77	21.04	85.78
56	20.71	22.17	21.17	23.14	87.19
65	19.22	19.41	19.59	20.38	78.61
71	24.55	24.25	25.67	25.11	99.59
72	23.83	22.94	24.34	23.55	94.66

TABLE A-1.1

2012 QUARTERLY TLD RESULTS

Results in milli-Roentgen (mR) per Standard Quarter

Station ID	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Quarterly Sum
73	21.17	19.62	21.37	20.21	82.36
74	22.90	22.66	23.45	22.78	91.79
75	21.69	22.66	22.31	22.55	89.21
76	21.53	24.28	21.91	24.48	92.20
77	21.52	21.13	21.89	21.57	86.11
78	20.90	20.72	21.16	21.53	84.30
79	20.83	20.90	20.91	20.86	83.50
80	20.32	20.86	20.31	20.36	81.86
81	20.74	20.36	21.63	21.21	83.94
82	22.33	21.60	23.58	22.10	89.61
83	21.59	21.40	21.80	21.75	86.54
84	20.88	21.40	21.24	21.98	85.50
85	21.81	23.80	22.76	23.19	91.56
86	28.42	27.22	28.81	27.79	112.24

TABLE A-1.2

2012 QUARTERLY TLD RESULTS- SUMMARY

Results in milli-Roentgen (mR) per Standard Quarter

Location	Average Activity	Activity Low	Activity High	Number of Samples
Quarterly Indicator TLDs	21.42	17.95	28.81	224
Quarterly Control TLDs	20.29	19.89	20.96	4

TABLE A-2.1

GROSS BETA ON AIR PARTICULATE FILTERS

Results in pCi per Cubic Meter

Collection Period	Station 01 Result	Station 01 Error	Station 04 Result	Station 04 Error	Station 05 Result	Station 05 Error
01/03/12 - 01/10/12	2.11E-02	8.79E-04	2.09E-02	8.98E-04	1.82E-02	8.40E-04
01/10/12 - 01/17/12	2.02E-02	8.68E-04	1.90E-02	8.91E-04	1.87E-02	8.53E-04
01/17/12 - 01/24/12	1.85E-02	8.32E-04	1.85E-02	8.66E-04	1.84E-02	8.55E-04
01/24/12 - 01/31/12	7.28E-03	5.74E-04	8.00E-03	6.14E-04	7.18E-03	5.90E-04
01/31/12 - 02/07/12	1.79E-02	8.15E-04	1.85E-02	8.73E-04	1.75E-02	8.20E-04
02/07/12 - 02/14/12	3.42E-02	1.12E-03	3.49E-02	1.17E-03	3.12E-02	1.09E-03
02/14/12 - 02/21/12	9.86E-03	6.22E-04	8.65E-03	5.86E-04	7.04E-03	5.57E-04
02/21/12 - 02/28/12	6.90E-03	5.44E-04	6.61E-03	5.36E-04	5.58E-03	4.99E-04
02/28/12 - 03/06/12	6.58E-03	5.34E-04	8.27E-03	5.94E-04	7.98E-03	5.77E-04
03/06/12 - 03/13/12	9.74E-03	6.30E-04	1.15E-02	6.92E-04	9.27E-03	6.14E-04
03/13/12 - 03/20/12	3.52E-03	4.42E-04	3.54E-03	4.53E-04	2.93E-03	4.11E-04
03/20/12 - 03/27/12	8.29E-03	5.77E-04	9.58E-03	6.17E-04	NVS	
03/27/12 - 04/03/12	3.83E-03	4.44E-04	4.80E-03	4.76E-04	NVS	
04/03/12 - 04/10/12	7.93E-03	5.86E-04	8.81E-03	6.06E-04	NVS	
04/10/12 - 04/17/12	1.03E-02	6.54E-04	1.20E-02	6.95E-04	9.81E-03	6.49E-04
04/17/12 - 04/24/12	1.11E-02	6.77E-04	9.13E-03	6.17E-04	1.06E-02	6.61E-04
04/24/12 - 05/01/12	4.65E-03	4.67E-04	6.08E-03	5.17E-04	3.32E-03	4.21E-04
05/01/12 - 05/07/12	6.93E-03	5.87E-04	5.65E-03	5.44E-04	8.39E-03	6.45E-04
05/07/12 - 05/15/12	1.77E-02	7.61E-04	1.91E-02	7.83E-04	1.70E-02	7.54E-04
05/15/12 - 05/22/12	1.62E-02	7.87E-04	1.64E-02	7.88E-04	1.43E-02	7.60E-04
05/22/12 - 05/29/12	8.26E-03	5.81E-04	7.89E-03	5.74E-04	7.94E-03	5.80E-04
05/29/12 - 06/05/12	9.96E-03	6.41E-04	8.78E-03	5.98E-04	1.06E-02	6.73E-04
06/05/12 - 06/12/12	4.59E-03	4.74E-04	4.61E-03	4.56E-04	4.15E-03	4.60E-04
06/12/12 - 06/19/12	6.91E-03	5.65E-04	6.63E-03	5.44E-04	6.36E-03	5.43E-04
06/19/12 - 06/26/12	7.35E-03	5.71E-04	7.87E-03	5.82E-04	7.01E-03	5.53E-04
06/26/12 - 07/03/12	6.49E-03	5.56E-04	8.17E-03	6.03E-04	6.04E-03	5.32E-04
07/03/12 - 07/10/12	1.53E-02	7.69E-04	1.54E-02	7.60E-04	1.59E-02	7.76E-04
07/10/12 - 07/17/12	1.66E-02	8.21E-04	1.65E-02	8.00E-04	1.66E-02	8.09E-04
07/17/12 - 07/24/12	1.29E-02	7.14E-04	1.36E-02	7.52E-04	1.31E-02	7.41E-04
07/24/12 - 07/31/12	1.42E-02	7.30E-04	1.40E-02	7.48E-04	1.43E-02	7.62E-04
07/31/12 - 08/07/12	1.39E-02	7.39E-04	1.36E-02	7.43E-04	1.21E-02	6.95E-04
08/07/12 - 08/14/12	2.24E-02	9.16E-04	2.31E-02	9.55E-04	2.14E-02	9.00E-04
08/14/12 - 08/21/12	1.89E-02	8.49E-04	1.75E-02	8.29E-04	1.87E-02	8.57E-04
08/22/12 - 08/29/12	1.26E-02	7.13E-04	1.35E-02	7.48E-04	1.06E-02	6.53E-04
08/28/12 - 09/04/12	1.19E-02	6.82E-04	1.23E-02	7.07E-04	9.89E-03	6.28E-04
09/04/12 - 09/11/12	1.33E-02	7.23E-04	1.41E-02	7.49E-04	1.29E-02	7.25E-04
09/11/12 - 09/18/12	1.91E-02	8.52E-04	1.96E-02	8.82E-04	1.82E-02	8.57E-04
09/18/12 - 09/25/12	3.45E-02	1.14E-03	3.53E-02	1.17E-03	3.38E-02	1.14E-03
09/25/12 - 10/02/12	3.03E-02	1.08E-03	2.88E-02	1.06E-03	2.62E-02	1.03E-03
10/02/12 - 10/09/12	2.82E-02	1.05E-03	2.73E-02	1.04E-03	2.49E-02	9.96E-04
10/09/12 - 10/16/12	2.64E-02	1.00E-03	2.46E-02	9.67E-04	2.43E-02	9.51E-04
10/16/12 - 10/23/12	8.74E-03	6.00E-04	8.64E-03	5.99E-04	9.38E-03	6.14E-04
10/23/12 - 10/30/12	9.69E-03	6.35E-04	1.06E-02	6.53E-04	9.77E-03	6.38E-04
10/30/12 - 11/06/12	9.25E-03	6.03E-04	8.78E-03	6.00E-04	8.29E-03	5.87E-04
11/06/12 - 11/13/12	1.93E-02	8.48E-04	1.86E-02	8.50E-04	1.81E-02	8.36E-04
11/13/12 - 11/20/12	1.62E-02	7.82E-04	1.46E-02	7.57E-04	1.36E-02	7.35E-04
11/20/12 - 11/27/12	9.93E-03	6.39E-04	8.99E-03	6.26E-04	1.07E-02	6.55E-04
11/27/12 - 12/04/12	2.16E-02	9.06E-04	2.14E-02	9.19E-04	2.05E-02	8.81E-04
12/04/12 - 12/11/12	6.42E-03	5.42E-04	5.83E-03	5.37E-04	4.92E-03	5.07E-04
12/11/12 - 12/18/12	9.01E-03	6.17E-04	9.14E-03	6.06E-04	7.08E-03	5.38E-04
12/18/12 - 12/26/12	7.01E-03	5.15E-04	7.45E-03	5.23E-04	6.16E-03	4.74E-04
12/26/12 - 01/02/13	1.39E-02	7.61E-04	NVS		1.52E-02	7.60E-04

NVS = Valid sample not obtained due to sampler failure.

Average MDA for analyses in Table A-2.1 was 9.14E-04.

TABLE A-2.1

GROSS BETA ON AIR PARTICULATE FILTERS

Results in pCi per Cubic Meter

Collection Period	Station 06 Result	Station 06 Error	Station 07 Result	Station 07 Error	Station 08 Result	Station 08 Error
01/03/12 - 01/10/12	2.01E-02	8.85E-04	2.08E-02	9.03E-04	1.92E-02	8.49E-04
01/10/12 - 01/17/12	2.03E-02	8.90E-04	2.07E-02	8.99E-04	1.92E-02	8.38E-04
01/17/12 - 01/24/12	1.78E-02	8.46E-04	NVS		2.21E-02	9.04E-04
01/24/12 - 01/31/12	9.12E-03	6.04E-04	8.38E-03	6.09E-04	9.22E-03	6.33E-04
01/31/12 - 02/07/12	2.14E-02	8.77E-04	2.05E-02	8.71E-04	1.88E-02	8.35E-04
02/07/12 - 02/14/12	3.43E-02	1.11E-03	3.41E-02	1.12E-03	3.45E-02	1.13E-03
02/14/12 - 02/21/12	9.72E-03	6.09E-04	1.03E-02	6.41E-04	9.43E-03	6.18E-04
02/21/12 - 02/28/12	6.51E-03	5.17E-04	6.95E-03	5.53E-04	6.75E-03	5.43E-04
02/28/12 - 03/06/12	8.06E-03	5.70E-04	8.43E-03	5.91E-04	6.22E-03	5.32E-04
03/06/12 - 03/13/12	1.14E-02	6.62E-04	1.04E-02	6.42E-04	1.30E-02	7.26E-04
03/13/12 - 03/20/12	3.43E-03	4.30E-04	4.23E-03	4.63E-04	3.33E-03	4.31E-04
03/20/12 - 03/27/12	9.70E-03	6.08E-04	9.12E-03	6.04E-04	9.54E-03	6.12E-04
03/27/12 - 04/03/12	3.79E-03	4.33E-04	4.65E-03	4.79E-04	4.19E-03	4.48E-04
04/03/12 - 04/10/12	9.83E-03	6.26E-04	9.87E-03	6.15E-04	8.89E-03	6.33E-04
04/10/12 - 04/17/12	1.02E-02	6.47E-04	9.36E-03	6.25E-04	1.00E-02	6.35E-04
04/17/12 - 04/24/12	9.73E-03	6.23E-04	1.11E-02	6.73E-04	1.16E-02	6.71E-04
04/24/12 - 05/01/12	4.37E-03	4.55E-04	4.81E-03	4.80E-04	4.94E-03	4.76E-04
05/01/12 - 05/07/12	6.26E-03	5.65E-04	7.39E-03	6.11E-04	7.00E-03	5.87E-04
05/07/12 - 05/15/12	1.78E-02	7.74E-04	1.87E-02	7.94E-04	1.68E-02	7.31E-04
05/15/12 - 05/22/12	1.51E-02	7.77E-04	1.56E-02	7.85E-04	1.56E-02	7.79E-04
05/22/12 - 05/29/12	7.97E-03	5.82E-04	8.22E-03	5.92E-04	7.77E-03	5.65E-04
05/29/12 - 06/05/12	8.71E-03	6.09E-04	9.98E-03	6.55E-04	8.38E-03	5.96E-04
06/05/12 - 06/12/12	5.83E-03	5.17E-04	5.00E-03	4.98E-04	5.11E-03	4.72E-04
06/12/12 - 06/19/12	6.27E-03	5.43E-04	5.37E-03	5.21E-04	5.94E-03	5.28E-04
06/19/12 - 06/26/12	7.13E-03	5.72E-04	5.73E-03	5.19E-04	6.29E-03	5.32E-04
06/26/12 - 07/03/12	8.33E-03	6.22E-04	7.00E-03	5.79E-04	6.68E-03	5.50E-04
07/03/12 - 07/10/12	1.46E-02	7.70E-04	1.52E-02	7.71E-04	1.50E-02	7.56E-04
07/10/12 - 07/17/12	1.73E-02	8.43E-04	1.81E-02	8.53E-04	1.61E-02	8.00E-04
07/17/12 - 07/24/12	1.34E-02	7.38E-04	1.40E-02	7.43E-04	1.31E-02	7.25E-04
07/24/12 - 07/31/12	1.39E-02	7.42E-04	1.32E-02	7.08E-04	1.28E-02	7.09E-04
07/31/12 - 08/07/12	1.37E-02	7.40E-04	1.38E-02	7.27E-04	1.38E-02	7.36E-04
08/07/12 - 08/14/12	2.15E-02	9.34E-04	2.20E-02	9.09E-04	1.99E-02	8.68E-04
08/14/12 - 08/21/12	1.80E-02	8.47E-04	1.99E-02	8.76E-04	1.86E-02	8.61E-04
08/22/12 - 08/29/12	1.30E-02	7.34E-04	1.34E-02	7.28E-04	1.18E-02	6.79E-04
08/28/12 - 09/04/12	1.26E-02	7.14E-04	1.21E-02	6.83E-04	1.14E-02	6.78E-04
09/04/12 - 09/11/12	1.42E-02	7.57E-04	1.46E-02	7.48E-04	1.38E-02	7.23E-04
09/11/12 - 09/18/12	1.90E-02	8.61E-04	2.00E-02	8.65E-04	1.83E-02	8.41E-04
09/18/12 - 09/25/12	3.67E-02	1.20E-03	3.81E-02	1.20E-03	3.44E-02	1.14E-03
09/25/12 - 10/02/12	2.89E-02	1.07E-03	3.05E-02	1.08E-03	2.78E-02	1.04E-03
10/02/12 - 10/09/12	2.72E-02	1.03E-03	2.75E-02	1.03E-03	3.03E-02	1.10E-03
10/09/12 - 10/16/12	2.53E-02	9.79E-04	2.65E-02	1.01E-03	2.40E-02	9.52E-04
10/16/12 - 10/23/12	9.28E-03	6.14E-04	8.42E-03	6.01E-04	8.54E-03	5.85E-04
10/23/12 - 10/30/12	1.15E-02	6.75E-04	1.16E-02	6.88E-04	1.01E-02	6.35E-04
10/30/12 - 11/06/12	8.26E-03	5.64E-04	8.13E-03	5.71E-04	9.17E-03	6.21E-04
11/06/12 - 11/13/12	1.85E-02	8.40E-04	1.81E-02	8.31E-04	1.89E-02	8.51E-04
11/13/12 - 11/20/12	1.52E-02	7.67E-04	1.85E-02	8.41E-04	1.54E-02	7.36E-04
11/20/12 - 11/27/12	1.01E-02	6.44E-04	9.36E-03	6.22E-04	8.87E-03	5.87E-04
11/27/12 - 12/04/12	2.33E-02	9.48E-04	2.10E-02	8.94E-04	2.05E-02	8.69E-04
12/04/12 - 12/11/12	6.12E-03	5.37E-04	5.90E-03	5.25E-04	5.78E-03	5.09E-04
12/11/12 - 12/18/12	8.53E-03	5.82E-04	1.04E-02	6.53E-04	8.13E-03	5.58E-04
12/18/12 - 12/26/12	7.75E-03	5.23E-04	8.12E-03	5.00E-04	6.71E-03	4.75E-04
12/26/12 - 01/02/13	1.25E-02	6.99E-04	1.40E-02	7.19E-04	1.59E-02	7.47E-04

NVS = Valid sample not obtained due to sampler failure.

Average MDA for analyses in Table A-2.1 was 9.14E-04.

TABLE A-2.1

GROSS BETA ON AIR PARTICULATE FILTERS

Results in pCi per Cubic Meter

Collection Period	Station 09 Result	Station 09 Error	Station 21 Result	Station 21 Error	Station 23 Result	Station 23 Error
01/03/12 - 01/10/12	1.58E-02	7.90E-04	1.86E-02	8.35E-04	2.39E-02	1.14E-03
01/10/12 - 01/17/12	1.45E-02	7.56E-04	2.10E-02	8.81E-04	2.23E-02	9.23E-04
01/17/12 - 01/24/12	1.45E-02	7.43E-04	1.99E-02	8.74E-04	1.93E-02	8.70E-04
01/24/12 - 01/31/12	6.88E-03	5.63E-04	8.41E-03	6.18E-04	9.88E-03	6.59E-04
01/31/12 - 02/07/12	2.19E-02	9.16E-04	1.74E-02	8.10E-04	1.83E-02	8.32E-04
02/07/12 - 02/14/12	2.90E-02	1.05E-03	3.46E-02	1.14E-03	3.67E-02	1.18E-03
02/14/12 - 02/21/12	7.64E-03	5.72E-04	1.03E-02	6.47E-04	1.03E-02	6.49E-04
02/21/12 - 02/28/12	6.39E-03	5.30E-04	6.45E-03	5.23E-04	6.21E-03	5.20E-04
02/28/12 - 03/06/12	8.70E-03	6.06E-04	8.57E-03	5.89E-04	7.93E-03	5.97E-04
03/06/12 - 03/13/12	9.32E-03	6.22E-04	1.05E-02	6.40E-04	1.19E-02	7.08E-04
03/13/12 - 03/20/12	3.29E-03	4.32E-04	5.24E-03	4.97E-04	3.08E-03	4.42E-04
03/20/12 - 03/27/12	9.80E-03	6.26E-04	9.27E-03	6.00E-04	9.89E-03	6.37E-04
03/27/12 - 04/03/12	4.25E-03	4.61E-04	4.66E-03	4.57E-04	6.17E-03	5.36E-04
04/03/12 - 04/10/12	1.04E-02	6.58E-04	1.01E-02	6.24E-04	1.01E-02	6.52E-04
04/10/12 - 04/17/12	9.64E-03	6.48E-04	1.19E-02	6.73E-04	1.21E-02	7.04E-04
04/17/12 - 04/24/12	1.02E-02	6.53E-04	1.20E-02	6.95E-04	1.11E-02	6.68E-04
04/24/12 - 05/01/12	4.06E-03	4.49E-04	5.17E-03	5.06E-04	6.61E-03	4.92E-04
05/01/12 - 05/07/12	7.83E-03	6.18E-04	3.23E-03	5.54E-04	7.22E-03	5.96E-04
05/07/12 - 05/15/12	1.70E-02	7.48E-04	1.85E-02	8.07E-04	1.75E-02	7.48E-04
05/15/12 - 05/22/12	1.49E-02	7.53E-04	1.56E-02	7.92E-04	1.75E-02	8.02E-04
05/22/12 - 05/29/12	8.00E-03	5.79E-04	8.58E-03	6.00E-04	7.85E-03	5.51E-04
05/29/12 - 06/05/12	9.58E-03	6.26E-04	9.49E-03	6.28E-04	1.00E-02	6.21E-04
06/05/12 - 06/12/12	5.99E-03	5.10E-04	5.32E-03	5.04E-04	5.57E-03	4.84E-04
06/12/12 - 06/19/12	5.70E-03	5.17E-04	6.56E-03	5.49E-04	6.49E-03	5.32E-04
06/19/12 - 06/26/12	6.60E-03	5.48E-04	6.95E-03	5.62E-04	7.59E-03	5.68E-04
06/26/12 - 07/03/12	6.99E-03	5.64E-04	6.95E-03	5.64E-04	6.89E-03	5.51E-04
07/03/12 - 07/10/12	1.38E-02	7.24E-04	1.51E-02	7.70E-04	1.50E-02	7.46E-04
07/10/12 - 07/17/12	1.50E-02	7.83E-04	1.99E-02	8.85E-04	1.90E-02	8.56E-04
07/17/12 - 07/24/12	1.33E-02	7.22E-04	1.30E-02	7.38E-04	1.30E-02	7.30E-04
07/24/12 - 07/31/12	1.29E-02	7.09E-04	1.65E-02	8.60E-04	1.32E-02	7.22E-04
07/31/12 - 08/07/12	1.24E-02	7.02E-04	1.43E-02	7.61E-04	1.44E-02	7.61E-04
08/07/12 - 08/14/12	1.91E-02	8.66E-04	2.23E-02	9.61E-04	2.22E-02	9.42E-04
08/14/12 - 08/21/12	1.78E-02	8.28E-04	1.92E-02	8.91E-04	1.97E-02	8.70E-04
08/22/12 - 08/29/12	1.11E-02	6.71E-04	1.26E-02	7.28E-04	1.17E-02	6.83E-04
08/28/12 - 09/04/12	1.07E-02	6.54E-04	1.10E-02	6.86E-04	1.26E-02	7.22E-04
09/04/12 - 09/11/12	1.36E-02	7.28E-04	1.51E-02	8.09E-04	1.39E-02	7.47E-04
09/11/12 - 09/18/12	1.74E-02	8.04E-04	2.06E-02	8.71E-04	1.88E-02	8.49E-04
09/18/12 - 09/25/12	3.30E-02	1.12E-03	3.47E-02	1.14E-03	3.47E-02	1.16E-03
09/25/12 - 10/02/12	2.56E-02	9.85E-04	2.75E-02	1.04E-03	2.71E-02	1.01E-03
10/02/12 - 10/09/12	1.17E-02	6.65E-04	2.88E-02	1.07E-03	2.63E-02	9.93E-04
10/09/12 - 10/16/12	1.79E-02	8.36E-04	2.43E-02	9.69E-04	2.46E-02	9.86E-04
10/16/12 - 10/23/12	7.33E-03	5.49E-04	9.46E-03	6.23E-04	8.93E-03	6.17E-04
10/23/12 - 10/30/12	1.00E-02	6.31E-04	1.02E-02	6.38E-04	1.10E-02	6.72E-04
10/30/12 - 11/06/12	7.45E-03	5.55E-04	9.24E-03	6.03E-04	8.60E-03	5.79E-04
11/06/12 - 11/13/12	1.47E-02	7.55E-04	1.87E-02	8.69E-04	1.80E-02	8.17E-04
11/13/12 - 11/20/12	1.34E-02	7.16E-04	1.50E-02	7.87E-04	9.16E-03	8.67E-04
11/20/12 - 11/27/12	6.91E-03	5.35E-04	1.07E-02	6.66E-04	9.38E-03	6.17E-04
11/27/12 - 12/04/12	1.92E-02	8.48E-04	2.14E-02	9.16E-04	2.15E-02	8.97E-04
12/04/12 - 12/11/12	5.19E-03	5.00E-04	5.28E-03	5.17E-04	6.15E-03	5.34E-04
12/11/12 - 12/18/12	7.62E-03	5.76E-04	8.90E-03	5.98E-04	9.24E-03	6.02E-04
12/18/12 - 12/26/12	5.89E-03	4.81E-04	6.99E-03	5.05E-04	7.27E-03	5.01E-04
12/26/12 - 01/02/13	1.26E-02	7.11E-04	1.32E-02	7.12E-04	1.37E-02	7.15E-04

NVS = Valid sample not obtained due to sampler failure.

Average MDA for analyses in Table A-2.1 was 9.14E-04.

TABLE A-2.1

GROSS BETA ON AIR PARTICULATE FILTERS

Results in pCi per Cubic Meter

Collection Period	Station 40 Result	Station 40 Error	Station 48 Result	Station 48 Error	Station 57 Result	Station 57 Error
01/03/12 - 01/10/12	1.73E-02	8.30E-04	2.03E-02	8.93E-04	1.89E-02	8.34E-04
01/10/12 - 01/17/12	2.00E-02	8.86E-04	1.94E-02	8.67E-04	1.68E-02	7.87E-04
01/17/12 - 01/24/12	1.61E-02	8.06E-04	1.99E-02	8.76E-04	NVS	
01/24/12 - 01/31/12	7.56E-03	6.06E-04	7.96E-03	6.12E-04	8.60E-03	6.02E-04
01/31/12 - 02/07/12	1.70E-02	7.94E-04	1.99E-02	8.80E-04	2.06E-02	9.51E-04
02/07/12 - 02/14/12	3.34E-02	1.12E-03	3.46E-02	1.15E-03	3.10E-02	1.07E-03
02/14/12 - 02/21/12	8.44E-03	5.97E-04	9.42E-03	6.37E-04	9.52E-03	6.14E-04
02/21/12 - 02/28/12	5.32E-03	4.97E-04	7.43E-03	5.45E-04	6.44E-03	5.15E-04
02/28/12 - 03/06/12	7.60E-03	5.84E-04	7.49E-03	5.44E-04	7.40E-03	5.51E-04
03/06/12 - 03/13/12	1.16E-02	6.99E-04	1.04E-02	6.18E-04	1.14E-02	6.65E-04
03/13/12 - 03/20/12	4.13E-03	4.00E-04	3.07E-03	4.24E-04	3.72E-03	4.22E-04
03/20/12 - 03/27/12	8.67E-03	5.89E-04	1.04E-02	6.36E-04	9.36E-03	5.98E-04
03/27/12 - 04/03/12	4.58E-03	4.60E-04	5.07E-03	4.83E-04	5.49E-03	4.73E-04
04/03/12 - 04/10/12	8.54E-03	5.91E-04	8.94E-03	6.11E-04	9.95E-03	6.44E-04
04/10/12 - 04/17/12	9.68E-03	6.09E-04	9.49E-03	6.32E-04	1.12E-02	6.65E-04
04/17/12 - 04/24/12	1.09E-02	6.56E-04	1.29E-02	7.10E-04	1.14E-02	6.74E-04
04/24/12 - 05/01/12	4.69E-03	4.77E-04	5.40E-03	4.96E-04	4.99E-03	4.75E-04
05/01/12 - 05/07/12	5.83E-03	5.57E-04	6.66E-03	5.83E-04	6.52E-03	5.62E-04
05/07/12 - 05/15/12	1.84E-02	7.68E-04	1.78E-02	7.55E-04	1.61E-02	7.22E-04
05/15/12 - 05/22/12	1.70E-02	8.11E-04	1.38E-02	7.28E-04	1.54E-02	7.41E-04
05/22/12 - 05/29/12	8.41E-03	5.85E-04	7.95E-03	5.63E-04	8.83E-03	5.99E-04
05/29/12 - 06/05/12	1.04E-02	6.58E-04	8.25E-03	5.77E-04	1.03E-02	6.39E-04
06/05/12 - 06/12/12	5.34E-03	4.84E-04	5.12E-03	4.65E-04	4.86E-03	4.62E-04
06/12/12 - 06/19/12	5.14E-03	4.97E-04	6.47E-03	5.38E-04	5.96E-03	5.14E-04
06/19/12 - 06/26/12	6.97E-03	5.51E-04	6.67E-03	5.46E-04	7.64E-03	5.53E-04
06/26/12 - 07/03/12	7.93E-03	5.81E-04	7.11E-03	5.59E-04	7.83E-03	5.73E-04
07/03/12 - 07/10/12	1.47E-02	7.44E-04	1.57E-02	7.58E-04	1.48E-02	7.39E-04
07/10/12 - 07/17/12	1.56E-02	7.71E-04	1.69E-02	7.93E-04	1.64E-02	7.81E-04
07/17/12 - 07/24/12	1.41E-02	7.45E-04	1.19E-02	6.86E-04	1.32E-02	7.29E-04
07/24/12 - 07/31/12	1.35E-02	7.10E-04	1.21E-02	6.74E-04	1.36E-02	7.29E-04
07/31/12 - 08/07/12	1.39E-02	7.32E-04	1.31E-02	7.05E-04	1.23E-02	8.77E-04
08/07/12 - 08/14/12	1.92E-02	8.43E-04	1.95E-02	8.35E-04	2.06E-02	8.96E-04
08/14/12 - 08/21/12	1.79E-02	8.10E-04	2.10E-02	8.71E-04	2.04E-02	8.81E-04
08/22/12 - 08/29/12	1.13E-02	6.60E-04	1.21E-02	6.78E-04	1.37E-02	7.25E-04
08/28/12 - 09/04/12	1.17E-02	6.66E-04	1.33E-02	7.08E-04	1.14E-02	6.57E-04
09/04/12 - 09/11/12	1.24E-02	6.79E-04	1.31E-02	7.02E-04	1.41E-02	7.29E-04
09/11/12 - 09/18/12	1.77E-02	8.09E-04	1.78E-02	8.04E-04	1.64E-02	7.81E-04
09/18/12 - 09/25/12	3.16E-02	1.06E-03	3.44E-02	1.11E-03	3.64E-02	1.14E-03
09/25/12 - 10/02/12	2.57E-02	9.72E-04	2.73E-02	9.94E-04	2.69E-02	9.82E-04
10/02/12 - 10/09/12	2.66E-02	9.88E-04	2.55E-02	9.50E-04	2.76E-02	9.91E-04
10/09/12 - 10/16/12	2.27E-02	9.32E-04	2.19E-02	8.87E-04	2.46E-02	9.43E-04
10/16/12 - 10/23/12	9.31E-03	6.29E-04	7.52E-03	5.40E-04	8.11E-03	5.58E-04
10/23/12 - 10/30/12	9.37E-03	5.98E-04	9.78E-03	6.03E-04	1.08E-02	6.30E-04
10/30/12 - 11/06/12	7.79E-03	5.67E-04	1.03E-02	5.99E-04	8.09E-03	5.81E-04
11/06/12 - 11/13/12	1.97E-02	8.72E-04	1.81E-02	8.27E-04	1.83E-02	8.28E-04
11/13/12 - 11/20/12	1.52E-02	7.61E-04	1.49E-02	7.57E-04	1.62E-02	7.84E-04
11/20/12 - 11/27/12	1.03E-02	6.48E-04	9.78E-03	6.13E-04	1.01E-02	6.37E-04
11/27/12 - 12/04/12	2.06E-02	8.81E-04	2.08E-02	8.75E-04	2.03E-02	8.73E-04
12/04/12 - 12/11/12	5.14E-03	5.07E-04	6.66E-03	5.44E-04	6.73E-03	5.53E-04
12/11/12 - 12/18/12	7.81E-03	5.61E-04	9.30E-03	6.05E-04	1.00E-02	6.23E-04
12/18/12 - 12/26/12	5.98E-03	4.66E-04	7.74E-03	5.23E-04	7.35E-03	5.16E-04
12/26/12 - 01/02/13	1.37E-02	7.24E-04	1.60E-02	7.76E-04	1.51E-02	7.56E-04

NVS = Valid sample not obtained due to sampler failure.

Average MDA for analyses in Table A-2.1 was 9.14E-04.

TABLE A-2.2

GROSS BETA ON AIR PARTICULATE FILTERS - SUMMARY

Results in pCi per cubic meter

LOCATION	Average Activity	Activity Low	Activity High	Number of Samples	Number of Positive IDs
Gross Beta Indicators	1.36E-02	2.93E-03	3.81E-02	566	566
Gross Beta Controls	1.20E-02	3.29E-03	3.30E-02	52	52

TABLE A-3.1

GAMMA SPECTROMETRY RESULTS OF AIR PARTICULATE FILTERS

Results in pCi/cubic meter, results decay corrected for decay during sample collection period

Location and Quarter Station 1 1st Q 2012

Nuclide	RQ	Activity		Error	MDA
BE-7	+	9.21E-02	±	1.29E-02	7.44E-03
K-40		-3.13E-03	±	1.72E-02	1.03E-02
MN-54		-4.16E-05	±	3.02E-04	4.80E-04
FE-59		0.00E+00	±	2.60E-03	4.27E-03
CO-60		0.00E+00	±	4.33E-04	7.13E-04
ZN-65		0.00E+00	±	1.53E-03	2.51E-03
ZRNB-95		3.93E-04	±	1.05E-03	1.60E-03
CS-134		-4.99E-07	±	3.03E-04	4.99E-04
CS-137		3.93E-05	±	3.38E-04	5.44E-04
BALA140		0.00E+00	±	3.36E-03	5.53E-03
RU-106		2.52E-03	±	3.04E-03	4.16E-03

Location and Quarter Station 1 2nd Q 2012

Nuclide	RQ	Activity		Error	MDA
BE-7	+	1.08E-01	±	1.59E-02	8.92E-03
K-40		5.24E-03	±	8.09E-03	1.25E-02
MN-54		-1.83E-05	±	5.73E-04	9.37E-04
FE-59		-1.34E-03	±	3.94E-03	6.10E-03
CO-60		0.00E+00	±	8.08E-04	1.33E-03
ZN-65		-8.42E-04	±	1.75E-03	2.66E-03
ZRNB-95		-5.61E-04	±	1.60E-03	2.47E-03
CS-134		-1.63E-06	±	3.76E-04	6.18E-04
CS-137		-9.21E-05	±	4.75E-04	7.54E-04
BALA140		0.00E+00	±	3.51E-03	5.77E-03
RU-106		-1.26E-03	±	4.98E-03	7.86E-03

Location and Quarter Station 1 3rd Q 2012

Nuclide	RQ	Activity		Error	MDA
BE-7	+	1.64E-01	±	2.04E-02	1.06E-02
K-40		3.84E-04	±	6.73E-03	1.17E-02
MN-54		6.43E-05	±	4.26E-04	6.75E-04
FE-59		-1.02E-03	±	3.38E-03	5.19E-03
CO-60		0.00E+00	±	8.39E-04	1.38E-03
ZN-65		-2.24E-04	±	1.11E-03	1.73E-03
ZRNB-95		3.02E-04	±	1.36E-03	2.14E-03
CS-134		1.06E-04	±	2.87E-04	4.26E-04
CS-137		-1.22E-04	±	5.30E-04	8.39E-04
BALA140		1.13E-04	±	1.08E-02	1.76E-02
RU-106		8.95E-04	±	4.24E-03	6.69E-03

Location and Quarter Station 1 4th Q 2012

Nuclide	RQ	Activity		Error	MDA
BE-7	+	5.94E-02	±	1.10E-02	6.70E-03
K-40		-4.75E-03	±	1.90E-02	7.16E-03
MN-54		1.37E-05	±	3.55E-04	5.80E-04
FE-59		0.00E+00	±	2.89E-03	4.74E-03
CO-60		-1.01E-04	±	2.00E-03	7.99E-04
ZN-65		0.00E+00	±	1.85E-03	3.04E-03
ZRNB-95		-7.90E-05	±	1.22E-03	1.99E-03
CS-134		-8.06E-05	±	3.49E-04	5.54E-04
CS-137		3.46E-08	±	2.70E-04	4.48E-04
BALA140		0.00E+00	±	2.74E-02	4.50E-02
RU-106		-7.44E-04	±	3.78E-03	6.03E-03

Location and Quarter Station 4 1st Q 2012

Nuclide	RQ	Activity		Error	MDA
BE-7	+	9.75E-02	±	1.34E-02	6.56E-03
K-40		-1.02E-03	±	6.50E-03	9.62E-03
MN-54		2.37E-05	±	3.98E-04	6.47E-04
FE-59		-4.15E-04	±	2.29E-03	3.61E-03
CO-60		0.00E+00	±	1.31E-04	2.15E-04
ZN-65		0.00E+00	±	1.57E-03	2.58E-03
ZRNB-95		2.30E-05	±	9.45E-04	1.55E-03
CS-134		-1.33E-04	±	4.34E-04	6.85E-04
CS-137		5.17E-05	±	3.27E-04	5.21E-04
BALA140		-1.38E-03	±	7.27E-03	1.11E-02
RU-106		-4.35E-04	±	3.34E-03	5.37E-03

Location and Quarter Station 4 2nd Q 2012

Nuclide	RQ	Activity		Error	MDA
BE-7	+	1.06E-01	±	1.52E-02	7.16E-03
K-40		-2.39E-03	±	7.68E-02	1.87E-02
MN-54		1.79E-04	±	5.36E-04	8.26E-04
FE-59		-4.49E-04	±	3.25E-03	5.20E-03
CO-60		-1.11E-05	±	6.21E-04	1.02E-03
ZN-65		3.70E-04	±	1.06E-03	1.59E-03
ZRNB-95		-3.20E-04	±	1.55E-03	2.47E-03
CS-134		-1.69E-04	±	5.13E-04	8.04E-04
CS-137		1.38E-04	±	4.60E-04	7.13E-04
BALA140		-3.12E-03	±	1.20E-02	1.86E-02
RU-106		-7.76E-04	±	4.78E-03	7.65E-03

Location and Quarter Station 4 3rd Q 2012

Nuclide	RQ	Activity		Error	MDA
BE-7	+	1.57E-01	±	2.14E-02	1.31E-02
K-40		2.57E-03	±	6.22E-03	1.02E-02
MN-54		-4.66E-05	±	4.66E-04	7.48E-04
FE-59		0.00E+00	±	1.04E-03	1.71E-03
CO-60		0.00E+00	±	6.09E-04	1.00E-03
ZN-65		0.00E+00	±	1.82E-03	2.98E-03
ZRNB-95		7.17E-04	±	1.51E-03	2.26E-03
CS-134		-7.11E-05	±	4.15E-04	6.61E-04
CS-137		-7.45E-05	±	5.42E-04	8.71E-04
BALA140		0.00E+00	±	2.14E-02	3.52E-02
RU-106		0.00E+00	±	2.83E-03	4.64E-03

Location and Quarter Station 4 4th Q 2012

Nuclide	RQ	Activity		Error	MDA
BE-7	+	6.72E-02	±	1.41E-02	8.11E-03
K-40		-2.59E-03	±	5.89E-02	1.50E-02
MN-54		-1.67E-04	±	6.32E-04	9.90E-04
FE-59		-4.47E-04	±	3.63E-03	5.81E-03
CO-60		2.21E-04	±	4.67E-04	6.58E-04
ZN-65		1.01E-04	±	1.04E-03	1.66E-03
ZRNB-95		0.00E+00	±	2.33E-03	3.84E-03
CS-134		-3.69E-05	±	4.30E-04	6.96E-04
CS-137		-1.70E-04	±	5.94E-04	9.33E-04
BALA140		0.00E+00	±	6.79E-03	1.12E-02
RU-106		9.92E-04	±	4.82E-03	7.64E-03

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

TABLE A-3.1

GAMMA SPECTROMETRY RESULTS OF AIR PARTICULATE FILTERS

Results in pCi/cubic meter, results decay corrected for decay during sample collection period

Location and Quarter		Station 5	1st Q 2012	
Nuclide	RQ	Activity	Error	MDA
BE-7	+	7.99E-02 ±	1.36E-02	9.18E-03
K-40		1.87E-03 ±	5.05E-03	9.79E-03
MN-54		-6.19E-05 ±	4.24E-04	6.77E-04
FE-59		-5.50E-04 ±	2.61E-03	4.09E-03
CO-60		-1.12E-04 ±	4.61E-04	7.15E-04
ZN-65		4.90E-05 ±	8.92E-04	1.45E-03
ZRNB-95		2.29E-04 ±	1.05E-03	1.64E-03
CS-134		-7.36E-05 ±	3.79E-04	6.03E-04
CS-137		1.08E-04 ±	3.27E-04	4.97E-04
BALA140		0.00E+00 ±	4.04E-03	6.64E-03
RU-106		1.95E-03 ±	2.95E-03	4.09E-03

Location and Quarter		Station 5	2nd Q 2012	
Nuclide	RQ	Activity	Error	MDA
BE-7	+	1.08E-01 ±	1.87E-02	1.36E-02
K-40		-2.64E-03 ±	6.01E-02	1.53E-02
MN-54		1.38E-04 ±	5.60E-04	8.75E-04
FE-59		0.00E+00 ±	1.01E-03	1.66E-03
CO-60		3.02E-04 ±	4.54E-04	5.80E-04
ZN-65		-5.22E-04 ±	1.76E-03	2.75E-03
ZRNB-95		2.39E-04 ±	8.30E-04	1.23E-03
CS-134		2.12E-05 ±	3.29E-04	5.33E-04
CS-137		1.50E-05 ±	3.67E-04	5.98E-04
BALA140		4.30E-03 ±	1.07E-02	1.58E-02
RU-106		1.38E-03 ±	4.34E-03	6.68E-03

Location and Quarter		Station 5	3rd Q 2012	
Nuclide	RQ	Activity	Error	MDA
BE-7	+	1.38E-01 ±	2.01E-02	1.36E-02
K-40		1.38E-03 ±	6.47E-03	1.10E-02
MN-54		2.35E-04 ±	4.24E-04	5.95E-04
FE-59		0.00E+00 ±	3.78E-03	6.22E-03
CO-60		0.00E+00 ±	1.02E-03	1.68E-03
ZN-65		0.00E+00 ±	2.21E-03	3.63E-03
ZRNB-95		-1.05E-04 ±	1.08E-03	1.73E-03
CS-134		-1.84E-04 ±	5.36E-04	8.38E-04
CS-137		1.26E-05 ±	3.75E-04	6.12E-04
BALA140		0.00E+00 ±	4.99E-03	8.21E-03
RU-106		7.91E-04 ±	4.72E-03	7.54E-03

Location and Quarter		Station 5	4th Q 2012	
Nuclide	RQ	Activity	Error	MDA
BE-7	+	4.93E-02 ±	1.17E-02	9.17E-03
K-40		3.11E-04 ±	5.61E-03	1.04E-02
MN-54		0.00E+00 ±	6.05E-04	9.95E-04
FE-59		-9.69E-05 ±	2.03E-03	3.30E-03
CO-60		-1.72E-04 ±	1.26E-03	6.02E-04
ZN-65		-3.97E-04 ±	1.18E-03	1.82E-03
ZRNB-95		2.29E-04 ±	8.81E-04	1.36E-03
CS-134		-1.61E-05 ±	3.33E-04	5.43E-04
CS-137		-1.48E-05 ±	3.88E-04	6.33E-04
BALA140		-3.67E-03 ±	1.30E-02	1.98E-02
RU-106		-1.10E-03 ±	3.58E-03	5.58E-03

Location and Quarter		Station 6	1st Q 2012	
Nuclide	RQ	Activity	Error	MDA
BE-7	+	9.14E-02 ±	1.28E-02	6.88E-03
K-40		-1.81E-03 ±	6.45E-03	8.08E-03
MN-54		-9.33E-07 ±	3.41E-04	5.62E-04
FE-59		-5.73E-04 ±	2.14E-03	3.29E-03
CO-60		-4.10E-05 ±	3.90E-04	6.26E-04
ZN-65		9.05E-05 ±	9.75E-04	1.57E-03
ZRNB-95		-6.76E-05 ±	1.07E-03	1.74E-03
CS-134		-9.55E-05 ±	3.67E-04	5.81E-04
CS-137		-4.86E-05 ±	3.11E-04	4.95E-04
BALA140		0.00E+00 ±	1.46E-02	2.41E-02
RU-106		-6.01E-04 ±	3.18E-03	5.06E-03

Location and Quarter		Station 6	2nd Q 2012	
Nuclide	RQ	Activity	Error	MDA
BE-7	+	1.11E-01 ±	1.67E-02	9.57E-03
K-40		1.42E-03 ±	6.98E-03	1.18E-02
MN-54		-2.04E-04 ±	6.42E-04	1.00E-03
FE-59		0.00E+00 ±	9.32E-04	1.53E-03
CO-60		-9.85E-05 ±	6.13E-04	9.74E-04
ZN-65		-5.58E-04 ±	1.54E-03	2.36E-03
ZRNB-95		-3.52E-06 ±	1.45E-03	2.38E-03
CS-134		-1.56E-04 ±	5.24E-04	8.25E-04
CS-137		1.85E-04 ±	4.43E-04	6.66E-04
BALA140		0.00E+00 ±	3.55E-03	5.83E-03
RU-106		-3.30E-03 ±	5.42E-03	8.11E-03

Location and Quarter		Station 6	3rd Q 2012	
Nuclide	RQ	Activity	Error	MDA
BE-7	+	1.30E-01 ±	1.94E-02	1.24E-02
K-40		1.92E-03 ±	7.22E-03	1.21E-02
MN-54		-1.30E-04 ±	5.89E-04	9.29E-04
FE-59		0.00E+00 ±	1.07E-03	1.76E-03
CO-60		1.07E-04 ±	5.13E-04	7.98E-04
ZN-65		-7.14E-04 ±	1.58E-03	2.38E-03
ZRNB-95		-1.07E-04 ±	1.36E-03	2.20E-03
CS-134		-4.60E-05 ±	4.56E-04	7.37E-04
CS-137		-6.51E-05 ±	4.27E-04	6.79E-04
BALA140		-6.23E-03 ±	2.02E-02	3.12E-02
RU-106		1.61E-03 ±	4.43E-03	6.78E-03

Location and Quarter		Station 6	4th Q 2012	
Nuclide	RQ	Activity	Error	MDA
BE-7	+	5.02E-02 ±	1.18E-02	7.52E-03
K-40		5.12E-04 ±	6.16E-03	1.08E-02
MN-54		0.00E+00 ±	3.95E-04	6.49E-04
FE-59		-1.02E-03 ±	4.19E-03	6.57E-03
CO-60		8.59E-06 ±	4.78E-04	7.82E-04
ZN-65		-2.88E-04 ±	1.53E-03	2.43E-03
ZRNB-95		-5.94E-04 ±	1.52E-03	2.31E-03
CS-134		2.89E-04 ±	4.35E-04	6.34E-04
CS-137		-1.09E-04 ±	5.51E-04	8.77E-04
BALA140		0.00E+00 ±	6.29E-03	1.03E-02
RU-106		1.14E-05 ±	3.76E-03	6.17E-03

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

1st Q 1/3/12 to 4/3/12 - 2nd Q 4/3/12 to 7/3/12 - 3rd Q 7/3/12 to 10/2/12 - 4th Q 10/2/12 to 1/2/13

TABLE A-3.1

GAMMA SPECTROMETRY RESULTS OF AIR PARTICULATE FILTERS

Results in pCi/cubic meter, results decay corrected for decay during sample collection period

Location and Quarter Station 7 1st Q 2012

Nuclide	RQ	Activity	±	Error	MDA
BE-7	+	1.02E-01	±	1.46E-02	8.27E-03
K-40		-2.70E-03	±	1.28E-02	1.07E-02
MN-54		-4.48E-05	±	4.40E-04	7.11E-04
FE-59		-2.12E-05	±	2.06E-03	3.37E-03
CO-60		0.00E+00	±	4.76E-04	7.83E-04
ZN-65		-1.08E-04	±	9.91E-04	1.59E-03
ZRNB-95		-3.80E-04	±	1.20E-03	1.85E-03
CS-134		4.77E-06	±	3.71E-04	6.09E-04
CS-137		5.50E-05	±	3.58E-04	5.71E-04
BALA140		3.75E-03	±	9.61E-03	1.39E-02
RU-106		-2.28E-04	±	3.32E-03	5.39E-03

Location and Quarter Station 7 2nd Q 2012

Nuclide	RQ	Activity	±	Error	MDA
BE-7	+	1.36E-01	±	1.78E-02	9.06E-03
K-40		5.52E-04	±	7.25E-03	1.25E-02
MN-54		-1.82E-04	±	5.49E-04	8.45E-04
FE-59		3.34E-04	±	2.86E-03	4.56E-03
CO-60		0.00E+00	±	8.48E-04	1.39E-03
ZN-65		-4.72E-04	±	1.48E-03	2.29E-03
ZRNB-95		8.97E-05	±	1.40E-03	2.28E-03
CS-134		-7.30E-07	±	4.46E-04	7.31E-04
CS-137		-1.23E-04	±	5.06E-04	7.97E-04
BALA140		0.00E+00	±	3.59E-03	5.90E-03
RU-106		8.40E-05	±	4.40E-03	7.21E-03

Location and Quarter Station 7 3rd Q 2012

Nuclide	RQ	Activity	±	Error	MDA
BE-7	+	1.60E-01	±	2.03E-02	1.04E-02
K-40		1.91E-03	±	7.76E-03	1.29E-02
MN-54		2.72E-04	±	4.72E-04	6.74E-04
FE-59		4.67E-04	±	2.15E-03	3.27E-03
CO-60		0.00E+00	±	1.74E-04	2.85E-04
ZN-65		-2.66E-04	±	1.36E-03	2.15E-03
ZRNB-95		2.26E-04	±	1.36E-03	2.16E-03
CS-134		1.00E-04	±	4.15E-04	6.53E-04
CS-137		-1.64E-04	±	4.73E-04	7.28E-04
BALA140		4.58E-03	±	1.24E-02	1.80E-02
RU-106		-9.16E-05	±	4.14E-03	6.77E-03

Location and Quarter Station 7 4th Q 2012

Nuclide	RQ	Activity	±	Error	MDA
BE-7	+	5.17E-02	±	1.19E-02	9.84E-03
K-40		1.51E-03	±	5.09E-03	9.31E-03
MN-54		-1.11E-05	±	3.37E-04	5.51E-04
FE-59		-7.85E-05	±	2.16E-03	3.52E-03
CO-60		-2.38E-05	±	7.08E-04	7.54E-04
ZN-65		0.00E+00	±	1.58E-03	2.59E-03
ZRNB-95		2.06E-04	±	1.06E-03	1.67E-03
CS-134		-1.15E-05	±	3.55E-04	5.81E-04
CS-137		3.52E-06	±	3.08E-04	5.05E-04
BALA140		-2.29E-03	±	1.03E-02	1.58E-02
RU-106		0.00E+00	±	3.39E-03	5.57E-03

Location and Quarter Station 8 1st Q 2012

Nuclide	RQ	Activity	±	Error	MDA
BE-7	+	8.44E-02	±	1.28E-02	7.57E-03
K-40		-3.01E-04	±	6.07E-03	1.05E-02
MN-54		-1.00E-04	±	3.69E-04	5.73E-04
FE-59		0.00E+00	±	2.65E-03	4.36E-03
CO-60		8.56E-05	±	4.02E-04	6.29E-04
ZN-65		-5.09E-04	±	1.34E-03	2.08E-03
ZRNB-95		-2.33E-04	±	1.22E-03	1.95E-03
CS-134		5.69E-06	±	3.36E-04	5.50E-04
CS-137		-5.14E-05	±	3.58E-04	5.74E-04
BALA140		0.00E+00	±	3.56E-03	5.85E-03
RU-106		5.67E-04	±	3.00E-03	4.75E-03

Location and Quarter Station 8 2nd Q 2012

Nuclide	RQ	Activity	±	Error	MDA
BE-7	+	1.10E-01	±	1.64E-02	9.40E-03
K-40		-3.45E-04	±	8.85E-03	1.17E-02
MN-54		-3.94E-05	±	5.25E-04	8.50E-04
FE-59		0.00E+00	±	9.16E-04	1.51E-03
CO-60		-4.69E-05	±	5.33E-04	8.58E-04
ZN-65		-4.67E-04	±	1.50E-03	2.33E-03
ZRNB-95		1.72E-04	±	1.17E-03	1.85E-03
CS-134		-1.11E-04	±	4.66E-04	7.39E-04
CS-137		7.50E-05	±	4.65E-04	7.43E-04
BALA140		5.87E-04	±	5.76E-03	9.04E-03
RU-106		-2.55E-05	±	3.94E-03	6.46E-03

Location and Quarter Station 8 3rd Q 2012

Nuclide	RQ	Activity	±	Error	MDA
BE-7	+	1.52E-01	±	1.92E-02	8.67E-03
K-40		-1.95E-04	±	7.28E-03	1.11E-02
MN-54		0.00E+00	±	5.12E-04	8.42E-04
FE-59		-2.94E-04	±	3.01E-03	4.83E-03
CO-60		9.00E-05	±	5.05E-04	7.93E-04
ZN-65		4.31E-04	±	1.41E-03	2.17E-03
ZRNB-95		1.08E-03	±	1.18E-03	1.47E-03
CS-134		2.59E-06	±	3.12E-04	5.13E-04
CS-137		1.37E-04	±	3.85E-04	5.80E-04
BALA140		-4.20E-03	±	1.60E-02	2.46E-02
RU-106		2.17E-03	±	4.36E-03	6.51E-03

Location and Quarter Station 8 4th Q 2012

Nuclide	RQ	Activity	±	Error	MDA
BE-7	+	4.44E-02	±	1.26E-02	1.07E-02
K-40		-1.44E-03	±	1.82E-02	8.68E-03
MN-54		0.00E+00	±	3.85E-04	6.32E-04
FE-59		-7.02E-04	±	3.46E-03	5.43E-03
CO-60		0.00E+00	±	8.13E-04	1.34E-03
ZN-65		-3.60E-04	±	1.45E-03	2.28E-03
ZRNB-95		4.60E-04	±	1.19E-03	1.77E-03
CS-134		8.49E-05	±	3.99E-04	6.32E-04
CS-137		0.00E+00	±	5.27E-04	8.66E-04
BALA140		-2.11E-03	±	1.83E-02	2.92E-02
RU-106		0.00E+00	±	5.47E-03	8.99E-03

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

TABLE A-3.1

GAMMA SPECTROMETRY RESULTS OF AIR PARTICULATE FILTERS

Results in pCi/cubic meter, results decay corrected for decay during sample collection period

Location and Quarter		Station 9 1st Q 2012		
Nuclide	RQ	Activity	Error	MDA
BE-7	+	8.91E-02 ±	1.35E-02	8.04E-03
K-40		-1.48E-04 ±	5.27E-03	9.93E-03
MN-54		0.00E+00 ±	2.86E-04	4.70E-04
FE-59		7.19E-04 ±	2.31E-03	3.52E-03
CO-60		-4.71E-05 ±	3.65E-04	5.81E-04
ZN-65		0.00E+00 ±	1.28E-03	2.10E-03
ZRNB-95		-1.72E-04 ±	1.12E-03	1.79E-03
CS-134		-9.01E-05 ±	3.55E-04	5.61E-04
CS-137		-2.27E-05 ±	3.39E-04	5.50E-04
BALA140		-3.02E-05 ±	9.93E-03	1.63E-02
RU-106		-4.03E-04 ±	3.37E-03	5.42E-03

Location and Quarter		Station 9 2nd Q 2012		
Nuclide	RQ	Activity	Error	MDA
BE-7	+	1.09E-01 ±	1.71E-02	1.13E-02
K-40		-5.11E-04 ±	9.01E-03	1.07E-02
MN-54		1.95E-04 ±	5.78E-04	8.94E-04
FE-59		-7.20E-04 ±	3.72E-03	5.90E-03
CO-60		2.28E-06 ±	4.98E-04	8.18E-04
ZN-65		3.20E-04 ±	1.46E-03	2.31E-03
ZRNB-95		-3.37E-04 ±	1.59E-03	2.53E-03
CS-134		6.53E-05 ±	4.20E-04	6.72E-04
CS-137		1.35E-04 ±	4.93E-04	7.71E-04
BALA140		-2.92E-03 ±	1.19E-02	1.85E-02
RU-106		-3.58E-04 ±	3.74E-03	6.02E-03

Location and Quarter		Station 9 3rd Q 2012		
Nuclide	RQ	Activity	Error	MDA
BE-7	+	1.56E-01 ±	1.93E-02	8.45E-03
K-40		1.55E-03 ±	6.06E-03	1.03E-02
MN-54		3.01E-06 ±	5.26E-04	8.64E-04
FE-59		-4.66E-04 ±	4.09E-03	6.59E-03
CO-60		1.35E-04 ±	5.12E-04	7.87E-04
ZN-65		-3.05E-05 ±	1.35E-03	2.21E-03
ZRNB-95		-3.28E-04 ±	1.38E-03	2.16E-03
CS-134		-1.79E-04 ±	5.01E-04	7.80E-04
CS-137		-1.20E-04 ±	4.84E-04	7.60E-04
BALA140		1.84E-04 ±	1.14E-02	1.86E-02
RU-106		2.36E-04 ±	3.93E-03	6.38E-03

Location and Quarter		Station 9 4th Q 2012		
Nuclide	RQ	Activity	Error	MDA
BE-7	+	4.25E-02 ±	9.84E-03	7.02E-03
K-40		1.99E-03 ±	5.07E-03	9.16E-03
MN-54		1.05E-04 ±	4.22E-04	6.62E-04
FE-59		0.00E+00 ±	2.86E-03	4.71E-03
CO-60		9.26E-05 ±	4.36E-04	7.19E-04
ZN-65		-5.42E-06 ±	5.13E-04	8.40E-04
ZRNB-95		0.00E+00 ±	2.96E-04	4.86E-04
CS-134		-3.48E-05 ±	3.88E-04	6.29E-04
CS-137		1.09E-04 ±	2.89E-04	4.35E-04
BALA140		0.00E+00 ±	4.67E-03	7.67E-03
RU-106		2.13E-04 ±	2.93E-03	4.74E-03

Location and Quarter		Station 21 1st Q 2012		
Nuclide	RQ	Activity	Error	MDA
BE-7	+	8.40E-02 ±	1.24E-02	7.17E-03
K-40		-2.57E-04 ±	4.27E-03	8.43E-03
MN-54		-1.08E-04 ±	4.18E-04	6.55E-04
FE-59		-4.36E-04 ±	2.36E-03	3.71E-03
CO-60		1.17E-04 ±	3.54E-04	5.32E-04
ZN-65		2.81E-04 ±	9.19E-04	1.41E-03
ZRNB-95		0.00E+00 ±	7.49E-04	1.23E-03
CS-134		0.00E+00 ±	3.22E-04	5.29E-04
CS-137		-8.02E-05 ±	3.09E-04	4.81E-04
BALA140		1.84E-03 ±	6.78E-03	9.97E-03
RU-106		6.63E-04 ±	3.15E-03	4.98E-03

Location and Quarter		Station 21 2nd Q 2012		
Nuclide	RQ	Activity	Error	MDA
BE-7	+	1.03E-01 ±	1.69E-02	1.14E-02
K-40		9.55E-04 ±	7.22E-03	1.23E-02
MN-54		9.04E-05 ±	6.21E-04	9.95E-04
FE-59		0.00E+00 ±	9.68E-04	1.59E-03
CO-60		1.28E-04 ±	5.31E-04	8.21E-04
ZN-65		0.00E+00 ±	1.79E-03	2.95E-03
ZRNB-95		1.23E-05 ±	1.26E-03	2.07E-03
CS-134		-1.13E-06 ±	4.57E-04	7.50E-04
CS-137		-1.66E-04 ±	4.97E-04	7.67E-04
BALA140		0.00E+00 ±	3.82E-03	6.28E-03
RU-106		-1.27E-03 ±	4.29E-03	6.66E-03

Location and Quarter		Station 21 3rd Q 2012		
Nuclide	RQ	Activity	Error	MDA
BE-7	+	1.49E-01 ±	1.98E-02	1.04E-02
K-40		1.97E-04 ±	6.51E-03	1.15E-02
MN-54		-1.71E-04 ±	5.15E-04	7.88E-04
FE-59		-1.14E-03 ±	4.20E-03	6.55E-03
CO-60		0.00E+00 ±	6.10E-04	1.00E-03
ZN-65		-7.64E-05 ±	1.37E-03	2.22E-03
ZRNB-95		-8.01E-04 ±	1.73E-03	2.62E-03
CS-134		-7.47E-05 ±	4.64E-04	7.42E-04
CS-137		-1.10E-04 ±	5.14E-04	8.13E-04
BALA140		0.00E+00 ±	2.37E-02	3.90E-02
RU-106		-2.21E-04 ±	4.82E-03	7.86E-03

Location and Quarter		Station 21 4th Q 2012		
Nuclide	RQ	Activity	Error	MDA
BE-7	+	4.70E-02 ±	1.26E-02	1.18E-02
K-40		-2.43E-03 ±	5.54E-02	1.41E-02
MN-54		3.03E-04 ±	5.18E-04	7.46E-04
FE-59		5.76E-04 ±	2.99E-03	4.67E-03
CO-60		1.87E-04 ±	5.44E-04	8.22E-04
ZN-65		-2.94E-05 ±	1.27E-03	2.08E-03
ZRNB-95		3.44E-04 ±	1.36E-03	2.11E-03
CS-134		1.11E-04 ±	4.14E-04	6.48E-04
CS-137		2.32E-04 ±	4.34E-04	6.34E-04
BALA140		2.48E-03 ±	2.10E-02	3.36E-02
RU-106		-2.85E-05 ±	4.21E-03	6.91E-03

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

1st Q 1/3/12 to 4/3/12 - 2nd Q 4/3/12 to 7/3/12 - 3rd Q 7/3/12 to 10/2/12 - 4th Q 10/2/12 to 1/2/13

TABLE A-3.1

GAMMA SPECTROMETRY RESULTS OF AIR PARTICULATE FILTERS

Results in pCi/cubic meter, results decay corrected for decay during sample collection period

Location and Quarter Station 23 1st Q 2012

Nuclide	RQ	Activity		Error	MDA
BE-7	+	8.35E-02	±	1.26E-02	6.66E-03
K-40		-1.46E-03	±	7.23E-03	9.56E-03
MN-54		4.26E-05	±	3.94E-04	6.34E-04
FE-59		3.69E-05	±	2.42E-03	3.97E-03
CO-60		-4.33E-05	±	4.74E-04	7.65E-04
ZN-65		-3.12E-04	±	9.94E-04	1.52E-03
ZRNB-95		0.00E+00	±	1.05E-03	1.73E-03
CS-134		-1.18E-04	±	3.73E-04	5.84E-04
CS-137		-4.36E-05	±	4.02E-04	6.50E-04
BALA140		0.00E+00	±	3.92E-03	6.44E-03
RU-106		9.17E-04	±	3.10E-03	4.79E-03

Location and Quarter Station 23 2nd Q 2012

Nuclide	RQ	Activity		Error	MDA
BE-7	+	1.20E-01	±	1.67E-02	9.31E-03
K-40		2.76E-03	±	7.14E-03	1.16E-02
MN-54		-1.77E-05	±	4.20E-04	6.84E-04
FE-59		0.00E+00	±	4.68E-03	7.69E-03
CO-60		1.41E-04	±	3.78E-04	5.44E-04
ZN-65		5.12E-05	±	1.16E-03	1.89E-03
ZRNB-95		2.91E-04	±	1.20E-03	1.87E-03
CS-134		5.44E-05	±	4.30E-04	6.93E-04
CS-137		-1.50E-04	±	5.53E-04	8.71E-04
BALA140		-9.45E-04	±	8.29E-03	1.31E-02
RU-106		-3.57E-05	±	3.86E-03	6.33E-03

Location and Quarter Station 23 3rd Q 2012

Nuclide	RQ	Activity		Error	MDA
BE-7	+	1.52E-01	±	2.01E-02	1.09E-02
K-40		-1.26E-03	±	2.45E-02	1.39E-02
MN-54		2.06E-04	±	5.62E-04	8.60E-04
FE-59		0.00E+00	±	1.06E-03	1.74E-03
CO-60		-1.94E-05	±	5.14E-04	8.38E-04
ZN-65		4.18E-04	±	1.35E-03	2.08E-03
ZRNB-95		2.62E-06	±	1.13E-03	1.86E-03
CS-134		-7.25E-05	±	4.49E-04	7.19E-04
CS-137		3.05E-04	±	4.43E-04	6.22E-04
BALA140		-5.55E-03	±	1.97E-02	3.06E-02
RU-106		-9.11E-04	±	4.45E-03	7.04E-03

Location and Quarter Station 23 4th Q 2012

Nuclide	RQ	Activity		Error	MDA
BE-7	+	4.91E-02	±	1.05E-02	7.69E-03
K-40		8.67E-04	±	4.52E-03	8.77E-03
MN-54		-6.95E-05	±	3.41E-04	5.34E-04
FE-59		0.00E+00	±	8.20E-04	1.35E-03
CO-60		-9.75E-05	±	1.65E-02	7.83E-04
ZN-65		0.00E+00	±	1.63E-03	2.68E-03
ZRNB-95		-2.93E-04	±	1.16E-03	1.82E-03
CS-134		2.09E-05	±	3.28E-04	5.34E-04
CS-137		4.27E-06	±	3.30E-04	5.41E-04
BALA140		-5.82E-03	±	1.80E-02	2.78E-02
RU-106		-6.36E-05	±	3.35E-03	5.49E-03

Location and Quarter Station 40 1st Q 2012

Nuclide	RQ	Activity		Error	MDA
BE-7	+	9.34E-02	±	1.29E-02	5.46E-03
K-40		-5.93E-03	±	1.34E-01	1.06E-02
MN-54		-9.92E-05	±	4.62E-04	7.33E-04
FE-59		8.11E-04	±	2.30E-03	3.46E-03
CO-60		2.37E-05	±	3.91E-04	6.34E-04
ZN-65		-2.05E-04	±	9.98E-04	1.57E-03
ZRNB-95		0.00E+00	±	1.48E-03	2.44E-03
CS-134		0.00E+00	±	4.47E-04	7.35E-04
CS-137		-1.13E-05	±	3.12E-04	5.10E-04
BALA140		2.94E-03	±	6.01E-03	7.44E-03
RU-106		1.47E-03	±	2.98E-03	4.41E-03

Location and Quarter Station 40 2nd Q 2012

Nuclide	RQ	Activity		Error	MDA
BE-7	+	1.06E-01	±	1.71E-02	1.19E-02
K-40		4.06E-03	±	5.86E-03	8.97E-03
MN-54		-1.21E-04	±	6.45E-04	1.03E-03
FE-59		2.90E-05	±	3.09E-03	5.07E-03
CO-60		2.25E-04	±	3.81E-04	4.96E-04
ZN-65		4.30E-04	±	1.14E-03	1.70E-03
ZRNB-95		0.00E+00	±	1.62E-03	2.66E-03
CS-134		4.29E-07	±	3.65E-04	5.97E-04
CS-137		1.85E-04	±	4.82E-04	7.38E-04
BALA140		-1.62E-03	±	8.86E-03	1.38E-02
RU-106		8.47E-04	±	3.62E-03	5.65E-03

Location and Quarter Station 40 3rd Q 2012

Nuclide	RQ	Activity		Error	MDA
BE-7	+	1.39E-01	±	1.85E-02	9.75E-03
K-40		1.47E-03	±	5.24E-03	8.96E-03
MN-54		-1.37E-04	±	5.53E-04	8.69E-04
FE-59		7.93E-04	±	1.55E-03	1.84E-03
CO-60		0.00E+00	±	1.68E-04	2.77E-04
ZN-65		-1.89E-04	±	1.47E-03	2.36E-03
ZRNB-95		4.80E-04	±	1.26E-03	1.89E-03
CS-134		-2.64E-05	±	4.21E-04	6.85E-04
CS-137		-1.16E-04	±	4.95E-04	7.82E-04
BALA140		0.00E+00	±	3.18E-02	5.22E-02
RU-106		5.90E-05	±	4.81E-03	7.89E-03

Location and Quarter Station 40 4th Q 2012

Nuclide	RQ	Activity		Error	MDA
BE-7	+	5.52E-02	±	1.55E-02	1.35E-02
K-40		3.73E-03	±	5.60E-03	8.66E-03
MN-54		-3.85E-05	±	5.17E-04	8.37E-04
FE-59		-4.66E-05	±	3.26E-03	5.34E-03
CO-60		5.83E-05	±	5.77E-04	9.28E-04
ZN-65		-6.45E-04	±	1.58E-03	2.41E-03
ZRNB-95		-4.48E-04	±	1.66E-03	2.61E-03
CS-134		-1.93E-04	±	5.34E-04	8.35E-04
CS-137		1.76E-06	±	4.31E-04	7.09E-04
BALA140		0.00E+00	±	6.33E-03	1.04E-02
RU-106		-5.89E-04	±	4.42E-03	7.10E-03

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

TABLE A-3.1

GAMMA SPECTROMETRY RESULTS OF AIR PARTICULATE FILTERS

Results in pCi/cubic meter, results decay corrected for decay during sample collection period

Location and Quarter Station 48 1st Q 2012

Nuclide	RQ	Activity		Error	MDA
BE-7	+	9.02E-02	±	1.30E-02	6.37E-03
K-40		-1.50E-04	±	5.48E-03	1.02E-02
MN-54		0.00E+00	±	4.92E-04	8.09E-04
FE-59		0.00E+00	±	7.52E-04	1.24E-03
CO-60		1.92E-04	±	3.65E-04	5.17E-04
ZN-65		-2.30E-04	±	1.04E-03	1.63E-03
ZRNB-95		-3.28E-05	±	9.49E-04	1.55E-03
CS-134		-1.07E-04	±	3.90E-04	6.18E-04
CS-137		-7.11E-05	±	3.23E-04	5.07E-04
BALA140		0.00E+00	±	3.77E-03	6.19E-03
RU-106		1.64E-03	±	3.51E-03	5.32E-03

Location and Quarter Station 48 2nd Q 2012

Nuclide	RQ	Activity		Error	MDA
BE-7	+	1.21E-01	±	1.65E-02	8.23E-03
K-40		1.90E-03	±	6.05E-03	1.01E-02
MN-54		3.37E-06	±	5.49E-04	9.01E-04
FE-59		1.18E-03	±	2.39E-03	3.37E-03
CO-60		-1.38E-04	±	5.88E-04	9.20E-04
ZN-65		-5.43E-04	±	1.52E-03	2.33E-03
ZRNB-95		1.78E-04	±	1.17E-03	1.85E-03
CS-134		0.00E+00	±	6.79E-04	1.12E-03
CS-137		-1.61E-04	±	4.75E-04	7.33E-04
BALA140		-4.04E-03	±	1.19E-02	1.81E-02
RU-106		1.20E-03	±	4.63E-03	7.29E-03

Location and Quarter Station 48 3rd Q 2012

Nuclide	RQ	Activity		Error	MDA
BE-7	+	1.30E-01	±	1.78E-02	9.48E-03
K-40		-5.97E-05	±	7.59E-03	1.25E-02
MN-54		3.43E-04	±	5.52E-04	8.01E-04
FE-59		0.00E+00	±	1.01E-03	1.65E-03
CO-60		-1.31E-04	±	6.88E-04	1.09E-03
ZN-65		5.86E-04	±	1.13E-03	1.62E-03
ZRNB-95		6.54E-04	±	1.54E-03	2.33E-03
CS-134		0.00E+00	±	6.91E-04	1.14E-03
CS-137		-5.64E-06	±	4.96E-04	8.14E-04
BALA140		4.41E-03	±	1.18E-02	1.69E-02
RU-106		-5.52E-05	±	4.42E-03	7.25E-03

Location and Quarter Station 48 4th Q 2012

Nuclide	RQ	Activity		Error	MDA
BE-7	+	5.94E-02	±	1.10E-02	6.93E-03
K-40		1.14E-03	±	4.56E-03	8.58E-03
MN-54		-4.24E-05	±	3.46E-04	5.55E-04
FE-59		0.00E+00	±	2.75E-03	4.53E-03
CO-60		-7.40E-05	±	3.15E-03	7.23E-04
ZN-65		3.41E-04	±	8.66E-04	1.30E-03
ZRNB-95		-4.38E-04	±	1.29E-03	2.00E-03
CS-134		-6.67E-05	±	3.37E-04	5.37E-04
CS-137		9.43E-06	±	2.60E-04	4.24E-04
BALA140		0.00E+00	±	1.87E-02	3.07E-02
RU-106		4.76E-04	±	2.81E-03	4.47E-03

Location and Quarter Station 57 1st Q 2012

Nuclide	RQ	Activity		Error	MDA
BE-7	+	9.05E-02	±	1.40E-02	8.62E-03
K-40		5.10E-04	±	4.78E-03	9.59E-03
MN-54		-1.46E-04	±	4.23E-04	6.50E-04
FE-59		-1.20E-04	±	1.82E-03	2.93E-03
CO-60		-6.78E-05	±	4.12E-04	6.51E-04
ZN-65		-2.19E-04	±	1.18E-03	1.88E-03
ZRNB-95		-2.59E-04	±	1.22E-03	1.93E-03
CS-134		0.00E+00	±	4.87E-04	8.00E-04
CS-137		0.00E+00	±	5.19E-04	8.54E-04
BALA140		-9.72E-04	±	9.01E-03	1.43E-02
RU-106		0.00E+00	±	5.06E-03	8.33E-03

Location and Quarter Station 57 2nd Q 2012

Nuclide	RQ	Activity		Error	MDA
BE-7	+	1.21E-01	±	1.67E-02	9.13E-03
K-40		2.36E-05	±	7.76E-03	1.34E-02
MN-54		0.00E+00	±	4.86E-04	7.99E-04
FE-59		0.00E+00	±	9.10E-04	1.50E-03
CO-60		-1.43E-04	±	6.55E-04	1.03E-03
ZN-65		-3.16E-04	±	1.31E-03	2.05E-03
ZRNB-95		-2.93E-04	±	1.31E-03	2.06E-03
CS-134		9.71E-05	±	4.46E-04	7.09E-04
CS-137		1.79E-04	±	3.58E-04	5.16E-04
BALA140		-5.54E-03	±	1.56E-02	2.42E-02
RU-106		-1.59E-03	±	5.01E-03	7.84E-03

Location and Quarter Station 57 3rd Q 2012

Nuclide	RQ	Activity		Error	MDA
BE-7	+	1.63E-01	±	2.08E-02	1.16E-02
K-40		5.11E-03	±	6.95E-03	1.05E-02
MN-54		0.00E+00	±	3.03E-04	4.97E-04
FE-59		0.00E+00	±	7.67E-03	1.26E-02
CO-60		-1.94E-04	±	6.02E-04	9.21E-04
ZN-65		-5.72E-04	±	1.70E-03	2.64E-03
ZRNB-95		-2.77E-04	±	1.48E-03	2.34E-03
CS-134		-2.01E-04	±	5.36E-04	8.36E-04
CS-137		2.23E-05	±	5.53E-04	9.03E-04
BALA140		-1.33E-03	±	1.52E-02	2.44E-02
RU-106		9.16E-04	±	4.70E-03	7.47E-03

Location and Quarter Station 57 4th Q 2012

Nuclide	RQ	Activity		Error	MDA
BE-7	+	4.70E-02	±	1.03E-02	7.36E-03
K-40		1.60E-03	±	5.10E-03	9.27E-03
MN-54		-1.60E-04	±	4.34E-04	6.68E-04
FE-59		3.96E-04	±	2.20E-03	3.45E-03
CO-60		-8.61E-05	±	6.09E-03	6.93E-04
ZN-65		7.83E-05	±	9.22E-04	1.49E-03
ZRNB-95		6.76E-05	±	8.20E-04	1.32E-03
CS-134		-3.65E-05	±	3.31E-04	5.34E-04
CS-137		1.17E-04	±	3.07E-04	4.64E-04
BALA140		-5.65E-04	±	8.66E-03	1.39E-02
RU-106		-6.36E-04	±	3.00E-03	4.73E-03

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

TABLE A-3.2

GAMMA SPECTROMETRY RESULTS OF AIR PARTICULATE FILTERS - SUMMARY

Results in pCi/liter, corrected for decay during collection period

Nuclide		Average Activity	Activity Low	Activity High	Average MDA	Number of Samples	Number of Positive IDs
BALA140	Ind	-5.54E-04	-6.23E-03	4.58E-03	1.80E-02	44	0
BALA140	Cntl	-6.92E-04	-2.92E-03	1.84E-04	1.53E-02	4	0
BE-7	Ind	1.01E-01	4.44E-02	1.64E-01	9.27E-03	44	44
BE-7	Cntl	9.91E-02	4.25E-02	1.56E-01	8.70E-03	4	4
CO-60	Ind	6.53E-06	-1.94E-04	3.02E-04	8.11E-04	44	0
CO-60	Cntl	4.56E-05	-4.71E-05	1.35E-04	7.26E-04	4	0
CS-134	Ind	-2.70E-05	-2.01E-04	2.89E-04	6.72E-04	44	0
CS-134	Cntl	-5.95E-05	-1.79E-04	6.53E-05	6.61E-04	4	0
CS-137	Ind	-1.66E-06	-1.70E-04	3.05E-04	6.68E-04	44	0
CS-137	Cntl	2.53E-05	-1.20E-04	1.35E-04	6.29E-04	4	0
FE-59	Ind	-9.42E-05	-1.34E-03	1.18E-03	3.96E-03	44	0
FE-59	Cntl	-1.17E-04	-7.20E-04	7.19E-04	5.18E-03	4	0
K-40	Ind	2.06E-04	-5.93E-03	5.24E-03	1.10E-02	44	0
K-40	Cntl	7.21E-04	-5.11E-04	1.99E-03	1.00E-02	4	0
MN-54	Ind	-5.49E-06	-2.04E-04	3.43E-04	7.47E-04	44	0
MN-54	Cntl	7.59E-05	0.00E+00	1.95E-04	7.23E-04	4	0
RU-106	Ind	1.64E-04	-3.30E-03	2.52E-03	6.35E-03	44	0
RU-106	Cntl	-7.79E-05	-4.03E-04	2.36E-04	5.64E-03	4	0
ZN-65	Ind	-1.33E-04	-8.42E-04	5.86E-04	2.15E-03	44	0
ZN-65	Cntl	7.10E-05	-3.05E-05	3.20E-04	1.86E-03	4	0
ZRNB-95	Ind	2.51E-05	-8.01E-04	1.08E-03	2.00E-03	44	0
ZRNB-95	Cntl	-2.09E-04	-3.37E-04	0.00E+00	1.74E-03	4	0

Ind = Indicator Stations Cntl = Control Stations

TABLE A-4.1

GAMMA SPECTROMETRY RESULTS OF IODINE 131 ON CHARCOAL FILTERS

Results in pCi/cubic meter, corrected for decay during collection period

Collection Period	Station 1 RQ	Activity	±	Error	MDA	Station 9 RQ	Activity	±	Error	MDA
1/3/2012 - 1/10/2012		-2.16E-04	±	8.41E-03	1.38E-02		2.62E-03	±	7.58E-03	1.17E-02
1/10/2012 - 1/17/2012		-1.52E-03	±	9.88E-03	1.59E-02		-3.17E-03	±	1.04E-02	1.64E-02
1/17/2012 - 1/24/2012		-3.18E-03	±	1.18E-02	1.87E-02		5.34E-03	±	1.13E-02	1.76E-02
1/24/2012 - 1/31/2012		-2.67E-03	±	1.17E-02	1.87E-02		6.67E-04	±	9.59E-03	1.56E-02
1/31/2012 - 2/7/2012		4.16E-03	±	9.58E-03	1.48E-02		-1.80E-04	±	8.77E-03	1.44E-02
2/7/2012 - 2/14/2012		-5.62E-04	±	9.55E-03	1.56E-02		2.05E-03	±	9.98E-03	1.60E-02
2/14/2012 - 2/21/2012		7.31E-04	±	1.14E-02	1.85E-02		7.63E-03	±	9.39E-03	1.35E-02
2/21/2012 - 2/28/2012		-2.68E-03	±	1.28E-02	2.06E-02		4.30E-03	±	9.08E-03	1.38E-02
2/28/2012 - 3/6/2012		1.18E-04	±	1.03E-02	1.68E-02		4.86E-03	±	1.03E-02	1.57E-02
3/6/2012 - 3/13/2012		0.00E+00	±	1.31E-02	2.16E-02		0.00E+00	±	1.23E-02	2.03E-02
3/13/2012 - 3/20/2012		1.37E-04	±	9.23E-03	1.51E-02		7.70E-03	±	9.87E-03	1.44E-02
3/20/2012 - 3/27/2012		0.00E+00	±	9.38E-03	1.54E-02		-3.94E-03	±	1.23E-02	1.95E-02
3/27/2012 - 4/3/2012		0.00E+00	±	1.08E-02	1.78E-02		4.15E-03	±	8.85E-03	1.35E-02
4/3/2012 - 4/10/2012		-5.06E-03	±	1.12E-02	1.74E-02		4.90E-03	±	1.23E-02	1.93E-02
4/10/2012 - 4/17/2012		-3.60E-03	±	1.03E-02	1.61E-02		-1.73E-03	±	1.14E-02	1.84E-02
4/17/2012 - 4/24/2012		-2.81E-03	±	1.02E-02	1.62E-02		-2.61E-03	±	1.08E-02	1.72E-02
4/24/2012 - 5/1/2012		-2.33E-04	±	1.30E-02	2.13E-02		-2.70E-03	±	1.12E-02	1.78E-02
5/1/2012 - 5/7/2012		-2.85E-03	±	1.21E-02	1.92E-02		-6.90E-04	±	8.59E-03	1.39E-02
5/7/2012 - 5/15/2012		-1.33E-03	±	9.51E-03	1.54E-02		-1.25E-03	±	8.16E-03	1.31E-02
5/15/2012 - 5/22/2012		0.00E+00	±	1.25E-02	2.05E-02		-4.37E-03	±	1.20E-02	1.88E-02
5/22/2012 - 5/29/2012		-3.51E-03	±	1.01E-02	1.59E-02		-3.46E-03	±	1.20E-02	1.90E-02
5/29/2012 - 6/5/2012		4.59E-03	±	9.88E-03	1.52E-02		6.81E-04	±	8.87E-03	1.44E-02
6/5/2012 - 6/12/2012		4.40E-03	±	1.00E-02	1.54E-02		-4.62E-03	±	1.12E-02	1.75E-02
6/12/2012 - 6/19/2012		-2.79E-03	±	1.17E-02	1.87E-02		-3.50E-03	±	1.19E-02	1.88E-02
6/19/2012 - 6/26/2012		1.84E-04	±	1.10E-02	1.81E-02		3.45E-03	±	9.52E-03	1.48E-02
6/26/2012 - 7/3/2012		3.28E-03	±	1.13E-02	1.80E-02		2.68E-05	±	8.19E-03	1.35E-02
7/3/2012 - 7/10/2012		-9.73E-05	±	1.05E-02	1.72E-02		-4.68E-03	±	1.20E-02	1.89E-02
7/10/2012 - 7/17/2012		-3.80E-03	±	1.20E-02	1.90E-02		5.75E-03	±	1.01E-02	1.53E-02
7/17/2012 - 7/24/2012		-3.62E-03	±	1.18E-02	1.87E-02		3.95E-03	±	9.48E-03	1.47E-02
7/24/2012 - 7/31/2012		-3.47E-03	±	1.08E-02	1.70E-02		-1.26E-03	±	1.06E-02	1.71E-02
7/31/2012 - 8/7/2012		1.08E-02	±	9.02E-03	1.19E-02		3.23E-03	±	8.93E-03	1.39E-02
8/7/2012 - 8/14/2012		1.83E-03	±	1.00E-02	1.61E-02		-1.11E-03	±	1.11E-02	1.81E-02
8/14/2012 - 8/21/2012		-2.46E-04	±	1.08E-02	1.77E-02		4.36E-03	±	9.61E-03	1.47E-02
8/21/2012 - 8/28/2012		6.87E-03	±	9.22E-03	1.34E-02		-2.11E-03	±	1.27E-02	2.05E-02
8/28/2012 - 9/4/2012		1.21E-03	±	9.37E-03	1.51E-02		-7.62E-04	±	1.11E-02	1.82E-02
9/4/2012 - 9/11/2012		-8.92E-04	±	1.03E-02	1.68E-02		9.46E-05	±	8.83E-03	1.45E-02
9/11/2012 - 9/18/2012		3.15E-03	±	1.10E-02	1.74E-02		1.66E-03	±	9.80E-03	1.57E-02
9/18/2012 - 9/25/2012		-2.20E-04	±	1.05E-02	1.73E-02		4.62E-03	±	9.40E-03	1.43E-02
9/25/2012 - 10/2/2012		2.97E-03	±	9.98E-03	1.57E-02		-2.07E-03	±	1.10E-02	1.77E-02
10/2/2012 - 10/9/2012		1.05E-02	±	1.15E-02	1.67E-02		-1.82E-03	±	1.11E-02	1.80E-02
10/9/2012 - 10/16/2012		-5.50E-03	±	1.24E-02	1.94E-02		-4.80E-04	±	1.04E-02	1.69E-02
10/16/2012 - 10/23/2012		8.25E-03	±	9.52E-03	1.35E-02		6.87E-03	±	1.06E-02	1.59E-02
10/23/2012 - 10/30/2012		4.40E-03	±	1.12E-02	1.75E-02		-2.21E-03	±	1.27E-02	2.05E-02
10/30/2012 - 11/6/2012		1.82E-03	±	9.91E-03	1.59E-02		-5.86E-05	±	1.28E-02	2.10E-02
11/6/2012 - 11/13/2012		0.00E+00	±	1.00E-02	1.64E-02		-2.23E-03	±	1.09E-02	1.75E-02
11/13/2012 - 11/20/2012		3.02E-03	±	7.25E-03	1.10E-02		0.00E+00	±	9.43E-03	1.55E-02
11/20/2012 - 11/27/2012		8.50E-03	±	8.35E-03	1.17E-02		5.98E-04	±	6.79E-03	1.10E-02
11/27/2012 - 12/4/2012		1.09E-03	±	7.84E-03	1.26E-02		1.04E-04	±	5.78E-03	9.48E-03
12/4/2012 - 12/11/2012		3.14E-03	±	1.24E-02	1.98E-02		-1.11E-03	±	1.24E-02	2.02E-02
12/11/2012 - 12/18/2012		-3.83E-03	±	1.20E-02	1.90E-02		-8.45E-04	±	1.06E-02	1.72E-02
12/18/2012 - 12/26/2012		3.26E-03	±	9.99E-03	1.57E-02		0.00E+00	±	9.84E-03	1.62E-02
12/26/2012 - 1/2/2013		-9.23E-04	±	8.52E-03	1.38E-02		-2.76E-03	±	8.55E-03	1.34E-02

NVS = Valid sample not obtained due to sampler failure.

RQ= Results Qualifer. If blank, result is less than detection limit. If "+", result is above detection limit.

TABLE A-4.1

GAMMA SPECTROMETRY RESULTS OF IODINE 131 ON CHARCOAL FILTERS

Results in pCi/cubic meter, corrected for decay during collection period

Collection Period	Station 4				Station 21			
	RQ	Activity	Error	MDA	RQ	Activity	Error	MDA
1/3/2012 - 1/10/2012		-2.27E-04 ±	8.82E-03	1.44E-02		2.53E-03 ±	7.32E-03	1.13E-02
1/10/2012 - 1/17/2012		-1.70E-03 ±	1.10E-02	1.78E-02		-3.07E-03 ±	1.01E-02	1.59E-02
1/17/2012 - 1/24/2012		-3.43E-03 ±	1.27E-02	2.02E-02		5.49E-03 ±	1.16E-02	1.80E-02
1/24/2012 - 1/31/2012		-2.84E-03 ±	1.24E-02	1.99E-02		6.84E-04 ±	9.84E-03	1.60E-02
1/31/2012 - 2/7/2012		4.61E-03 ±	1.06E-02	1.64E-02		-1.77E-04 ±	8.62E-03	1.41E-02
2/7/2012 - 2/14/2012		-6.02E-04 ±	1.02E-02	1.67E-02		2.02E-03 ±	9.84E-03	1.57E-02
2/14/2012 - 2/21/2012		7.31E-04 ±	1.14E-02	1.85E-02		7.58E-03 ±	9.34E-03	1.34E-02
2/21/2012 - 2/28/2012		-2.68E-03 ±	1.28E-02	2.06E-02		4.13E-03 ±	8.73E-03	1.33E-02
2/28/2012 - 3/6/2012		1.20E-04 ±	1.05E-02	1.72E-02		4.67E-03 ±	9.84E-03	1.51E-02
3/6/2012 - 3/13/2012		0.00E+00 ±	1.35E-02	2.23E-02		0.00E+00 ±	1.19E-02	1.95E-02
3/13/2012 - 3/20/2012		1.39E-04 ±	9.38E-03	1.54E-02		7.50E-03 ±	9.62E-03	1.41E-02
3/20/2012 - 3/27/2012		0.00E+00 ±	9.35E-03	1.54E-02		-3.77E-03 ±	1.18E-02	1.87E-02
3/27/2012 - 4/3/2012		0.00E+00 ±	1.07E-02	1.75E-02		3.86E-03 ±	8.23E-03	1.25E-02
4/3/2012 - 4/10/2012		-4.98E-03 ±	1.10E-02	1.71E-02		4.57E-03 ±	1.15E-02	1.80E-02
4/10/2012 - 4/17/2012		-3.55E-03 ±	1.02E-02	1.59E-02		-1.59E-03 ±	1.05E-02	1.69E-02
4/17/2012 - 4/24/2012		-2.77E-03 ±	1.01E-02	1.60E-02		-2.58E-03 ±	1.07E-02	1.71E-02
4/24/2012 - 5/1/2012		-2.32E-04 ±	1.29E-02	2.12E-02		-2.89E-03 ±	1.19E-02	1.91E-02
5/1/2012 - 5/7/2012		-2.84E-03 ±	1.20E-02	1.92E-02		-9.26E-04 ±	1.15E-02	1.87E-02
5/7/2012 - 5/15/2012		-1.30E-03 ±	9.35E-03	1.51E-02		-1.33E-03 ±	8.71E-03	1.40E-02
5/15/2012 - 5/22/2012		0.00E+00 ±	1.25E-02	2.06E-02		-4.61E-03 ±	1.26E-02	1.99E-02
5/22/2012 - 5/29/2012		-3.51E-03 ±	1.01E-02	1.58E-02		-3.53E-03 ±	1.22E-02	1.95E-02
5/29/2012 - 6/5/2012		4.44E-03 ±	9.56E-03	1.47E-02		6.88E-04 ±	8.97E-03	1.46E-02
6/5/2012 - 6/12/2012		4.19E-03 ±	9.51E-03	1.47E-02		-4.90E-03 ±	1.19E-02	1.85E-02
6/12/2012 - 6/19/2012		-2.69E-03 ±	1.13E-02	1.80E-02		-3.60E-03 ±	1.22E-02	1.93E-02
6/19/2012 - 6/26/2012		1.81E-04 ±	1.09E-02	1.78E-02		3.48E-03 ±	9.60E-03	1.49E-02
6/26/2012 - 7/3/2012		3.22E-03 ±	1.11E-02	1.76E-02		2.70E-05 ±	8.26E-03	1.36E-02
7/3/2012 - 7/10/2012		-9.44E-05 ±	1.02E-02	1.67E-02		-4.87E-03 ±	1.25E-02	1.96E-02
7/10/2012 - 7/17/2012		-3.67E-03 ±	1.16E-02	1.83E-02		5.67E-03 ±	9.99E-03	1.51E-02
7/17/2012 - 7/24/2012		-3.81E-03 ±	1.24E-02	1.97E-02		4.16E-03 ±	9.97E-03	1.54E-02
7/24/2012 - 7/31/2012		-3.65E-03 ±	1.13E-02	1.79E-02		-1.32E-03 ±	1.11E-02	1.79E-02
7/31/2012 - 8/7/2012		1.12E-02 ±	9.36E-03	1.24E-02		3.36E-03 ±	9.29E-03	1.44E-02
8/7/2012 - 8/14/2012		1.94E-03 ±	1.06E-02	1.70E-02		-1.17E-03 ±	1.18E-02	1.91E-02
8/14/2012 - 8/21/2012		-2.54E-04 ±	1.11E-02	1.83E-02		4.57E-03 ±	1.01E-02	1.55E-02
8/21/2012 - 8/28/2012		7.07E-03 ±	9.49E-03	1.37E-02		-2.18E-03 ±	1.31E-02	2.11E-02
8/28/2012 - 9/4/2012		1.25E-03 ±	9.72E-03	1.57E-02		-8.09E-04 ±	1.18E-02	1.93E-02
9/4/2012 - 9/11/2012		-9.07E-04 ±	1.05E-02	1.71E-02		1.00E-04 ±	9.35E-03	1.53E-02
9/11/2012 - 9/18/2012		3.29E-03 ±	1.15E-02	1.82E-02		1.70E-03 ±	1.00E-02	1.61E-02
9/18/2012 - 9/25/2012		-2.27E-04 ±	1.09E-02	1.78E-02		4.55E-03 ±	9.26E-03	1.41E-02
9/25/2012 - 10/2/2012		3.01E-03 ±	1.01E-02	1.59E-02		-2.14E-03 ±	1.14E-02	1.83E-02
10/2/2012 - 10/9/2012		1.07E-02 ±	1.17E-02	1.70E-02		-1.98E-03 ±	1.21E-02	1.95E-02
10/9/2012 - 10/16/2012		-5.51E-03 ±	1.25E-02	1.95E-02		-4.79E-04 ±	1.03E-02	1.69E-02
10/16/2012 - 10/23/2012		8.27E-03 ±	9.53E-03	1.35E-02		7.11E-03 ±	1.10E-02	1.65E-02
10/23/2012 - 10/30/2012		4.34E-03 ±	1.11E-02	1.73E-02		-2.19E-03 ±	1.26E-02	2.03E-02
10/30/2012 - 11/6/2012		1.87E-03 ±	1.02E-02	1.64E-02		-5.75E-05 ±	1.26E-02	2.06E-02
11/6/2012 - 11/13/2012		0.00E+00 ±	1.03E-02	1.70E-02		-2.36E-03 ±	1.16E-02	1.85E-02
11/13/2012 - 11/20/2012		3.12E-03 ±	7.50E-03	1.14E-02		0.00E+00 ±	1.03E-02	1.69E-02
11/20/2012 - 11/27/2012		8.81E-03 ±	8.65E-03	1.21E-02		6.39E-04 ±	7.25E-03	1.18E-02
11/27/2012 - 12/4/2012		1.12E-03 ±	8.08E-03	1.30E-02		1.09E-04 ±	6.08E-03	9.97E-03
12/4/2012 - 12/11/2012		3.29E-03 ±	1.29E-02	2.07E-02		-1.16E-03 ±	1.30E-02	2.12E-02
12/11/2012 - 12/18/2012		-3.69E-03 ±	1.16E-02	1.83E-02		-8.06E-04 ±	1.01E-02	1.64E-02
12/18/2012 - 12/26/2012		3.19E-03 ±	9.79E-03	1.54E-02		0.00E+00 ±	9.51E-03	1.56E-02
12/26/2012 - 1/2/2013		NVS				-2.68E-03 ±	8.29E-03	1.30E-02

NVS = Valid sample not obtained due to sampler failure.

RQ= Results Qualifer. If blank, result is less than detection limit. If "+", result is above detection limit.

TABLE A-4.1

GAMMA SPECTROMETRY RESULTS OF IODINE 131 ON CHARCOAL FILTERS

Results in pCi/cubic meter, corrected for decay during collection period

Collection Period	Station 5 RQ	Activity	±	Error	MDA	Station 23 RQ	Activity	±	Error	MDA
1/3/2012 - 1/10/2012		-2.27E-04	±	8.83E-03	1.45E-02		-3.52E-03	±	1.59E-02	2.55E-02
1/10/2012 - 1/17/2012		-1.58E-03	±	1.03E-02	1.65E-02		-1.59E-03	±	9.88E-03	1.59E-02
1/17/2012 - 1/24/2012		-3.34E-03	±	1.23E-02	1.97E-02		7.39E-03	±	1.17E-02	1.76E-02
1/24/2012 - 1/31/2012		-2.82E-03	±	1.23E-02	1.97E-02		1.38E-04	±	1.19E-02	1.96E-02
1/31/2012 - 2/7/2012		4.29E-03	±	9.87E-03	1.52E-02		-1.77E-04	±	8.62E-03	1.41E-02
2/7/2012 - 2/14/2012		-5.81E-04	±	9.87E-03	1.61E-02		3.58E-03	±	1.01E-02	1.59E-02
2/14/2012 - 2/21/2012		7.75E-04	±	1.21E-02	1.97E-02		4.73E-03	±	1.03E-02	1.58E-02
2/21/2012 - 2/28/2012		-2.66E-03	±	1.27E-02	2.05E-02		2.70E-03	±	1.21E-02	1.93E-02
2/28/2012 - 3/6/2012		1.18E-04	±	1.02E-02	1.68E-02		3.59E-03	±	1.20E-02	1.90E-02
3/6/2012 - 3/13/2012		0.00E+00	±	1.30E-02	2.14E-02		-2.25E-03	±	1.13E-02	1.82E-02
3/13/2012 - 3/20/2012		1.32E-04	±	8.90E-03	1.46E-02		-1.14E-03	±	1.37E-02	2.23E-02
3/20/2012 - 3/27/2012		NVS					-5.27E-05	±	1.02E-02	1.67E-02
3/27/2012 - 4/3/2012		NVS					-2.29E-03	±	1.25E-02	2.01E-02
4/3/2012 - 4/10/2012		NVS					9.35E-04	±	9.89E-03	1.60E-02
4/10/2012 - 4/17/2012		-1.73E-03	±	1.14E-02	1.84E-02		-2.09E-03	±	1.07E-02	1.72E-02
4/17/2012 - 4/24/2012		-2.79E-03	±	1.02E-02	1.61E-02		6.01E-05	±	1.06E-02	1.75E-02
4/24/2012 - 5/1/2012		-2.32E-04	±	1.29E-02	2.12E-02		6.86E-03	±	7.71E-03	1.07E-02
5/1/2012 - 5/7/2012		-7.05E-04	±	8.78E-03	1.42E-02		-1.85E-03	±	1.15E-02	1.86E-02
5/7/2012 - 5/15/2012		-1.27E-03	±	8.29E-03	1.33E-02		-3.93E-04	±	8.16E-03	1.33E-02
5/15/2012 - 5/22/2012		0.00E+00	±	1.31E-02	2.15E-02		-2.23E-04	±	1.15E-02	1.88E-02
5/22/2012 - 5/29/2012		-3.61E-03	±	1.04E-02	1.63E-02		-2.98E-04	±	9.88E-03	1.62E-02
5/29/2012 - 6/5/2012		4.79E-03	±	1.03E-02	1.58E-02		0.00E+00	±	1.25E-02	2.06E-02
6/5/2012 - 6/12/2012		-4.86E-03	±	1.18E-02	1.84E-02		0.00E+00	±	1.01E-02	1.66E-02
6/12/2012 - 6/19/2012		-2.74E-03	±	1.15E-02	1.83E-02		-1.34E-03	±	1.03E-02	1.67E-02
6/19/2012 - 6/26/2012		1.80E-04	±	1.08E-02	1.77E-02		-3.68E-03	±	1.28E-02	2.04E-02
6/26/2012 - 7/3/2012		2.69E-05	±	8.22E-03	1.35E-02		4.55E-03	±	9.08E-03	1.38E-02
7/3/2012 - 7/10/2012		-9.50E-05	±	1.02E-02	1.68E-02		-9.29E-05	±	1.00E-02	1.64E-02
7/10/2012 - 7/17/2012		-3.70E-03	±	1.17E-02	1.85E-02		-2.18E-03	±	1.12E-02	1.80E-02
7/17/2012 - 7/24/2012		-3.84E-03	±	1.25E-02	1.98E-02		-5.39E-04	±	1.01E-02	1.65E-02
7/24/2012 - 7/31/2012		-3.74E-03	±	1.16E-02	1.83E-02		-2.56E-04	±	9.61E-03	1.57E-02
7/31/2012 - 8/7/2012		1.09E-02	±	9.14E-03	1.21E-02		1.38E-04	±	1.06E-02	1.73E-02
8/7/2012 - 8/14/2012		1.85E-03	±	1.01E-02	1.62E-02		4.76E-04	±	1.07E-02	1.74E-02
8/14/2012 - 8/21/2012		4.49E-03	±	9.88E-03	1.52E-02		3.83E-03	±	9.29E-03	1.43E-02
8/21/2012 - 8/28/2012		6.68E-03	±	8.97E-03	1.30E-02		1.71E-03	±	9.56E-03	1.53E-02
8/28/2012 - 9/4/2012		1.21E-03	±	9.43E-03	1.52E-02		-3.77E-03	±	1.20E-02	1.90E-02
9/4/2012 - 9/11/2012		-9.14E-04	±	1.06E-02	1.72E-02		-1.85E-04	±	1.22E-02	2.00E-02
9/11/2012 - 9/18/2012		3.31E-03	±	1.15E-02	1.83E-02		0.00E+00	±	9.98E-03	1.64E-02
9/18/2012 - 9/25/2012		-2.24E-04	±	1.07E-02	1.76E-02		2.60E-03	±	9.04E-03	1.42E-02
9/25/2012 - 10/2/2012		3.08E-03	±	1.03E-02	1.63E-02		-2.00E-03	±	1.08E-02	1.74E-02
10/2/2012 - 10/9/2012		1.08E-02	±	1.18E-02	1.72E-02		5.26E-03	±	1.33E-02	2.09E-02
10/9/2012 - 10/16/2012		-5.40E-03	±	1.22E-02	1.91E-02		1.05E-02	±	1.22E-02	1.79E-02
10/16/2012 - 10/23/2012		8.11E-03	±	9.35E-03	1.33E-02		-8.69E-04	±	9.35E-03	1.52E-02
10/23/2012 - 10/30/2012		4.39E-03	±	1.12E-02	1.75E-02		3.99E-04	±	1.09E-02	1.78E-02
10/30/2012 - 11/6/2012		1.86E-03	±	1.02E-02	1.63E-02		-3.91E-03	±	1.25E-02	1.98E-02
11/6/2012 - 11/13/2012		0.00E+00	±	1.03E-02	1.69E-02		3.20E-03	±	1.01E-02	1.58E-02
11/13/2012 - 11/20/2012		3.12E-03	±	7.48E-03	1.13E-02		0.00E+00	±	2.15E-02	3.54E-02
11/20/2012 - 11/27/2012		8.39E-03	±	8.24E-03	1.16E-02		6.86E-04	±	6.99E-03	1.13E-02
11/27/2012 - 12/4/2012		1.08E-03	±	7.81E-03	1.26E-02		-1.56E-03	±	7.91E-03	1.26E-02
12/4/2012 - 12/11/2012		3.25E-03	±	1.28E-02	2.04E-02		-4.02E-03	±	1.33E-02	2.11E-02
12/11/2012 - 12/18/2012		-3.60E-03	±	1.13E-02	1.79E-02		-1.33E-03	±	1.06E-02	1.72E-02
12/18/2012 - 12/26/2012		3.09E-03	±	9.47E-03	1.49E-02		1.73E-03	±	7.06E-03	1.11E-02
12/26/2012 - 1/2/2013		-8.96E-04	±	8.26E-03	1.34E-02		-2.31E-03	±	8.76E-03	1.39E-02

NVS = Valid sample not obtained due to sampler failure.

RQ= Results Qualifer. If blank, result is less than detection limit. If "+", result is above detection limit.

TABLE A-4.1

GAMMA SPECTROMETRY RESULTS OF IODINE 131 ON CHARCOAL FILTERS

Results in pCi/cubic meter, corrected for decay during collection period

Collection Period	Station 6					Station 40				
	RQ	Activity		Error	MDA	RQ	Activity		Error	MDA
1/3/2012 - 1/10/2012		-2.27E-04	±	8.82E-03	1.44E-02		-2.59E-03	±	1.17E-02	1.87E-02
1/10/2012 - 1/17/2012		-1.60E-03	±	1.04E-02	1.67E-02		-1.63E-03	±	1.01E-02	1.62E-02
1/17/2012 - 1/24/2012		-3.37E-03	±	1.25E-02	1.99E-02		7.53E-03	±	1.19E-02	1.79E-02
1/24/2012 - 1/31/2012		-2.52E-03	±	1.11E-02	1.77E-02		1.42E-04	±	1.23E-02	2.02E-02
1/31/2012 - 2/7/2012		4.03E-03	±	9.27E-03	1.43E-02		-1.74E-04	±	8.45E-03	1.39E-02
2/7/2012 - 2/14/2012		-5.45E-04	±	9.25E-03	1.51E-02		3.52E-03	±	9.97E-03	1.56E-02
2/14/2012 - 2/21/2012		7.07E-04	±	1.10E-02	1.80E-02		4.77E-03	±	1.04E-02	1.60E-02
2/21/2012 - 2/28/2012		-2.55E-03	±	1.22E-02	1.96E-02		2.76E-03	±	1.24E-02	1.98E-02
2/28/2012 - 3/6/2012		1.14E-04	±	9.93E-03	1.63E-02		3.59E-03	±	1.20E-02	1.90E-02
3/6/2012 - 3/13/2012		0.00E+00	±	1.27E-02	2.08E-02		-2.27E-03	±	1.14E-02	1.83E-02
3/13/2012 - 3/20/2012		1.32E-04	±	8.93E-03	1.46E-02		-8.76E-04	±	1.06E-02	1.72E-02
3/20/2012 - 3/27/2012		0.00E+00	±	9.05E-03	1.49E-02		-5.07E-05	±	9.78E-03	1.61E-02
3/27/2012 - 4/3/2012		0.00E+00	±	1.05E-02	1.73E-02		-2.18E-03	±	1.19E-02	1.91E-02
4/3/2012 - 4/10/2012		-4.89E-03	±	1.08E-02	1.68E-02		8.83E-04	±	9.34E-03	1.51E-02
4/10/2012 - 4/17/2012		-3.54E-03	±	1.01E-02	1.59E-02		-1.93E-03	±	9.89E-03	1.58E-02
4/17/2012 - 4/24/2012		-2.68E-03	±	9.74E-03	1.54E-02		5.89E-05	±	1.04E-02	1.71E-02
4/24/2012 - 5/1/2012		-2.28E-04	±	1.27E-02	2.09E-02		8.09E-03	±	9.09E-03	1.27E-02
5/1/2012 - 5/7/2012		-2.84E-03	±	1.20E-02	1.92E-02		-1.90E-03	±	1.18E-02	1.91E-02
5/7/2012 - 5/15/2012		-1.37E-03	±	9.82E-03	1.59E-02		-3.95E-04	±	8.21E-03	1.34E-02
5/15/2012 - 5/22/2012		0.00E+00	±	1.29E-02	2.13E-02		-2.33E-04	±	1.20E-02	1.97E-02
5/22/2012 - 5/29/2012		-3.57E-03	±	1.03E-02	1.61E-02		-3.10E-04	±	1.03E-02	1.69E-02
5/29/2012 - 6/5/2012		4.59E-03	±	9.88E-03	1.52E-02		0.00E+00	±	1.35E-02	2.21E-02
6/5/2012 - 6/12/2012		4.41E-03	±	1.00E-02	1.54E-02		0.00E+00	±	1.02E-02	1.68E-02
6/12/2012 - 6/19/2012		-2.78E-03	±	1.17E-02	1.86E-02		-1.36E-03	±	1.04E-02	1.69E-02
6/19/2012 - 6/26/2012		1.88E-04	±	1.13E-02	1.85E-02		-3.66E-03	±	1.28E-02	2.03E-02
6/26/2012 - 7/3/2012		3.39E-03	±	1.17E-02	1.86E-02		4.58E-03	±	9.13E-03	1.39E-02
7/3/2012 - 7/10/2012		-1.01E-04	±	1.09E-02	1.79E-02		-9.38E-05	±	1.01E-02	1.66E-02
7/10/2012 - 7/17/2012		-3.87E-03	±	1.22E-02	1.93E-02		-2.10E-03	±	1.08E-02	1.73E-02
7/17/2012 - 7/24/2012		-3.74E-03	±	1.22E-02	1.94E-02		-5.24E-04	±	9.84E-03	1.61E-02
7/24/2012 - 7/31/2012		-3.59E-03	±	1.11E-02	1.76E-02		-2.46E-04	±	9.22E-03	1.51E-02
7/31/2012 - 8/7/2012		1.10E-02	±	9.23E-03	1.22E-02		1.33E-04	±	1.01E-02	1.66E-02
8/7/2012 - 8/14/2012		1.98E-03	±	1.08E-02	1.74E-02		4.41E-04	±	9.86E-03	1.61E-02
8/14/2012 - 8/21/2012		-2.57E-04	±	1.13E-02	1.85E-02		3.65E-03	±	8.85E-03	1.36E-02
8/21/2012 - 8/28/2012		7.05E-03	±	9.46E-03	1.37E-02		1.63E-03	±	9.16E-03	1.46E-02
8/28/2012 - 9/4/2012		1.25E-03	±	9.73E-03	1.57E-02		-3.47E-03	±	1.11E-02	1.75E-02
9/4/2012 - 9/11/2012		-9.23E-04	±	1.07E-02	1.74E-02		-1.70E-04	±	1.12E-02	1.84E-02
9/11/2012 - 9/18/2012		3.24E-03	±	1.13E-02	1.79E-02		0.00E+00	±	9.66E-03	1.59E-02
9/18/2012 - 9/25/2012		-2.26E-04	±	1.08E-02	1.78E-02		2.43E-03	±	8.44E-03	1.32E-02
9/25/2012 - 10/2/2012		3.07E-03	±	1.03E-02	1.62E-02		-1.95E-03	±	1.06E-02	1.70E-02
10/2/2012 - 10/9/2012		1.07E-02	±	1.17E-02	1.70E-02		5.18E-03	±	1.31E-02	2.05E-02
10/9/2012 - 10/16/2012		-5.51E-03	±	1.25E-02	1.95E-02		1.01E-02	±	1.18E-02	1.72E-02
10/16/2012 - 10/23/2012		8.12E-03	±	9.37E-03	1.33E-02		-8.68E-04	±	9.35E-03	1.52E-02
10/23/2012 - 10/30/2012		4.26E-03	±	1.09E-02	1.70E-02		3.66E-04	±	9.98E-03	1.63E-02
10/30/2012 - 11/6/2012		1.76E-03	±	9.59E-03	1.54E-02		-4.04E-03	±	1.29E-02	2.05E-02
11/6/2012 - 11/13/2012		0.00E+00	±	1.01E-02	1.67E-02		3.36E-03	±	1.06E-02	1.67E-02
11/13/2012 - 11/20/2012		3.07E-03	±	7.38E-03	1.12E-02		0.00E+00	±	1.19E-02	1.96E-02
11/20/2012 - 11/27/2012		8.51E-03	±	8.36E-03	1.17E-02		7.00E-04	±	7.13E-03	1.15E-02
11/27/2012 - 12/4/2012		1.10E-03	±	7.94E-03	1.28E-02		-1.58E-03	±	8.01E-03	1.28E-02
12/4/2012 - 12/11/2012		3.17E-03	±	1.25E-02	1.99E-02		-4.09E-03	±	1.35E-02	2.15E-02
12/11/2012 - 12/18/2012		-3.62E-03	±	1.14E-02	1.80E-02		-1.33E-03	±	1.06E-02	1.72E-02
12/18/2012 - 12/26/2012		3.14E-03	±	9.63E-03	1.52E-02		1.76E-03	±	7.16E-03	1.13E-02
12/26/2012 - 1/2/2013		-8.96E-04	±	8.26E-03	1.34E-02		-2.35E-03	±	8.93E-03	1.42E-02

NVS = Valid sample not obtained due to sampler failure.

RQ= Results Qualifer. If blank, result is less than detection limit. If "+", result is above detection limit.

TABLE A-4.1

GAMMA SPECTROMETRY RESULTS OF IODINE 131 ON CHARCOAL FILTERS

Results in pCi/cubic meter, corrected for decay during collection period

Collection Period	Station 7				Station 48			
	RQ	Activity	Error	MDA	RQ	Activity	Error	MDA
1/3/2012 - 1/10/2012		2.66E-03 ±	7.70E-03	1.19E-02		-2.59E-03 ±	1.17E-02	1.87E-02
1/10/2012 - 1/17/2012		-3.22E-03 ±	1.06E-02	1.67E-02		-1.60E-03 ±	9.92E-03	1.59E-02
1/17/2012 - 1/24/2012		NVS				7.26E-03 ±	1.15E-02	1.73E-02
1/24/2012 - 1/31/2012		6.66E-04 ±	9.58E-03	1.56E-02		1.40E-04 ±	1.21E-02	1.99E-02
1/31/2012 - 2/7/2012		-1.75E-04 ±	8.48E-03	1.39E-02		-1.83E-04 ±	8.89E-03	1.46E-02
2/7/2012 - 2/14/2012		1.99E-03 ±	9.67E-03	1.54E-02		3.64E-03 ±	1.03E-02	1.61E-02
2/14/2012 - 2/21/2012		7.45E-03 ±	9.18E-03	1.32E-02		4.94E-03 ±	1.07E-02	1.65E-02
2/21/2012 - 2/28/2012		4.32E-03 ±	9.13E-03	1.39E-02		2.59E-03 ±	1.16E-02	1.85E-02
2/28/2012 - 3/6/2012		4.78E-03 ±	1.01E-02	1.55E-02		3.19E-03 ±	1.07E-02	1.69E-02
3/6/2012 - 3/13/2012		0.00E+00 ±	1.21E-02	1.99E-02		-1.96E-03 ±	9.87E-03	1.58E-02
3/13/2012 - 3/20/2012		7.60E-03 ±	9.74E-03	1.42E-02		-1.10E-03 ±	1.32E-02	2.15E-02
3/20/2012 - 3/27/2012		-3.88E-03 ±	1.22E-02	1.93E-02		-5.06E-05 ±	9.78E-03	1.61E-02
3/27/2012 - 4/3/2012		4.15E-03 ±	8.85E-03	1.35E-02		-2.21E-03 ±	1.21E-02	1.95E-02
4/3/2012 - 4/10/2012		4.52E-03 ±	1.13E-02	1.78E-02		9.12E-04 ±	9.65E-03	1.56E-02
4/10/2012 - 4/17/2012		-3.53E-03 ±	1.01E-02	1.58E-02		-2.09E-03 ±	1.07E-02	1.72E-02
4/17/2012 - 4/24/2012		-2.57E-03 ±	1.07E-02	1.70E-02		5.95E-05 ±	1.05E-02	1.73E-02
4/24/2012 - 5/1/2012		-2.74E-03 ±	1.13E-02	1.81E-02		7.88E-03 ±	8.85E-03	1.23E-02
5/1/2012 - 5/7/2012		-2.90E-03 ±	1.23E-02	1.96E-02		-1.87E-03 ±	1.16E-02	1.87E-02
5/7/2012 - 5/15/2012		-1.37E-03 ±	9.83E-03	1.59E-02		-3.95E-04 ±	8.21E-03	1.34E-02
5/15/2012 - 5/22/2012		-4.55E-03 ±	1.25E-02	1.96E-02		-2.30E-04 ±	1.18E-02	1.94E-02
5/22/2012 - 5/29/2012		-3.53E-03 ±	1.22E-02	1.95E-02		-3.00E-04 ±	9.96E-03	1.63E-02
5/29/2012 - 6/5/2012		7.12E-04 ±	9.29E-03	1.51E-02		0.00E+00 ±	1.28E-02	2.11E-02
6/5/2012 - 6/12/2012		4.56E-03 ±	1.04E-02	1.60E-02		0.00E+00 ±	9.91E-03	1.63E-02
6/12/2012 - 6/19/2012		-3.65E-03 ±	1.24E-02	1.96E-02		-1.37E-03 ±	1.05E-02	1.70E-02
6/19/2012 - 6/26/2012		3.43E-03 ±	9.48E-03	1.47E-02		-3.72E-03 ±	1.30E-02	2.06E-02
6/26/2012 - 7/3/2012		3.34E-03 ±	1.15E-02	1.83E-02		4.58E-03 ±	9.13E-03	1.39E-02
7/3/2012 - 7/10/2012		-4.83E-03 ±	1.24E-02	1.95E-02		-9.19E-05 ±	9.91E-03	1.63E-02
7/10/2012 - 7/17/2012		5.75E-03 ±	1.01E-02	1.53E-02		-2.10E-03 ±	1.08E-02	1.74E-02
7/17/2012 - 7/24/2012		3.93E-03 ±	9.43E-03	1.46E-02		-5.16E-04 ±	9.68E-03	1.58E-02
7/24/2012 - 7/31/2012		-1.23E-03 ±	1.03E-02	1.67E-02		-2.45E-04 ±	9.22E-03	1.51E-02
7/31/2012 - 8/7/2012		3.18E-03 ±	8.81E-03	1.37E-02		1.32E-04 ±	1.01E-02	1.65E-02
8/7/2012 - 8/14/2012		-1.06E-03 ±	1.07E-02	1.73E-02		4.31E-04 ±	9.64E-03	1.58E-02
8/14/2012 - 8/21/2012		-2.49E-04 ±	1.09E-02	1.79E-02		3.63E-03 ±	8.79E-03	1.35E-02
8/21/2012 - 8/28/2012		-2.11E-03 ±	1.27E-02	2.05E-02		1.64E-03 ±	9.16E-03	1.47E-02
8/28/2012 - 9/4/2012		-7.40E-04 ±	1.08E-02	1.76E-02		-3.53E-03 ±	1.12E-02	1.77E-02
9/4/2012 - 9/11/2012		9.30E-05 ±	8.68E-03	1.42E-02		-1.72E-04 ±	1.14E-02	1.87E-02
9/11/2012 - 9/18/2012		1.69E-03 ±	9.97E-03	1.60E-02		0.00E+00 ±	9.46E-03	1.56E-02
9/18/2012 - 9/25/2012		4.53E-03 ±	9.23E-03	1.41E-02		2.41E-03 ±	8.38E-03	1.31E-02
9/25/2012 - 10/2/2012		-2.08E-03 ±	1.11E-02	1.78E-02		-1.92E-03 ±	1.04E-02	1.67E-02
10/2/2012 - 10/9/2012		-1.91E-03 ±	1.17E-02	1.88E-02		4.99E-03 ±	1.26E-02	1.98E-02
10/9/2012 - 10/16/2012		-4.79E-04 ±	1.03E-02	1.69E-02		9.52E-03 ±	1.11E-02	1.62E-02
10/16/2012 - 10/23/2012		7.24E-03 ±	1.12E-02	1.68E-02		-7.85E-04 ±	8.45E-03	1.37E-02
10/23/2012 - 10/30/2012		-2.29E-03 ±	1.31E-02	2.12E-02		3.60E-04 ±	9.81E-03	1.60E-02
10/30/2012 - 11/6/2012		-5.75E-05 ±	1.26E-02	2.07E-02		-3.58E-03 ±	1.15E-02	1.82E-02
11/6/2012 - 11/13/2012		-2.23E-03 ±	1.09E-02	1.75E-02		3.28E-03 ±	1.04E-02	1.63E-02
11/13/2012 - 11/20/2012		0.00E+00 ±	9.61E-03	1.58E-02		0.00E+00 ±	1.19E-02	1.95E-02
11/20/2012 - 11/27/2012		6.27E-04 ±	7.12E-03	1.15E-02		6.55E-04 ±	6.68E-03	1.08E-02
11/27/2012 - 12/4/2012		1.06E-04 ±	5.89E-03	9.66E-03		-1.53E-03 ±	7.76E-03	1.24E-02
12/4/2012 - 12/11/2012		-1.12E-03 ±	1.25E-02	2.04E-02		-3.92E-03 ±	1.30E-02	2.06E-02
12/11/2012 - 12/18/2012		-8.34E-04 ±	1.04E-02	1.70E-02		-1.32E-03 ±	1.05E-02	1.70E-02
12/18/2012 - 12/26/2012		0.00E+00 ±	8.39E-03	1.38E-02		1.76E-03 ±	7.20E-03	1.13E-02
12/26/2012 - 1/2/2013		-2.58E-03 ±	8.00E-03	1.26E-02		-2.35E-03 ±	8.93E-03	1.42E-02

NVS = Valid sample not obtained due to sampler failure.

RQ= Results Qualifer. If blank, result is less than detection limit. If "+", result is above detection limit.

TABLE A-4.1

GAMMA SPECTROMETRY RESULTS OF IODINE 131 ON CHARCOAL FILTERS

Results in pCi/cubic meter, corrected for decay during collection period

Collection Period	Station 8				Station 57			
	RQ	Activity	Error	MDA	RQ	Activity	Error	MDA
1/3/2012 - 1/10/2012		2.53E-03 ±	7.32E-03	1.13E-02		-2.42E-03 ±	1.10E-02	1.75E-02
1/10/2012 - 1/17/2012		-3.03E-03 ±	9.96E-03	1.57E-02		-1.52E-03 ±	9.40E-03	1.51E-02
1/17/2012 - 1/24/2012		5.33E-03 ±	1.13E-02	1.75E-02		NVS		
1/24/2012 - 1/31/2012		6.59E-04 ±	9.48E-03	1.54E-02		1.29E-04 ±	1.12E-02	1.84E-02
1/31/2012 - 2/7/2012		-1.74E-04 ±	8.45E-03	1.38E-02		-2.05E-04 ±	9.98E-03	1.63E-02
2/7/2012 - 2/14/2012		2.02E-03 ±	9.83E-03	1.57E-02		3.46E-03 ±	9.80E-03	1.53E-02
2/14/2012 - 2/21/2012		7.51E-03 ±	9.25E-03	1.33E-02		4.57E-03 ±	9.95E-03	1.53E-02
2/21/2012 - 2/28/2012		4.29E-03 ±	9.07E-03	1.38E-02		2.60E-03 ±	1.16E-02	1.86E-02
2/28/2012 - 3/6/2012		4.86E-03 ±	1.02E-02	1.57E-02		3.30E-03 ±	1.10E-02	1.75E-02
3/6/2012 - 3/13/2012		0.00E+00 ±	1.26E-02	2.07E-02		-2.07E-03 ±	1.04E-02	1.67E-02
3/13/2012 - 3/20/2012		7.70E-03 ±	9.87E-03	1.44E-02		-9.99E-04 ±	1.20E-02	1.96E-02
3/20/2012 - 3/27/2012		-3.86E-03 ±	1.21E-02	1.91E-02		-4.93E-05 ±	9.53E-03	1.56E-02
3/27/2012 - 4/3/2012		4.01E-03 ±	8.56E-03	1.30E-02		-2.01E-03 ±	1.10E-02	1.77E-02
4/3/2012 - 4/10/2012		5.10E-03 ±	1.28E-02	2.01E-02		9.22E-04 ±	9.75E-03	1.58E-02
4/10/2012 - 4/17/2012		-1.64E-03 ±	1.08E-02	1.75E-02		-2.02E-03 ±	1.04E-02	1.66E-02
4/17/2012 - 4/24/2012		-2.50E-03 ±	1.04E-02	1.65E-02		5.99E-05 ±	1.06E-02	1.74E-02
4/24/2012 - 5/1/2012		-2.64E-03 ±	1.09E-02	1.74E-02		7.74E-03 ±	8.70E-03	1.21E-02
5/1/2012 - 5/7/2012		-6.82E-04 ±	8.49E-03	1.38E-02		-1.79E-03 ±	1.12E-02	1.80E-02
5/7/2012 - 5/15/2012		-1.21E-03 ±	7.89E-03	1.27E-02		-3.92E-04 ±	8.16E-03	1.33E-02
5/15/2012 - 5/22/2012		-4.46E-03 ±	1.22E-02	1.92E-02		-2.16E-04 ±	1.11E-02	1.82E-02
5/22/2012 - 5/29/2012		-3.39E-03 ±	1.18E-02	1.87E-02		-3.13E-04 ±	1.04E-02	1.70E-02
5/29/2012 - 6/5/2012		6.82E-04 ±	8.89E-03	1.44E-02		0.00E+00 ±	1.29E-02	2.12E-02
6/5/2012 - 6/12/2012		-4.53E-03 ±	1.10E-02	1.72E-02		0.00E+00 ±	1.01E-02	1.66E-02
6/12/2012 - 6/19/2012		-3.53E-03 ±	1.19E-02	1.90E-02		-1.33E-03 ±	1.02E-02	1.65E-02
6/19/2012 - 6/26/2012		3.37E-03 ±	9.30E-03	1.45E-02		-3.48E-03 ±	1.21E-02	1.93E-02
6/26/2012 - 7/3/2012		2.64E-05 ±	8.08E-03	1.33E-02		4.46E-03 ±	8.90E-03	1.35E-02
7/3/2012 - 7/10/2012		-4.70E-03 ±	1.21E-02	1.90E-02		-9.28E-05 ±	1.00E-02	1.64E-02
7/10/2012 - 7/17/2012		5.62E-03 ±	9.90E-03	1.49E-02		-2.07E-03 ±	1.07E-02	1.71E-02
7/17/2012 - 7/24/2012		4.03E-03 ±	9.66E-03	1.49E-02		-5.29E-04 ±	9.93E-03	1.62E-02
7/24/2012 - 7/31/2012		-1.26E-03 ±	1.05E-02	1.71E-02		-2.56E-04 ±	9.60E-03	1.57E-02
7/31/2012 - 8/7/2012		3.25E-03 ±	8.99E-03	1.40E-02		2.01E-04 ±	1.54E-02	2.52E-02
8/7/2012 - 8/14/2012		-1.07E-03 ±	1.07E-02	1.74E-02		4.65E-04 ±	1.04E-02	1.70E-02
8/14/2012 - 8/21/2012		4.56E-03 ±	1.00E-02	1.54E-02		3.82E-03 ±	9.26E-03	1.42E-02
8/21/2012 - 8/28/2012		-2.04E-03 ±	1.22E-02	1.97E-02		1.66E-03 ±	9.32E-03	1.49E-02
8/28/2012 - 9/4/2012		-7.72E-04 ±	1.13E-02	1.84E-02		-3.48E-03 ±	1.11E-02	1.75E-02
9/4/2012 - 9/11/2012		9.25E-05 ±	8.63E-03	1.42E-02		-1.73E-04 ±	1.14E-02	1.87E-02
9/11/2012 - 9/18/2012		1.73E-03 ±	1.02E-02	1.64E-02		0.00E+00 ±	9.61E-03	1.58E-02
9/18/2012 - 9/25/2012		4.59E-03 ±	9.34E-03	1.42E-02		2.41E-03 ±	8.37E-03	1.31E-02
9/25/2012 - 10/2/2012		-2.11E-03 ±	1.12E-02	1.80E-02		-1.89E-03 ±	1.03E-02	1.65E-02
10/2/2012 - 10/9/2012		-2.00E-03 ±	1.22E-02	1.97E-02		5.01E-03 ±	1.26E-02	1.99E-02
10/9/2012 - 10/16/2012		-4.69E-04 ±	1.01E-02	1.65E-02		9.56E-03 ±	1.12E-02	1.63E-02
10/16/2012 - 10/23/2012		6.87E-03 ±	1.06E-02	1.59E-02		-7.84E-04 ±	8.44E-03	1.37E-02
10/23/2012 - 10/30/2012		-2.21E-03 ±	1.27E-02	2.04E-02		3.60E-04 ±	9.82E-03	1.61E-02
10/30/2012 - 11/6/2012		-6.10E-05 ±	1.33E-02	2.19E-02		-4.11E-03 ±	1.32E-02	2.09E-02
11/6/2012 - 11/13/2012		-2.24E-03 ±	1.10E-02	1.76E-02		3.25E-03 ±	1.03E-02	1.61E-02
11/13/2012 - 11/20/2012		0.00E+00 ±	8.85E-03	1.45E-02		0.00E+00 ±	1.17E-02	1.93E-02
11/20/2012 - 11/27/2012		5.89E-04 ±	6.69E-03	1.08E-02		6.85E-04 ±	6.98E-03	1.13E-02
11/27/2012 - 12/4/2012		1.02E-04 ±	5.68E-03	9.31E-03		-1.56E-03 ±	7.91E-03	1.26E-02
12/4/2012 - 12/11/2012		-1.08E-03 ±	1.20E-02	1.96E-02		-4.02E-03 ±	1.33E-02	2.11E-02
12/11/2012 - 12/18/2012		-7.61E-04 ±	9.51E-03	1.55E-02		-1.33E-03 ±	1.06E-02	1.72E-02
12/18/2012 - 12/26/2012		0.00E+00 ±	8.91E-03	1.46E-02		1.79E-03 ±	7.29E-03	1.15E-02
12/26/2012 - 1/2/2013		-2.51E-03 ±	7.78E-03	1.22E-02		-2.34E-03 ±	8.90E-03	1.41E-02

NVS = Valid sample not obtained due to sampler failure.

RQ= Results Qualifer. If blank, result is less than detection limit. If "+", result is above detection limit.

TABLE A-4.2

GAMMA SPECTROMETRY RESULTS OF IODINE 131 ON CHARCOAL FILTERS - SUMMARY

Results in pCi per cubic meter, corrected for decay during collection period

Nuclide		Average Activity	Activity Low	Activity High	Average MDA	Number of Samples	Number of Positive IDs
I-131	Ind	5.04E-04	-5.51E-03	1.12E-02	1.67E-02	566	0
I-131	Cntl	4.60E-04	-4.68E-03	7.70E-03	1.63E-02	52	0

Ind = Indicator Stations Cntl = Control Station

TABLE A-5.1

GROSS BETA IN WATER

Results in pCi per liter

Collection Period	ST 26 River/Drinking Cntl RQ	Activity	± Error	MDA	ST 29 River/Drinking Ind RQ	Activity	± Error	MDA
01/03/12 - 02/01/12		2.30E-01	6.97E-01	2.41E+00		1.10E+00	7.49E-01	2.41E+00
02/01/12 - 03/01/12		1.17E+00	7.53E-01	2.39E+00		1.14E+00	7.36E-01	2.37E+00
03/01/12 - 04/02/12		1.16E-01	6.19E-01	2.23E+00		1.50E+00	7.08E-01	2.23E+00
04/02/12 - 05/01/12		-1.80E-01	6.64E-01	2.32E+00		5.20E-01	6.73E-01	2.33E+00
05/01/12 - 06/01/12		-2.89E-01	6.58E-01	2.34E+00		1.76E+00	7.52E-01	2.34E+00
06/01/12 - 07/02/12		-1.55E+00	8.11E-01	2.58E+00		-4.54E-01	7.41E-01	2.59E+00
07/02/12 - 08/01/12	+	2.17E+00	7.12E-01	2.07E+00		1.64E+00	6.75E-01	2.06E+00
08/01/12 - 09/04/12		-3.41E-02	6.12E-01	2.18E+00		2.05E+00	7.28E-01	2.18E+00
09/04/12 - 10/01/12		4.17E-01	6.60E-01	2.27E+00		1.25E+00	6.98E-01	2.26E+00
10/01/12 - 11/01/12		8.23E-01	7.13E-01	2.36E+00		1.16E+00	7.21E-01	2.37E+00
11/01/12 - 11/30/12		6.87E-01	7.41E-01	2.52E+00		3.45E-01	7.14E-01	2.52E+00
11/30/12 - 01/02/13		8.44E-02	7.29E-01	2.61E+00		1.41E-01	7.35E-01	2.61E+00

Collection Period	ST 27 CW Discharge RQ	Activity	± Error	MDA
01/03/12 - 02/01/12		9.48E-01	7.93E-01	2.59E+00
02/01/12 - 03/01/12	+	8.75E+00	1.24E+00	2.85E+00
03/01/12 - 04/02/12	+	7.69E+00	1.19E+00	2.78E+00
04/02/12 - 05/01/12	+	8.41E+00	1.26E+00	2.89E+00
05/01/12 - 06/01/12	+	5.32E+00	1.09E+00	2.90E+00
06/01/12 - 07/02/12	+	6.36E+00	1.22E+00	3.15E+00
07/02/12 - 08/01/12	+	9.02E+00	1.23E+00	2.65E+00
08/01/12 - 09/04/12	+	8.99E+00	1.27E+00	2.80E+00
09/04/12 - 10/01/12	+	6.92E+00	1.20E+00	2.88E+00
10/01/12 - 11/01/12	+	6.55E+00	1.20E+00	2.94E+00
11/01/12 - 11/30/12	+	6.42E+00	1.21E+00	3.05E+00
11/30/12 - 01/02/13	+	8.73E+00	1.31E+00	3.15E+00

TABLE A-5.2

GROSS BETA IN WATER - SUMMARY

Results in pCi per liter

Location	Average Activity	Activity Low	Activity High	Number of Samples	Number of Positive IDs
ST 26 Control	3.04E-01	-1.55E+00	2.17E+00	12	1
ST 29 Indicator	1.01E+00	-4.54E-01	2.05E+00	12	0
ST 27 Discharge	7.01E+00	9.48E-01	9.02E+00	12	11

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

TABLE A-6.1

TRITIUM IN WATER

Results in pCi per liter, MDA for all samples is 300 pCi/l

Location	Description	Collection Period	RQ	Activity	Error
26	River/Drinking Control	01/03/12 - 04/02/12		2.21E+01 ±	1.03E+02
		04/02/12 - 07/02/12		2.36E+01 ±	1.01E+02
		07/02/12 - 11/01/12		1.05E+02 ±	9.84E+01
		11/01/12 - 01/02/13		6.14E+01 ±	9.40E+01
29	River/Drinking Indicator	01/03/12 - 04/02/12		-3.62E+01 ±	1.03E+02
		04/02/12 - 07/02/12		4.50E+00 ±	9.86E+01
		07/02/12 - 11/01/12		1.31E+02 ±	9.96E+01
		11/01/12 - 01/02/13		1.01E+02 ±	9.41E+01
27	Plant Discharge	01/03/12 - 04/02/12		2.68E+01 ±	1.00E+02
		04/02/12 - 07/02/12		5.93E+01 ±	9.73E+01
		07/02/12 - 11/01/12		2.03E+02 ±	1.03E+02
		11/01/12 - 01/02/13		1.72E+02 ±	9.70E+01
31	Ground Water Well 1	03/07/12		5.07E+00 ±	9.57E+01
		06/06/12		-1.57E+02 ±	9.83E+01
		09/13/12		5.12E+01 ±	1.01E+02
		12/12/12		4.50E+01 ±	9.33E+01
32	Ground Water Well 2	03/07/12		-1.02E+02 ±	1.00E+02
		06/06/12		-1.08E+02 ±	1.00E+02
		09/13/12		7.43E+01 ±	1.01E+02
		12/12/12		1.06E+02 ±	9.63E+01
52	Ground Water Well 3	03/07/12		-1.81E+02 ±	9.63E+01
		06/06/12		-5.07E+01 ±	1.00E+02
		09/13/12		-2.76E+01 ±	9.93E+01
		12/05/12		6.42E+01 ±	9.55E+01

TABLE A-6.2

TRITIUM IN WATER - Summary

Results in pCi per liter

Location Description	Average Activity	Activity Low	Activity High	Number of Samples	Number of Positive IDs
River/Drinking Control	5.32E+01	2.21E+01	1.05E+02	4	0
River/Drinking Indicator	5.01E+01	-3.62E+01	1.31E+02	4	0
Discharge Indicator	1.15E+02	2.68E+01	2.03E+02	4	0
Ground Water Indicator	-2.34E+01	-1.81E+02	1.06E+02	12	0

Quarterly tritium values reported for ST-26, 27, and 29 are average of monthly analysis values.
RQ= results Qualifier. If blank, result is less than detection limit. If "+", result is above the detection limit.

Table A-7.1

GAMMA SPECTROMETRY RESULTS OF WATER

STATION 26 - River/Drinking Control

Results in pCi/liter, corrected for decay during collection period

Location 26 collected 2/1/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-1.15E+01	±	3.68E+01	5.31E+01
CR-51		-5.87E+00	±	1.81E+01	2.93E+01
MN-54		-4.20E-01	±	1.79E+00	2.87E+00
CO-58		-6.21E-01	±	1.98E+00	3.16E+00
FE-59		0.00E+00	±	5.22E+00	8.59E+00
CO-60		2.61E-01	±	1.87E+00	3.03E+00
ZN-65		-3.26E+00	±	5.23E+00	8.12E+00
ZRNB-95		1.94E-01	±	3.54E+00	5.79E+00
I-131		0.00E+00	±	2.33E+00	3.84E+00
CS-134		-4.78E-02	±	2.52E+00	4.14E+00
CS-137		-1.17E+00	±	2.33E+00	3.67E+00
BALA140		0.00E+00	±	7.46E-01	1.23E+00
BI-214	+	1.05E+01	±	5.68E+00	1.01E+01
RA-226		-9.13E+00	±	6.04E+01	9.88E+01

Location 26 collected 3/1/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-6.51E+01	±	2.11E+02	5.20E+01
CR-51		-8.23E-01	±	1.95E+01	3.20E+01
MN-54		1.06E+00	±	1.85E+00	2.90E+00
CO-58		9.92E-02	±	1.63E+00	2.66E+00
FE-59		1.11E+00	±	4.24E+00	6.76E+00
CO-60		-5.69E-01	±	2.07E+00	3.32E+00
ZN-65		6.07E-02	±	3.72E+00	6.10E+00
ZRNB-95		-1.63E+00	±	3.88E+00	6.21E+00
I-131		0.00E+00	±	2.79E+00	4.60E+00
CS-134		5.06E-01	±	1.98E+00	3.21E+00
CS-137		-5.33E-01	±	1.99E+00	3.21E+00
BALA140		0.00E+00	±	3.16E+00	5.20E+00
BI-214		-8.33E-01	±	5.63E+00	9.00E+00
RA-226		1.56E+01	±	5.37E+01	9.44E+01

Location 26 collected 4/2/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-9.57E+00	±	3.67E+01	5.50E+01
CR-51		-9.04E-01	±	1.49E+01	2.44E+01
MN-54		7.63E-01	±	2.02E+00	3.20E+00
CO-58		-6.89E-02	±	2.14E+00	3.51E+00
FE-59		8.28E-01	±	5.26E+00	8.48E+00
CO-60		-2.21E-01	±	1.85E+00	2.99E+00
ZN-65		-1.89E+00	±	5.23E+00	8.32E+00
ZRNB-95		-1.22E+00	±	3.74E+00	5.97E+00
I-131		-1.32E+00	±	2.43E+00	3.86E+00
CS-134		9.97E-02	±	1.86E+00	3.05E+00
CS-137		1.42E+00	±	2.18E+00	3.38E+00
BALA140		1.10E+00	±	2.42E+00	3.70E+00
BI-214		-8.34E+00	±	1.35E+01	1.10E+01
RA-226		-1.84E+01	±	6.62E+01	9.71E+01

Location 26 collected 5/1/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-2.68E+01	±	6.07E+01	5.40E+01
CR-51		-9.21E+00	±	2.05E+01	3.29E+01
MN-54		3.48E-01	±	2.12E+00	3.43E+00
CO-58		-7.20E-01	±	2.20E+00	3.51E+00
FE-59		0.00E+00	±	7.23E+00	1.19E+01
CO-60		3.94E-01	±	1.97E+00	3.15E+00
ZN-65		0.00E+00	±	6.39E+00	1.05E+01
ZRNB-95		7.09E-01	±	3.81E+00	6.15E+00
I-131		-2.24E+00	±	3.62E+00	5.73E+00
CS-134		-1.56E+00	±	2.56E+00	4.06E+00
CS-137		1.05E+00	±	1.94E+00	3.02E+00
BALA140		3.19E-01	±	3.62E+00	5.89E+00
BI-214		-2.69E+00	±	7.08E+00	1.07E+01
RA-226		-3.07E+01	±	7.99E+01	9.98E+01

Location 26 collected 6/1/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-2.55E+01	±	6.01E+01	5.51E+01
CR-51		6.54E+00	±	1.74E+01	2.79E+01
MN-54		-5.40E-01	±	2.10E+00	3.38E+00
CO-58		-6.66E-01	±	2.14E+00	3.42E+00
FE-59		-2.18E+00	±	5.99E+00	9.47E+00
CO-60		-2.23E-02	±	2.11E+00	3.47E+00
ZN-65		0.00E+00	±	7.39E+00	1.22E+01
ZRNB-95		1.58E-01	±	3.28E+00	5.36E+00
I-131		1.49E+00	±	1.82E+00	2.76E+00
CS-134		-5.91E-03	±	2.15E+00	3.54E+00
CS-137		-9.22E-02	±	2.16E+00	3.54E+00
BALA140		2.28E-02	±	3.04E+00	4.99E+00
BI-214		-1.07E+00	±	6.14E+00	1.08E+01
RA-226		-1.01E+01	±	5.87E+01	9.56E+01

Location 26 collected 7/2/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-1.19E+01	±	3.55E+01	5.16E+01
CR-51		-2.44E-01	±	1.63E+01	2.68E+01
MN-54		2.61E-01	±	1.37E+00	2.18E+00
CO-58		-7.75E-01	±	2.08E+00	3.29E+00
FE-59		-1.16E+00	±	4.40E+00	6.94E+00
CO-60		2.05E-01	±	1.92E+00	3.11E+00
ZN-65		1.30E+00	±	4.05E+00	6.41E+00
ZRNB-95		-4.97E-01	±	3.72E+00	6.05E+00
I-131		-3.90E-01	±	3.86E+00	6.31E+00
CS-134		-1.47E+00	±	2.52E+00	4.00E+00
CS-137		1.05E-01	±	2.01E+00	3.28E+00
BALA140		7.07E-01	±	3.12E+00	4.96E+00
BI-214		-3.36E+00	±	8.06E+00	1.12E+01
RA-226		9.51E+00	±	4.99E+01	9.20E+01

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

Table A-7.1

GAMMA SPECTROMETRY RESULTS OF WATER

STATION 26 - River/Drinking Control

Results in pCi/liter, corrected for decay during collection period

Location 26 collected 8/1/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-3.67E+01	±	6.37E+01	5.45E+01
CR-51		-4.89E+00	±	1.61E+01	2.61E+01
MN-54		5.16E-01	±	1.66E+00	2.65E+00
CO-58		1.02E+00	±	1.35E+00	2.00E+00
FE-59		0.00E+00	±	4.59E+00	7.56E+00
CO-60		2.33E-01	±	1.77E+00	2.87E+00
ZN-65		-1.31E+00	±	4.13E+00	6.57E+00
ZRNB-95		-1.38E+00	±	3.38E+00	5.37E+00
I-131		-8.01E-01	±	2.88E+00	4.65E+00
CS-134		-6.99E-01	±	2.13E+00	3.43E+00
CS-137		7.72E-01	±	1.76E+00	2.77E+00
BALA140		1.96E+00	±	2.45E+00	3.52E+00
BI-214		-5.29E-01	±	5.17E+00	8.72E+00
RA-226		-1.25E+01	±	5.02E+01	7.31E+01

Location 26 collected 9/4/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-2.60E+01	±	4.66E+01	5.34E+01
CR-51		-6.44E+00	±	1.61E+01	2.59E+01
MN-54		-6.22E-01	±	1.76E+00	2.80E+00
CO-58		-3.31E-01	±	1.72E+00	2.77E+00
FE-59		-1.25E+00	±	5.13E+00	8.22E+00
CO-60		-2.96E-01	±	1.53E+00	2.44E+00
ZN-65		-1.59E-01	±	3.54E+00	5.79E+00
ZRNB-95		-7.43E-01	±	3.29E+00	5.30E+00
I-131		1.91E-01	±	1.84E+00	3.01E+00
CS-134		9.20E-02	±	2.00E+00	3.27E+00
CS-137		2.01E-01	±	1.46E+00	2.37E+00
BALA140		-2.71E-02	±	2.32E+00	3.82E+00
BI-214		2.44E+00	±	4.59E+00	8.32E+00
RA-226		-9.80E+00	±	4.80E+01	7.33E+01

Location 26 collected 10/1/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-4.60E+01	±	7.89E+01	5.30E+01
CR-51		-6.02E+00	±	1.63E+01	2.62E+01
MN-54		1.58E-01	±	1.87E+00	3.05E+00
CO-58		1.03E+00	±	1.46E+00	2.21E+00
FE-59		-1.58E+00	±	4.09E+00	6.37E+00
CO-60		7.32E-01	±	1.70E+00	2.65E+00
ZN-65		-1.41E+00	±	4.16E+00	6.61E+00
ZRNB-95		-6.10E-02	±	2.55E+00	4.19E+00
I-131		2.00E-02	±	2.14E+00	3.51E+00
CS-134		7.85E-01	±	1.82E+00	2.90E+00
CS-137		6.37E-01	±	1.67E+00	2.65E+00
BALA140		0.00E+00	±	3.86E+00	6.34E+00
BI-214		-1.44E+00	±	6.02E+00	8.65E+00
RA-226		-6.24E+00	±	4.33E+01	7.10E+01

Location 26 collected 11/1/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-3.26E+01	±	5.09E+01	5.14E+01
CR-51		-2.44E+00	±	1.51E+01	2.47E+01
MN-54		0.00E+00	±	2.14E+00	3.53E+00
CO-58		-1.77E-01	±	1.42E+00	2.31E+00
FE-59		-2.30E-01	±	4.37E+00	7.13E+00
CO-60		1.07E+00	±	1.73E+00	2.63E+00
ZN-65		-2.25E-01	±	3.67E+00	5.99E+00
ZRNB-95		-2.32E-01	±	3.28E+00	5.36E+00
I-131		-9.60E-01	±	2.66E+00	4.29E+00
CS-134		-5.90E-02	±	1.85E+00	3.03E+00
CS-137		-4.35E-01	±	1.81E+00	2.92E+00
BALA140		1.52E-01	±	2.39E+00	3.90E+00
BI-214		1.31E+00	±	4.43E+00	8.18E+00
RA-226		-1.24E+01	±	5.37E+01	7.72E+01

Location 26 collected 11/30/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-2.67E+01	±	4.51E+01	5.20E+01
CR-51		-2.68E+00	±	1.58E+01	2.58E+01
MN-54		1.13E+00	±	1.75E+00	2.71E+00
CO-58		9.52E-01	±	1.61E+00	2.49E+00
FE-59		-2.66E-02	±	4.05E+00	6.66E+00
CO-60		1.42E+00	±	2.02E+00	3.08E+00
ZN-65		-9.05E-01	±	3.06E+00	4.83E+00
ZRNB-95		-2.23E-01	±	3.42E+00	5.59E+00
I-131		8.34E-01	±	2.16E+00	3.47E+00
CS-134		1.18E-01	±	1.79E+00	2.93E+00
CS-137		7.82E-01	±	1.90E+00	3.02E+00
BALA140		-5.86E-01	±	2.47E+00	3.93E+00
BI-214		-5.47E-01	±	4.82E+00	8.24E+00
RA-226		-2.45E+01	±	6.78E+01	7.78E+01

Location 26 collected 1/2/2013

Nuclide	RQ	Activity		Error	MDA
K-40		-4.84E+01	±	1.05E+02	5.80E+01
CR-51		7.33E+00	±	2.03E+01	3.27E+01
MN-54		2.51E-02	±	2.00E+00	3.29E+00
CO-58		-6.23E-01	±	2.06E+00	3.29E+00
FE-59		0.00E+00	±	7.66E+00	1.26E+01
CO-60		0.00E+00	±	1.14E+00	1.87E+00
ZN-65		-1.29E+00	±	4.54E+00	7.24E+00
ZRNB-95		7.98E-02	±	2.65E+00	4.34E+00
I-131		-2.19E+00	±	3.76E+00	5.99E+00
CS-134		5.13E-01	±	2.30E+00	3.73E+00
CS-137		-1.75E-01	±	1.98E+00	3.23E+00
BALA140		-6.81E-03	±	3.01E+00	4.95E+00
BI-214		1.66E+00	±	5.18E+00	9.42E+00
RA-226		-1.50E+01	±	6.25E+01	9.63E+01

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

Table A-7.1

GAMMA SPECTROMETRY RESULTS OF WATER

STATION 29 - River/Drinking Indicator

Results in pCi/liter, corrected for decay during collection period

Location 29 collected 2/1/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-2.62E+01	±	5.66E+01	5.26E+01
CR-51		1.36E+01	±	2.34E+01	3.70E+01
MN-54		-7.08E-01	±	2.47E+00	3.97E+00
CO-58		6.64E-01	±	1.69E+00	2.64E+00
FE-59		-7.64E-01	±	6.86E+00	1.11E+01
CO-60		5.75E-01	±	2.12E+00	3.38E+00
ZN-65		-4.84E-01	±	9.20E-01	1.13E+00
ZRNB-95		2.28E-01	±	3.44E+00	5.61E+00
I-131		0.00E+00	±	8.59E+00	1.41E+01
CS-134		5.58E-01	±	2.20E+00	3.55E+00
CS-137		1.01E+00	±	1.94E+00	3.03E+00
BALA140		8.34E-01	±	6.17E+00	9.95E+00
BI-214		4.41E+00	±	5.70E+00	1.07E+01
RA-226		1.49E+01	±	5.38E+01	9.74E+01

Location 29 collected 3/1/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-2.18E+01	±	4.00E+01	5.19E+01
CR-51		3.66E+00	±	2.16E+01	3.51E+01
MN-54		6.52E-01	±	1.67E+00	2.64E+00
CO-58		-8.92E-02	±	1.46E+00	2.38E+00
FE-59		-8.33E-01	±	5.61E+00	9.05E+00
CO-60		-5.64E-01	±	1.76E+00	2.79E+00
ZN-65		-1.27E+00	±	4.25E+00	6.79E+00
ZRNB-95		6.43E-01	±	3.69E+00	5.96E+00
I-131		2.24E+00	±	7.20E+00	1.16E+01
CS-134		3.02E-01	±	1.72E+00	2.78E+00
CS-137		7.15E-01	±	1.88E+00	2.99E+00
BALA140		1.01E+00	±	5.01E+00	8.00E+00
BI-214		1.99E+00	±	4.04E+00	7.55E+00
RA-226		-8.04E+00	±	4.32E+01	6.91E+01

Location 29 collected 4/2/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-1.51E+01	±	4.06E+01	5.30E+01
CR-51		1.02E+01	±	2.49E+01	3.99E+01
MN-54		6.46E-01	±	1.95E+00	3.10E+00
CO-58		-6.61E-01	±	2.07E+00	3.29E+00
FE-59		4.16E+00	±	6.52E+00	9.87E+00
CO-60		1.62E-02	±	2.23E+00	3.67E+00
ZN-65		-1.40E+00	±	4.97E+00	7.95E+00
ZRNB-95		-6.80E-01	±	4.21E+00	6.82E+00
I-131		5.21E+00	±	6.60E+00	1.02E+01
CS-134		-1.18E+00	±	2.39E+00	3.80E+00
CS-137		-2.56E-02	±	2.04E+00	3.35E+00
BALA140		0.00E+00	±	6.63E+00	1.09E+01
BI-214		-5.57E+00	±	8.82E+00	1.03E+01
RA-226		1.54E+01	±	4.58E+01	8.56E+01

Location 29 collected 5/1/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-1.55E+01	±	4.08E+01	5.27E+01
CR-51		6.81E+00	±	2.64E+01	4.27E+01
MN-54		7.22E-01	±	2.01E+00	3.18E+00
CO-58		5.18E-01	±	2.35E+00	3.78E+00
FE-59		-9.12E-02	±	4.92E+00	8.07E+00
CO-60		5.75E-01	±	2.11E+00	3.37E+00
ZN-65		3.85E-03	±	4.37E+00	7.19E+00
ZRNB-95		1.24E+00	±	4.31E+00	6.89E+00
I-131		7.51E+00	±	9.39E+00	1.46E+01
CS-134		1.15E+00	±	1.59E+00	2.42E+00
CS-137		2.13E-01	±	2.16E+00	3.51E+00
BALA140		-3.26E-01	±	6.92E+00	1.13E+01
BI-214		-2.15E+00	±	6.48E+00	1.04E+01
RA-226		-1.48E+01	±	6.63E+01	1.01E+02

Location 29 collected 6/1/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-3.03E+01	±	4.92E+01	5.20E+01
CR-51		2.65E+00	±	2.16E+01	3.53E+01
MN-54		-6.74E-01	±	2.10E+00	3.37E+00
CO-58		-1.90E-01	±	2.02E+00	3.30E+00
FE-59		0.00E+00	±	5.59E+00	9.19E+00
CO-60		4.10E-01	±	1.62E+00	2.58E+00
ZN-65		1.74E-02	±	4.57E+00	7.52E+00
ZRNB-95		9.97E-04	±	3.35E+00	5.41E+00
I-131		-1.78E+00	±	5.97E+00	9.60E+00
CS-134		0.00E+00	±	2.31E+00	3.79E+00
CS-137		-5.19E-01	±	1.78E+00	2.85E+00
BALA140		-1.97E+00	±	5.64E+00	8.86E+00
BI-214		-2.36E+00	±	7.22E+00	8.77E+00
RA-226		-2.72E+01	±	6.76E+01	7.46E+01

Location 29 collected 7/2/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-1.50E+01	±	4.05E+01	5.30E+01
CR-51		-7.02E+00	±	3.25E+01	5.28E+01
MN-54		-6.40E-02	±	2.21E+00	3.63E+00
CO-58		-9.10E-01	±	2.60E+00	4.13E+00
FE-59		-1.73E-01	±	6.88E+00	1.13E+01
CO-60		0.00E+00	±	2.64E+00	4.35E+00
ZN-65		2.80E+00	±	3.45E+00	4.98E+00
ZRNB-95		-9.51E-01	±	4.42E+00	7.12E+00
I-131		8.57E-01	±	1.00E+01	1.64E+01
CS-134		-8.37E-01	±	2.56E+00	4.12E+00
CS-137		-6.60E-01	±	2.15E+00	3.43E+00
BALA140		0.00E+00	±	8.81E+00	1.45E+01
BI-214		-6.10E+00	±	1.06E+01	1.11E+01
RA-226		-2.86E+01	±	7.47E+01	9.67E+01

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

Table A-7.1

GAMMA SPECTROMETRY RESULTS OF WATER

STATION 29 - River/Drinking Indicator

Results in pCi/liter, corrected for decay during collection period

Location 29 collected 8/1/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-8.34E+01	±	1.21E+03	5.71E+01
CR-51		8.82E+00	±	1.82E+01	2.90E+01
MN-54		5.87E-01	±	1.51E+00	2.37E+00
CO-58		-8.32E-01	±	1.98E+00	3.13E+00
FE-59		-1.39E+00	±	5.72E+00	9.14E+00
CO-60		6.21E-01	±	1.66E+00	2.60E+00
ZN-65		-4.18E-01	±	3.98E+00	6.47E+00
ZRNB-95		2.14E-01	±	2.45E+00	3.98E+00
I-131		-6.55E-02	±	5.17E+00	8.49E+00
CS-134		6.94E-01	±	1.72E+00	2.74E+00
CS-137		2.02E-01	±	1.66E+00	2.70E+00
BALA140		-4.91E-02	±	4.20E+00	6.89E+00
BI-214		2.35E+00	±	4.13E+00	7.64E+00
RA-226		-4.48E+00	±	4.44E+01	7.43E+01

Location 29 collected 9/4/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-3.94E+01	±	6.73E+01	5.40E+01
CR-51		-7.93E+00	±	2.24E+01	3.60E+01
MN-54		6.60E-02	±	1.73E+00	2.83E+00
CO-58		-5.54E-01	±	1.99E+00	3.19E+00
FE-59		-1.32E+00	±	5.75E+00	9.19E+00
CO-60		-2.11E-02	±	1.72E+00	2.82E+00
ZN-65		-1.31E+00	±	4.48E+00	7.17E+00
ZRNB-95		6.21E-01	±	3.86E+00	6.26E+00
I-131		4.15E-02	±	6.01E+00	9.88E+00
CS-134		1.64E-01	±	1.67E+00	2.72E+00
CS-137		4.03E-01	±	1.58E+00	2.53E+00
BALA140		0.00E+00	±	4.50E+00	7.41E+00
BI-214		4.68E+00	±	4.71E+00	8.29E+00
RA-226		-7.53E+00	±	4.69E+01	7.43E+01

Location 29 collected 10/1/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-3.86E+01	±	6.76E+01	5.47E+01
CR-51		-6.35E-01	±	2.28E+01	3.74E+01
MN-54		6.48E-01	±	1.27E+00	1.95E+00
CO-58		-6.29E-01	±	2.11E+00	3.38E+00
FE-59		-1.89E+00	±	6.18E+00	9.81E+00
CO-60		1.71E-01	±	1.67E+00	2.70E+00
ZN-65		-2.26E+00	±	4.66E+00	7.32E+00
ZRNB-95		1.37E+00	±	3.61E+00	5.73E+00
I-131		-4.31E+00	±	8.53E+00	1.36E+01
CS-134		-8.74E-01	±	2.08E+00	3.32E+00
CS-137		1.97E-02	±	1.76E+00	2.89E+00
BALA140		-1.97E+00	±	6.90E+00	1.10E+01
BI-214		7.04E+00	±	5.10E+00	8.71E+00
RA-226		-2.33E+00	±	3.93E+01	6.95E+01

Location 29 collected 11/1/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-3.20E+01	±	5.23E+01	5.26E+01
CR-51		-1.49E+01	±	2.52E+01	4.01E+01
MN-54		6.73E-02	±	1.65E+00	2.71E+00
CO-58		-1.59E-01	±	1.85E+00	3.01E+00
FE-59		-1.75E+00	±	6.66E+00	1.06E+01
CO-60		8.60E-01	±	1.88E+00	2.93E+00
ZN-65		-2.11E+00	±	4.83E+00	7.64E+00
ZRNB-95		-1.52E+00	±	3.31E+00	5.18E+00
I-131		-3.59E+00	±	8.73E+00	1.40E+01
CS-134		-3.10E-01	±	1.83E+00	2.96E+00
CS-137		-6.82E-01	±	1.91E+00	3.05E+00
BALA140		-1.76E+00	±	6.56E+00	1.04E+01
BI-214		6.92E-01	±	4.82E+00	8.80E+00
RA-226		-4.10E+00	±	4.56E+01	7.64E+01

Location 29 collected 11/30/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-1.93E+01	±	4.23E+01	5.58E+01
CR-51		-1.60E+00	±	2.86E+01	4.68E+01
MN-54		5.72E-01	±	1.69E+00	2.67E+00
CO-58		-5.86E-01	±	2.31E+00	3.71E+00
FE-59		-1.26E-01	±	6.80E+00	1.12E+01
CO-60		-8.74E-01	±	2.53E+00	4.02E+00
ZN-65		-4.86E-01	±	4.67E+00	7.60E+00
ZRNB-95		-1.37E-01	±	3.98E+00	6.53E+00
I-131		2.21E+00	±	8.12E+00	1.31E+01
CS-134		1.41E+00	±	2.31E+00	3.63E+00
CS-137		0.00E+00	±	2.04E+00	3.36E+00
BALA140		-7.96E-01	±	6.17E+00	9.97E+00
BI-214		3.37E+00	±	5.61E+00	9.91E+00
RA-226		-9.29E+00	±	5.70E+01	9.45E+01

Location 29 collected 1/2/2013

Nuclide	RQ	Activity		Error	MDA
K-40		-5.88E+00	±	3.21E+01	5.70E+01
CR-51		3.51E+00	±	2.84E+01	4.64E+01
MN-54		4.56E-01	±	1.58E+00	2.51E+00
CO-58		-2.36E-01	±	2.47E+00	4.02E+00
FE-59		-1.44E+00	±	5.12E+00	8.02E+00
CO-60		9.57E-01	±	1.99E+00	3.08E+00
ZN-65		-1.90E+00	±	5.07E+00	8.03E+00
ZRNB-95		-1.61E+00	±	4.65E+00	7.41E+00
I-131		-5.13E+00	±	1.08E+01	1.72E+01
CS-134		-1.60E+00	±	2.55E+00	4.02E+00
CS-137		0.00E+00	±	3.14E+00	5.17E+00
BALA140		-3.68E+00	±	8.39E+00	1.31E+01
BI-214		6.95E-01	±	5.65E+00	1.02E+01
RA-226		3.56E+00	±	5.24E+01	9.63E+01

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

Table A-7.1

GAMMA SPECTROMETRY RESULTS OF WATER

STATION 27 - Plant Discharge Water Indicator

Results in pCi/liter, corrected for decay during collection period

Location 27 collected 2/1/2012

Nuclide	RQ	Activity	±	Error	MDA
K-40		-1.72E+01	±	3.71E+01	5.26E+01
CR-51		1.05E+01	±	1.91E+01	3.03E+01
MN-54		8.46E-01	±	1.83E+00	2.88E+00
CO-58		1.50E-01	±	1.44E+00	2.33E+00
FE-59		-1.67E-02	±	5.23E+00	8.59E+00
CO-60		-2.39E-03	±	1.85E+00	3.04E+00
ZN-65		-6.49E-01	±	3.56E+00	5.74E+00
ZRNB-95		0.00E+00	±	3.47E+00	5.71E+00
I-131		-1.78E+00	±	5.26E+00	8.47E+00
CS-134		8.97E-01	±	1.32E+00	2.03E+00
CS-137		-8.55E-01	±	2.05E+00	3.26E+00
BALA140		-6.44E-01	±	4.42E+00	7.13E+00
BI-214		7.93E+00	±	4.78E+00	8.11E+00
RA-226		-4.36E+00	±	4.42E+01	7.41E+01

Location 27 collected 3/1/2012

Nuclide	RQ	Activity	±	Error	MDA
K-40		-1.34E+01	±	3.19E+01	5.06E+01
CR-51		1.05E+01	±	2.05E+01	3.27E+01
MN-54		-3.78E-01	±	1.68E+00	2.70E+00
CO-58		2.98E-01	±	2.25E+00	3.65E+00
FE-59		5.85E-01	±	4.91E+00	7.94E+00
CO-60		1.25E-03	±	1.83E+00	2.98E+00
ZN-65		-4.90E-01	±	3.87E+00	6.28E+00
ZRNB-95		7.95E-01	±	3.93E+00	6.35E+00
I-131		-2.39E+00	±	6.61E+00	1.06E+01
CS-134		1.10E+00	±	1.95E+00	3.08E+00
CS-137		-8.03E-01	±	2.07E+00	3.30E+00
BALA140		-6.39E-01	±	5.43E+00	8.80E+00
BI-214		1.62E+00	±	4.63E+00	8.45E+00
RA-226		-4.06E+00	±	4.28E+01	7.25E+01

Location 27 collected 4/2/2012

Nuclide	RQ	Activity	±	Error	MDA
K-40		-3.77E+01	±	6.63E+01	5.49E+01
CR-51		-2.56E+00	±	1.97E+01	3.22E+01
MN-54		1.54E+00	±	1.85E+00	2.80E+00
CO-58		5.66E-03	±	2.03E+00	3.34E+00
FE-59		3.00E+00	±	4.28E+00	6.22E+00
CO-60		-6.64E-03	±	1.79E+00	2.95E+00
ZN-65		-1.09E+00	±	4.28E+00	6.86E+00
ZRNB-95		-2.72E-01	±	3.82E+00	6.24E+00
I-131		1.39E+00	±	6.11E+00	9.90E+00
CS-134		9.39E-01	±	1.40E+00	2.15E+00
CS-137		-7.69E-01	±	1.89E+00	3.00E+00
BALA140		6.88E-01	±	4.97E+00	8.02E+00
BI-214		-2.49E+00	±	7.97E+00	9.28E+00
RA-226		-4.93E+01	±	1.11E+02	7.67E+01

Location 27 collected 5/1/2012

Nuclide	RQ	Activity	±	Error	MDA
K-40		-1.50E+01	±	3.96E+01	5.23E+01
CR-51		1.20E+01	±	2.88E+01	4.62E+01
MN-54		2.52E-02	±	2.09E+00	3.44E+00
CO-58		-3.30E-01	±	2.47E+00	4.02E+00
FE-59		-4.85E-01	±	6.38E+00	1.04E+01
CO-60		3.18E-01	±	1.85E+00	2.98E+00
ZN-65		4.57E-01	±	4.35E+00	7.07E+00
ZRNB-95		9.04E-01	±	4.24E+00	6.83E+00
I-131		-2.02E+00	±	1.24E+01	2.02E+01
CS-134		-7.81E-01	±	2.47E+00	3.97E+00
CS-137		-8.24E-01	±	2.47E+00	3.95E+00
BALA140		-1.39E+00	±	8.50E+00	1.37E+01
BI-214		-1.15E+01	±	2.03E+01	1.09E+01
RA-226		-1.57E+01	±	6.54E+01	9.87E+01

Location 27 collected 6/1/2012

Nuclide	RQ	Activity	±	Error	MDA
K-40		-8.51E+00	±	3.15E+01	5.34E+01
CR-51		3.26E+00	±	2.02E+01	3.29E+01
MN-54		-4.69E-02	±	1.66E+00	2.72E+00
CO-58		1.86E-01	±	1.82E+00	2.96E+00
FE-59		3.28E-02	±	5.13E+00	8.42E+00
CO-60		-5.13E-01	±	1.98E+00	3.17E+00
ZN-65		-5.43E-01	±	3.84E+00	6.21E+00
ZRNB-95		-7.85E-03	±	3.39E+00	5.57E+00
I-131		-1.50E-01	±	6.10E+00	1.00E+01
CS-134		-5.63E-01	±	2.07E+00	3.34E+00
CS-137		-1.48E+00	±	2.25E+00	3.52E+00
BALA140		-2.48E-01	±	3.77E+00	6.12E+00
BI-214		1.73E+00	±	4.69E+00	8.53E+00
RA-226		-2.06E+01	±	6.20E+01	7.67E+01

Location 27 collected 7/2/2012

Nuclide	RQ	Activity	±	Error	MDA
K-40		-4.28E+01	±	7.45E+01	5.40E+01
CR-51		-4.34E+00	±	2.38E+01	3.87E+01
MN-54		-5.80E-02	±	1.69E+00	2.77E+00
CO-58		1.39E-01	±	1.93E+00	3.15E+00
FE-59		1.53E+00	±	6.08E+00	9.69E+00
CO-60		8.26E-01	±	1.98E+00	3.11E+00
ZN-65		-1.20E+00	±	4.19E+00	6.69E+00
ZRNB-95		8.98E-01	±	2.96E+00	4.70E+00
I-131		-4.14E+00	±	1.00E+01	1.61E+01
CS-134		-1.97E-01	±	1.96E+00	3.20E+00
CS-137		1.89E-01	±	1.15E+00	1.85E+00
BALA140		-6.03E-01	±	5.37E+00	8.67E+00
BI-214		2.28E+00	±	4.66E+00	8.44E+00
RA-226		9.86E+00	±	3.88E+01	7.04E+01

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

Table A-7.1

GAMMA SPECTROMETRY RESULTS OF WATER

STATION 27 - Plant Discharge Water Indicator

Results in pCi/liter, corrected for decay during collection period

Location 27 collected 7/31/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-6.07E+00	±	3.18E+01	5.34E+01
CR-51		1.18E+01	±	2.61E+01	4.19E+01
MN-54		-5.90E-01	±	2.14E+00	3.42E+00
CO-58		-7.38E-01	±	2.32E+00	3.70E+00
FE-59		-5.71E-01	±	6.65E+00	1.08E+01
CO-60		1.00E-01	±	2.17E+00	3.54E+00
ZN-65		-9.46E-02	±	4.14E+00	6.78E+00
ZRNB-95		-8.14E-01	±	4.58E+00	7.41E+00
I-131		2.15E+00	±	6.66E+00	1.07E+01
CS-134		-1.14E+00	±	2.46E+00	3.92E+00
CS-137		-6.98E-01	±	2.25E+00	3.61E+00
BALA140		6.21E-01	±	4.68E+00	7.53E+00
BI-214		-1.57E+00	±	5.95E+00	1.02E+01
RA-226		-1.97E+01	±	6.83E+01	9.82E+01

Location 27 collected 9/4/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-1.73E+01	±	4.39E+01	5.87E+01
CR-51		-8.10E+00	±	2.68E+01	4.32E+01
MN-54		-1.32E+00	±	2.36E+00	3.70E+00
CO-58		-5.84E-01	±	2.38E+00	3.82E+00
FE-59		-3.18E-01	±	6.28E+00	1.03E+01
CO-60		-1.01E+00	±	2.30E+00	3.61E+00
ZN-65		2.98E-02	±	4.47E+00	7.34E+00
ZRNB-95		1.35E+00	±	3.84E+00	6.07E+00
I-131		4.78E+00	±	7.33E+00	1.15E+01
CS-134		8.09E-01	±	2.17E+00	3.47E+00
CS-137		-1.06E+00	±	2.32E+00	3.66E+00
BALA140		0.00E+00	±	5.14E+00	8.46E+00
BI-214		2.25E+00	±	5.46E+00	9.77E+00
RA-226		8.79E+00	±	5.08E+01	9.35E+01

Location 27 collected 10/1/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-2.41E+01	±	4.27E+01	5.22E+01
CR-51		2.75E-01	±	1.70E+01	2.79E+01
MN-54		-3.59E-01	±	1.92E+00	3.10E+00
CO-58		2.03E-01	±	1.80E+00	2.93E+00
FE-59		-1.37E-01	±	5.14E+00	8.42E+00
CO-60		6.15E-01	±	1.85E+00	2.93E+00
ZN-65		-2.79E+00	±	5.17E+00	8.12E+00
ZRNB-95		-1.03E+00	±	3.78E+00	6.06E+00
I-131		1.70E+00	±	6.14E+00	9.92E+00
CS-134		5.89E-01	±	1.63E+00	2.60E+00
CS-137		1.33E+00	±	1.94E+00	3.01E+00
BALA140		-1.11E-01	±	4.85E+00	7.95E+00
BI-214		2.35E+00	±	4.66E+00	8.44E+00
RA-226		-9.79E+00	±	4.54E+01	7.01E+01

Location 27 collected 11/1/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-6.31E+01	±	1.77E+02	5.48E+01
CR-51		-8.23E+00	±	2.34E+01	3.77E+01
MN-54		7.08E-01	±	1.54E+00	2.40E+00
CO-58		-9.36E-01	±	2.40E+00	3.82E+00
FE-59		-2.10E-01	±	5.16E+00	8.43E+00
CO-60		1.34E+00	±	1.91E+00	2.88E+00
ZN-65		1.19E+00	±	3.52E+00	5.55E+00
ZRNB-95		7.70E-01	±	3.63E+00	5.85E+00
I-131		-1.09E-02	±	7.11E+00	1.17E+01
CS-134		-2.52E-01	±	1.83E+00	2.97E+00
CS-137		0.00E+00	±	2.18E+00	3.58E+00
BALA140		6.79E-01	±	5.04E+00	8.12E+00
BI-214		-8.42E-01	±	5.02E+00	8.17E+00
RA-226		8.38E+00	±	4.19E+01	7.52E+01

Location 27 collected 11/30/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-2.97E+01	±	6.25E+01	6.01E+01
CR-51		1.97E+01	±	2.49E+01	3.89E+01
MN-54		1.52E-02	±	2.23E+00	3.66E+00
CO-58		-1.30E+00	±	2.56E+00	4.02E+00
FE-59		5.01E-02	±	5.96E+00	9.79E+00
CO-60		8.31E-01	±	2.08E+00	3.25E+00
ZN-65		-1.29E+00	±	4.67E+00	7.46E+00
ZRNB-95		-2.43E-02	±	3.59E+00	5.89E+00
I-131		-1.16E+00	±	7.37E+00	1.20E+01
CS-134		-7.03E-01	±	2.47E+00	3.99E+00
CS-137		-9.73E-01	±	2.54E+00	4.06E+00
BALA140		0.00E+00	±	2.35E+00	3.86E+00
BI-214		1.03E+00	±	5.51E+00	9.96E+00
RA-226		2.01E+01	±	5.30E+01	9.60E+01

Location 27 collected 1/2/2013

Nuclide	RQ	Activity		Error	MDA
K-40		-3.34E+01	±	5.90E+01	5.27E+01
CR-51		2.07E+00	±	2.69E+01	4.41E+01
MN-54		-5.19E-02	±	1.97E+00	3.23E+00
CO-58		-1.92E-01	±	2.14E+00	3.50E+00
FE-59		-2.82E-01	±	6.11E+00	1.00E+01
CO-60		1.74E+00	±	1.87E+00	2.78E+00
ZN-65		2.69E-01	±	3.66E+00	5.97E+00
ZRNB-95		-1.29E+00	±	4.44E+00	7.16E+00
I-131		4.68E+00	±	9.41E+00	1.51E+01
CS-134		-1.24E+00	±	2.38E+00	3.81E+00
CS-137		-9.63E-01	±	2.22E+00	3.54E+00
BALA140		-4.02E-01	±	6.02E+00	9.81E+00
BI-214		-1.04E+00	±	5.83E+00	9.04E+00
RA-226		-1.53E+01	±	6.62E+01	9.73E+01

RQ = Results Qualifier. If blank, result is less than detection limit: If "+", result is above detection limit.

Table A-7.1

GAMMA SPECTROMETRY RESULTS OF WATER

Deep Ground Water Wells - Stations 31, 32, 52

Results in pCi/liter

Location 31 collected 3/7/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-5.60E+01	±	2.07E+02	7.94E+01
CR-51		-8.47E+00	±	2.64E+01	4.27E+01
MN-54		1.00E+00	±	2.94E+00	4.67E+00
CO-58		1.23E+00	±	2.62E+00	4.09E+00
FE-59		-2.29E+00	±	7.65E+00	1.21E+01
CO-60		1.48E+00	±	2.48E+00	3.70E+00
ZN-65		-5.87E+00	±	8.16E+00	1.26E+01
ZRNB-95		-1.46E+00	±	4.77E+00	7.60E+00
I-131		-5.77E-01	±	3.11E+00	5.05E+00
CS-134		3.92E-01	±	1.85E+00	2.96E+00
CS-137		1.06E+00	±	2.71E+00	4.27E+00
BALA140		-1.72E-01	±	4.26E+00	6.97E+00
BI-214	+	7.16E+01	±	1.03E+01	1.16E+01
RA-226		-2.83E+01	±	1.09E+02	1.36E+02

Location 31 collected 6/6/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-1.26E+01	±	5.94E+01	8.28E+01
CR-51		7.46E+00	±	2.78E+01	4.44E+01
MN-54		2.06E-01	±	3.13E+00	5.09E+00
CO-58		0.00E+00	±	4.34E+00	7.13E+00
FE-59		2.41E+00	±	8.05E+00	1.24E+01
CO-60		-1.63E-01	±	2.89E+00	4.70E+00
ZN-65		-1.40E+00	±	8.81E+00	1.42E+01
ZRNB-95		-3.25E-01	±	5.49E+00	8.94E+00
I-131		3.27E+00	±	5.98E+00	9.21E+00
CS-134		-3.27E-01	±	3.56E+00	5.79E+00
CS-137		1.24E-01	±	3.25E+00	5.31E+00
BALA140		0.00E+00	±	1.73E+00	2.85E+00
BI-214		-9.99E-01	±	8.68E+00	1.58E+01
RA-226		-6.90E+00	±	8.86E+01	1.50E+02

Location 31 collected 9/13/2012

Nuclide	RQ	Activity		Error	MDA
K-40		2.51E+00	±	4.62E+01	9.12E+01
CR-51		-1.88E+01	±	3.85E+01	6.12E+01
MN-54		7.74E-01	±	3.68E+00	5.90E+00
CO-58		0.00E+00	±	3.67E+00	6.04E+00
FE-59		0.00E+00	±	1.04E+01	1.71E+01
CO-60		1.68E+00	±	3.44E+00	5.17E+00
ZN-65		-5.26E+00	±	1.21E+01	1.90E+01
ZRNB-95		9.75E-01	±	5.44E+00	8.71E+00
I-131		2.55E+00	±	4.32E+00	6.67E+00
CS-134		-2.87E+00	±	5.10E+00	8.03E+00
CS-137		-1.86E+00	±	3.60E+00	5.51E+00
BALA140		-1.44E-01	±	4.59E+00	7.50E+00
BI-214	+	6.15E+01	±	1.29E+01	1.54E+01
RA-226		-2.29E+01	±	1.21E+02	1.65E+02

Location 31 collected 12/12/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-3.62E+01	±	1.53E+02	7.89E+01
CR-51		1.29E+01	±	2.67E+01	4.25E+01
MN-54		-1.22E-02	±	2.84E+00	4.67E+00
CO-58		1.83E-01	±	3.01E+00	4.91E+00
FE-59		-2.36E+00	±	7.80E+00	1.22E+01
CO-60		6.75E-01	±	3.50E+00	5.89E+00
ZN-65		-9.96E-01	±	2.69E+01	6.90E+00
ZRNB-95		1.33E+00	±	4.59E+00	7.24E+00
I-131		9.37E-01	±	2.96E+00	4.72E+00
CS-134		-6.98E-01	±	3.21E+00	5.17E+00
CS-137		-5.66E-01	±	3.83E+00	6.20E+00
BALA140		3.47E-01	±	3.52E+00	5.68E+00
BI-214	+	1.68E+02	±	1.69E+01	1.32E+01
RA-226		-1.33E+01	±	1.05E+02	1.37E+02

Location 32 collected 3/7/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-5.59E+01	±	1.97E+02	7.74E+01
CR-51		1.21E+01	±	2.61E+01	4.19E+01
MN-54		-2.39E-02	±	3.03E+00	4.97E+00
CO-58		-2.06E+00	±	3.34E+00	5.20E+00
FE-59		2.07E+00	±	7.77E+00	1.24E+01
CO-60		1.28E+00	±	2.98E+00	4.65E+00
ZN-65		2.00E+00	±	4.90E+00	7.44E+00
ZRNB-95		-1.41E+00	±	5.41E+00	8.68E+00
I-131		9.65E-01	±	3.54E+00	5.72E+00
CS-134		-4.08E-01	±	8.08E+00	1.33E+01
CS-137		-3.23E+00	±	4.39E+00	6.88E+00
BALA140		-1.24E+00	±	4.90E+00	7.83E+00
BI-214	+	1.42E+02	±	1.40E+01	1.21E+01
RA-226		-1.80E+01	±	1.12E+02	1.56E+02

Location 32 collected 6/6/2012

Nuclide	RQ	Activity		Error	MDA
K-40		2.09E+01	±	4.52E+01	8.35E+01
CR-51		-4.76E+00	±	3.20E+01	5.19E+01
MN-54		-6.05E-01	±	2.73E+00	4.32E+00
CO-58		7.63E-01	±	2.69E+00	4.19E+00
FE-59		1.80E+00	±	8.63E+00	1.36E+01
CO-60		1.49E+00	±	3.74E+00	5.76E+00
ZN-65		-3.94E+00	±	9.49E+00	1.48E+01
ZRNB-95		1.20E+00	±	5.19E+00	8.20E+00
I-131		1.44E+00	±	6.01E+00	9.62E+00
CS-134		-8.36E-01	±	3.05E+00	4.84E+00
CS-137		1.87E-02	±	2.74E+00	4.50E+00
BALA140		0.00E+00	±	1.74E+00	2.86E+00
BI-214		5.31E+00	±	8.58E+00	1.60E+01
RA-226		1.14E+01	±	7.15E+01	1.34E+02

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

Table A-7.1

GAMMA SPECTROMETRY RESULTS OF WATER

Deep Ground Water Wells - Stations 31, 32, 52

Results in pCi/liter

Location 32 collected 9/13/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-3.94E+01	±	1.05E+02	8.30E+01
CR-51		-1.31E+01	±	2.68E+01	4.24E+01
MN-54		-8.74E-01	±	3.69E+00	5.92E+00
CO-58		-5.10E-01	±	3.12E+00	5.03E+00
FE-59		1.63E+00	±	6.65E+00	1.04E+01
CO-60		-3.11E-01	±	3.35E+00	5.43E+00
ZN-65		1.00E+00	±	2.90E+01	1.01E+01
ZRNB-95		2.49E+00	±	4.98E+00	7.63E+00
I-131		-1.34E+00	±	4.69E+00	7.54E+00
CS-134		2.22E+00	±	2.63E+00	3.88E+00
CS-137		0.00E+00	±	5.50E+00	9.04E+00
BALA140		1.73E-01	±	3.12E+00	5.06E+00
BI-214	+	1.61E+02	±	1.53E+01	1.20E+01
RA-226		2.86E+01	±	7.86E+01	1.35E+02

Location 32 collected 12/12/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-3.65E+01	±	1.62E+02	1.14E+02
CR-51		0.00E+00	±	4.26E+01	7.00E+01
MN-54		0.00E+00	±	8.50E+00	1.40E+01
CO-58		4.46E-02	±	4.81E+00	7.91E+00
FE-59		-4.18E+00	±	1.25E+01	1.97E+01
CO-60		4.69E-01	±	3.56E+00	5.72E+00
ZN-65		-1.34E+01	±	1.72E+01	9.91E+00
ZRNB-95		-1.13E+00	±	7.07E+00	1.14E+01
I-131		-1.55E+00	±	5.55E+00	8.98E+00
CS-134		2.94E+00	±	2.64E+01	4.34E+01
CS-137		-1.95E+00	±	5.25E+00	8.35E+00
BALA140		1.92E+00	±	5.86E+00	9.19E+00
BI-214	+	5.23E+02	±	3.17E+01	1.80E+01
RA-226		1.49E+01	±	1.37E+02	2.34E+02

Location 52 collected 3/7/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-4.47E+01	±	1.15E+02	7.35E+01
CR-51		4.42E+00	±	2.43E+01	3.94E+01
MN-54		-1.03E+00	±	3.11E+00	4.96E+00
CO-58		1.38E-01	±	2.08E+00	3.39E+00
FE-59		0.00E+00	±	8.54E+00	1.40E+01
CO-60		2.73E-01	±	2.44E+00	3.94E+00
ZN-65		-1.31E+00	±	6.17E+00	9.91E+00
ZRNB-95		-1.62E+00	±	4.96E+00	7.89E+00
I-131		-9.36E-01	±	4.42E+00	7.18E+00
CS-134		-4.23E-01	±	3.04E+00	4.95E+00
CS-137		-1.92E-02	±	2.62E+00	4.30E+00
BALA140		-8.72E-01	±	4.59E+00	7.35E+00
BI-214		-1.96E+00	±	8.38E+00	1.16E+01
RA-226		-2.60E+01	±	9.96E+01	1.30E+02

Location 52 collected 6/6/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-7.17E+00	±	4.87E+01	8.05E+01
CR-51		0.00E+00	±	3.66E+01	6.02E+01
MN-54		0.00E+00	±	2.64E+00	4.34E+00
CO-58		1.34E-01	±	3.11E+00	5.07E+00
FE-59		-1.74E+00	±	1.09E+01	1.76E+01
CO-60		7.08E-01	±	3.35E+00	5.30E+00
ZN-65		0.00E+00	±	1.20E+01	1.98E+01
ZRNB-95		1.50E+00	±	5.78E+00	9.14E+00
I-131		-2.70E-01	±	6.02E+00	9.85E+00
CS-134		-9.85E-02	±	3.86E+00	6.33E+00
CS-137		4.01E-01	±	3.16E+00	5.11E+00
BALA140		-2.61E-01	±	4.77E+00	7.73E+00
BI-214		-5.03E+00	±	1.38E+01	1.66E+01
RA-226		1.28E+01	±	8.44E+01	1.53E+02

Location 52 collected 9/13/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-4.75E+01	±	1.32E+02	8.22E+01
CR-51		8.95E+00	±	1.74E+01	2.68E+01
MN-54		4.42E-01	±	2.42E+00	3.87E+00
CO-58		1.68E-01	±	2.78E+00	4.54E+00
FE-59		-1.57E+00	±	6.94E+00	1.09E+01
CO-60		-1.33E-01	±	2.40E+00	3.90E+00
ZN-65		-1.93E+00	±	7.34E+00	1.17E+01
ZRNB-95		2.39E+00	±	4.74E+00	7.24E+00
I-131		-2.13E-01	±	3.23E+00	5.28E+00
CS-134		-6.60E-01	±	2.88E+00	4.63E+00
CS-137		-6.16E-01	±	2.87E+00	4.58E+00
BALA140		-6.32E-01	±	4.84E+00	7.79E+00
BI-214		8.24E+00	±	7.56E+00	1.28E+01
RA-226		-4.88E+01	±	1.34E+02	9.94E+01

Location 52 collected 12/5/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-2.99E+01	±	1.09E+02	9.96E+01
CR-51		3.17E+00	±	2.47E+01	4.01E+01
MN-54		8.74E-01	±	3.32E+00	5.25E+00
CO-58		1.32E-01	±	2.75E+00	4.49E+00
FE-59		-5.75E-01	±	9.75E+00	1.59E+01
CO-60		4.77E-02	±	3.67E+00	6.02E+00
ZN-65		5.09E-01	±	7.79E+00	1.27E+01
ZRNB-95		-1.29E+00	±	5.35E+00	8.49E+00
I-131		1.52E+00	±	3.23E+00	5.04E+00
CS-134		-1.45E-01	±	4.21E+00	6.91E+00
CS-137		-6.01E-01	±	3.58E+00	5.76E+00
BALA140		5.23E-02	±	3.67E+00	6.01E+00
BI-214		1.01E+01	±	8.56E+00	1.42E+01
RA-226		1.01E+01	±	7.72E+01	1.43E+02

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

TABLE A-7.2

GAMMA SPECTROMETRY RESULTS OF WATER - SUMMARY

RIVER/DRINKING WATER

Nuclide		Average Activity	Activity Low	Activity High	Average MDA	Number of Samples	Number of Positive IDs
BALA140	Ind	-7.26E-01	-3.68E+00	1.01E+00	1.02E+01	12	0
BALA140	Cntl	3.04E-01	-5.86E-01	1.96E+00	4.37E+00	12	0
BI-214	Ind	7.54E-01	-6.10E+00	7.04E+00	9.36E+00	12	0
BI-214	Cntl	-2.40E-01	-8.34E+00	1.05E+01	9.53E+00	12	1
CO-58	Ind	-3.05E-01	-9.10E-01	6.64E-01	3.33E+00	12	0
CO-58	Cntl	-7.26E-02	-7.75E-01	1.03E+00	2.88E+00	12	0
CO-60	Ind	2.27E-01	-8.74E-01	9.57E-01	3.19E+00	12	0
CO-60	Cntl	2.67E-01	-5.69E-01	1.42E+00	2.88E+00	12	0
CR-51	Ind	1.43E+00	-1.49E+01	1.36E+01	3.99E+01	12	0
CR-51	Cntl	-2.14E+00	-9.21E+00	7.33E+00	2.79E+01	12	0
CS-134	Ind	-4.35E-02	-1.60E+00	1.41E+00	3.32E+00	12	0
CS-134	Cntl	-1.44E-01	-1.56E+00	7.85E-01	3.44E+00	12	0
CS-137	Ind	5.60E-02	-6.82E-01	1.01E+00	3.24E+00	12	0
CS-137	Cntl	2.13E-01	-1.17E+00	1.42E+00	3.09E+00	12	0
FE-59	Ind	-4.67E-01	-1.89E+00	4.16E+00	9.71E+00	12	0
FE-59	Cntl	-3.74E-01	-2.18E+00	1.11E+00	8.39E+00	12	0
I-131	Ind	2.66E-01	-5.13E+00	7.51E+00	1.27E+01	12	0
I-131	Cntl	-4.47E-01	-2.24E+00	1.49E+00	4.33E+00	12	0
K-40	Ind	-2.85E+01	-8.34E+01	-5.88E+00	5.39E+01	12	0
K-40	Cntl	-3.06E+01	-6.51E+01	-9.57E+00	5.36E+01	12	0
MN-54	Ind	2.47E-01	-7.08E-01	7.22E-01	2.91E+00	12	0
MN-54	Cntl	2.23E-01	-6.22E-01	1.13E+00	3.00E+00	12	0
RA-226	Ind	-6.05E+00	-2.86E+01	1.54E+01	8.41E+01	12	0
RA-226	Cntl	-1.03E+01	-3.07E+01	1.56E+01	8.72E+01	12	0
ZN-65	Ind	-7.36E-01	-2.26E+00	2.80E+00	6.65E+00	12	0
ZN-65	Cntl	-7.58E-01	-3.26E+00	1.30E+00	7.39E+00	12	0
ZRNB-95	Ind	-4.77E-02	-1.61E+00	1.37E+00	6.07E+00	12	0
ZRNB-95	Cntl	-4.04E-01	-1.63E+00	7.09E-01	5.47E+00	12	0

Ind = Indicator Stations Cntl = Control Stations

TABLE A-7.2

GAMMA SPECTROMETRY RESULTS OF WATER - SUMMARY
PLANT DISCHARGE WATER

Nuclide		Average Activity	Activity Low	Activity High	Average MDA	Number of Samples	Number of Positive IDs
K-40	Ind	-2.57E+01	-6.31E+01	-6.07E+00	5.41E+01	12	0
CR-51	Ind	3.91E+00	-8.23E+00	1.97E+01	3.72E+01	12	0
MN-54	Ind	2.75E-02	-1.32E+00	1.54E+00	3.07E+00	12	0
CO-58	Ind	-2.58E-01	-1.30E+00	2.98E-01	3.44E+00	12	0
FE-59	Ind	2.65E-01	-5.71E-01	3.00E+00	9.08E+00	12	0
CO-60	Ind	3.54E-01	-1.01E+00	1.74E+00	3.10E+00	12	0
ZN-65	Ind	-5.16E-01	-2.79E+00	1.19E+00	6.67E+00	12	0
ZRNB-95	Ind	1.06E-01	-1.29E+00	1.35E+00	6.15E+00	12	0
I-131	Ind	2.55E-01	-4.14E+00	4.78E+00	1.22E+01	12	0
CS-134	Ind	-4.50E-02	-1.24E+00	1.10E+00	3.21E+00	12	0
CS-137	Ind	-5.76E-01	-1.48E+00	1.33E+00	3.36E+00	12	0
BALA140	Ind	-1.71E-01	-1.39E+00	6.88E-01	8.18E+00	12	0
BI-214	Ind	1.47E-01	-1.15E+01	7.93E+00	9.11E+00	12	0
RA-226	Ind	-7.65E+00	-4.93E+01	2.01E+01	8.33E+01	12	0

GAMMA SPECTROMETRY RESULTS OF WATER - SUMMARY
DEEP GROUND WATER

Nuclide		Average Activity	Activity Low	Activity High	Average MDA	Number of Samples	Number of Positive IDs
K-40	Ind	-2.85E+01	-5.60E+01	2.09E+01	8.55E+01	12	0
CR-51	Ind	3.17E-01	-1.88E+01	1.29E+01	4.70E+01	12	0
MN-54	Ind	6.28E-02	-1.03E+00	1.00E+00	5.66E+00	12	0
CO-58	Ind	1.81E-02	-2.06E+00	1.23E+00	5.17E+00	12	0
FE-59	Ind	-4.00E-01	-4.18E+00	2.41E+00	1.40E+01	12	0
CO-60	Ind	6.25E-01	-3.11E-01	1.68E+00	5.02E+00	12	0
ZN-65	Ind	-2.55E+00	-1.34E+01	2.00E+00	1.24E+01	12	0
ZRNB-95	Ind	2.21E-01	-1.62E+00	2.49E+00	8.43E+00	12	0
I-131	Ind	4.83E-01	-1.55E+00	3.27E+00	7.07E+00	12	0
CS-134	Ind	-7.67E-02	-2.87E+00	2.94E+00	9.18E+00	12	0
CS-137	Ind	-6.03E-01	-3.23E+00	1.06E+00	5.82E+00	12	0
BALA140	Ind	-6.99E-02	-1.24E+00	1.92E+00	6.40E+00	12	0
BI-214	Ind	9.53E+01	-5.03E+00	5.23E+02	1.41E+01	12	6
RA-226	Ind	-7.20E+00	-4.88E+01	2.86E+01	1.48E+02	12	0

Ind = Indicator Stations Cntl = Control Stations

TABLE A-8.1

GAMMA SPECTROMETRY RESULTS OF SOIL

Results in pCi/kilogram

Location & Date		Station 1		5/29/2012
Nuclide	RQ	Activity	Error	MDA
BE-7		1.18E+02 ±	2.04E+02	3.21E+02
K-40	+	1.60E+04 ±	9.92E+02	2.85E+02
CR-51		-3.77E+01 ±	1.76E+02	2.85E+02
MN-54		7.77E+00 ±	2.32E+01	3.70E+01
CO-58		-1.65E+00 ±	1.91E+01	3.11E+01
FE-59		-1.05E+00 ±	6.22E+01	1.02E+02
CO-60		-1.63E+00 ±	2.67E+01	4.36E+01
ZN-65		-3.43E+01 ±	7.30E+01	1.16E+02
ZRNB-95		1.33E+01 ±	4.26E+01	6.80E+01
CS-134		1.20E+01 ±	1.82E+01	2.79E+01
CS-137	+	8.07E+01 ±	3.38E+01	4.59E+01
BALA140		0.00E+00 ±	3.38E+01	5.56E+01
BI-214	+	5.67E+02 ±	8.39E+01	8.48E+01
RA-226		1.05E+03 ±	7.57E+02	1.21E+03

Location & Date		Station 21		5/29/2012
Nuclide	RQ	Activity	Error	MDA
BE-7	+	2.48E+02 ±	1.61E+02	2.30E+02
K-40	+	1.48E+04 ±	8.56E+02	1.97E+02
CR-51		1.07E+02 ±	1.63E+02	2.55E+02
MN-54		9.24E+00 ±	1.38E+01	2.06E+01
CO-58		-3.23E+00 ±	1.93E+01	3.11E+01
FE-59		1.45E+01 ±	5.17E+01	8.23E+01
CO-60		-5.77E+00 ±	2.47E+01	3.98E+01
ZN-65		-1.11E+01 ±	4.83E+01	7.78E+01
ZRNB-95		-1.42E+01 ±	3.14E+01	4.91E+01
CS-134		-1.02E+01 ±	2.17E+01	3.45E+01
CS-137		2.04E+01 ±	2.09E+01	3.13E+01
BALA140		-5.17E+00 ±	2.03E+01	3.18E+01
BI-214	+	4.63E+02 ±	7.49E+01	6.27E+01
RA-226		6.41E+02 ±	5.98E+02	9.68E+02

Location & Date		Station 9a		5/29/2012
Nuclide	RQ	Activity	Error	MDA
BE-7		2.42E+02 ±	2.08E+02	3.11E+02
K-40	+	1.43E+04 ±	9.56E+02	3.25E+02
CR-51		7.32E+01 ±	2.09E+02	3.36E+02
MN-54		2.03E+01 ±	2.36E+01	3.55E+01
CO-58		1.50E+00 ±	1.98E+01	3.23E+01
FE-59		-1.76E+01 ±	6.27E+01	9.98E+01
CO-60		6.76E+00 ±	2.53E+01	4.03E+01
ZN-65		-3.81E+01 ±	6.96E+01	1.10E+02
ZRNB-95		-9.26E+00 ±	4.26E+01	6.86E+01
CS-134		1.65E+01 ±	1.92E+01	2.88E+01
CS-137	+	5.47E+01 ±	2.75E+01	3.71E+01
BALA140		4.79E+00 ±	2.63E+01	4.19E+01
BI-214	+	4.75E+02 ±	7.62E+01	8.64E+01
RA-226		1.11E+03 ±	7.06E+02	1.12E+03

Location & Date		Station 8		5/29/2012
Nuclide	RQ	Activity	Error	MDA
BE-7		9.58E+01 ±	2.28E+02	3.63E+02
K-40	+	1.82E+04 ±	1.08E+03	3.00E+02
CR-51		1.20E+01 ±	2.14E+02	3.50E+02
MN-54		-6.05E+00 ±	2.56E+01	4.13E+01
CO-58		4.48E-01 ±	2.10E+01	3.44E+01
FE-59		2.28E+01 ±	5.71E+01	8.90E+01
CO-60		4.06E+00 ±	2.57E+01	4.15E+01
ZN-65		-1.75E+01 ±	6.18E+01	9.90E+01
ZRNB-95		-1.67E+01 ±	4.51E+01	7.17E+01
CS-134		1.24E+00 ±	2.48E+01	4.07E+01
CS-137	+	6.54E+01 ±	3.25E+01	4.51E+01
BALA140		-6.37E+00 ±	3.00E+01	4.78E+01
BI-214	+	6.63E+02 ±	8.89E+01	8.76E+01
RA-226	+	1.32E+03 ±	7.84E+02	1.24E+03

Location & Date		Station 43		6/12/2012
Nuclide	RQ	Activity	Error	MDA
BE-7		-2.74E+01 ±	1.99E+02	3.24E+02
K-40	+	1.72E+04 ±	1.04E+03	2.51E+02
CR-51		9.35E+01 ±	2.09E+02	3.33E+02
MN-54		2.36E+01 ±	2.48E+01	3.70E+01
CO-58		2.21E+00 ±	1.86E+01	3.02E+01
FE-59		-1.63E+01 ±	5.99E+01	9.52E+01
CO-60		-3.73E+00 ±	2.96E+01	4.81E+01
ZN-65		6.73E+00 ±	1.43E+02	2.35E+02
ZRNB-95		6.33E+00 ±	4.07E+01	6.58E+01
CS-134		1.68E+01 ±	1.64E+01	2.34E+01
CS-137		3.22E+01 ±	2.76E+01	4.06E+01
BALA140		0.00E+00 ±	2.35E+01	3.87E+01
BI-214	+	6.04E+02 ±	9.02E+01	9.92E+01
RA-226		1.01E+03 ±	7.75E+02	1.24E+03

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

TABLE A-8.2

GAMMA SPECTROMETRY RESULTS OF SOIL - SUMMARY

Results in pCi/kilogram

Nuclide		Average Activity	Activity Low	Activity High	Average MDA	Number of Samples	Number of Positive IDs
BALA140	Ind	-2.89E+00	-6.37E+00	0.00E+00	4.35E+01	4	0
BALA140	Cntl	4.79E+00	4.79E+00	4.79E+00	4.19E+01	1	0
BE-7	Ind	1.09E+02	-2.74E+01	2.48E+02	3.10E+02	4	1
BE-7	Cntl	2.42E+02	2.42E+02	2.42E+02	3.11E+02	1	0
BI-214	Ind	5.74E+02	4.63E+02	6.63E+02	8.36E+01	4	4
BI-214	Cntl	4.75E+02	4.75E+02	4.75E+02	8.64E+01	1	1
CO-58	Ind	-5.57E-01	-3.23E+00	2.21E+00	3.17E+01	4	0
CO-58	Cntl	1.50E+00	1.50E+00	1.50E+00	3.23E+01	1	0
CO-60	Ind	-1.77E+00	-5.77E+00	4.06E+00	4.32E+01	4	0
CO-60	Cntl	6.76E+00	6.76E+00	6.76E+00	4.03E+01	1	0
CR-51	Ind	4.36E+01	-3.77E+01	1.07E+02	3.06E+02	4	0
CR-51	Cntl	7.32E+01	7.32E+01	7.32E+01	3.36E+02	1	0
CS-134	Ind	4.96E+00	-1.02E+01	1.68E+01	3.16E+01	4	0
CS-134	Cntl	1.65E+01	1.65E+01	1.65E+01	2.88E+01	1	0
CS-137	Ind	4.97E+01	2.04E+01	8.07E+01	4.07E+01	4	2
CS-137	Cntl	5.47E+01	5.47E+01	5.47E+01	3.71E+01	1	1
FE-59	Ind	4.98E+00	-1.63E+01	2.28E+01	9.21E+01	4	0
FE-59	Cntl	-1.76E+01	-1.76E+01	-1.76E+01	9.98E+01	1	0
K-40	Ind	1.66E+04	1.48E+04	1.82E+04	2.58E+02	4	4
K-40	Cntl	1.43E+04	1.43E+04	1.43E+04	3.25E+02	1	1
MN-54	Ind	8.65E+00	-6.05E+00	2.36E+01	3.40E+01	4	0
MN-54	Cntl	2.03E+01	2.03E+01	2.03E+01	3.55E+01	1	0
RA-226	Ind	1.00E+03	6.41E+02	1.32E+03	1.16E+03	4	1
RA-226	Cntl	1.11E+03	1.11E+03	1.11E+03	1.12E+03	1	0
ZN-65	Ind	-1.40E+01	-3.43E+01	6.73E+00	1.32E+02	4	0
ZN-65	Cntl	-3.81E+01	-3.81E+01	-3.81E+01	1.10E+02	1	0
ZRNB-95	Ind	-2.81E+00	-1.67E+01	1.33E+01	6.37E+01	4	0
ZRNB-95	Cntl	-9.26E+00	-9.26E+00	-9.26E+00	6.86E+01	1	0

Ind = Indicator Stations Cntl = Control Stations

TABLE A-9.1

GAMMA SPECTROMETRY RESULTS OF SEDIMENT

Results in pCi/kilogram dry material

Station 33 Upstream Control

Nuclide	Location & Date RQ	Activity	Station 33 Error	3/28/2012 MDA
BE-7		1.97E+02 ±	2.35E+02	3.60E+02
K-40	+	1.47E+04 ±	9.75E+02	2.93E+02
CR-51		-9.88E+00 ±	2.73E+02	4.47E+02
MN-54		-8.46E+00 ±	2.84E+01	4.56E+01
CO-58		-1.00E+01 ±	2.59E+01	4.10E+01
FE-59		4.10E+00 ±	6.05E+01	9.85E+01
CO-60		1.11E+01 ±	2.68E+01	4.21E+01
ZN-65		-6.47E+00 ±	6.89E+01	1.12E+02
ZRNB-95		0.00E+00 ±	6.22E+01	1.02E+02
CS-134		-1.19E+01 ±	2.43E+01	3.83E+01
CS-137	+	2.37E+02 ±	5.08E+01	4.24E+01
BALA140		-1.39E+01 ±	5.30E+01	8.37E+01
BI-214	+	9.16E+02 ±	1.07E+02	7.51E+01
RA-226	+	2.08E+03 ±	8.28E+02	9.94E+02

Nuclide	Location & Date RQ	Activity	Station 33 Error	10/10/2012 MDA
BE-7		1.12E+02 ±	2.11E+02	3.33E+02
K-40	+	1.51E+04 ±	9.12E+02	2.12E+02
CR-51		1.04E+00 ±	2.08E+02	3.42E+02
MN-54		-1.19E+00 ±	1.85E+01	3.01E+01
CO-58		1.33E+00 ±	1.94E+01	3.17E+01
FE-59		-1.36E+01 ±	6.16E+01	9.87E+01
CO-60		1.04E+01 ±	2.75E+01	4.36E+01
ZN-65		-2.13E+01 ±	5.37E+01	8.51E+01
ZRNB-95		1.06E+01 ±	4.44E+01	7.15E+01
CS-134		-3.77E+00 ±	1.88E+01	3.03E+01
CS-137		2.24E+01 ±	2.55E+01	3.89E+01
BALA140		-1.28E+01 ±	3.48E+01	5.42E+01
BI-214	+	7.45E+02 ±	8.87E+01	6.18E+01
RA-226	+	2.19E+03 ±	7.35E+02	8.64E+02

Station 34 Downstream Indicator

Nuclide	Location & Date RQ	Activity	Station 34 Error	4/9/2012 MDA
BE-7		5.29E+01 ±	2.65E+02	4.31E+02
K-40	+	1.66E+04 ±	1.08E+03	3.33E+02
CR-51		2.34E+01 ±	3.03E+02	4.96E+02
MN-54		3.95E+01 ±	3.29E+01	4.91E+01
CO-58		-7.25E+00 ±	2.96E+01	4.77E+01
FE-59		0.00E+00 ±	1.18E+02	1.94E+02
CO-60		2.42E+01 ±	3.16E+01	4.80E+01
ZN-65		6.22E-01 ±	5.48E+01	8.99E+01
ZRNB-95		1.08E+01 ±	5.00E+01	8.08E+01
CS-134		2.04E+00 ±	8.87E+01	1.46E+02
CS-137	+	9.47E+01 ±	3.95E+01	3.92E+01
BALA140		-5.76E+00 ±	3.31E+01	5.33E+01
BI-214	+	1.06E+03 ±	1.34E+02	1.03E+02
RA-226	+	2.00E+03 ±	1.06E+03	1.67E+03

Nuclide	Location & Date RQ	Activity	Station 34 Error	10/10/2012 MDA
BE-7		1.05E+01 ±	1.57E+02	2.56E+02
K-40	+	1.72E+04 ±	1.02E+03	2.80E+02
CR-51		-6.22E+00 ±	1.90E+02	3.12E+02
MN-54		-3.49E+00 ±	2.02E+01	3.25E+01
CO-58		1.01E+01 ±	1.85E+01	2.83E+01
FE-59		-2.27E+01 ±	7.04E+01	1.12E+02
CO-60		1.43E-01 ±	2.36E+01	3.88E+01
ZN-65		-3.27E+01 ±	5.88E+01	9.18E+01
ZRNB-95		8.68E+00 ±	3.51E+01	5.61E+01
CS-134		9.37E+00 ±	1.80E+01	2.80E+01
CS-137	+	1.35E+02 ±	3.51E+01	2.80E+01
BALA140		-1.47E+01 ±	3.74E+01	5.80E+01
BI-214	+	5.54E+02 ±	8.36E+01	6.61E+01
RA-226	+	1.84E+03 ±	7.23E+02	8.09E+02

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

TABLE A-9.2

GAMMA SPECTROMETRY RESULTS OF SEDIMENT - SUMMARY

Results in pCi/kilogram

Nuclide		Average Activity	Activity Low	Activity High	Average MDA	Number of Samples	Number of Positive IDs
BALA140	Ind	-1.02E+01	-1.47E+01	-5.76E+00	5.57E+01	2	0
BALA140	Cntl	-1.33E+01	-1.39E+01	-1.28E+01	6.90E+01	2	0
BE-7	Ind	3.17E+01	1.05E+01	5.29E+01	3.43E+02	2	0
BE-7	Cntl	1.54E+02	1.12E+02	1.97E+02	3.46E+02	2	0
BI-214	Ind	8.07E+02	5.54E+02	1.06E+03	8.47E+01	2	2
BI-214	Cntl	8.31E+02	7.45E+02	9.16E+02	6.84E+01	2	2
CO-58	Ind	1.41E+00	-7.25E+00	1.01E+01	3.80E+01	2	0
CO-58	Cntl	-4.34E+00	-1.00E+01	1.33E+00	3.64E+01	2	0
CO-60	Ind	1.22E+01	1.43E-01	2.42E+01	4.34E+01	2	0
CO-60	Cntl	1.07E+01	1.04E+01	1.11E+01	4.28E+01	2	0
CR-51	Ind	8.57E+00	-6.22E+00	2.34E+01	4.04E+02	2	0
CR-51	Cntl	-4.42E+00	-9.88E+00	1.04E+00	3.95E+02	2	0
CS-134	Ind	5.71E+00	2.04E+00	9.37E+00	8.69E+01	2	0
CS-134	Cntl	-7.84E+00	-1.19E+01	-3.77E+00	3.43E+01	2	0
CS-137	Ind	1.15E+02	9.47E+01	1.35E+02	3.36E+01	2	2
CS-137	Cntl	1.30E+02	2.24E+01	2.37E+02	4.07E+01	2	1
FE-59	Ind	-1.14E+01	-2.27E+01	0.00E+00	1.53E+02	2	0
FE-59	Cntl	-4.77E+00	-1.36E+01	4.10E+00	9.86E+01	2	0
K-40	Ind	1.69E+04	1.66E+04	1.72E+04	3.06E+02	2	2
K-40	Cntl	1.49E+04	1.47E+04	1.51E+04	2.53E+02	2	2
MN-54	Ind	1.80E+01	-3.49E+00	3.95E+01	4.08E+01	2	0
MN-54	Cntl	-4.82E+00	-8.46E+00	-1.19E+00	3.79E+01	2	0
RA-226	Ind	1.92E+03	1.84E+03	2.00E+03	1.24E+03	2	2
RA-226	Cntl	2.14E+03	2.08E+03	2.19E+03	9.29E+02	2	2
ZN-65	Ind	-1.60E+01	-3.27E+01	6.22E-01	9.09E+01	2	0
ZN-65	Cntl	-1.39E+01	-2.13E+01	-6.47E+00	9.87E+01	2	0
ZRNB-95	Ind	9.72E+00	8.68E+00	1.08E+01	6.84E+01	2	0
ZRNB-95	Cntl	5.29E+00	0.00E+00	1.06E+01	8.69E+01	2	0

Ind = Indicator Stations Cntl = Control Stations

TABLE A-10.1

GAMMA SPECTROMETRY RESULTS OF FISH

Station 30 Columbia River - Station 38 Snake River

Results in pCi/kilogram (wet)

Location & Species	Collection Date	Nuclide	RQ	Activity		Error	MDA
Steelhead	10/24/12	K-40	+	2.96E+03	±	4.79E+02	2.62E+02
Station 30		MN-54		0.00E+00	±	1.71E+01	2.81E+01
Indicator		CO-58		1.01E+00	±	1.92E+01	3.13E+01
		FE-59		-2.09E+01	±	6.35E+01	9.81E+01
		CO-60		1.17E+00	±	1.81E+01	3.05E+01
		ZN-65		-6.06E+00	±	3.59E+01	5.71E+01
		ZRNB-95		2.28E+00	±	3.30E+01	5.37E+01
		CS-134		2.71E+00	±	1.30E+01	2.07E+01
		CS-137		-4.63E+00	±	1.72E+01	2.71E+01
		Bi-214		2.69E+01	±	3.31E+01	5.56E+01
		RA-226		-8.41E+01	±	4.83E+02	4.99E+02
Carp	09/12/12	K-40	+	2.76E+03	±	3.39E+02	2.05E+02
Station 30		MN-54		2.82E+00	±	1.11E+01	1.75E+01
Indicator		CO-58		2.18E+00	±	1.46E+01	2.34E+01
		FE-59		-8.89E+00	±	5.53E+01	8.80E+01
		CO-60		-4.04E+00	±	7.98E+02	2.39E+01
		ZN-65		-1.23E+00	±	2.68E+01	4.37E+01
		ZRNB-95		-9.06E+00	±	3.51E+01	5.58E+01
		CS-134		5.67E+00	±	1.18E+01	1.84E+01
		CS-137		4.82E+00	±	9.18E+00	1.39E+01
		Bi-214		1.11E+01	±	2.68E+01	4.72E+01
		RA-226		-7.53E+01	±	3.09E+02	3.48E+02
Sucker	09/12/12	K-40	+	3.07E+03	±	4.24E+02	2.83E+02
Station 30		MN-54		5.79E-02	±	1.73E+01	2.84E+01
Indicator		CO-58		1.79E+00	±	2.30E+01	3.74E+01
		FE-59		3.48E+01	±	1.03E+02	1.61E+02
		CO-60		3.44E+00	±	1.51E+01	2.53E+01
		ZN-65		-1.72E+01	±	4.90E+01	7.74E+01
		ZRNB-95		-2.04E+01	±	5.48E+01	8.62E+01
		CS-134		2.84E-02	±	1.53E+01	2.51E+01
		CS-137		7.15E+00	±	1.37E+01	2.08E+01
		Bi-214		2.10E+00	±	3.07E+01	5.77E+01
		RA-226		-1.36E+02	±	5.63E+02	5.30E+02

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

TABLE A-10.1

GAMMA SPECTROMETRY RESULTS OF FISH

Station 30 Columbia River - Station 38 Snake River

Results in pCi/kilogram (wet)

Location & Species	Collection Date	Nuclide	RQ	Activity		Error	MDA
Steelhead	10/16/12	K-40	+	2.85E+03	±	4.55E+02	2.46E+02
Station 38		MN-54		0.00E+00	±	1.78E+01	2.93E+01
Control		CO-58		0.00E+00	±	2.10E+01	3.46E+01
		FE-59		-1.29E+00	±	5.38E+01	8.79E+01
		CO-60		4.87E+00	±	1.90E+01	3.09E+01
		ZN-65		0.00E+00	±	7.29E+01	1.20E+02
		ZRNB-95		-9.22E+00	±	3.01E+01	4.66E+01
		CS-134		-1.84E-01	±	9.32E+00	1.53E+01
		CS-137		-1.30E+00	±	1.53E+01	2.47E+01
		Bi-214		1.23E+01	±	3.12E+01	5.52E+01
		RA-226		-4.01E+01	±	3.24E+02	4.50E+02
Carp	09/26/12	K-40	+	2.79E+03	±	3.48E+02	2.19E+02
Station 38		MN-54		2.97E+00	±	1.10E+01	1.73E+01
Control		CO-58		5.30E+00	±	1.60E+01	2.52E+01
		FE-59		-2.29E+00	±	4.55E+01	7.40E+01
		CO-60		-4.01E+00	±	7.59E+01	1.65E+01
		ZN-65		1.23E+01	±	2.80E+01	4.32E+01
		ZRNB-95		7.37E-01	±	2.43E+01	3.97E+01
		CS-134		8.43E+00	±	1.20E+01	1.83E+01
		CS-137		-1.75E+00	±	9.14E+00	1.46E+01
		Bi-214		1.27E+01	±	2.69E+01	4.73E+01
		RA-226		5.33E+01	±	1.92E+02	3.47E+02
Sucker	09/26/12	K-40	+	2.76E+03	±	3.37E+02	1.95E+02
Station 38		MN-54		-4.08E-02	±	7.59E+00	1.25E+01
Control		CO-58		-5.22E-01	±	1.73E+01	2.83E+01
		FE-59		0.00E+00	±	5.72E+01	9.41E+01
		CO-60		-3.05E+00	±	6.07E+01	1.57E+01
		ZN-65		-5.25E+00	±	2.74E+01	4.38E+01
		ZRNB-95		1.74E-01	±	2.98E+01	4.90E+01
		CS-134		1.65E-01	±	1.01E+01	1.65E+01
		CS-137		-1.36E+00	±	1.02E+01	1.65E+01
		Bi-214		-1.19E+01	±	4.81E+01	4.53E+01
		RA-226		3.80E+01	±	2.09E+02	3.75E+02

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

TABLE A-10.2

GAMMA SPECTROMETRY RESULTS OF FISH - SUMMARY

Results in pCi/kilogram (wet)

Nuclide		Average Activity	Activity Low	Activity High	Average MDA	Number of Samples	Number of Positive IDs
Bi-214	Ind	1.33E+01	2.10E+00	2.69E+01	5.35E+01	3	0
Bi-214	Cntl	4.38E+00	-1.19E+01	1.27E+01	4.93E+01	3	0
CO-58	Ind	1.66E+00	1.01E+00	2.18E+00	3.07E+01	3	0
CO-58	Cntl	1.59E+00	-5.22E-01	5.30E+00	2.93E+01	3	0
CO-60	Ind	1.90E-01	-4.04E+00	3.44E+00	2.65E+01	3	0
CO-60	Cntl	-7.28E-01	-4.01E+00	4.87E+00	2.10E+01	3	0
CS-134	Ind	2.80E+00	2.84E-02	5.67E+00	2.14E+01	3	0
CS-134	Cntl	2.80E+00	-1.84E-01	8.43E+00	1.67E+01	3	0
CS-137	Ind	2.45E+00	-4.63E+00	7.15E+00	2.06E+01	3	0
CS-137	Cntl	-1.47E+00	-1.75E+00	-1.30E+00	1.86E+01	3	0
FE-59	Ind	1.66E+00	-2.09E+01	3.48E+01	1.16E+02	3	0
FE-59	Cntl	-1.19E+00	-2.29E+00	0.00E+00	8.53E+01	3	0
K-40	Ind	2.93E+03	2.76E+03	3.07E+03	2.50E+02	3	3
K-40	Cntl	2.80E+03	2.76E+03	2.85E+03	2.20E+02	3	3
MN-54	Ind	9.58E-01	0.00E+00	2.82E+00	2.47E+01	3	0
MN-54	Cntl	9.75E-01	-4.08E-02	2.97E+00	1.97E+01	3	0
RA-226	Ind	-9.86E+01	-1.36E+02	-7.53E+01	4.59E+02	3	0
RA-226	Cntl	1.70E+01	-4.01E+01	5.33E+01	3.91E+02	3	0
ZN-65	Ind	-8.17E+00	-1.72E+01	-1.23E+00	5.94E+01	3	0
ZN-65	Cntl	2.36E+00	-5.25E+00	1.23E+01	6.89E+01	3	0
ZRNB-95	Ind	-9.06E+00	-2.04E+01	2.28E+00	6.52E+01	3	0
ZRNB-95	Cntl	-2.77E+00	-9.22E+00	7.37E-01	4.51E+01	3	0

Ind = Indicator Stations Cntl = Control Stations

TABLE A-11.1

IODINE 131 IN MILK

Results in pCi/liter, decay corrected to sample collection time

Collection Date	Station 9b Control RQ	I-131 Activity	±	Error	I-131 MDA	Station 36 Indicator RQ	I-131 Activity	±	Error	I-131 MDA
01/10/12		-3.69E-02	±	1.80E-01	2.94E-01		-8.54E-03	±	1.65E-01	2.71E-01
02/07/12		0.00E+00	±	1.91E-01	3.14E-01		1.52E-02	±	1.98E-01	3.24E-01
03/06/12		8.76E-02	±	1.49E-01	2.38E-01		-2.99E-02	±	1.57E-01	2.57E-01
04/10/12		-1.98E-04	±	1.64E-01	2.71E-01		-8.08E-03	±	1.40E-01	2.30E-01
04/24/12		1.69E-02	±	2.11E-01	3.45E-01		-8.55E-02	±	1.86E-01	3.01E-01
05/07/12		-9.66E-02	±	1.98E-01	3.20E-01		-5.08E-02	±	1.65E-01	2.69E-01
05/22/12		1.15E-01	±	3.20E-01	5.20E-01		2.64E-02	±	1.72E-01	2.82E-01
06/05/12		5.87E-02	±	1.79E-01	2.91E-01		-8.09E-02	±	1.95E-01	3.16E-01
06/19/12		-4.54E-04	±	1.62E-01	2.66E-01		-6.24E-02	±	1.89E-01	3.08E-01
07/10/12		3.30E-02	±	1.82E-01	2.98E-01		8.58E-02	±	1.98E-01	3.22E-01
07/24/12		-3.11E-02	±	1.84E-01	3.01E-01		3.51E-03	±	1.64E-01	2.69E-01
08/07/12		8.10E-02	±	2.08E-01	3.37E-01		2.42E-02	±	1.85E-01	3.02E-01
08/21/12		7.52E-02	±	1.97E-01	3.20E-01		-4.41E-02	±	1.75E-01	2.85E-01
09/04/12		0.00E+00	±	1.77E-01	2.90E-01		2.74E-02	±	1.69E-01	2.77E-01
09/18/12		2.52E-02	±	1.81E-01	2.96E-01		8.96E-03	±	1.64E-01	2.69E-01
10/09/12		-8.04E-02	±	2.06E-01	3.34E-01		-2.63E-02	±	1.89E-01	3.10E-01
11/06/12		-3.45E-02	±	1.87E-01	3.05E-01		6.07E-02	±	1.86E-01	3.02E-01
12/11/12		3.08E-02	±	2.89E-01	4.73E-01		1.37E-03	±	1.88E-01	3.09E-01

TABLE A-11.2

IODINE 131 IN MILK

Summary

Results in pCi/liter, decay corrected to sample collection time

Location	Average Activity	Activity Low	Activity High	Average MDA	Number Samples	Number Positive IDs
Indicator- St 36	-7.94E-03	-8.55E-02	8.58E-02	2.89E-01	18	0
Control - St 9b	1.35E-02	-9.66E-02	1.15E-01	3.23E-01	18	0

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

TABLE A-12.1

GAMMA SPECTROMETRY RESULTS OF MILK

STATION 9b - CONTROL

Results in pCi per liter

Collection Date: 1/10/2012

Nuclide	RQ	Activity	±	Error	MDA
BA-133		-2.83E-01	±	3.16E+00	5.15E+00
CO-60		6.03E-01	±	3.87E+00	6.23E+00
ZN-65		-2.81E+00	±	8.15E+00	1.29E+01
MN-54		-3.16E-02	±	3.14E+00	5.15E+00
CS-134		-6.76E-02	±	2.77E+00	4.55E+00
CS-137		0.00E+00	±	4.08E+00	6.72E+00
BALA140		3.32E-02	±	3.57E+00	5.86E+00
K-40	+	1.35E+03	±	1.27E+02	7.88E+01
FE-59		0.00E+00	±	1.22E+01	2.00E+01
RA-226		6.91E+00	±	6.32E+01	1.14E+02
ZRNB-95		4.90E-02	±	4.03E+00	6.62E+00
BE-7		1.71E+01	±	2.18E+01	3.27E+01

Collection Date: 2/7/2012

Nuclide	RQ	Activity	±	Error	MDA
BA-133		3.31E-02	±	2.73E+00	4.48E+00
CO-60		0.00E+00	±	4.35E+00	7.16E+00
ZN-65		-7.52E+00	±	1.11E+01	1.72E+01
MN-54		1.36E+00	±	3.06E+00	4.76E+00
CS-134		-3.21E-02	±	3.09E+00	5.08E+00
CS-137		8.60E-02	±	2.79E+00	4.57E+00
BALA140		9.84E-01	±	3.73E+00	5.83E+00
K-40	+	1.39E+03	±	1.28E+02	7.61E+01
FE-59		2.06E-01	±	7.79E+00	1.28E+01
RA-226		-1.90E+01	±	8.51E+01	1.10E+02
ZRNB-95		-6.68E-01	±	4.82E+00	7.78E+00
BE-7		-1.06E+01	±	2.82E+01	4.48E+01

Collection Date: 3/6/2012

Nuclide	RQ	Activity	±	Error	MDA
BA-133		7.26E-01	±	3.11E+00	4.99E+00
CO-60		-2.58E-01	±	3.20E+00	5.19E+00
ZN-65		8.56E-01	±	7.18E+00	1.16E+01
MN-54		-7.99E-01	±	3.03E+00	4.82E+00
CS-134		7.55E-01	±	2.71E+00	4.32E+00
CS-137		0.00E+00	±	4.04E+00	6.65E+00
BALA140		-7.71E-02	±	3.10E+00	5.07E+00
K-40	+	1.44E+03	±	1.32E+02	8.19E+01
FE-59		1.35E+00	±	7.87E+00	1.26E+01
RA-226		1.13E+01	±	6.41E+01	1.14E+02
ZRNB-95		0.00E+00	±	5.10E+00	8.38E+00
BE-7		-9.10E+00	±	2.50E+01	3.96E+01

Collection Date: 4/10/2012

Nuclide	RQ	Activity	±	Error	MDA
BA-133		3.47E-01	±	3.60E+00	5.85E+00
CO-60		1.43E+00	±	4.09E+00	6.38E+00
ZN-65		0.00E+00	±	1.30E+01	2.13E+01
MN-54		-1.46E+00	±	4.00E+00	6.30E+00
CS-134		-4.33E-02	±	3.71E+00	6.09E+00
CS-137		1.34E+00	±	3.74E+00	5.87E+00
BALA140		3.09E-01	±	3.85E+00	6.22E+00
K-40	+	1.39E+03	±	1.46E+02	8.73E+01
FE-59		-6.44E-01	±	1.00E+01	1.63E+01
RA-226		-3.92E+01	±	1.40E+02	1.56E+02
ZRNB-95		-1.45E+00	±	6.59E+00	1.05E+01
BE-7		1.40E+00	±	2.48E+01	4.06E+01

Collection Date: 4/24/2012

Nuclide	RQ	Activity	±	Error	MDA
BA-133		-1.20E-01	±	4.56E+00	7.48E+00
CO-60		-3.31E-01	±	4.74E+00	7.73E+00
ZN-65		0.00E+00	±	9.23E+00	1.52E+01
MN-54		-6.19E-01	±	3.87E+00	6.24E+00
CS-134		-6.93E-01	±	3.99E+00	6.46E+00
CS-137		1.41E+00	±	3.93E+00	6.18E+00
BALA140		0.00E+00	±	4.81E+00	7.92E+00
K-40	+	1.67E+03	±	1.54E+02	8.09E+01
FE-59		1.38E-01	±	9.75E+00	1.60E+01
RA-226		-6.69E+00	±	8.65E+01	1.47E+02
ZRNB-95		2.24E+00	±	5.67E+00	8.81E+00
BE-7		-7.31E-01	±	1.96E+01	3.21E+01

Collection Date: 5/7/2012

Nuclide	RQ	Activity	±	Error	MDA
BA-133		-6.51E-02	±	4.20E+00	6.90E+00
CO-60		-6.78E-01	±	4.66E+00	7.52E+00
ZN-65		-1.73E+00	±	8.39E+00	1.34E+01
MN-54		0.00E+00	±	4.44E+00	7.30E+00
CS-134		-2.51E+00	±	4.68E+00	7.36E+00
CS-137		1.40E+00	±	3.63E+00	5.67E+00
BALA140		0.00E+00	±	8.80E+00	1.45E+01
K-40	+	1.49E+03	±	1.43E+02	7.17E+01
FE-59		2.43E-01	±	9.13E+00	1.49E+01
RA-226		1.30E+01	±	8.13E+01	1.48E+02
ZRNB-95		2.07E-02	±	5.19E+00	8.53E+00
BE-7		-6.78E+00	±	3.16E+01	5.09E+01

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

TABLE A-12.1

GAMMA SPECTROMETRY RESULTS OF MILK

STATION 9b - CONTROL

Results in pCi per liter

Collection Date:		5/22/2012				
Nuclide	RQ	Activity		Error		MDA
BA-133		1.78E-01	±	4.25E+00		6.97E+00
CO-60		2.05E+00	±	3.75E+00		5.61E+00
ZN-65		-1.91E+00	±	9.19E+00		1.47E+01
MN-54		0.00E+00	±	3.09E+00		5.08E+00
CS-134		-1.01E+00	±	3.57E+00		5.70E+00
CS-137		2.81E-02	±	3.94E+00		6.47E+00
BALA140		0.00E+00	±	1.13E+00		1.86E+00
K-40	+	1.50E+03	±	1.46E+02		7.73E+01
FE-59		-2.13E+00	±	9.99E+00		1.59E+01
RA-226		-2.86E+01	±	1.21E+02		1.55E+02
ZRNB-95		8.70E-02	±	5.46E+00		8.96E+00
BE-7		-6.20E+00	±	2.46E+01		3.92E+01

Collection Date:		6/5/2012				
Nuclide	RQ	Activity		Error		MDA
BA-133		-1.66E-01	±	3.92E+00		6.42E+00
CO-60		5.38E-01	±	4.21E+00		6.81E+00
ZN-65		5.07E+00	±	8.99E+00		1.37E+01
MN-54		9.43E-02	±	3.38E+00		5.54E+00
CS-134		8.14E-01	±	3.60E+00		5.77E+00
CS-137		2.53E-01	±	3.67E+00		5.97E+00
BALA140		-1.06E+00	±	4.09E+00		6.37E+00
K-40	+	1.51E+03	±	1.47E+02		7.79E+01
FE-59		1.50E+00	±	1.03E+01		1.66E+01
RA-226		4.29E-01	±	8.74E+01		1.58E+02
ZRNB-95		2.29E+00	±	6.26E+00		9.81E+00
BE-7		1.96E+01	±	2.42E+01		3.56E+01

Collection Date:		6/19/2012				
Nuclide	RQ	Activity		Error		MDA
BA-133		-1.28E+00	±	4.96E+00		7.98E+00
CO-60		9.97E-02	±	4.36E+00		7.15E+00
ZN-65		1.55E+00	±	7.70E+00		1.23E+01
MN-54		-1.65E-01	±	3.05E+00		4.98E+00
CS-134		-2.30E+00	±	4.49E+00		7.06E+00
CS-137		8.02E-01	±	3.54E+00		5.64E+00
BALA140		-1.15E+00	±	4.64E+00		7.30E+00
K-40	+	1.47E+03	±	1.42E+02		7.17E+01
FE-59		5.29E+00	±	9.08E+00		1.35E+01
RA-226		-3.75E+01	±	1.35E+02		1.55E+02
ZRNB-95		6.19E-01	±	5.62E+00		9.09E+00
BE-7		1.30E+01	±	2.78E+01		4.34E+01

Collection Date:		7/10/2012				
Nuclide	RQ	Activity		Error		MDA
BA-133		1.31E+00	±	4.59E+00		7.35E+00
CO-60		6.92E-01	±	4.30E+00		6.91E+00
ZN-65		0.00E+00	±	1.39E+01		2.29E+01
MN-54		-9.91E-02	±	3.02E+00		4.94E+00
CS-134		1.08E+00	±	3.51E+00		5.58E+00
CS-137		2.71E-01	±	3.26E+00		5.29E+00
BALA140		-8.83E-01	±	4.54E+00		7.20E+00
K-40	+	1.40E+03	±	1.40E+02		7.56E+01
FE-59		2.54E+00	±	9.10E+00		1.43E+01
RA-226		-1.03E+01	±	8.86E+01		1.45E+02
ZRNB-95		5.05E-01	±	5.79E+00		9.41E+00
BE-7		-6.49E+00	±	2.86E+01		4.58E+01

Collection Date:		7/24/2012				
Nuclide	RQ	Activity		Error		MDA
BA-133		-1.27E-03	±	2.63E+00		4.29E+00
CO-60		5.68E-01	±	4.05E+00		6.55E+00
ZN-65		0.00E+00	±	9.12E+00		1.50E+01
MN-54		2.68E-01	±	3.32E+00		5.41E+00
CS-134		7.93E-03	±	3.09E+00		5.07E+00
CS-137		-1.14E-02	±	3.39E+00		5.56E+00
BALA140		-3.39E-01	±	3.73E+00		6.03E+00
K-40	+	1.37E+03	±	1.28E+02		7.73E+01
FE-59		0.00E+00	±	1.30E+01		2.13E+01
RA-226		-2.11E+01	±	9.35E+01		1.15E+02
ZRNB-95		1.46E+00	±	5.38E+00		8.56E+00
BE-7		1.75E-01	±	1.72E+01		2.82E+01

Collection Date:		8/7/2012				
Nuclide	RQ	Activity		Error		MDA
BA-133		-8.26E-01	±	3.38E+00		5.43E+00
CO-60		2.44E+00	±	4.12E+00		6.29E+00
ZN-65		-1.73E-02	±	7.73E+00		1.27E+01
MN-54		0.00E+00	±	2.71E+00		4.45E+00
CS-134		0.00E+00	±	3.75E+00		6.17E+00
CS-137		-9.16E-01	±	3.61E+00		5.77E+00
BALA140		7.09E-01	±	3.94E+00		6.27E+00
K-40	+	1.39E+03	±	1.25E+02		7.06E+01
FE-59		-3.51E-01	±	8.59E+00		1.40E+01
RA-226		-3.38E+01	±	1.20E+02		1.15E+02
ZRNB-95		-5.17E-02	±	4.80E+00		7.88E+00
BE-7		-9.91E-01	±	2.35E+01		3.85E+01

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

TABLE A-12.1

GAMMA SPECTROMETRY RESULTS OF MILK

STATION 9b - CONTROL

Results in pCi per liter

Collection Date: 8/21/2012

Nuclide	RQ	Activity	±	Error	MDA
BA-133		-3.08E-01	±	2.35E+00	3.80E+00
CO-60		-6.67E-01	±	4.20E+00	6.79E+00
ZN-65		-2.97E+00	±	8.27E+00	1.31E+01
MN-54		-4.37E-01	±	3.24E+00	5.25E+00
CS-134		-1.11E+00	±	3.07E+00	4.87E+00
CS-137		6.81E-01	±	2.90E+00	4.63E+00
BALA140		0.00E+00	±	8.18E+00	1.34E+01
K-40	+	1.37E+03	±	1.31E+02	8.25E+01
FE-59		5.04E-01	±	9.40E+00	1.53E+01
RA-226		4.94E+00	±	5.96E+01	1.08E+02
ZRNB-95		9.01E-01	±	4.46E+00	7.11E+00
BE-7		1.64E+00	±	2.67E+01	4.36E+01

Collection Date: 9/4/2012

Nuclide	RQ	Activity	±	Error	MDA
BA-133		-4.05E-02	±	2.68E+00	4.40E+00
CO-60		3.62E-01	±	3.72E+00	6.04E+00
ZN-65		0.00E+00	±	9.19E+00	1.51E+01
MN-54		1.29E-02	±	2.77E+00	4.55E+00
CS-134		-1.01E+00	±	3.00E+00	4.76E+00
CS-137		-2.05E-02	±	3.30E+00	5.42E+00
BALA140		-1.13E+00	±	3.94E+00	6.16E+00
K-40	+	1.49E+03	±	1.31E+02	7.38E+01
FE-59		0.00E+00	±	1.43E+01	2.36E+01
RA-226		-2.55E+01	±	9.51E+01	1.09E+02
ZRNB-95		-9.10E-01	±	5.06E+00	8.14E+00
BE-7		8.65E+00	±	2.22E+01	3.49E+01

Collection Date: 9/18/2012

Nuclide	RQ	Activity	±	Error	MDA
BA-133		-1.54E+00	±	3.50E+00	5.52E+00
CO-60		6.36E-01	±	3.27E+00	5.23E+00
ZN-65		-1.53E+00	±	7.96E+00	1.28E+01
MN-54		-1.29E-01	±	2.89E+00	4.73E+00
CS-134		-1.03E+00	±	3.28E+00	5.24E+00
CS-137		-5.03E-02	±	2.87E+00	4.70E+00
BALA140		-1.55E-01	±	2.82E+00	4.57E+00
K-40	+	1.36E+03	±	1.29E+02	7.93E+01
FE-59		-8.84E-02	±	8.32E+00	1.37E+01
RA-226		-1.02E+01	±	7.68E+01	1.15E+02
ZRNB-95		-9.78E-01	±	5.37E+00	8.63E+00
BE-7		5.87E+00	±	2.32E+01	3.72E+01

Collection Date: 10/9/2012

Nuclide	RQ	Activity	±	Error	MDA
BA-133		8.77E-01	±	3.03E+00	4.83E+00
CO-60		-8.71E-01	±	3.86E+00	6.16E+00
ZN-65		-1.27E+00	±	7.70E+00	1.24E+01
MN-54		0.00E+00	±	3.83E+00	6.29E+00
CS-134		4.20E-01	±	3.13E+00	5.08E+00
CS-137		-8.24E-01	±	3.26E+00	5.20E+00
BALA140		-2.17E-01	±	4.09E+00	6.66E+00
K-40	+	1.40E+03	±	1.32E+02	8.41E+01
FE-59		-5.91E-01	±	7.17E+00	1.16E+01
RA-226		5.65E+00	±	6.59E+01	1.18E+02
ZRNB-95		6.95E-01	±	5.18E+00	8.37E+00
BE-7		-8.51E+00	±	2.30E+01	3.63E+01

Collection Date: 11/6/2012

Nuclide	RQ	Activity	±	Error	MDA
BA-133		-2.89E-02	±	3.71E+00	6.10E+00
CO-60		1.21E-01	±	3.25E+00	5.31E+00
ZN-65		-9.48E-01	±	6.38E+00	1.03E+01
MN-54		3.83E-03	±	2.42E+00	3.96E+00
CS-134		3.35E-01	±	3.04E+00	4.95E+00
CS-137		3.72E-01	±	2.87E+00	4.66E+00
BALA140		-5.32E-01	±	3.90E+00	6.29E+00
K-40	+	1.31E+03	±	1.16E+02	7.77E+01
FE-59		-2.59E-01	±	8.17E+00	1.34E+01
RA-226		-8.27E-01	±	8.43E+01	1.46E+02
ZRNB-95		-1.50E+00	±	5.75E+00	9.25E+00
BE-7		-9.08E+00	±	2.70E+01	4.33E+01

Collection Date: 12/11/2012

Nuclide	RQ	Activity	±	Error	MDA
BA-133		-3.14E-02	±	3.46E+00	5.68E+00
CO-60		1.06E+00	±	3.74E+00	5.92E+00
ZN-65		9.55E-01	±	7.90E+00	1.28E+01
MN-54		-9.59E-01	±	3.23E+00	5.13E+00
CS-134		-8.71E-01	±	3.09E+00	4.94E+00
CS-137		1.12E-02	±	3.08E+00	5.06E+00
BALA140		0.00E+00	±	5.52E+00	9.08E+00
K-40	+	1.41E+03	±	1.30E+02	7.99E+01
FE-59		3.83E+00	±	7.74E+00	1.17E+01
RA-226		1.72E+01	±	6.64E+01	1.17E+02
ZRNB-95		3.50E+00	±	5.15E+00	7.74E+00
BE-7		-2.32E+00	±	1.93E+01	3.13E+01

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

TABLE A-12.1

GAMMA SPECTROMETRY RESULTS OF MILK

STATION 36 - INDICATOR

Results in pCi per liter

Collection Date: 1/10/2012

Nuclide	RQ	Activity		Error	MDA
BA-133		-1.37E+00	±	3.53E+00	5.60E+00
CO-60		2.29E-02	±	2.50E+00	4.10E+00
ZN-65		-8.63E-01	±	7.17E+00	1.16E+01
MN-54		-1.10E+00	±	2.97E+00	4.66E+00
CS-134		-1.10E+00	±	2.97E+00	4.70E+00
CS-137		-8.28E-01	±	3.27E+00	5.23E+00
BALA140		0.00E+00	±	5.68E+00	9.34E+00
K-40	+	1.30E+03	±	1.26E+02	8.14E+01
FE-59		-1.14E+00	±	7.44E+00	1.19E+01
RA-226		4.54E+00	±	5.86E+01	1.07E+02
ZRNB-95		-3.91E-01	±	4.70E+00	7.64E+00
BE-7		0.00E+00	±	2.26E+01	3.72E+01

Collection Date: 2/7/2012

Nuclide	RQ	Activity		Error	MDA
BA-133		-9.53E-02	±	3.36E+00	5.51E+00
CO-60		1.87E-01	±	3.59E+00	5.86E+00
ZN-65		-1.75E+00	±	8.44E+00	1.36E+01
MN-54		-6.24E-02	±	2.78E+00	4.56E+00
CS-134		2.19E-01	±	2.83E+00	4.61E+00
CS-137		-7.82E-01	±	3.28E+00	5.25E+00
BALA140		-5.89E-01	±	3.80E+00	6.07E+00
K-40	+	1.47E+03	±	1.31E+02	7.64E+01
FE-59		4.72E+00	±	8.49E+00	1.28E+01
RA-226		1.74E+01	±	6.35E+01	1.13E+02
ZRNB-95		-9.34E-01	±	5.76E+00	9.30E+00
BE-7		-4.64E+00	±	2.29E+01	3.68E+01

Collection Date: 3/6/2012

Nuclide	RQ	Activity		Error	MDA
BA-133		9.50E-01	±	2.97E+00	4.72E+00
CO-60		-1.27E+00	±	4.28E+00	6.79E+00
ZN-65		0.00E+00	±	1.43E+01	2.35E+01
MN-54		-5.16E-01	±	2.69E+00	4.31E+00
CS-134		-8.92E-01	±	2.57E+00	4.06E+00
CS-137		2.76E-01	±	3.08E+00	5.01E+00
BALA140		-7.66E-01	±	3.79E+00	6.02E+00
K-40	+	1.18E+03	±	1.20E+02	7.73E+01
FE-59		3.70E+00	±	8.17E+00	1.25E+01
RA-226		-7.20E+00	±	6.79E+01	1.09E+02
ZRNB-95		-7.32E-01	±	5.19E+00	8.38E+00
BE-7		-4.01E+00	±	2.29E+01	3.69E+01

Collection Date: 4/10/2012

Nuclide	RQ	Activity		Error	MDA
BA-133		2.08E+00	±	4.27E+00	6.70E+00
CO-60		-2.97E-04	±	4.21E+00	6.72E+00
ZN-65		-3.00E+00	±	9.10E+00	1.43E+01
MN-54		0.00E+00	±	3.00E+00	4.93E+00
CS-134		6.48E-01	±	3.65E+00	5.88E+00
CS-137		-1.72E+00	±	4.24E+00	6.67E+00
BALA140		-9.62E-01	±	4.52E+00	7.15E+00
K-40	+	1.46E+03	±	1.44E+02	7.97E+01
FE-59		-2.90E+00	±	1.08E+01	1.72E+01
RA-226		-4.26E+01	±	1.46E+02	1.56E+02
ZRNB-95		-1.41E-01	±	5.68E+00	9.30E+00
BE-7		-8.18E+00	±	2.81E+01	4.47E+01

Collection Date: 4/24/2012

Nuclide	RQ	Activity		Error	MDA
BA-133		-1.75E-01	±	3.22E+00	5.27E+00
CO-60		1.18E+00	±	3.65E+00	5.68E+00
ZN-65		-1.62E+00	±	9.31E+00	1.50E+01
MN-54		4.39E-01	±	3.52E+00	5.69E+00
CS-134		1.28E+00	±	3.90E+00	6.21E+00
CS-137		2.76E-02	±	3.94E+00	6.47E+00
BALA140		8.70E-01	±	4.03E+00	6.34E+00
K-40	+	1.41E+03	±	1.41E+02	7.80E+01
FE-59		-1.90E-01	±	9.37E+00	1.54E+01
RA-226		1.18E+01	±	8.33E+01	1.51E+02
ZRNB-95		-5.08E-01	±	6.28E+00	1.02E+01
BE-7		4.47E-01	±	2.48E+01	4.06E+01

Collection Date: 5/7/2012

Nuclide	RQ	Activity		Error	MDA
BA-133		-1.31E+00	±	3.92E+00	6.23E+00
CO-60		2.80E+00	±	3.58E+00	5.08E+00
ZN-65		-3.07E+00	±	1.02E+01	1.61E+01
MN-54		2.48E+00	±	3.26E+00	4.75E+00
CS-134		-2.75E-02	±	3.25E+00	5.34E+00
CS-137		-2.30E-01	±	3.86E+00	6.30E+00
BALA140		2.00E+00	±	5.07E+00	7.78E+00
K-40	+	1.41E+03	±	1.44E+02	8.17E+01
FE-59		-2.94E-01	±	1.01E+01	1.66E+01
RA-226		1.99E+01	±	8.16E+01	1.48E+02
ZRNB-95		1.80E+00	±	5.78E+00	9.09E+00
BE-7		6.59E+00	±	2.51E+01	3.99E+01

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

TABLE A-12.1

GAMMA SPECTROMETRY RESULTS OF MILK

STATION 36 - INDICATOR

Results in pCi per liter

Nuclide	RQ	Collection Date: 5/22/2012 Activity	± Error	MDA
BA-133		-1.52E+00	4.90E+00	7.85E+00
CO-60		6.47E-01	4.28E+00	6.89E+00
ZN-65		-3.73E+00	1.08E+01	1.71E+01
MN-54		1.65E-02	3.20E+00	5.25E+00
CS-134		-1.79E+00	4.11E+00	6.49E+00
CS-137		1.96E+00	3.50E+00	5.32E+00
BALA140		5.08E-02	3.79E+00	6.21E+00
K-40	+	1.47E+03	1.42E+02	7.48E+01
FE-59		1.30E-01	8.55E+00	1.40E+01
RA-226		5.03E+00	8.35E+01	1.52E+02
ZRNB-95		0.00E+00	4.30E+00	7.07E+00
BE-7		2.25E+00	2.52E+01	4.09E+01

Nuclide	RQ	Collection Date: 6/5/2012 Activity	± Error	MDA
BA-133		6.08E-01	3.05E+00	4.93E+00
CO-60		-1.49E-01	3.22E+00	5.26E+00
ZN-65		-2.48E+00	7.48E+00	1.19E+01
MN-54		1.70E-02	2.32E+00	3.81E+00
CS-134		8.26E-01	2.40E+00	3.81E+00
CS-137		-4.87E-01	3.27E+00	5.29E+00
BALA140		-3.10E-01	3.35E+00	5.43E+00
K-40	+	1.39E+03	1.21E+02	7.61E+01
FE-59		-3.59E-01	8.44E+00	1.38E+01
RA-226		7.35E+00	5.59E+01	1.01E+02
ZRNB-95		-1.69E-01	4.26E+00	6.98E+00
BE-7		-4.76E+00	2.05E+01	3.29E+01

Nuclide	RQ	Collection Date: 6/19/2012 Activity	± Error	MDA
BA-133		-9.77E-01	4.35E+00	7.01E+00
CO-60		3.97E-02	4.37E+00	7.18E+00
ZN-65		-4.77E+00	1.03E+01	1.61E+01
MN-54		1.72E-01	3.46E+00	5.64E+00
CS-134		3.54E-03	2.94E+00	4.83E+00
CS-137		-1.43E+00	4.17E+00	6.60E+00
BALA140		-1.57E+00	4.67E+00	7.23E+00
K-40	+	1.55E+03	1.45E+02	7.15E+01
FE-59		0.00E+00	1.25E+01	2.06E+01
RA-226		2.29E+01	7.91E+01	1.44E+02
ZRNB-95		4.16E-01	6.13E+00	9.99E+00
BE-7		1.07E+01	2.49E+01	3.88E+01

Nuclide	RQ	Collection Date: 7/10/2012 Activity	± Error	MDA
BA-133		-1.82E+00	4.55E+00	7.22E+00
CO-60		0.00E+00	6.29E+00	1.03E+01
ZN-65		-2.83E+00	9.51E+00	1.51E+01
MN-54		-3.35E-02	3.26E+00	5.36E+00
CS-134		1.27E-01	4.09E+00	6.70E+00
CS-137		1.53E+00	3.82E+00	5.97E+00
BALA140		-1.16E+00	3.96E+00	6.11E+00
K-40	+	1.57E+03	1.46E+02	7.17E+01
FE-59		1.70E+00	1.03E+01	1.65E+01
RA-226		-5.59E+00	9.02E+01	1.54E+02
ZRNB-95		-3.97E-01	6.22E+00	1.01E+01
BE-7		-5.45E-01	2.50E+01	4.10E+01

Nuclide	RQ	Collection Date: 7/24/2012 Activity	± Error	MDA
BA-133		-3.29E-01	4.66E+00	7.62E+00
CO-60		1.14E-01	3.87E+00	6.33E+00
ZN-65		-7.23E+00	1.14E+01	1.76E+01
MN-54		-2.71E-05	4.68E+00	5.92E+00
CS-134		2.55E-01	3.47E+00	5.67E+00
CS-137		1.16E+00	3.89E+00	6.17E+00
BALA140		-1.68E+00	5.61E+00	8.82E+00
K-40	+	1.41E+03	1.37E+02	6.58E+01
FE-59		-2.49E+00	1.12E+01	1.79E+01
RA-226		4.85E+01	8.50E+01	1.50E+02
ZRNB-95		2.85E-01	5.40E+00	8.81E+00
BE-7		-8.72E+00	2.62E+01	4.15E+01

Nuclide	RQ	Collection Date: 8/7/2012 Activity	± Error	MDA
BA-133		1.07E+00	2.34E+00	3.60E+00
CO-60		2.71E+00	3.21E+00	4.57E+00
ZN-65		-1.81E+00	7.80E+00	1.25E+01
MN-54		3.50E-01	2.54E+00	4.08E+00
CS-134		2.16E+00	2.57E+00	3.80E+00
CS-137		1.17E+00	3.42E+00	5.41E+00
BALA140		-8.90E-01	3.79E+00	5.96E+00
K-40	+	1.40E+03	1.26E+02	7.12E+01
FE-59		-2.14E+00	9.02E+00	1.44E+01
RA-226		-1.62E+01	8.48E+01	1.14E+02
ZRNB-95		7.50E-01	4.76E+00	7.66E+00
BE-7		-7.65E+00	2.32E+01	3.68E+01

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

TABLE A-12.1

GAMMA SPECTROMETRY RESULTS OF MILK

STATION 36 - INDICATOR

Results in pCi per liter

Collection Date: 8/21/2012

Nuclide	RQ	Activity	±	Error	MDA
BA-133		-1.93E+00	±	4.24E+00	6.67E+00
CO-60		9.19E-02	±	4.79E+00	7.85E+00
ZN-65		3.14E+00	±	7.53E+00	1.16E+01
MN-54		0.00E+00	±	4.37E+00	7.18E+00
CS-134		-8.83E-01	±	3.61E+00	5.79E+00
CS-137		6.31E-02	±	2.96E+00	4.85E+00
BALA140		0.00E+00	±	1.14E+00	1.87E+00
K-40	+	1.41E+03	±	1.42E+02	8.50E+01
FE-59		0.00E+00	±	6.38E+00	1.05E+01
RA-226		-1.58E+01	±	9.75E+01	1.49E+02
ZRNB-95		-1.07E+00	±	5.12E+00	8.14E+00
BE-7		0.00E+00	±	2.96E+01	4.87E+01

Collection Date: 9/4/2012

Nuclide	RQ	Activity	±	Error	MDA
BA-133		-1.04E+00	±	4.45E+00	7.16E+00
CO-60		9.54E-01	±	4.55E+00	7.28E+00
ZN-65		-1.45E-01	±	9.30E+00	1.53E+01
MN-54		-1.03E+00	±	4.02E+00	6.42E+00
CS-134		-1.72E+00	±	3.91E+00	6.16E+00
CS-137		4.68E-01	±	3.77E+00	6.10E+00
BALA140		1.64E+00	±	3.57E+00	5.22E+00
K-40	+	1.53E+03	±	1.45E+02	7.77E+01
FE-59		2.77E-02	±	1.03E+01	1.69E+01
RA-226		-3.30E+00	±	8.34E+01	1.48E+02
ZRNB-95		-3.44E-02	±	6.72E+00	1.10E+01
BE-7		-3.77E-02	±	2.67E+01	4.39E+01

Collection Date: 9/18/2012

Nuclide	RQ	Activity	±	Error	MDA
BA-133		1.09E+00	±	3.46E+00	5.53E+00
CO-60		8.35E-02	±	3.51E+00	5.75E+00
ZN-65		-1.52E+00	±	7.88E+00	1.27E+01
MN-54		8.72E-01	±	2.82E+00	4.45E+00
CS-134		-1.99E-02	±	2.93E+00	4.82E+00
CS-137		-9.69E-02	±	2.89E+00	4.72E+00
BALA140		-3.36E-01	±	4.33E+00	7.03E+00
K-40	+	1.42E+03	±	1.31E+02	8.19E+01
FE-59		-3.09E+00	±	1.01E+01	1.59E+01
RA-226		3.85E+00	±	6.32E+01	1.14E+02
ZRNB-95		-5.26E-01	±	4.80E+00	7.78E+00
BE-7		1.03E+01	±	2.08E+01	3.21E+01

Collection Date: 10/9/2012

Nuclide	RQ	Activity	±	Error	MDA
BA-133		1.65E+00	±	3.54E+00	5.58E+00
CO-60		-1.00E+00	±	3.66E+00	5.81E+00
ZN-65		1.70E+00	±	7.46E+00	1.19E+01
MN-54		1.37E+00	±	2.77E+00	4.24E+00
CS-134		1.36E-02	±	2.51E+00	4.12E+00
CS-137		1.51E+00	±	3.04E+00	4.69E+00
BALA140		-9.70E-01	±	3.95E+00	6.20E+00
K-40	+	1.36E+03	±	1.25E+02	7.28E+01
FE-59		0.00E+00	±	1.07E+01	1.76E+01
RA-226		-6.46E+00	±	6.39E+01	1.05E+02
ZRNB-95		8.73E-01	±	4.67E+00	7.49E+00
BE-7		-1.85E+00	±	2.68E+01	4.38E+01

Collection Date: 11/6/2012

Nuclide	RQ	Activity	±	Error	MDA
BA-133		-1.71E-01	±	3.09E+00	5.06E+00
CO-60		-2.85E-01	±	3.82E+00	6.23E+00
ZN-65		-1.40E-01	±	6.17E+00	1.01E+01
MN-54		-9.65E-02	±	2.72E+00	4.44E+00
CS-134		1.22E-01	±	2.49E+00	4.08E+00
CS-137		5.09E-01	±	2.62E+00	4.19E+00
BALA140		2.39E+00	±	2.85E+00	3.65E+00
K-40	+	1.33E+03	±	1.26E+02	7.67E+01
FE-59		2.10E-01	±	7.46E+00	1.22E+01
RA-226		4.61E+00	±	6.51E+01	1.17E+02
ZRNB-95		0.00E+00	±	6.95E+00	1.14E+01
BE-7		-6.02E+00	±	2.15E+01	3.43E+01

Collection Date: 12/11/2012

Nuclide	RQ	Activity	±	Error	MDA
BA-133		1.10E-01	±	4.37E+00	7.16E+00
CO-60		2.39E-01	±	4.33E+00	7.07E+00
ZN-65		3.09E+00	±	8.12E+00	1.26E+01
MN-54		1.65E-02	±	3.65E+00	5.99E+00
CS-134		-4.71E-01	±	3.66E+00	5.95E+00
CS-137		-1.26E+00	±	4.37E+00	6.97E+00
BALA140		-8.35E-02	±	4.42E+00	7.23E+00
K-40	+	1.52E+03	±	1.44E+02	7.77E+01
FE-59		1.63E+00	±	8.99E+00	1.43E+01
RA-226		-6.88E+00	±	8.09E+01	1.40E+02
ZRNB-95		-3.17E+00	±	6.80E+00	1.06E+01
BE-7		-8.53E+00	±	2.75E+01	4.37E+01

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

TABLE A-12.2

GAMMA SPECTROMETRY RESULTS OF MILK - SUMMARY

Results in pCi per liter

Nuclide		Average Activity	Activity Low	Activity High	Average MDA	Number of Samples	Number of Positive IDs
BA-133	Ind	-1.77E-01	-1.93E+00	2.08E+00	5.76E+00	18	0
BA-133	Cntl	-6.78E-02	-1.54E+00	1.31E+00	5.45E+00	18	0
BALA140	Ind	-1.31E-01	-1.68E+00	2.39E+00	5.98E+00	18	0
BALA140	Cntl	-1.95E-01	-1.15E+00	9.84E-01	6.66E+00	18	0
BE-7	Ind	-1.37E+00	-8.72E+00	1.07E+01	3.76E+01	18	0
BE-7	Cntl	3.68E-01	-1.06E+01	1.96E+01	3.67E+01	18	0
CO-60	Ind	3.53E-01	-1.27E+00	2.80E+00	6.04E+00	18	0
CO-60	Cntl	4.33E-01	-8.71E-01	2.44E+00	6.05E+00	18	0
CS-134	Ind	-6.97E-02	-1.79E+00	2.16E+00	4.89E+00	18	0
CS-134	Cntl	-4.04E-01	-2.51E+00	1.08E+00	5.21E+00	18	0
CS-137	Ind	1.03E-01	-1.72E+00	1.96E+00	5.33E+00	18	0
CS-137	Cntl	2.68E-01	-9.16E-01	1.41E+00	5.27E+00	18	0
FE-59	Ind	-2.70E-02	-3.09E+00	4.72E+00	1.43E+01	18	0
FE-59	Cntl	6.41E-01	-2.13E+00	5.29E+00	1.46E+01	18	0
K-40	Ind	1.42E+03	1.18E+03	1.57E+03	7.25E+01	18	18
K-40	Cntl	1.43E+03	1.31E+03	1.67E+03	7.39E+01	18	18
MN-54	Ind	1.61E-01	-1.10E+00	2.48E+00	4.83E+00	18	0
MN-54	Cntl	-1.64E-01	-1.46E+00	1.36E+00	4.99E+00	18	0
RA-226	Ind	2.33E+00	-4.26E+01	4.85E+01	1.25E+02	18	0
RA-226	Cntl	-9.63E+00	-3.92E+01	1.72E+01	1.24E+02	18	0
ZN-65	Ind	-1.50E+00	-7.23E+00	3.14E+00	1.36E+01	18	0
ZN-65	Cntl	-6.82E-01	-7.52E+00	5.07E+00	1.37E+01	18	0
ZRNB-95	Ind	-2.19E-01	-3.17E+00	1.80E+00	8.48E+00	18	0
ZRNB-95	Cntl	3.78E-01	-1.50E+00	3.50E+00	8.08E+00	18	0

Ind = Indicator Stations Cntl = Control Stations

TABLE A-15.1

GAMMA SPECTROMETRY RESULTS OF ROOTS

Results in pCi/ kilogram (wet)

Station 37 is Indicator - Station 9c is Control

Station 37 Onion collected 7/10/2012

Nuclide	RQ	Activity	Error	MDA
K-40	+	6.83E+02 ±	1.61E+02	1.54E+02
MN-54		-5.31E-02 ±	6.34E+00	1.04E+01
CO-58		-1.03E-02 ±	5.98E+00	9.84E+00
FE-59		3.14E+00 ±	1.46E+01	2.29E+01
CO-60		6.08E-01 ±	6.16E+00	9.91E+00
ZN-65		-2.83E-01 ±	1.40E+01	2.29E+01
ZRNB-95		2.37E+00 ±	1.07E+01	1.69E+01
I-131		-2.37E-01 ±	5.92E+00	9.68E+00
CS-134		-4.32E-02 ±	7.66E+00	1.26E+01
CS-137		0.00E+00 ±	6.91E+00	1.14E+01
BALA140		0.00E+00 ±	2.54E+00	4.18E+00

Station 9c Potato collected 8/24/2012

Nuclide	RQ	Activity	Error	MDA
K-40	+	4.75E+03 ±	3.64E+02	1.37E+02
MN-54		9.49E-01 ±	5.07E+00	8.05E+00
CO-58		-1.73E-01 ±	5.96E+00	9.76E+00
FE-59		1.10E+01 ±	1.88E+01	2.78E+01
CO-60		7.57E-01 ±	8.61E+00	1.40E+01
ZN-65		2.99E+00 ±	1.43E+01	2.27E+01
ZRNB-95		0.00E+00 ±	1.34E+01	2.20E+01
I-131		-1.29E+00 ±	6.33E+00	1.01E+01
CS-134		-2.06E+00 ±	5.70E+00	8.92E+00
CS-137		1.67E+00 ±	6.03E+00	9.49E+00
BALA140		0.00E+00 ±	2.65E+00	4.37E+00

Station 37 Potato collected 7/31/2012

Nuclide	RQ	Activity	Error	MDA
K-40	+	3.85E+03 ±	3.07E+02	1.16E+02
MN-54		0.00E+00 ±	6.57E+00	1.08E+01
CO-58		0.00E+00 ±	5.87E+00	9.66E+00
FE-59		2.38E+00 ±	1.90E+01	3.07E+01
CO-60		-2.28E-01 ±	6.59E+00	1.08E+01
ZN-65		0.00E+00 ±	2.56E+01	4.21E+01
ZRNB-95		5.71E+00 ±	1.04E+01	1.57E+01
I-131		2.06E-01 ±	4.41E+00	7.20E+00
CS-134		-4.78E-02 ±	5.04E+00	8.28E+00
CS-137		-3.61E-01 ±	5.96E+00	9.71E+00
BALA140		0.00E+00 ±	2.09E+00	3.43E+00

Station 37 Potato collected 9/5/2012

Nuclide	RQ	Activity	Error	MDA
K-40	+	3.32E+03 ±	3.35E+02	1.22E+02
MN-54		0.00E+00 ±	7.59E+00	1.25E+01
CO-58		2.06E+00 ±	5.71E+00	8.68E+00
FE-59		1.45E+01 ±	2.14E+01	3.07E+01
CO-60		0.00E+00 ±	1.17E+01	1.92E+01
ZN-65		0.00E+00 ±	2.67E+01	4.39E+01
ZRNB-95		1.34E-02 ±	1.02E+01	1.68E+01
I-131		-7.99E-01 ±	5.96E+00	9.61E+00
CS-134		-1.80E-01 ±	6.10E+00	9.99E+00
CS-137		2.01E+00 ±	7.51E+00	1.18E+01
BALA140		6.99E+00 ±	8.57E+00	1.09E+01

Station 37 Potato collected 8/14/2012

Nuclide	RQ	Activity	Error	MDA
K-40	+	3.99E+03 ±	3.13E+02	1.18E+02
MN-54		1.77E+00 ±	4.24E+00	6.39E+00
CO-58		1.34E+00 ±	4.81E+00	7.53E+00
FE-59		-4.69E+00 ±	1.89E+01	3.00E+01
CO-60		-3.09E-02 ±	8.16E+00	1.34E+01
ZN-65		2.81E+00 ±	1.39E+01	2.22E+01
ZRNB-95		4.45E-01 ±	8.05E+00	1.31E+01
I-131		1.56E+00 ±	4.38E+00	6.82E+00
CS-134		1.29E+00 ±	4.89E+00	7.75E+00
CS-137		-1.34E+00 ±	5.74E+00	9.12E+00
BALA140		0.00E+00 ±	9.22E+00	1.52E+01

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

TABLE A - 15.2

GAMMA SPECTROMETRY RESULTS OF ROOTS- SUMMARY

Results in pCi/ kilogram (wet)

Nuclide		Average Activity	Activity Low	Activity High	Average MDA	Number of Samples	Number of Positive IDs
BALA140	Ind	1.75E+00	0.00E+00	6.99E+00	8.42E+00	4	0
BALA140	Cntl	0.00E+00	0.00E+00	0.00E+00	4.37E+00	1	0
CO-58	Ind	8.47E-01	-1.03E-02	2.06E+00	8.93E+00	4	0
CO-58	Cntl	-1.73E-01	-1.73E-01	-1.73E-01	9.76E+00	1	0
CO-60	Ind	8.73E-02	-2.28E-01	6.08E-01	1.33E+01	4	0
CO-60	Cntl	7.57E-01	7.57E-01	7.57E-01	1.40E+01	1	0
CS-134	Ind	2.56E-01	-1.80E-01	1.29E+00	9.65E+00	4	0
CS-134	Cntl	-2.06E+00	-2.06E+00	-2.06E+00	8.92E+00	1	0
CS-137	Ind	7.71E-02	-1.34E+00	2.01E+00	1.05E+01	4	0
CS-137	Cntl	1.67E+00	1.67E+00	1.67E+00	9.49E+00	1	0
FE-59	Ind	3.84E+00	-4.69E+00	1.45E+01	2.86E+01	4	0
FE-59	Cntl	1.10E+01	1.10E+01	1.10E+01	2.78E+01	1	0
I-131	Ind	1.81E-01	-7.99E-01	1.56E+00	8.33E+00	4	0
I-131	Cntl	-1.29E+00	-1.29E+00	-1.29E+00	1.01E+01	1	0
K-40	Ind	2.96E+03	6.83E+02	3.99E+03	1.28E+02	4	4
K-40	Cntl	4.75E+03	4.75E+03	4.75E+03	1.37E+02	1	1
MN-54	Ind	4.29E-01	-5.31E-02	1.77E+00	1.00E+01	4	0
MN-54	Cntl	9.49E-01	9.49E-01	9.49E-01	8.05E+00	1	0
ZN-65	Ind	6.32E-01	-2.83E-01	2.81E+00	3.28E+01	4	0
ZN-65	Cntl	2.99E+00	2.99E+00	2.99E+00	2.27E+01	1	0
ZRNB-95	Ind	2.14E+00	1.34E-02	5.71E+00	1.56E+01	4	0
ZRNB-95	Cntl	0.00E+00	0.00E+00	0.00E+00	2.20E+01	1	0

Ind= Indicator Stations Cntl= Control Stations

TABLE A-16.1

GAMMA SPECTROMETRY RESULTS OF FRUITS

Results in pCi/ kilogram (wet)

Station 37 is Indicator - Station 9c is Control

Station 37 Cherries collected 6/15/2012

Nuclide	RQ	Activity		Error	MDA
K-40	+	1.87E+03	±	2.83E+02	1.71E+02
MN-54		-2.68E+00	±	9.44E+00	1.49E+01
CO-58		-1.40E+00	±	8.97E+00	1.44E+01
FE-59		2.07E+00	±	2.43E+01	3.92E+01
CO-60		7.03E-01	±	1.13E+01	1.84E+01
ZN-65		-7.05E+00	±	2.19E+01	3.42E+01
ZRNB-95		-2.51E-01	±	1.41E+01	2.31E+01
I-131		-1.76E+00	±	1.02E+01	1.65E+01
CS-134		-2.29E+00	±	8.03E+00	1.27E+01
CS-137		-1.39E+00	±	9.82E+00	1.58E+01
BALA140		-3.03E+00	±	1.27E+01	1.97E+01

Station 37 Peaches collected 9/5/2012

Nuclide	RQ	Activity		Error	MDA
K-40	+	1.77E+03	±	2.56E+02	1.40E+02
MN-54		-1.85E+00	±	7.43E+00	1.17E+01
CO-58		-2.26E+00	±	7.74E+00	1.21E+01
FE-59		0.00E+00	±	5.47E+00	9.00E+00
CO-60		6.40E-01	±	8.72E+00	1.42E+01
ZN-65		4.60E+00	±	1.65E+01	2.57E+01
ZRNB-95		-1.79E+00	±	1.19E+01	1.91E+01
I-131		-1.44E+00	±	6.40E+00	1.02E+01
CS-134		1.50E+00	±	4.89E+00	7.55E+00
CS-137		-1.07E-01	±	5.32E+00	8.70E+00
BALA140		0.00E+00	±	1.26E+01	2.07E+01

Station 37 Cherries collected 6/27/2012

Nuclide	RQ	Activity		Error	MDA
K-40	+	2.41E+03	±	2.38E+02	1.77E+02
MN-54		6.78E-01	±	4.94E+00	7.97E+00
CO-58		2.46E+00	±	6.93E+00	1.10E+01
FE-59		-2.06E+00	±	1.83E+01	2.97E+01
CO-60		2.90E+00	±	7.60E+00	1.19E+01
ZN-65		-3.69E+00	±	2.04E+01	3.31E+01
ZRNB-95		4.69E+00	±	1.35E+01	2.15E+01
I-131		1.34E+00	±	8.83E+00	1.44E+01
CS-134		-1.95E-02	±	9.51E+00	1.56E+01
CS-137		-3.53E+00	±	9.46E+00	1.51E+01
BALA140		-1.98E+00	±	9.50E+00	1.52E+01

Station 37 Apples collected 9/11/2012

Nuclide	RQ	Activity		Error	MDA
K-40	+	1.00E+03	±	1.83E+02	1.33E+02
MN-54		5.60E-01	±	5.92E+00	9.58E+00
CO-58		-2.51E+00	±	6.08E+00	9.30E+00
FE-59		-2.79E+00	±	1.38E+01	2.15E+01
CO-60		0.00E+00	±	1.23E+01	2.02E+01
ZN-65		0.00E+00	±	1.60E+01	2.63E+01
ZRNB-95		-2.81E+00	±	9.49E+00	1.47E+01
I-131		1.06E+00	±	5.36E+00	8.58E+00
CS-134		-4.96E-01	±	4.84E+00	7.83E+00
CS-137		3.57E-02	±	5.63E+00	9.25E+00
BALA140		0.00E+00	±	2.56E+00	4.22E+00

Station 37 Peaches collected 7/31/2012

Nuclide	RQ	Activity		Error	MDA
K-40	+	2.09E+03	±	2.58E+02	1.41E+02
MN-54		0.00E+00	±	3.71E+00	6.10E+00
CO-58		-1.21E+00	±	7.04E+00	1.13E+01
FE-59		0.00E+00	±	2.40E+01	3.94E+01
CO-60		0.00E+00	±	8.87E+00	1.46E+01
ZN-65		-4.18E+00	±	1.89E+01	3.01E+01
ZRNB-95		2.58E+00	±	1.02E+01	1.61E+01
I-131		1.41E-01	±	4.32E+00	7.07E+00
CS-134		-1.93E+00	±	6.71E+00	1.06E+01
CS-137		-1.07E+00	±	7.17E+00	1.15E+01
BALA140		0.00E+00	±	2.54E+00	4.18E+00

Station 37 Apples collected 9/18/2012

Nuclide	RQ	Activity		Error	MDA
K-40	+	1.25E+03	±	2.46E+02	1.72E+02
MN-54		7.79E-01	±	8.11E+00	1.31E+01
CO-58		-5.02E+00	±	1.10E+01	1.70E+01
FE-59		0.00E+00	±	2.48E+01	4.08E+01
CO-60		-3.17E+00	±	1.11E+01	1.74E+01
ZN-65		0.00E+00	±	4.43E+01	7.28E+01
ZRNB-95		-2.25E+00	±	1.28E+01	2.04E+01
I-131		-9.44E-02	±	8.48E+00	1.39E+01
CS-134		-2.60E+00	±	8.51E+00	1.34E+01
CS-137		-5.71E-01	±	6.59E+00	1.06E+01
BALA140		-2.43E+00	±	1.10E+01	1.70E+01

Station 37 Apples collected 8/24/2012

Nuclide	RQ	Activity		Error	MDA
K-40	+	1.28E+03	±	1.87E+02	1.08E+02
MN-54		-1.15E+00	±	5.05E+00	7.96E+00
CO-58		-1.10E+00	±	4.85E+00	7.63E+00
FE-59		1.59E+00	±	1.51E+01	2.43E+01
CO-60		0.00E+00	±	7.32E+00	1.20E+01
ZN-65		-2.92E+00	±	1.37E+01	2.17E+01
ZRNB-95		-2.81E-01	±	6.67E+00	1.09E+01
I-131		2.58E+00	±	4.98E+00	7.51E+00
CS-134		7.60E-01	±	4.84E+00	7.77E+00
CS-137		-9.59E-01	±	5.56E+00	8.89E+00
BALA140		-2.44E+00	±	8.34E+00	1.28E+01

Station 37 Wine grapes collected 9/28/2012

Nuclide	RQ	Activity		Error	MDA
K-40	+	2.26E+03	±	2.70E+02	1.29E+02
MN-54		-3.28E-01	±	5.85E+00	9.52E+00
CO-58		1.64E+00	±	5.08E+00	7.74E+00
FE-59		0.00E+00	±	2.66E+01	4.37E+01
CO-60		0.00E+00	±	1.10E+01	1.81E+01
ZN-65		0.00E+00	±	1.74E+01	2.86E+01
ZRNB-95		2.54E+00	±	1.03E+01	1.61E+01
I-131		-1.91E+00	±	8.16E+00	1.30E+01
CS-134		1.09E-01	±	5.83E+00	9.57E+00
CS-137		-1.66E+00	±	7.41E+00	1.18E+01
BALA140		-3.69E+00	±	1.23E+01	1.90E+01

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

TABLE A-16.1

GAMMA SPECTROMETRY RESULTS OF FRUITS

Results in pCi/ kilogram (wet)

Station 37 is Indicator - Station 9c is Control

Nuclide	RQ	Station 9c Peaches collected 7/31/2012 Activity	± Error	MDA	Nuclide	RQ	Station 37 Wine Grapes collected 9/28/2012 Activity	± Error	MDA
K-40	+	2.01E+03	2.06E+02	8.93E+01	K-40	+	3.62E+03	3.65E+02	1.50E+02
MN-54		1.50E+00	4.79E+00	7.49E+00	MN-54		1.12E-01	7.25E+00	1.19E+01
CO-58		9.36E-02	4.41E+00	7.22E+00	CO-58		0.00E+00	6.40E+00	1.05E+01
FE-59		1.70E+00	1.51E+01	2.43E+01	FE-59		-2.45E+00	2.63E+01	4.26E+01
CO-60		-2.45E+00	7.24E+00	1.14E+01	CO-60		2.81E+00	9.74E+00	1.52E+01
ZN-65		-2.90E+00	1.36E+01	2.17E+01	ZN-65		-1.14E+01	2.44E+01	3.77E+01
ZRNB-95		-2.38E+00	7.92E+00	1.24E+01	ZRNB-95		-9.79E-01	1.42E+01	2.30E+01
I-131		8.70E-03	4.94E+00	8.12E+00	I-131		-4.98E+00	1.13E+01	1.77E+01
CS-134		-1.85E+00	5.46E+00	8.65E+00	CS-134		-1.22E+00	6.03E+00	9.58E+00
CS-137		4.06E-01	4.34E+00	7.02E+00	CS-137		1.73E+00	6.59E+00	1.03E+01
BALA140		0.00E+00	1.88E+00	3.08E+00	BALA140		3.25E+00	1.02E+01	1.52E+01

TABLE A - 16.2

GAMMA SPECTROMETRY RESULTS OF FRUITS- SUMMARY

Results in pCi/ kilogram (wet)

Nuclide		Average Activity	Activity Low	Activity High	Average MDA	Number of Samples	Number of Positive IDs
BALA140	Ind	-1.15E+00	-3.69E+00	3.25E+00	1.42E+01	9	0
BALA140	Cntl	0.00E+00	0.00E+00	0.00E+00	3.08E+00	1	0
CO-58	Ind	-1.04E+00	-5.02E+00	2.46E+00	1.12E+01	9	0
CO-58	Cntl	9.36E-02	9.36E-02	9.36E-02	7.22E+00	1	0
CO-60	Ind	4.32E-01	-3.17E+00	2.90E+00	1.58E+01	9	0
CO-60	Cntl	-2.45E+00	-2.45E+00	-2.45E+00	1.14E+01	1	0
CS-134	Ind	-6.87E-01	-2.60E+00	1.50E+00	1.05E+01	9	0
CS-134	Cntl	-1.85E+00	-1.85E+00	-1.85E+00	8.65E+00	1	0
CS-137	Ind	-8.36E-01	-3.53E+00	1.73E+00	1.13E+01	9	0
CS-137	Cntl	4.06E-01	4.06E-01	4.06E-01	7.02E+00	1	0
FE-59	Ind	-4.03E-01	-2.79E+00	2.07E+00	3.23E+01	9	0
FE-59	Cntl	1.70E+00	1.70E+00	1.70E+00	2.43E+01	1	0
I-131	Ind	-5.63E-01	-4.98E+00	2.58E+00	1.21E+01	9	0
I-131	Cntl	8.70E-03	8.70E-03	8.70E-03	8.12E+00	1	0
K-40	Ind	1.95E+03	1.00E+03	3.62E+03	1.47E+02	9	9
K-40	Cntl	2.01E+03	2.01E+03	2.01E+03	8.93E+01	1	1
MN-54	Ind	-4.31E-01	-2.68E+00	7.79E-01	1.03E+01	9	0
MN-54	Cntl	1.50E+00	1.50E+00	1.50E+00	7.49E+00	1	0
ZN-65	Ind	-2.74E+00	-1.14E+01	4.60E+00	3.45E+01	9	0
ZN-65	Cntl	-2.90E+00	-2.90E+00	-2.90E+00	2.17E+01	1	0
ZRNB-95	Ind	1.60E-01	-2.81E+00	4.69E+00	1.83E+01	9	0
ZRNB-95	Cntl	-2.38E+00	-2.38E+00	-2.38E+00	1.24E+01	1	0

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

TABLE A-17.1

GAMMA SPECTROMETRY RESULTS OF VEGETABLES

Results in pCi/ kilogram (wet)

Station 37 is Indicator - Station 9c is Control

Station 37 Asparagus collected 5/15/2012

Nuclide	RQ	Activity		Error	MDA
K-40	+	2.18E+03	±	2.98E+02	1.44E+02
MN-54		3.13E-02	±	7.90E+00	1.30E+01
CO-58		-1.62E-02	±	6.28E+00	1.03E+01
FE-59		-9.17E+00	±	3.04E+01	4.78E+01
CO-60		3.18E+00	±	1.03E+01	1.61E+01
ZN-65		-4.84E+00	±	2.16E+01	3.43E+01
ZRNB-95		-2.84E+00	±	1.48E+01	2.36E+01
I-131		1.01E+00	±	7.25E+00	1.17E+01
CS-134		0.00E+00	±	1.30E+01	2.14E+01
CS-137		1.09E+00	±	8.60E+00	1.38E+01
BALA140		0.00E+00	±	3.49E+00	5.74E+00

Station 37 Corn collected 7/10/2012

Nuclide	RQ	Activity		Error	MDA
K-40	+	2.52E+03	±	2.90E+02	2.36E+02
MN-54		-4.62E-01	±	8.54E+00	1.40E+01
CO-58		-1.65E+00	±	9.04E+00	1.46E+01
FE-59		-3.70E+00	±	2.46E+01	3.97E+01
CO-60		1.66E-03	±	1.01E+01	1.68E+01
ZN-65		2.95E+00	±	1.90E+01	3.07E+01
ZRNB-95		-4.44E+00	±	1.59E+01	2.54E+01
I-131		5.98E-01	±	7.38E+00	1.20E+01
CS-134		-6.20E-01	±	1.02E+01	1.67E+01
CS-137		-8.35E-01	±	1.25E+01	2.04E+01
BALA140		6.47E-01	±	9.60E+00	1.56E+01

Station 37 Spinach collected 6/1/2012

Nuclide	RQ	Activity		Error	MDA
K-40	+	6.74E+03	±	7.63E+02	3.35E+02
MN-54		-2.62E-01	±	1.97E+01	3.23E+01
CO-58		-6.95E+00	±	2.03E+01	3.16E+01
FE-59		-1.76E+01	±	5.73E+01	8.93E+01
CO-60		1.54E+01	±	1.97E+01	2.71E+01
ZN-65		2.00E+01	±	4.50E+01	6.84E+01
ZRNB-95		-8.18E+00	±	3.59E+01	5.71E+01
I-131		2.94E+00	±	1.54E+01	2.47E+01
CS-134		4.59E+00	±	2.06E+01	3.29E+01
CS-137		0.00E+00	±	2.96E+01	4.87E+01
BALA140		0.00E+00	±	3.02E+01	4.97E+01

Station 37 Watermelon collected 7/27/2012

Nuclide	RQ	Activity		Error	MDA
K-40	+	9.31E+02	±	1.48E+02	9.27E+01
MN-54		-4.89E-01	±	4.52E+00	7.29E+00
CO-58		-1.86E+00	±	5.43E+00	8.50E+00
FE-59		1.72E+00	±	1.29E+01	2.06E+01
CO-60		1.47E+00	±	5.01E+00	7.75E+00
ZN-65		1.01E+00	±	9.56E+00	1.54E+01
ZRNB-95		2.46E+00	±	7.77E+00	1.21E+01
I-131		-7.48E-01	±	4.28E+00	6.89E+00
CS-134		-1.16E+00	±	5.27E+00	8.43E+00
CS-137		1.08E-01	±	4.33E+00	7.08E+00
BALA140		0.00E+00	±	7.63E+00	1.25E+01

Station 37 Collard Greens collected 6/15/2012

Nuclide	RQ	Activity		Error	MDA
K-40	+	4.43E+03	±	4.10E+02	1.63E+02
MN-54		-1.46E+00	±	9.42E+00	1.51E+01
CO-58		9.02E-01	±	8.54E+00	1.38E+01
FE-59		9.26E+00	±	2.61E+01	4.03E+01
CO-60		-4.67E+00	±	1.33E+01	2.10E+01
ZN-65		-6.55E+00	±	2.56E+01	4.08E+01
ZRNB-95		-6.71E+00	±	1.60E+01	2.47E+01
I-131		6.76E+00	±	9.98E+00	1.51E+01
CS-134		-1.07E-01	±	9.43E+00	1.55E+01
CS-137		5.33E+00	±	7.63E+00	1.09E+01
BALA140		-4.06E-01	±	1.14E+01	1.86E+01

Station 37 Zuchini collected 7/31/2012

Nuclide	RQ	Activity		Error	MDA
K-40	+	1.71E+03	±	2.14E+02	1.11E+02
MN-54		4.95E-01	±	5.07E+00	8.19E+00
CO-58		3.19E-02	±	5.19E+00	8.53E+00
FE-59		-3.19E+00	±	1.60E+01	2.54E+01
CO-60		1.63E+00	±	6.29E+00	9.86E+00
ZN-65		-7.06E+00	±	1.61E+01	2.49E+01
ZRNB-95		0.00E+00	±	1.03E+01	1.70E+01
I-131		1.65E+00	±	4.88E+00	7.65E+00
CS-134		6.01E-01	±	3.74E+00	5.95E+00
CS-137		0.00E+00	±	9.31E+00	1.53E+01
BALA140		0.00E+00	±	2.21E+00	3.64E+00

Station 37 Green Bean collected 7/10/2012

Nuclide	RQ	Activity		Error	MDA
K-40	+	3.29E+03	±	3.20E+02	2.29E+02
MN-54		4.56E+00	±	9.89E+00	1.55E+01
CO-58		-2.64E+00	±	9.86E+00	1.58E+01
FE-59		3.42E+00	±	2.20E+01	3.54E+01
CO-60		-1.82E-01	±	1.17E+01	1.92E+01
ZN-65		-5.27E+00	±	2.18E+01	3.50E+01
ZRNB-95		-3.38E+00	±	1.62E+01	2.61E+01
I-131		6.27E-01	±	8.66E+00	1.42E+01
CS-134		-2.55E-01	±	9.79E+00	1.61E+01
CS-137		-6.73E+00	±	1.13E+01	1.77E+01
BALA140		1.61E+00	±	9.06E+00	1.44E+01

Station 37 Broad Leaf Vegetable collected 7/31/2012

Nuclide	RQ	Activity		Error	MDA
K-40	+	3.40E+03	±	3.82E+02	1.83E+02
MN-54		3.20E+00	±	9.29E+00	1.44E+01
CO-58		2.28E+00	±	9.23E+00	1.46E+01
FE-59		-2.57E-01	±	2.87E+01	4.71E+01
CO-60		-1.51E+00	±	1.36E+01	2.20E+01
ZN-65		-1.21E+01	±	2.96E+01	4.62E+01
ZRNB-95		-1.69E-01	±	1.45E+01	2.38E+01
I-131		-3.95E+00	±	1.01E+01	1.58E+01
CS-134		-2.56E+00	±	8.90E+00	1.41E+01
CS-137		-2.20E+00	±	9.28E+00	1.47E+01
BALA140		0.00E+00	±	3.58E+00	5.89E+00

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

TABLE A-17.1

GAMMA SPECTROMETRY RESULTS OF VEGETABLES

Results in pCi/ kilogram (wet)

Station 37 is Indicator - Station 9c is Control

Station 37 Corn collected 8/14/2012

Nuclide	RQ	Activity		Error	MDA
K-40	+	2.37E+03	±	2.78E+02	2.27E+02
MN-54		-2.48E+00	±	9.15E+00	1.47E+01
CO-58		1.35E+00	±	7.10E+00	1.14E+01
FE-59		0.00E+00	±	2.50E+01	4.11E+01
CO-60		-2.34E-01	±	9.55E+00	1.56E+01
ZN-65		5.46E-01	±	2.28E+01	3.75E+01
ZRNB-95		-2.01E-01	±	1.49E+01	2.45E+01
I-131		2.65E+00	±	8.87E+00	1.42E+01
CS-134		5.85E-01	±	8.49E+00	1.39E+01
CS-137		2.72E+00	±	8.39E+00	1.33E+01
BALA140		-4.83E+00	±	1.16E+01	1.79E+01

Station 9c Corn collected 8/24/2012

Nuclide	RQ	Activity		Error	MDA
K-40	+	2.14E+03	±	2.43E+02	2.12E+02
MN-54		-2.93E+00	±	8.73E+00	1.39E+01
CO-58		1.89E+00	±	8.10E+00	1.30E+01
FE-59		-5.88E+00	±	2.35E+01	3.75E+01
CO-60		6.53E-01	±	7.45E+00	1.21E+01
ZN-65		-7.46E+00	±	2.25E+01	3.59E+01
ZRNB-95		1.43E+01	±	1.36E+01	1.97E+01
I-131		3.68E+00	±	1.20E+01	1.93E+01
CS-134		-5.21E-01	±	7.19E+00	1.17E+01
CS-137		-4.54E+00	±	1.06E+01	1.68E+01
BALA140		-2.43E+00	±	1.15E+01	1.84E+01

Station 37 Broad Leaf Vegetable collected 8/24/2012

Nuclide	RQ	Activity		Error	MDA
K-40	+	4.12E+03	±	4.92E+02	4.41E+02
MN-54		1.58E+01	±	1.83E+01	2.75E+01
CO-58		3.45E+00	±	1.73E+01	2.79E+01
FE-59		-7.29E+00	±	5.32E+01	8.62E+01
CO-60		0.00E+00	±	2.72E+01	4.48E+01
ZN-65		-1.54E+01	±	3.88E+01	6.10E+01
ZRNB-95		-7.21E+00	±	3.39E+01	5.47E+01
I-131		1.72E+01	±	1.84E+01	2.77E+01
CS-134		8.05E+00	±	1.86E+01	2.96E+01
CS-137		1.43E+00	±	1.97E+01	3.22E+01
BALA140		-1.61E+00	±	2.02E+01	3.28E+01

Station 37 Bell peppers collected 9/5/2012

Nuclide	RQ	Activity		Error	MDA
K-40	+	2.35E+03	±	2.47E+02	2.02E+02
MN-54		-3.82E+00	±	9.45E+00	1.50E+01
CO-58		-1.01E-01	±	7.09E+00	1.16E+01
FE-59		5.40E-01	±	1.95E+01	3.19E+01
CO-60		-4.90E+00	±	1.07E+01	1.69E+01
ZN-65		-6.42E+00	±	2.06E+01	3.30E+01
ZRNB-95		1.83E+00	±	1.58E+01	2.57E+01
I-131		-4.20E-03	±	9.50E+00	1.57E+01
CS-134		3.25E+00	±	9.11E+00	1.46E+01
CS-137		-4.93E+00	±	9.96E+00	1.57E+01
BALA140		1.23E-01	±	9.25E+00	1.52E+01

Station 37 Green Bean collected 9/5/2012

Nuclide	RQ	Activity		Error	MDA
K-40	+	1.82E+03	±	2.95E+02	2.96E+02
MN-54		5.02E+00	±	1.07E+01	1.66E+01
CO-58		4.81E-02	±	1.06E+01	1.74E+01
FE-59		8.17E+00	±	2.95E+01	4.67E+01
CO-60		1.29E+01	±	1.25E+01	1.79E+01
ZN-65		-1.19E+01	±	2.73E+01	4.27E+01
ZRNB-95		1.08E+00	±	1.67E+01	2.73E+01
I-131		-5.30E+00	±	1.18E+01	1.87E+01
CS-134		-6.13E+00	±	1.37E+01	2.18E+01
CS-137		-4.67E+00	±	1.39E+01	2.23E+01
BALA140		-3.89E+00	±	1.53E+01	2.42E+01

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

TABLE A - 17.2

GAMMA SPECTROMETRY RESULTS OF VEGETABLES- SUMMARY

Results in pCi/ kilogram (wet)

Nuclide		Average Activity	Activity Low	Activity High	Average MDA	Number of Samples	Number of Positive IDs
BALA140	Ind	-6.97E-01	-4.83E+00	1.61E+00	1.80E+01	12	0
BALA140	Cntl	-2.43E+00	-2.43E+00	-2.43E+00	1.84E+01	1	0
CO-58	Ind	-4.29E-01	-6.95E+00	3.45E+00	1.55E+01	12	0
CO-58	Cntl	1.89E+00	1.89E+00	1.89E+00	1.30E+01	1	0
CO-60	Ind	1.92E+00	-4.90E+00	1.54E+01	1.96E+01	12	0
CO-60	Cntl	6.53E-01	6.53E-01	6.53E-01	1.21E+01	1	0
CS-134	Ind	5.20E-01	-6.13E+00	8.05E+00	1.76E+01	12	0
CS-134	Cntl	-5.21E-01	-5.21E-01	-5.21E-01	1.17E+01	1	0
CS-137	Ind	-7.24E-01	-6.73E+00	5.33E+00	1.93E+01	12	0
CS-137	Cntl	-4.54E+00	-4.54E+00	-4.54E+00	1.68E+01	1	0
FE-59	Ind	-1.51E+00	-1.76E+01	9.26E+00	4.60E+01	12	0
FE-59	Cntl	-5.88E+00	-5.88E+00	-5.88E+00	3.75E+01	1	0
I-131	Ind	1.95E+00	-5.30E+00	1.72E+01	1.54E+01	12	0
I-131	Cntl	3.68E+00	3.68E+00	3.68E+00	1.93E+01	1	0
K-40	Ind	2.99E+03	9.31E+02	6.74E+03	2.22E+02	12	12
K-40	Cntl	2.14E+03	2.14E+03	2.14E+03	2.12E+02	1	1
MN-54	Ind	1.68E+00	-3.82E+00	1.58E+01	1.61E+01	12	0
MN-54	Cntl	-2.93E+00	-2.93E+00	-2.93E+00	1.39E+01	1	0
ZN-65	Ind	-3.75E+00	-1.54E+01	2.00E+01	3.92E+01	12	0
ZN-65	Cntl	-7.46E+00	-7.46E+00	-7.46E+00	3.59E+01	1	0
ZRNB-95	Ind	-2.31E+00	-8.18E+00	2.46E+00	2.85E+01	12	0
ZRNB-95	Cntl	1.43E+01	1.43E+01	1.43E+01	1.97E+01	1	0

Ind= Indicator Stations Cntl= Control Stations

TABLE B-1.1

2012 QUARTERLY SPECIAL INTEREST TLD RESULTS

Results in milli-Roentgen (mR) per Standard Quarter

Station ID	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Quarterly Sum
58	18.80	19.09	18.69	19.63	76.2
87	34.34	27.48	32.70	29.10	123.6
88	25.84	23.64	23.80	24.98	98.3
89	26.68	25.23	26.09	26.46	104.5
90	18.75	18.26	18.57	18.57	74.2
119B	21.83	21.63	22.95	22.43	88.8
119C	21.94	22.02	22.80	22.10	88.9
120 (East)	21.23	21.69	21.96	22.63	87.5
121	84.21	70.70	81.30	74.79	311.0
122	35.43	35.22	35.36	35.61	141.6
123	117.88	113.16	113.26	112.94	457.2
124	134.79	137.60	129.88	136.56	538.8
125	101.82	100.62	99.32	101.61	403.4
126	101.18	101.31	99.42	103.21	405.1
127	79.37	76.39	74.91	75.16	305.8
128	126.59	130.96	119.08	127.57	504.2
129	100.64	101.08	94.69	99.85	396.3
136A	148.91	145.73	139.73	143.61	578.0
137A	164.36	160.66	151.77	157.80	634.6
138A	129.08	129.96	124.75	125.01	508.8
150 (Site 1)	19.04	17.74	17.99	18.90	73.7
151 (Site 4)	19.31	17.67	19.10	19.16	75.2

TABLE B-1.2

2012 QUARTERLY SPECIAL INTEREST TLD RESULTS- SUMMARY

Results in milli-Roentgen (mR) per Standard Quarter

Location	Average Activity	Activity Low	Activity High	Number of Samples
ISFSI Quarterly Ind	118.3	74.9	164.4	40
SITE 1 & 4 Quarterly Ind	18.6	17.7	19.3	8
Quarterly Control TLDs	20.29	19.89	20.96	4

Ind = Indicator Station Cntl = Control Station

Stations 123 through 138A are locationed on the ISFSI fence.

Stations 58 and 87 to 90 were established in 2009 to monitor exposure from remediation work at the DOE 618-11 burial site.

Station 121 results high due to location being near transformer yard. Staion 122 results influenced by ISFSI.

Quarterly Control TLD location is ST-9. See Table A-1.1

Table B-2.1

GAMMA SPECTROMETRY RESULTS OF STORM DRAIN WATER

STATION 101

Results in pCi/liter, corrected for decay during collection period

Location 101 collected 2/6/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-3.62E+01	±	9.23E+01	5.60E+01
CR-51		2.05E-01	±	2.23E+01	3.66E+01
MN-54		-4.48E-01	±	2.18E+00	3.52E+00
CO-58		7.13E-01	±	2.09E+00	3.31E+00
FE-59		6.04E-01	±	6.78E+00	1.10E+01
CO-60		0.00E+00	±	1.62E+00	2.66E+00
ZN-65		-1.35E+00	±	4.76E+00	7.59E+00
ZRNB-95		9.31E-01	±	4.20E+00	6.77E+00
I-131		-4.66E-01	±	5.88E+00	9.62E+00
CS-134		-6.07E-01	±	2.28E+00	3.67E+00
CS-137		7.16E-02	±	2.21E+00	3.62E+00
BALA140		-4.65E-01	±	5.31E+00	8.63E+00
BI-214		-2.29E+00	±	6.80E+00	1.07E+01
RA-226		-3.80E+01	±	8.32E+01	9.59E+01

Location 101 collected 3/5/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-6.37E+01	±	1.60E+02	5.21E+01
CR-51		1.24E+01	±	1.75E+01	2.75E+01
MN-54		-5.31E-04	±	1.73E+00	2.90E+00
CO-58		2.95E-01	±	1.59E+00	2.56E+00
FE-59		-6.89E-01	±	4.97E+00	8.02E+00
CO-60		2.18E-01	±	1.80E+00	2.92E+00
ZN-65		-8.05E-01	±	3.98E+00	6.40E+00
ZRNB-95		-8.01E-01	±	3.48E+00	5.60E+00
I-131		6.41E-01	±	4.40E+00	7.17E+00
CS-134		-1.00E+00	±	2.14E+00	3.42E+00
CS-137		0.00E+00	±	1.85E+00	3.04E+00
BALA140		-1.10E+00	±	4.83E+00	7.73E+00
BI-214		-2.20E+00	±	6.71E+00	8.49E+00
RA-226		-8.78E+00	±	4.84E+01	7.48E+01

Location 101 collected 4/3/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-1.16E+01	±	3.15E+01	5.14E+01
CR-51		-2.66E+00	±	1.96E+01	3.20E+01
MN-54		4.83E-01	±	1.80E+00	2.88E+00
CO-58		-2.51E-01	±	1.50E+00	2.41E+00
FE-59		9.84E-01	±	4.86E+00	7.77E+00
CO-60		1.12E+00	±	1.64E+00	2.46E+00
ZN-65		-1.03E+00	±	4.37E+00	7.02E+00
ZRNB-95		-1.06E-01	±	2.91E+00	4.77E+00
I-131		3.20E+00	±	4.76E+00	7.45E+00
CS-134		-1.32E-02	±	1.85E+00	3.05E+00
CS-137		-3.45E-02	±	1.62E+00	2.66E+00
BALA140		-2.85E-03	±	4.46E+00	7.34E+00
BI-214		5.07E-01	±	4.38E+00	8.18E+00
RA-226		-5.51E+00	±	4.51E+01	7.41E+01

Location 101 collected 5/7/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-5.66E+01	±	1.19E+02	5.34E+01
CR-51		6.75E+00	±	1.82E+01	2.91E+01
MN-54		2.76E-01	±	1.99E+00	3.24E+00
CO-58		8.85E-02	±	1.77E+00	2.90E+00
FE-59		-2.73E+00	±	6.42E+00	1.01E+01
CO-60		-4.20E-02	±	2.02E+00	3.31E+00
ZN-65		0.00E+00	±	8.03E+00	1.32E+01
ZRNB-95		0.00E+00	±	3.13E+00	5.15E+00
I-131		-6.74E-01	±	6.37E+00	1.04E+01
CS-134		-1.10E-01	±	2.13E+00	3.49E+00
CS-137		0.00E+00	±	1.96E+00	3.22E+00
BALA140		-1.33E+00	±	6.07E+00	9.73E+00
BI-214		1.13E+00	±	4.50E+00	8.31E+00
RA-226		1.95E+01	±	4.11E+01	7.33E+01

Location 101 collected 6/4/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-3.45E+01	±	8.07E+01	5.41E+01
CR-51		-1.62E+00	±	1.51E+01	2.46E+01
MN-54		3.61E-02	±	1.82E+00	2.99E+00
CO-58		-1.29E-01	±	2.11E+00	3.44E+00
FE-59		-5.43E-01	±	6.73E+00	1.10E+01
CO-60		9.80E-01	±	2.02E+00	3.12E+00
ZN-65		-3.40E+00	±	5.84E+00	9.14E+00
ZRNB-95		7.75E-01	±	3.97E+00	6.40E+00
I-131		-2.15E+00	±	5.99E+00	9.62E+00
CS-134		-4.89E-01	±	2.50E+00	4.06E+00
CS-137		-5.17E-01	±	2.05E+00	3.30E+00
BALA140		-8.94E-01	±	4.21E+00	6.69E+00
BI-214		-6.64E+00	±	1.15E+01	1.13E+01
RA-226		-3.05E+01	±	7.88E+01	9.90E+01

Location 101 collected 7/3/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-2.62E+00	±	3.04E+01	5.53E+01
CR-51		-8.56E-01	±	2.32E+01	3.80E+01
MN-54		-5.60E-02	±	1.99E+00	3.26E+00
CO-58		6.22E-01	±	2.06E+00	3.28E+00
FE-59		-1.84E+00	±	6.47E+00	1.02E+01
CO-60		1.88E-02	±	1.89E+00	3.11E+00
ZN-65		-1.09E+00	±	4.94E+00	7.94E+00
ZRNB-95		-2.81E-01	±	4.17E+00	6.81E+00
I-131		-2.75E+00	±	1.15E+01	1.86E+01
CS-134		-1.79E+00	±	2.47E+00	3.87E+00
CS-137		1.47E+00	±	1.98E+00	3.01E+00
BALA140		-2.67E+00	±	7.45E+00	1.17E+01
BI-214		-4.88E+00	±	9.06E+00	1.09E+01
RA-226		6.63E+00	±	4.83E+01	8.98E+01

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

Table B-2.1

GAMMA SPECTROMETRY RESULTS OF STORM DRAIN WATER

STATION 101

Results in pCi/liter, corrected for decay during collection period

Location 101 collected 8/1/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-3.62E+01	±	5.97E+01	5.31E+01
CR-51		-2.32E-02	±	1.89E+01	3.11E+01
MN-54		1.46E-02	±	1.96E+00	3.21E+00
CO-58		-3.19E-01	±	1.94E+00	3.14E+00
FE-59		-1.93E+00	±	7.07E+00	1.13E+01
CO-60		0.00E+00	±	2.70E+00	4.44E+00
ZN-65		-1.51E+00	±	4.05E+00	6.40E+00
ZRNB-95		6.08E-01	±	3.19E+00	5.13E+00
I-131		2.93E+00	±	6.96E+00	1.11E+01
CS-134		-5.40E-01	±	2.18E+00	3.54E+00
CS-137		-7.58E-01	±	1.93E+00	3.07E+00
BALA140		6.53E-01	±	5.55E+00	8.97E+00
BI-214		-1.89E-01	±	5.07E+00	9.00E+00
RA-226		-1.36E+01	±	5.15E+01	7.34E+01

Location 101 collected 9/4/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-4.56E+01	±	9.10E+01	5.68E+01
CR-51		-6.42E+00	±	2.64E+01	4.28E+01
MN-54		0.00E+00	±	3.05E+00	5.01E+00
CO-58		-3.42E-01	±	2.21E+00	3.57E+00
FE-59		7.53E-01	±	6.64E+00	1.08E+01
CO-60		6.07E-01	±	2.02E+00	3.19E+00
ZN-65		-1.51E+00	±	4.99E+00	7.96E+00
ZRNB-95		2.44E+00	±	3.78E+00	5.78E+00
I-131		-3.65E+00	±	7.58E+00	1.21E+01
CS-134		-4.22E-02	±	2.01E+00	3.30E+00
CS-137		8.44E-01	±	1.94E+00	3.05E+00
BALA140		2.29E+00	±	5.63E+00	8.72E+00
BI-214		6.59E+00	±	4.97E+00	8.61E+00
RA-226		-9.06E+00	±	5.89E+01	9.71E+01

Location 101 collected 10/1/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-1.83E+01	±	3.82E+01	5.27E+01
CR-51		3.55E-02	±	1.87E+01	3.08E+01
MN-54		6.04E-02	±	1.62E+00	2.66E+00
CO-58		-4.98E-02	±	1.82E+00	2.99E+00
FE-59		-1.06E+00	±	5.51E+00	8.86E+00
CO-60		-4.97E-01	±	1.95E+00	3.12E+00
ZN-65		-1.70E+00	±	4.28E+00	6.77E+00
ZRNB-95		4.51E-02	±	3.00E+00	4.92E+00
I-131		-2.18E+00	±	5.26E+00	8.43E+00
CS-134		2.20E-01	±	2.28E+00	3.72E+00
CS-137		-6.44E-01	±	2.10E+00	3.37E+00
BALA140		4.11E-01	±	4.13E+00	6.70E+00
BI-214		1.14E+00	±	4.92E+00	8.92E+00
RA-226		-2.31E+01	±	6.03E+01	7.24E+01

Location 101 collected 11/1/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-3.21E+01	±	5.64E+01	5.45E+01
CR-51		1.28E+00	±	2.22E+01	3.64E+01
MN-54		3.02E-01	±	1.85E+00	3.00E+00
CO-58		9.57E-03	±	1.76E+00	2.89E+00
FE-59		2.96E-01	±	4.98E+00	8.12E+00
CO-60		5.72E-01	±	2.07E+00	3.30E+00
ZN-65		0.00E+00	±	6.84E+00	1.13E+01
ZRNB-95		6.45E-02	±	3.33E+00	5.46E+00
I-131		-7.92E-01	±	7.98E+00	1.30E+01
CS-134		1.58E+00	±	1.65E+00	2.49E+00
CS-137		8.93E-01	±	1.64E+00	2.55E+00
BALA140		0.00E+00	±	1.64E+00	2.70E+00
BI-214		1.23E-01	±	4.02E+00	7.71E+00
RA-226		-1.31E+00	±	4.27E+01	7.53E+01

Location 101 collected 12/3/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-3.31E+01	±	6.37E+01	5.77E+01
CR-51		1.35E+01	±	2.41E+01	3.83E+01
MN-54		-5.55E-01	±	2.04E+00	3.27E+00
CO-58		-1.08E+00	±	2.60E+00	4.13E+00
FE-59		2.97E-01	±	6.70E+00	1.10E+01
CO-60		1.48E-01	±	2.16E+00	3.52E+00
ZN-65		-2.34E-02	±	4.79E+00	7.88E+00
ZRNB-95		-1.66E-01	±	3.71E+00	6.07E+00
I-131		-2.89E+00	±	7.98E+00	1.28E+01
CS-134		-8.73E-01	±	2.46E+00	3.95E+00
CS-137		-6.07E-02	±	2.43E+00	3.98E+00
BALA140		-1.01E+00	±	5.71E+00	9.16E+00
BI-214		-1.09E+00	±	6.12E+00	9.39E+00
RA-226		-6.27E+00	±	5.62E+01	9.61E+01

Location 101 collected 1/3/2013

Nuclide	RQ	Activity		Error	MDA
K-40		-3.73E+01	±	7.05E+01	5.48E+01
CR-51		-4.60E-01	±	2.48E+01	4.07E+01
MN-54		6.79E-01	±	1.92E+00	3.06E+00
CO-58		-7.12E-02	±	1.68E+00	2.75E+00
FE-59		-3.42E+00	±	7.18E+00	1.13E+01
CO-60		-1.55E-01	±	1.71E+00	2.78E+00
ZN-65		-8.66E-01	±	3.94E+00	6.35E+00
ZRNB-95		6.58E-01	±	4.20E+00	6.83E+00
I-131		-2.05E+00	±	8.57E+00	1.39E+01
CS-134		-1.31E-01	±	1.94E+00	3.18E+00
CS-137		4.97E-01	±	1.62E+01	3.68E+00
BALA140		-5.10E-01	±	6.09E+00	9.92E+00
BI-214		1.06E+00	±	4.61E+00	8.45E+00
RA-226		-2.46E+01	±	7.40E+01	9.73E+01

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

TABLE B-2.2

GAMMA SPECTROMETRY RESULTS OF STORM DRAIN WATER - SUMMARY

STATION 101

Results in pCi/liter, corrected for decay during collection period

Nuclide	Average Activity	Activity Low	Activity High	Average MDA	Number of Samples	Number of Positive IDs
K-40	-3.40E+01	-6.37E+01	-2.62E+00	5.43E+01	12	0
CR-51	1.84E+00	-6.42E+00	1.35E+01	3.40E+01	12	0
MN-54	6.60E-02	-5.55E-01	6.79E-01	3.25E+00	12	0
CO-58	-4.31E-02	-1.08E+00	7.13E-01	3.11E+00	12	0
FE-59	-7.73E-01	-3.42E+00	9.84E-01	9.95E+00	12	0
CO-60	2.47E-01	-4.97E-01	1.12E+00	3.16E+00	12	0
ZN-65	-1.11E+00	-3.40E+00	0.00E+00	8.16E+00	12	0
ZRNB-95	3.47E-01	-8.01E-01	2.44E+00	5.81E+00	12	0
I-131	-9.04E-01	-3.65E+00	3.20E+00	1.12E+01	12	0
CS-134	-3.17E-01	-1.79E+00	1.58E+00	3.48E+00	12	0
CS-137	1.47E-01	-7.58E-01	1.47E+00	3.21E+00	12	0
BALA140	-3.85E-01	-2.67E+00	2.29E+00	8.16E+00	12	0
BI-214	-5.63E-01	-6.64E+00	6.59E+00	9.16E+00	12	0
RA-226	-1.12E+01	-3.80E+01	1.95E+01	8.49E+01	12	0

TABLE B-3.1

GROSS BETA IN STORM DRAIN WATER

Results in pCi per liter

Location	Collection Period	RQ	Activity	Error	MDA
ST-101	01/05/12 - 02/06/12		6.81E-02 ±	7.16E-01	2.46E+00
	02/06/12 - 03/05/12		2.26E+00 ±	8.64E-01	2.45E+00
	03/05/12 - 04/03/12		1.28E+00 ±	7.46E-01	2.29E+00
	04/03/12 - 05/07/12		1.61E+00 ±	7.70E-01	2.37E+00
	05/07/12 - 06/04/12	+	3.32E+00 ±	8.47E-01	2.38E+00
	06/04/12 - 07/03/12		4.15E-01 ±	7.76E-01	2.65E+00
	07/03/12 - 08/01/12		1.66E+00 ±	6.95E-01	2.10E+00
	08/01/12 - 09/04/12		4.41E-01 ±	6.55E-01	2.25E+00
	09/04/12 - 10/01/12		4.17E-01 ±	6.84E-01	2.30E+00
	10/01/12 - 11/01/12		3.69E+00 ±	9.20E-01	2.42E+00
	11/01/12 - 12/03/12		1.11E+00 ±	8.05E-01	2.58E+00
	12/03/12 - 01/03/13		1.41E-01 ±	7.53E-01	2.65E+00

TABLE B-3.2

GROSS BETA IN STORM DRAIN WATER - SUMMARY

Results in pCi per liter

Average Activity	Activity Low	Activity High	Number of Samples	Number of Positive IDs
1.37E+00	6.81E-02	3.69E+00	12	1

TABLE B-4.1

TRITIUM IN STORM DRAIN WATER

Results in pCi per liter

Location	Collection Period	RQ	Activity	Error
ST-101	01/05/12 - 02/06/12	+	4.88E+03 ±	1.93E+02
	02/06/12 - 03/05/12	+	1.44E+03 ±	1.43E+02
	03/05/12 - 04/03/12	+	5.88E+02 ±	1.15E+02
	04/03/12 - 05/07/12	+	3.66E+02 ±	1.07E+02
	05/07/12 - 06/04/12		2.13E+02 ±	1.07E+02
	06/04/12 - 07/03/12		2.77E+02 ±	1.02E+02
	07/03/12 - 08/01/12		1.41E+02 ±	9.65E+01
	08/01/12 - 09/04/12		1.57E+02 ±	9.71E+01
	09/04/12 - 10/01/12		1.88E+02 ±	1.02E+02
	10/01/12 - 11/01/12	+	1.80E+03 ±	1.40E+02
	11/01/12 - 12/03/12	+	2.53E+03 ±	1.52E+02
	12/03/12 - 01/03/13	+	7.20E+03 ±	2.25E+02

TABLE B-4.2

TRITIUM IN STORM DRAIN WATER - SUMMARY

Results in pCi per liter

Average Activity	Activity Low	Activity High	Number of Samples	Number of Positive IDs
1.65E+03	1.41E+02	7.20E+03	12	7

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

TABLE B-5.1

GROSS ALPHA IN SANITARY WASTE TREATMENT WATER

Results in pCi per liter

Collection Period	ST 102A RQ	Activity	±	Error	MDA	ST 102B RQ	Activity	±	Error	MDA
01/05/12 - 02/06/12		6.27E-01	±	9.22E-01	3.60E+00		9.66E-01	±	1.42E+00	5.55E+00
02/06/12 - 03/05/12		9.88E-01	±	1.45E+00	5.68E+00		2.89E-01	±	8.00E-01	3.32E+00
03/05/12 - 04/02/12		-4.88E-01	±	1.05E+00	4.09E+00		-1.62E+00	±	1.69E+00	6.16E+00
04/02/12 - 05/07/12		-6.15E-01	±	9.05E-01	3.53E+00		-4.68E-01	±	1.30E+00	5.39E+00
05/07/12 - 06/04/12		6.16E-01	±	9.06E-01	3.54E+00		0.00E+00	±	1.19E+00	5.28E+00
06/04/12 - 07/03/12		5.13E-01	±	8.27E-01	3.31E+00		1.43E+00	±	1.54E+00	5.76E+00
07/03/12 - 08/01/12		-1.41E+00	±	1.32E+00	4.69E+00		-7.46E-01	±	1.80E+00	6.94E+00
08/01/12 - 09/04/12		9.35E-01	±	1.12E+00	4.18E+00		-1.62E+00	±	1.52E+00	5.43E+00
09/04/12 - 10/01/12		9.13E-01	±	7.64E-01	2.72E+00		-3.17E-01	±	1.08E+00	4.73E+00
10/01/12 - 11/01/12		1.85E+00	±	1.22E+00	4.09E+00		2.07E+00	±	1.58E+00	5.42E+00
11/01/12 - 12/03/12		2.76E-01	±	9.15E-01	3.70E+00		-1.95E+00	±	1.51E+00	5.23E+00
12/03/12 - 01/03/13		0.00E+00	±	8.17E-01	3.64E+00		-1.34E+00	±	1.09E+00	3.85E+00

TABLE B-5.2

GROSS ALPHA IN SANITARY WASTE TREATMENT WATER - SUMMARY

Results in pCi per liter

Location	Average Activity	Activity Low	Activity High	Number of Samples	Number of Positive IDs
ST 102A	3.51E-01	-1.41E+00	1.85E+00	12	0
ST 102B	-2.75E-01	-1.95E+00	2.07E+00	12	0

TABLE B-6.1

GROSS BETA IN SANITARY WASTE TREATMENT WATER

Results in pCi per liter

Collection Period	ST 102A RQ	Activity	±	Error	MDA	ST 102B RQ	Activity	±	Error	MDA
01/05/12 - 02/06/12	+	7.97E+00	±	1.11E+00	2.54E+00	+	1.49E+01	±	1.42E+00	2.69E+00
02/06/12 - 03/05/12	+	5.53E+00	±	1.04E+00	2.67E+00	+	1.21E+01	±	1.25E+00	2.49E+00
03/05/12 - 04/02/12	+	3.83E+00	±	8.66E-01	2.33E+00	+	1.46E+01	±	1.36E+00	2.46E+00
04/02/12 - 05/07/12	+	3.80E+00	±	8.88E-01	2.44E+00	+	1.41E+01	±	1.36E+00	2.58E+00
05/07/12 - 06/04/12	+	4.95E+00	±	9.53E-01	2.46E+00	+	1.62E+01	±	1.44E+00	2.60E+00
06/04/12 - 07/03/12		2.32E+00	±	8.81E-01	2.72E+00	+	1.25E+01	±	1.37E+00	2.93E+00
07/03/12 - 08/01/12	+	5.18E+00	±	9.06E-01	2.16E+00	+	1.66E+01	±	1.41E+00	2.28E+00
08/01/12 - 09/04/12	+	4.53E+00	±	9.03E-01	2.30E+00	+	1.19E+01	±	1.24E+00	2.38E+00
09/04/12 - 10/01/12	+	4.65E+00	±	9.13E-01	2.35E+00	+	1.63E+01	±	1.43E+00	2.54E+00
10/01/12 - 11/01/12	+	5.71E+00	±	9.99E-01	2.47E+00	+	1.46E+01	±	1.38E+00	2.57E+00
11/01/12 - 12/03/12	+	5.26E+00	±	9.97E-01	2.62E+00	+	1.22E+01	±	1.32E+00	2.75E+00
12/03/12 - 01/03/13	+	6.83E+00	±	1.10E+00	2.77E+00	+	2.16E+01	±	1.61E+00	2.79E+00

TABLE B-6.2

GROSS BETA IN SANITARY WASTE TREATMENT WATER - SUMMARY

Results in pCi per liter

Location	Average Activity	Activity Low	Activity High	Number of Samples	Number of Positive IDs
ST 102A	5.05E+00	2.32E+00	7.97E+00	12	11
ST 102B	1.48E+01	1.19E+01	2.16E+01	12	12

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

Table B-7.1

GAMMA SPECTROMETRY RESULTS OF SANITARY WASTE TREATMENT WATER
STATION 102A

Results in pCi/liter, corrected for decay during collection period

Location 102a collected 2/6/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-1.83E+01	±	3.73E+01	5.20E+01
CR-51		1.80E+01	±	2.10E+01	3.29E+01
MN-54		5.11E-01	±	1.78E+00	2.85E+00
CO-58		0.00E+00	±	2.13E+00	3.50E+00
FE-59		-1.87E+00	±	6.35E+00	1.01E+01
CO-60		-4.42E-01	±	2.17E+00	3.49E+00
ZN-65		2.08E-02	±	3.15E+00	5.17E+00
ZRNB-95		2.11E+00	±	3.41E+00	5.27E+00
I-131		4.99E+00	±	5.23E+00	8.05E+00
CS-134		7.29E-01	±	1.55E+00	2.45E+00
CS-137		-1.01E+00	±	2.12E+00	3.36E+00
BALA140		-1.76E+00	±	5.93E+00	9.45E+00
BI-214	+	9.71E+00	±	5.12E+00	8.50E+00
RA-226		9.95E+00	±	4.01E+01	7.24E+01

Location 102a collected 3/5/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-2.21E+01	±	4.07E+01	5.21E+01
CR-51		-5.13E+00	±	2.25E+01	3.66E+01
MN-54		-4.89E-03	±	1.46E+00	2.39E+00
CO-58		1.23E+00	±	1.92E+00	2.96E+00
FE-59		2.34E-01	±	5.30E+00	8.66E+00
CO-60		2.73E-01	±	1.48E+00	2.37E+00
ZN-65		-6.60E-01	±	4.05E+00	6.55E+00
ZRNB-95		-5.21E-01	±	3.16E+00	5.10E+00
I-131		-5.15E-01	±	5.86E+00	9.58E+00
CS-134		-9.48E-01	±	1.96E+00	3.11E+00
CS-137		1.22E-01	±	1.74E+00	2.84E+00
BALA140		-8.97E-01	±	5.37E+00	8.65E+00
BI-214		-2.48E+00	±	7.30E+00	8.69E+00
RA-226		-1.08E+01	±	4.84E+01	7.26E+01

Location 102a collected 4/2/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-2.41E+01	±	4.63E+01	4.92E+01
CR-51		-5.91E+00	±	2.59E+01	4.21E+01
MN-54		5.76E-01	±	2.00E+00	3.19E+00
CO-58		-8.16E-01	±	2.41E+00	3.84E+00
FE-59		-2.06E+00	±	6.22E+00	9.80E+00
CO-60		1.87E-02	±	1.88E+00	3.10E+00
ZN-65		9.65E-01	±	4.65E+00	7.48E+00
ZRNB-95		2.12E+00	±	4.55E+00	7.18E+00
I-131		3.80E+00	±	6.24E+00	9.80E+00
CS-134		-1.19E+00	±	2.28E+00	3.62E+00
CS-137		-3.32E-01	±	2.28E+00	3.70E+00
BALA140		-1.34E-01	±	5.57E+00	9.13E+00
BI-214		-7.84E+00	±	1.25E+01	1.09E+01
RA-226		-6.51E+00	±	5.75E+01	9.73E+01

Location 102a collected 5/7/2012

Nuclide	RQ	Activity		Error	MDA
K-40		7.87E+00	±	2.59E+01	5.10E+01
CR-51		-1.14E+00	±	2.27E+01	3.73E+01
MN-54		-8.78E-01	±	2.30E+00	3.65E+00
CO-58		1.84E-01	±	1.99E+00	3.23E+00
FE-59		-6.20E-02	±	6.02E+00	9.89E+00
CO-60		-1.60E-01	±	1.52E+00	2.46E+00
ZN-65		-1.21E+00	±	4.06E+00	6.43E+00
ZRNB-95		2.00E-02	±	3.91E+00	6.42E+00
I-131		4.36E+00	±	7.82E+00	1.24E+01
CS-134		1.06E+00	±	2.04E+00	3.21E+00
CS-137		1.48E-02	±	2.21E+00	3.64E+00
BALA140		1.36E+00	±	6.44E+00	1.03E+01
BI-214		-5.27E+00	±	8.88E+00	1.05E+01
RA-226		-3.65E+01	±	8.58E+01	9.96E+01

Location 102a collected 6/4/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-3.36E+01	±	5.93E+01	5.49E+01
CR-51		-1.25E+01	±	2.41E+01	3.84E+01
MN-54		5.86E-01	±	1.91E+00	3.06E+00
CO-58		-9.47E-01	±	2.37E+00	3.77E+00
FE-59		-1.23E-01	±	6.04E+00	9.90E+00
CO-60		7.30E-02	±	1.81E+00	2.96E+00
ZN-65		-1.54E+00	±	4.29E+00	6.81E+00
ZRNB-95		-9.74E-01	±	4.03E+00	6.50E+00
I-131		-3.55E-01	±	8.59E+00	1.41E+01
CS-134		1.09E-02	±	1.78E+00	2.92E+00
CS-137		6.64E-02	±	2.19E+00	3.58E+00
BALA140		-1.98E+00	±	6.69E+00	1.06E+01
BI-214		-4.79E-01	±	4.90E+00	8.42E+00
RA-226		-8.44E+00	±	4.83E+01	7.51E+01

Location 102a collected 7/3/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-8.18E+00	±	3.02E+01	5.23E+01
CR-51		-6.73E+00	±	2.39E+01	3.87E+01
MN-54		-3.12E-02	±	1.65E+00	2.70E+00
CO-58		-1.67E-01	±	1.95E+00	3.17E+00
FE-59		-2.22E-01	±	5.28E+00	8.64E+00
CO-60		2.80E-01	±	1.83E+00	2.96E+00
ZN-65		-7.84E-02	±	3.77E+00	6.19E+00
ZRNB-95		-1.69E+00	±	4.31E+00	6.87E+00
I-131		5.62E+00	±	7.37E+00	1.15E+01
CS-134		-6.22E-01	±	1.85E+00	2.96E+00
CS-137		4.22E-02	±	1.99E+00	3.26E+00
BALA140		0.00E+00	±	4.52E+00	7.44E+00
BI-214		-1.92E+00	±	5.98E+00	8.09E+00
RA-226		1.23E+01	±	3.98E+01	7.17E+01

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

Table B-7.1

GAMMA SPECTROMETRY RESULTS OF SANITARY WASTE TREATMENT WATER
STATION 102A

Results in pCi/liter, corrected for decay during collection period

Location 102a collected 8/1/2012

Nuclide	RQ	Activity	±	Error	MDA
K-40		-3.55E+01	±	6.26E+01	5.50E+01
CR-51		4.59E+00	±	2.03E+01	3.30E+01
MN-54		-1.61E-01	±	2.16E+00	3.53E+00
CO-58		0.00E+00	±	1.52E+00	2.50E+00
FE-59		9.59E-01	±	5.70E+00	9.18E+00
CO-60		-1.33E-01	±	1.92E+00	3.13E+00
ZN-65		2.72E-02	±	4.09E+00	6.72E+00
ZRNB-95		1.49E+00	±	3.71E+00	5.87E+00
I-131		-4.18E+00	±	7.44E+00	1.18E+01
CS-134		-9.53E-01	±	2.04E+00	3.26E+00
CS-137		-8.46E-01	±	1.99E+00	3.16E+00
BALA140		-1.52E-02	±	5.89E+00	9.69E+00
BI-214		4.50E-01	±	4.58E+00	8.48E+00
RA-226		-1.81E+01	±	5.55E+01	7.30E+01

Location 102a collected 9/4/2012

Nuclide	RQ	Activity	±	Error	MDA
K-40		-5.27E+01	±	1.01E+02	5.32E+01
CR-51		-8.63E+00	±	2.34E+01	3.76E+01
MN-54		-1.91E-01	±	1.87E+00	3.05E+00
CO-58		-1.55E-02	±	1.81E+00	2.97E+00
FE-59		4.84E-01	±	5.47E+00	8.89E+00
CO-60		1.34E-01	±	1.71E+00	2.79E+00
ZN-65		1.86E+00	±	3.40E+00	5.20E+00
ZRNB-95		1.30E+00	±	3.37E+00	5.32E+00
I-131		-4.77E+00	±	9.44E+00	1.50E+01
CS-134		8.01E-03	±	1.94E+00	3.18E+00
CS-137		-4.70E-01	±	2.06E+00	3.33E+00
BALA140		-6.78E-02	±	6.29E+00	1.03E+01
BI-214		3.34E-01	±	4.61E+00	8.54E+00
RA-226		2.71E+00	±	4.01E+01	7.28E+01

Location 102a collected 10/1/2012

Nuclide	RQ	Activity	±	Error	MDA
K-40		-3.58E+01	±	5.84E+01	5.29E+01
CR-51		3.82E+00	±	1.59E+01	2.57E+01
MN-54		-2.09E-01	±	1.71E+00	2.77E+00
CO-58		-7.89E-01	±	2.22E+00	3.54E+00
FE-59		0.00E+00	±	7.03E+00	1.16E+01
CO-60		5.18E-01	±	1.76E+00	2.79E+00
ZN-65		0.00E+00	±	6.52E+00	1.07E+01
ZRNB-95		3.36E-02	±	2.73E+00	4.48E+00
I-131		3.22E+00	±	3.90E+00	5.96E+00
CS-134		-1.22E+00	±	2.06E+00	3.26E+00
CS-137		2.32E-01	±	1.86E+00	3.03E+00
BALA140		-8.43E-01	±	5.15E+00	8.31E+00
BI-214		2.73E-01	±	4.34E+00	8.14E+00
RA-226		-2.84E+01	±	6.90E+01	7.43E+01

Location 102a collected 11/1/2012

Nuclide	RQ	Activity	±	Error	MDA
K-40		-2.10E+01	±	4.42E+01	5.34E+01
CR-51		1.01E+01	±	2.65E+01	4.29E+01
MN-54		7.05E-01	±	2.03E+00	3.26E+00
CO-58		1.42E+00	±	2.23E+00	3.49E+00
FE-59		-1.28E+00	±	6.73E+00	1.09E+01
CO-60		-2.03E-02	±	1.79E+00	2.95E+00
ZN-65		0.00E+00	±	6.73E+00	1.11E+01
ZRNB-95		-6.79E-01	±	4.14E+00	6.73E+00
I-131		2.95E+00	±	1.02E+01	1.65E+01
CS-134		-7.14E-01	±	2.28E+00	3.68E+00
CS-137		-3.14E-01	±	2.25E+00	3.67E+00
BALA140		0.00E+00	±	5.88E+00	9.66E+00
BI-214		-3.45E+00	±	8.09E+00	8.58E+00
RA-226		-1.30E+01	±	6.22E+01	9.43E+01

Location 102a collected 12/3/2012

Nuclide	RQ	Activity	±	Error	MDA
K-40		-4.89E+01	±	8.77E+01	5.32E+01
CR-51		3.00E-02	±	2.06E+01	3.38E+01
MN-54		1.42E-01	±	1.99E+00	3.25E+00
CO-58		-1.58E-02	±	1.43E+00	2.34E+00
FE-59		-3.39E+00	±	7.03E+00	1.10E+01
CO-60		2.59E-01	±	1.73E+00	2.79E+00
ZN-65		-2.23E+00	±	4.76E+00	7.50E+00
ZRNB-95		-1.28E+00	±	4.44E+00	7.15E+00
I-131		5.21E-01	±	5.91E+00	9.66E+00
CS-134		-2.99E-01	±	1.92E+00	3.13E+00
CS-137		2.96E-01	±	1.93E+00	3.14E+00
BALA140		-1.86E-01	±	3.89E+00	6.34E+00
BI-214		8.51E-02	±	4.59E+00	8.52E+00
RA-226		-5.72E+00	±	4.77E+01	7.74E+01

Location 102a collected 1/3/2013

Nuclide	RQ	Activity	±	Error	MDA
K-40		-1.14E+01	±	3.89E+01	5.24E+01
CR-51		0.00E+00	±	2.58E+01	4.25E+01
MN-54		-3.03E-01	±	1.75E+00	2.83E+00
CO-58		8.99E-01	±	2.07E+00	3.26E+00
FE-59		2.63E+00	±	5.83E+00	9.05E+00
CO-60		1.15E+00	±	2.01E+00	3.33E+00
ZN-65		5.88E-01	±	3.51E+00	5.65E+00
ZRNB-95		-1.22E+00	±	3.83E+00	6.13E+00
I-131		-2.82E+00	±	7.57E+00	1.22E+01
CS-134		-5.95E-01	±	2.18E+00	3.53E+00
CS-137		2.27E-01	±	2.15E+00	3.51E+00
BALA140		1.18E+00	±	5.54E+00	8.85E+00
BI-214		7.88E+00	±	4.89E+00	8.29E+00
RA-226		1.17E+01	±	4.31E+01	7.60E+01

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

Table B-7.1

GAMMA SPECTROMETRY RESULTS OF SANITARY WASTE TREATMENT WATER
STATION 102B

Results in pCi/liter, corrected for decay during collection period

Location 102b collected 2/6/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-2.62E+01	±	5.82E+01	5.34E+01
CR-51		3.43E+00	±	2.47E+01	4.03E+01
MN-54		-3.17E-01	±	2.10E+00	3.40E+00
CO-58		5.64E-01	±	1.99E+00	3.18E+00
FE-59		-2.05E+00	±	6.85E+00	1.09E+01
CO-60		7.38E-02	±	2.16E+00	3.54E+00
ZN-65		-3.23E+00	±	6.17E+00	9.72E+00
ZRNB-95		1.87E+00	±	4.25E+00	6.71E+00
I-131		5.05E+00	±	5.12E+00	7.73E+00
CS-134		-6.25E-01	±	2.54E+00	4.10E+00
CS-137		0.00E+00	±	2.47E+00	4.06E+00
BALA140		1.93E-01	±	3.73E+00	6.08E+00
BI-214		4.73E-01	±	5.55E+00	1.08E+01
RA-226		-7.61E+00	±	6.01E+01	9.98E+01

Location 102b collected 3/5/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-3.81E+00	±	2.89E+01	5.39E+01
CR-51		-8.16E-02	±	2.10E+01	3.45E+01
MN-54		-9.57E-01	±	2.00E+00	3.16E+00
CO-58		3.36E-01	±	1.73E+00	2.78E+00
FE-59		-1.41E+00	±	6.00E+00	9.59E+00
CO-60		3.77E-01	±	1.90E+00	3.05E+00
ZN-65		-3.78E-02	±	4.16E+00	6.83E+00
ZRNB-95		2.22E+00	±	2.44E+00	3.47E+00
I-131		-3.09E+00	±	8.70E+00	1.40E+01
CS-134		-1.06E+00	±	1.97E+00	3.13E+00
CS-137		-6.30E-01	±	1.96E+00	3.14E+00
BALA140		1.64E+00	±	5.35E+00	8.39E+00
BI-214		-1.88E+00	±	5.81E+00	7.97E+00
RA-226		-1.22E+01	±	5.08E+01	7.40E+01

Location 102b collected 4/2/2012

Nuclide	RQ	Activity		Error	MDA
K-40		3.62E-03	±	2.52E+01	5.12E+01
CR-51		1.25E+00	±	2.83E+01	4.63E+01
MN-54		-5.40E-01	±	2.20E+00	3.53E+00
CO-58		0.00E+00	±	1.97E+00	3.24E+00
FE-59		0.00E+00	±	7.86E+00	1.29E+01
CO-60		-1.60E-01	±	2.12E+00	3.45E+00
ZN-65		-8.71E-01	±	4.53E+00	7.29E+00
ZRNB-95		9.21E-03	±	3.44E+00	5.65E+00
I-131		9.51E+00	±	7.80E+00	1.18E+01
CS-134		0.00E+00	±	3.53E+00	5.81E+00
CS-137		2.21E-01	±	1.71E+00	2.78E+00
BALA140		-2.09E-01	±	5.39E+00	8.82E+00
BI-214		-8.01E+00	±	1.35E+01	1.13E+01
RA-226		1.58E+01	±	5.27E+01	9.57E+01

Location 102b collected 5/7/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-1.88E+01	±	3.91E+01	5.31E+01
CR-51		1.62E+00	±	2.17E+01	3.55E+01
MN-54		-1.76E-02	±	1.61E+00	2.65E+00
CO-58		-2.21E-01	±	1.73E+00	2.80E+00
FE-59		-6.17E-01	±	5.87E+00	9.52E+00
CO-60		-4.04E-01	±	1.91E+00	3.07E+00
ZN-65		-9.45E-01	±	3.87E+00	6.20E+00
ZRNB-95		4.59E-01	±	3.52E+00	5.72E+00
I-131		1.19E+00	±	6.95E+00	1.13E+01
CS-134		-1.10E-01	±	1.71E+00	2.80E+00
CS-137		-9.06E-01	±	2.21E+00	3.53E+00
BALA140		-1.09E+00	±	5.13E+00	8.17E+00
BI-214		-2.37E+00	±	6.48E+00	8.10E+00
RA-226		-5.04E+00	±	4.24E+01	7.10E+01

Location 102b collected 6/4/2012

Nuclide	RQ	Activity		Error	MDA
K-40		7.79E+00	±	2.70E+01	5.26E+01
CR-51		-1.02E+00	±	2.57E+01	4.21E+01
MN-54		-8.83E-02	±	1.80E+00	2.95E+00
CO-58		-1.48E-01	±	2.26E+00	3.69E+00
FE-59		-2.15E-01	±	5.97E+00	9.77E+00
CO-60		5.71E-01	±	1.94E+00	3.07E+00
ZN-65		0.00E+00	±	7.04E+00	1.16E+01
ZRNB-95		-2.88E-01	±	3.32E+00	5.39E+00
I-131		-1.62E+00	±	7.78E+00	1.26E+01
CS-134		0.00E+00	±	4.19E+00	6.89E+00
CS-137		-7.52E-01	±	2.31E+00	3.70E+00
BALA140		-1.73E+00	±	6.86E+00	1.09E+01
BI-214		-4.04E+00	±	8.25E+00	1.08E+01
RA-226		-2.74E+01	±	7.54E+01	9.85E+01

Location 102b collected 7/3/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-5.13E+00	±	3.31E+01	5.59E+01
CR-51		1.64E+01	±	2.43E+01	3.82E+01
MN-54		-1.84E-02	±	1.81E+00	2.96E+00
CO-58		-4.62E-01	±	2.34E+00	3.77E+00
FE-59		3.66E+00	±	6.81E+00	1.05E+01
CO-60		0.00E+00	±	2.64E+00	4.34E+00
ZN-65		-1.81E+00	±	4.80E+00	7.58E+00
ZRNB-95		4.79E+00	±	4.47E+00	6.59E+00
I-131		1.25E+00	±	8.83E+00	1.44E+01
CS-134		-1.56E-01	±	3.63E+00	5.96E+00
CS-137		-3.55E-01	±	2.15E+00	3.48E+00
BALA140		2.64E-01	±	5.87E+00	9.59E+00
BI-214		-2.01E+00	±	6.20E+00	1.02E+01
RA-226		-1.29E+01	±	5.73E+01	9.15E+01

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

Table B-7.1

GAMMA SPECTROMETRY RESULTS OF SANITARY WASTE TREATMENT WATER

STATION 102B

Results in pCi/liter, corrected for decay during collection period

Location 102b collected 8/1/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-2.21E+01	±	4.35E+01	5.41E+01
CR-51		8.80E+00	±	2.23E+01	3.59E+01
MN-54		3.69E-01	±	1.90E+00	3.07E+00
CO-58		1.00E-01	±	1.92E+00	3.14E+00
FE-59		-1.26E+00	±	6.01E+00	9.63E+00
CO-60		1.10E+00	±	1.86E+00	2.84E+00
ZN-65		2.11E-02	±	3.86E+00	6.35E+00
ZRNB-95		-7.37E-01	±	3.76E+00	6.07E+00
I-131		2.41E+00	±	6.65E+00	1.06E+01
CS-134		0.00E+00	±	2.25E+00	3.70E+00
CS-137		1.08E+00	±	1.90E+00	2.97E+00
BALA140		1.14E+00	±	4.53E+00	7.12E+00
BI-214		2.57E+00	±	4.97E+00	8.87E+00
RA-226		-1.18E+01	±	5.03E+01	7.38E+01

Location 102b collected 9/4/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-8.60E+00	±	3.10E+01	5.28E+01
CR-51		5.40E+00	±	2.19E+01	3.55E+01
MN-54		-7.45E-01	±	2.10E+00	3.36E+00
CO-58		-5.96E-01	±	2.37E+00	3.81E+00
FE-59		-1.70E+00	±	5.85E+00	9.27E+00
CO-60		3.88E-02	±	1.77E+00	2.90E+00
ZN-65		1.67E-01	±	4.06E+00	6.65E+00
ZRNB-95		8.97E-01	±	3.86E+00	6.21E+00
I-131		-4.82E+00	±	9.52E+00	1.52E+01
CS-134		-5.39E-01	±	1.80E+00	2.89E+00
CS-137		5.56E-01	±	1.74E+00	2.77E+00
BALA140		-2.67E+00	±	7.52E+00	1.19E+01
BI-214		2.35E-02	±	4.20E+00	7.97E+00
RA-226		-1.84E+01	±	5.79E+01	7.51E+01

Location 102b collected 10/1/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-1.07E+01	±	3.26E+01	5.30E+01
CR-51		2.55E+00	±	1.98E+01	3.23E+01
MN-54		-1.49E-02	±	1.59E+00	2.61E+00
CO-58		1.06E-01	±	1.50E+00	2.44E+00
FE-59		0.00E+00	±	7.89E+00	1.30E+01
CO-60		1.19E+00	±	1.55E+00	2.27E+00
ZN-65		3.19E-01	±	3.55E+00	5.77E+00
ZRNB-95		6.51E-01	±	3.48E+00	5.63E+00
I-131		-1.83E+00	±	6.06E+00	9.78E+00
CS-134		-4.07E-01	±	1.84E+00	2.98E+00
CS-137		8.96E-01	±	1.75E+00	2.74E+00
BALA140		4.90E-01	±	4.82E+00	7.83E+00
BI-214		3.07E+00	±	4.64E+00	8.34E+00
RA-226		1.16E+01	±	3.90E+01	7.05E+01

Location 102b collected 11/1/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-2.38E+01	±	4.67E+01	5.50E+01
CR-51		-9.41E+00	±	2.47E+01	3.97E+01
MN-54		1.36E+00	±	1.80E+00	2.74E+00
CO-58		6.21E-01	±	1.86E+00	2.94E+00
FE-59		-4.47E-01	±	6.38E+00	1.04E+01
CO-60		1.47E+00	±	1.69E+00	2.47E+00
ZN-65		-7.48E-01	±	3.70E+00	5.94E+00
ZRNB-95		7.06E-01	±	3.61E+00	5.82E+00
I-131		-3.11E+00	±	9.61E+00	1.55E+01
CS-134		-8.14E-03	±	2.04E+00	3.35E+00
CS-137		-5.97E-01	±	1.85E+00	2.96E+00
BALA140		-8.77E-02	±	5.67E+00	9.31E+00
BI-214		3.65E+00	±	4.99E+00	8.82E+00
RA-226		-8.66E+00	±	5.03E+01	7.73E+01

Location 102b collected 12/3/2012

Nuclide	RQ	Activity		Error	MDA
K-40		1.08E+01	±	2.72E+01	5.43E+01
CR-51		2.30E+00	±	2.33E+01	3.81E+01
MN-54		3.54E-01	±	2.04E+00	3.29E+00
CO-58		5.47E-01	±	2.20E+00	3.52E+00
FE-59		-1.71E+00	±	5.88E+00	9.28E+00
CO-60		1.64E-02	±	2.02E+00	3.31E+00
ZN-65		8.98E-01	±	4.68E+00	7.54E+00
ZRNB-95		1.10E+00	±	3.81E+00	6.07E+00
I-131		1.85E+00	±	6.42E+00	1.03E+01
CS-134		1.22E+00	±	1.91E+00	2.97E+00
CS-137		-4.67E-01	±	2.10E+00	3.38E+00
BALA140		-1.00E+00	±	5.53E+00	8.87E+00
BI-214		2.26E+00	±	4.79E+00	8.78E+00
RA-226		-8.41E+00	±	5.68E+01	9.50E+01

Location 102b collected 1/3/2013

Nuclide	RQ	Activity		Error	MDA
K-40		-1.46E+00	±	2.60E+01	4.91E+01
CR-51		9.67E+00	±	2.33E+01	3.75E+01
MN-54		-7.24E-01	±	2.01E+00	3.20E+00
CO-58		0.00E+00	±	2.21E+00	3.63E+00
FE-59		-9.38E-01	±	6.06E+00	9.79E+00
CO-60		-8.02E-01	±	8.32E+00	3.44E+00
ZN-65		-5.53E-02	±	3.69E+00	6.06E+00
ZRNB-95		-9.41E-01	±	3.92E+00	6.31E+00
I-131		-2.25E+00	±	7.52E+00	1.21E+01
CS-134		-3.27E-01	±	1.88E+00	3.05E+00
CS-137		3.97E-01	±	1.59E+00	2.55E+00
BALA140		-2.34E-01	±	6.00E+00	9.82E+00
BI-214		-1.37E+00	±	5.48E+00	8.13E+00
RA-226		1.10E+01	±	4.60E+01	8.04E+01

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

TABLE B-7.2

GAMMA SPECTROMETRY RESULTS OF SANITARY WASTE TREATMENT WATER - SUMMARY

Results in pCi per liter, corrected for decay during collection period

Location	Nuclide	Average Activity	Activity Low	Activity High	Average MDA	Number of Samples	Number of Positive IDs
102A	K-40	-2.53E+01	-5.27E+01	7.87E+00	5.26E+01	12	0
	CR-51	-2.92E-01	-1.25E+01	1.80E+01	3.68E+01	12	0
	MN-54	6.19E-02	-8.78E-01	7.05E-01	3.04E+00	12	0
	CO-58	8.25E-02	-9.47E-01	1.42E+00	3.22E+00	12	0
	FE-59	-3.92E-01	-3.39E+00	2.63E+00	9.80E+00	12	0
	CO-60	1.63E-01	-4.42E-01	1.15E+00	2.93E+00	12	0
	ZN-65	-1.88E-01	-2.23E+00	1.86E+00	7.12E+00	12	0
	ZRNB-95	6.08E-02	-1.69E+00	2.12E+00	6.09E+00	12	0
	I-131	1.07E+00	-4.77E+00	5.62E+00	1.14E+01	12	0
	CS-134	-3.95E-01	-1.22E+00	1.06E+00	3.19E+00	12	0
	CS-137	-1.65E-01	-1.01E+00	2.96E-01	3.35E+00	12	0
	BALA140	-2.80E-01	-1.98E+00	1.36E+00	9.06E+00	12	0
	BI-214	-2.25E-01	-7.84E+00	9.71E+00	8.81E+00	12	1
	RA-226	-7.57E+00	-3.65E+01	1.23E+01	7.97E+01	12	0
102B	K-40	-8.50E+00	-2.62E+01	1.08E+01	5.32E+01	12	0
	CR-51	3.41E+00	-9.41E+00	1.64E+01	3.80E+01	12	0
	MN-54	-1.11E-01	-9.57E-01	1.36E+00	3.08E+00	12	0
	CO-58	7.05E-02	-5.96E-01	6.21E-01	3.24E+00	12	0
	FE-59	-5.57E-01	-2.05E+00	3.66E+00	1.04E+01	12	0
	CO-60	2.88E-01	-8.02E-01	1.47E+00	3.15E+00	12	0
	ZN-65	-5.25E-01	-3.23E+00	8.98E-01	7.29E+00	12	0
	ZRNB-95	8.95E-01	-9.41E-01	4.79E+00	5.80E+00	12	0
	I-131	3.77E-01	-4.82E+00	9.51E+00	1.21E+01	12	0
	CS-134	-1.68E-01	-1.06E+00	1.22E+00	3.97E+00	12	0
	CS-137	-4.65E-02	-9.06E-01	1.08E+00	3.17E+00	12	0
	BALA140	-2.73E-01	-2.67E+00	1.64E+00	8.89E+00	12	0
	BI-214	-6.37E-01	-8.01E+00	3.65E+00	9.18E+00	12	0
	RA-226	-6.17E+00	-2.74E+01	1.58E+01	8.36E+01	12	0

TABLE B-8.1

TRITIUM IN SANITARY WASTE TREATMENT WATER

Results in pCi per liter, MDA for all samples is 300 pCi/l

Location	Description	Collection Period			RQ	Activity		Error
102A	FFTF-Effluent	01/05/12	-	02/06/12	+	1.77E+03	±	1.39E+02
		02/06/12	-	03/05/12	+	1.60E+03	±	1.48E+02
		03/05/12	-	04/02/12	+	1.74E+03	±	1.41E+02
		04/02/12	-	05/07/12	+	1.75E+03	±	1.39E+02
		05/07/12	-	06/04/12	+	1.63E+03	±	1.42E+02
		06/04/12	-	07/03/12	+	1.67E+03	±	1.36E+02
		07/03/12	-	08/01/12	+	1.67E+03	±	1.35E+02
		08/01/12	-	09/04/12	+	1.58E+03	±	1.37E+02
		09/04/12	-	10/01/12	+	1.67E+03	±	1.39E+02
		10/01/12	-	11/01/12	+	1.69E+03	±	1.38E+02
		11/01/12	-	12/03/12	+	1.68E+03	±	1.35E+02
		12/03/12	-	01/03/13	+	1.54E+03	±	1.28E+02
102B	Monthly Headworks	01/05/12	-	02/06/12	+	6.69E+02	±	1.13E+02
		02/06/12	-	03/05/12		2.70E+02	±	1.20E+02
		03/05/12	-	04/02/12	+	5.11E+02	±	1.13E+02
		04/02/12	-	05/07/12	+	4.71E+02	±	1.11E+02
		05/07/12	-	06/04/12	+	4.93E+02	±	1.15E+02
		06/04/12	-	07/03/12	+	4.63E+02	±	1.07E+02
		07/03/12	-	08/01/12	+	4.66E+02	±	1.06E+02
		08/01/12	-	09/04/12	+	5.25E+02	±	1.13E+02
		09/04/12	-	10/01/12	+	4.98E+02	±	1.10E+02
		10/01/12	-	11/01/12	+	5.72E+02	±	1.09E+02
		11/01/12	-	12/03/12	+	5.05E+02	±	1.08E+02
		12/03/12	-	01/03/13	+	4.12E+02	±	1.00E+02

TABLE B-8.2

TRITIUM IN SANITARY WASTE TREATMENT WATER - SUMMARY

Results in pCi per liter

Location Description	Average Activity	Activity Low	Activity High	Number of Samples	Number of Positive IDs
102A FFTF Effluent	1.67E+03	1.54E+03	1.77E+03	12	12
102B Monthly Headworks	4.88E+02	2.70E+02	6.69E+02	12	11

RQ= results Qualifier. If blank, result is less than detection limit. If "+", result is above the detection limit.

TABLE B-10.1

GAMMA SPECTROMETRY RESULTS OF GROUNDWATER MONITORING SAMPLES

Results in pCi per liter

Station MW-3 collected 1/25/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-1.96E+01	±	9.32E+01	9.67E+01
MN-54		-1.67E+00	±	4.67E+00	7.41E+00
CO-58		-1.53E+00	±	4.52E+00	7.17E+00
FE-59		0.00E+00	±	1.08E+01	1.78E+01
CO-60		5.06E-03	±	3.38E+00	5.55E+00
ZN-65		1.35E+00	±	3.98E+01	8.91E+00
ZRNB-95		1.72E-01	±	5.81E+00	9.51E+00
I-131		1.59E+00	±	4.51E+00	7.21E+00
CS-134		-4.90E+00	±	6.11E+00	9.54E+00
CS-137		-1.41E+00	±	4.40E+00	6.99E+00
BALA140		-4.94E-01	±	5.69E+00	9.24E+00
BI-214	+	2.78E+02	±	2.48E+01	1.78E+01

Station MW-5 collected 1/25/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-2.02E+01	±	8.18E+01	8.77E+01
MN-54		-5.78E-01	±	3.22E+00	5.15E+00
CO-58		-6.98E-01	±	3.56E+00	5.70E+00
FE-59		-3.29E+00	±	9.20E+00	1.42E+01
CO-60		0.00E+00	±	6.90E+00	1.14E+01
ZN-65		0.00E+00	±	1.56E+00	2.57E+00
ZRNB-95		1.45E+00	±	6.06E+00	9.65E+00
I-131		-1.23E+00	±	3.85E+00	6.15E+00
CS-134		-3.68E-01	±	1.47E+01	2.41E+01
CS-137		-1.92E+00	±	4.08E+00	6.34E+00
BALA140		4.17E-02	±	3.16E+00	5.18E+00
BI-214	+	1.32E+02	±	1.90E+01	1.77E+01

Station MW-6 collected 1/25/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-1.45E+01	±	6.44E+01	8.41E+01
MN-54		8.17E-03	±	3.90E+00	6.40E+00
CO-58		-1.05E+00	±	3.93E+00	6.26E+00
FE-59		-1.11E+00	±	8.95E+00	1.44E+01
CO-60		-3.22E-01	±	4.28E+00	6.96E+00
ZN-65		-1.15E+01	±	1.68E+01	2.64E+01
ZRNB-95		2.48E+00	±	5.19E+00	7.89E+00
I-131		-1.19E-01	±	3.49E+00	5.72E+00
CS-134		-1.10E+00	±	1.67E+01	2.74E+01
CS-137		-1.49E+00	±	4.32E+00	6.84E+00
BALA140		1.57E-01	±	5.09E+00	8.33E+00
BI-214	+	1.56E+02	±	1.89E+01	1.83E+01

Station MW-7 collected 1/25/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-3.11E+01	±	1.38E+02	9.60E+01
MN-54		-1.45E+00	±	4.06E+00	6.40E+00
CO-58		-7.54E-01	±	3.71E+00	5.95E+00
FE-59		1.45E+00	±	9.41E+00	1.51E+01
CO-60		1.17E+00	±	3.69E+00	5.76E+00
ZN-65		-1.07E+01	±	1.49E+01	2.32E+01
ZRNB-95		-7.57E-01	±	6.52E+00	1.06E+01
I-131		1.01E+00	±	3.01E+00	4.74E+00
CS-134		1.69E-01	±	3.37E+00	5.51E+00
CS-137		9.71E-01	±	3.29E+00	5.18E+00
BALA140		-5.80E-01	±	4.80E+00	7.72E+00
BI-214	+	1.94E+02	±	2.01E+01	1.64E+01

Station MW-8 collected 1/25/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-2.28E+01	±	7.31E+01	8.62E+01
MN-54		1.37E+00	±	2.38E+00	3.55E+00
CO-58		5.89E-01	±	2.99E+00	4.78E+00
FE-59		0.00E+00	±	1.22E+01	2.00E+01
CO-60		7.21E-01	±	2.97E+00	4.68E+00
ZN-65		-5.78E+00	±	9.10E-01	2.12E+00
ZRNB-95		-1.61E+00	±	5.69E+00	9.04E+00
I-131		1.12E+00	±	4.21E+00	6.75E+00
CS-134		-4.82E-02	±	2.81E+00	4.61E+00
CS-137		-5.67E-01	±	3.29E+00	5.30E+00
BALA140		0.00E+00	±	8.78E+00	1.44E+01
BI-214	+	1.04E+02	±	1.34E+01	1.25E+01

Station MW-9 collected 1/25/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-4.33E+01	±	1.97E+02	8.58E+01
MN-54		7.84E-01	±	3.54E+00	5.65E+00
CO-58		1.55E-01	±	3.61E+00	5.90E+00
FE-59		-1.97E+00	±	1.09E+01	1.75E+01
CO-60		-2.48E-02	±	3.73E+00	6.13E+00
ZN-65		-8.73E+00	±	1.32E+01	2.04E+01
ZRNB-95		-4.05E-01	±	5.41E+00	8.79E+00
I-131		6.36E-01	±	5.37E+00	8.73E+00
CS-134		-4.31E-02	±	3.62E+00	5.94E+00
CS-137		0.00E+00	±	3.84E+00	6.32E+00
BALA140		-4.29E-01	±	5.21E+00	8.43E+00
BI-214	+	7.73E+01	±	1.41E+01	1.71E+01

Station MW-10 collected 1/30/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-5.24E+01	±	2.03E+02	9.33E+01
MN-54		-1.16E-01	±	2.87E+00	4.69E+00
CO-58		-2.81E-03	±	3.34E+00	5.51E+00
FE-59		-2.68E+00	±	8.91E+00	1.40E+01
CO-60		-1.12E+00	±	3.86E+00	6.11E+00
ZN-65		9.93E-01	±	3.20E+01	1.14E+01
ZRNB-95		-1.12E+00	±	5.79E+00	9.32E+00
I-131		-1.19E+00	±	3.16E+00	5.05E+00
CS-134		1.44E+00	±	2.69E+00	4.15E+00
CS-137		-4.93E-01	±	3.30E+00	5.33E+00
BALA140		2.52E-01	±	3.62E+00	5.87E+00
BI-214	+	2.29E+02	±	1.90E+01	1.34E+01

Station MW-11 collected 1/30/2012

Nuclide	RQ	Activity		Error	MDA
K-40		1.78E+01	±	4.89E+01	8.95E+01
MN-54		-9.38E-01	±	4.09E+00	6.55E+00
CO-58		-2.09E+00	±	4.63E+00	7.27E+00
FE-59		-1.42E+00	±	1.00E+01	1.62E+01
CO-60		3.49E+00	±	4.19E+00	6.05E+00
ZN-65		-1.34E+00	±	4.52E+01	5.13E+00
ZRNB-95		-6.44E-01	±	6.86E+00	1.12E+01
I-131		1.56E+00	±	4.34E+00	6.95E+00
CS-134		2.94E+00	±	2.32E+01	3.80E+01
CS-137		2.45E+00	±	4.48E+00	6.94E+00
BALA140		6.95E-01	±	5.63E+00	9.10E+00
BI-214	+	3.26E+02	±	2.67E+01	1.94E+01

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

TABLE B-10.1

GAMMA SPECTROMETRY RESULTS OF GROUNDWATER MONITORING SAMPLES

Results in pCi per liter

Station MW-12 collected 1/30/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-2.56E+01	±	9.05E+01	9.45E+01
MN-54		-8.13E-01	±	3.56E+00	5.72E+00
CO-58		2.40E+00	±	2.98E+00	4.40E+00
FE-59		-3.00E-01	±	8.60E+00	1.41E+01
CO-60		-7.13E-01	±	3.78E+00	6.06E+00
ZN-65		2.98E+00	±	5.04E+00	7.36E+00
ZRNB-95		4.11E-01	±	5.29E+00	8.62E+00
I-131		-4.05E-01	±	3.95E+00	6.45E+00
CS-134		1.04E+00	±	3.53E+00	5.66E+00
CS-137		-9.10E-01	±	3.63E+00	5.82E+00
BALA140		1.04E+00	±	4.78E+00	7.62E+00
BI-214	+	2.61E+02	±	2.05E+01	1.40E+01

Station MW-13 collected 1/30/2012

Nuclide	RQ	Activity		Error	MDA
K-40		4.38E+00	±	5.06E+01	9.46E+01
MN-54		-9.12E-01	±	4.55E+00	7.32E+00
CO-58		-1.54E+00	±	4.42E+00	7.01E+00
FE-59		0.00E+00	±	7.63E+00	1.25E+01
CO-60		-7.16E-01	±	3.99E+00	6.38E+00
ZN-65		-1.06E+01	±	1.59E+01	2.50E+01
ZRNB-95		-1.39E+00	±	6.70E+00	1.07E+01
I-131		-1.70E+00	±	4.67E+00	7.47E+00
CS-134		-3.68E-01	±	1.81E+01	2.98E+01
CS-137		-2.25E+00	±	5.41E+00	8.57E+00
BALA140		-1.74E+00	±	5.30E+00	8.27E+00
BI-214	+	2.21E+02	±	2.07E+01	1.60E+01

Station MW-14 collected 1/30/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-1.56E+01	±	7.76E+01	9.30E+01
MN-54		-7.57E-01	±	3.82E+00	6.12E+00
CO-58		2.65E-01	±	2.50E+00	4.02E+00
FE-59		3.56E+00	±	9.44E+00	1.46E+01
CO-60		0.00E+00	±	5.67E+00	9.33E+00
ZN-65		-1.37E+01	±	1.63E+01	2.53E+01
ZRNB-95		-1.84E+00	±	7.04E+00	1.12E+01
I-131		-1.69E-01	±	4.12E+00	6.74E+00
CS-134		-3.68E-01	±	1.87E+01	3.08E+01
CS-137		-2.48E+00	±	5.05E+00	7.93E+00
BALA140		7.18E-01	±	4.59E+00	7.34E+00
BI-214	+	2.01E+02	±	2.04E+01	1.83E+01

Station MW-3 collected 4/25/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-5.13E+00	±	5.17E+01	8.70E+01
MN-54		6.60E-01	±	3.54E+00	5.68E+00
CO-58		-4.35E-01	±	3.69E+00	5.98E+00
FE-59		2.59E-01	±	1.00E+01	1.64E+01
CO-60		-4.64E-02	±	3.33E+00	5.47E+00
ZN-65		-3.93E+00	±	9.74E+00	1.53E+01
ZRNB-95		0.00E+00	±	8.56E+00	1.41E+01
I-131		0.00E+00	±	5.14E+00	8.45E+00
CS-134		3.69E-01	±	1.15E+01	1.90E+01
CS-137		8.70E-02	±	3.10E+00	5.07E+00
BALA140		0.00E+00	±	6.00E+00	9.87E+00
BI-214	+	4.84E+01	±	1.23E+01	1.68E+01

Station MW-5 collected 4/25/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-6.33E+01	±	1.41E+03	8.76E+01
MN-54		1.51E+00	±	3.43E+00	5.29E+00
CO-58		1.45E-02	±	3.16E+00	5.19E+00
FE-59		-2.19E-01	±	1.03E+01	1.69E+01
CO-60		-5.92E-01	±	3.72E+00	5.96E+00
ZN-65		0.00E+00	±	5.00E+00	8.22E+00
ZRNB-95		1.38E+00	±	5.49E+00	8.69E+00
I-131		2.93E+00	±	4.54E+00	6.94E+00
CS-134		-1.77E+00	±	4.01E+00	6.31E+00
CS-137		2.50E-01	±	3.51E+00	5.71E+00
BALA140		-1.55E+00	±	6.40E+00	1.01E+01
BI-214		5.57E+00	±	8.93E+00	1.65E+01

Station MW-6 collected 4/25/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-6.33E+01	±	2.53E+02	4.80E+01
MN-54		-3.07E-01	±	3.39E+00	5.51E+00
CO-58		1.70E+00	±	2.76E+00	4.03E+00
FE-59		-4.49E-01	±	9.35E+00	1.52E+01
CO-60		-1.14E-01	±	3.27E+00	5.35E+00
ZN-65		-6.38E+00	±	1.22E+01	1.91E+01
ZRNB-95		2.53E+00	±	5.76E+00	8.86E+00
I-131		1.28E+00	±	4.50E+00	7.18E+00
CS-134		-2.03E-01	±	3.64E+00	5.95E+00
CS-137		0.00E+00	±	4.19E+00	6.88E+00
BALA140		-5.07E-01	±	4.64E+00	7.44E+00
BI-214	+	3.02E+01	±	1.12E+01	1.71E+01

Station MW-7 collected 5/16/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-2.44E+01	±	1.18E+02	1.02E+02
MN-54		-7.17E-01	±	3.99E+00	6.42E+00
CO-58		8.14E-05	±	3.46E+00	6.60E+00
FE-59		2.51E+00	±	8.73E+00	1.36E+01
CO-60		2.01E+00	±	4.51E+00	6.98E+00
ZN-65		-1.10E+01	±	1.59E+01	2.48E+01
ZRNB-95		-1.43E+00	±	6.76E+00	1.08E+01
I-131		-1.45E+00	±	4.52E+00	7.26E+00
CS-134		2.57E+00	±	2.08E+01	3.41E+01
CS-137		-1.81E+00	±	5.18E+00	8.25E+00
BALA140		1.66E+00	±	5.26E+00	8.23E+00
BI-214	+	3.22E+02	±	2.53E+01	1.95E+01

Station MW-8 collected 4/25/2012

Nuclide	RQ	Activity		Error	MDA
K-40		-4.34E+01	±	1.98E+02	8.58E+01
MN-54		-1.19E-02	±	3.68E+00	6.04E+00
CO-58		-1.14E-01	±	3.66E+00	6.00E+00
FE-59		-2.10E+00	±	9.06E+00	1.43E+01
CO-60		0.00E+00	±	8.21E-01	1.35E+00
ZN-65		0.00E+00	±	1.52E+01	2.49E+01
ZRNB-95		-1.16E-01	±	4.81E+00	7.87E+00
I-131		-7.49E-02	±	4.67E+00	7.66E+00
CS-134		-2.71E+00	±	4.68E+00	7.32E+00
CS-137		7.77E-01	±	3.26E+00	5.18E+00
BALA140		3.29E+00	±	4.89E+00	6.79E+00
BI-214		1.26E+01	±	9.34E+00	1.62E+01

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

TABLE B-10.1

GAMMA SPECTROMETRY RESULTS OF GROUNDWATER MONITORING SAMPLES

Results in pCi per liter

Station MW-9 collected 4/25/2012

Nuclide	RQ	Activity	±	Error	MDA
K-40		-3.78E+01	±	1.38E+02	8.22E+01
MN-54		1.73E-01	±	3.41E+00	5.57E+00
CO-58		1.67E+00	±	3.66E+00	5.65E+00
FE-59		2.19E-01	±	8.57E+00	1.40E+01
CO-60		-8.65E-02	±	2.98E+00	4.87E+00
ZN-65		-6.74E+00	±	1.10E+01	1.69E+01
ZRNB-95		1.04E-01	±	6.12E+00	1.00E+01
I-131		-1.88E-01	±	4.63E+00	7.57E+00
CS-134		1.37E-01	±	3.68E+00	6.02E+00
CS-137		-1.23E-01	±	3.30E+00	5.40E+00
BALA140		0.00E+00	±	1.49E+00	2.45E+00
BI-214		1.71E+01	±	1.04E+01	1.74E+01

Station MW-10 collected 4/18/2012

Nuclide	RQ	Activity	±	Error	MDA
K-40		-8.55E+00	±	5.80E+01	8.79E+01
MN-54		-8.85E-01	±	3.80E+00	6.07E+00
CO-58		-1.07E+00	±	3.92E+00	6.23E+00
FE-59		-3.05E+00	±	9.82E+00	1.54E+01
CO-60		1.76E-02	±	3.07E+00	5.04E+00
ZN-65		1.66E+00	±	6.83E+00	1.08E+01
ZRNB-95		5.20E-02	±	6.78E+00	1.11E+01
I-131		2.38E+00	±	3.30E+00	5.01E+00
CS-134		1.84E-01	±	5.62E+00	9.21E+00
CS-137		-1.47E+00	±	4.34E+00	6.88E+00
BALA140		-9.06E-01	±	4.56E+00	7.22E+00
BI-214	+	1.38E+02	±	1.84E+01	1.81E+01

Station MW-11 collected 4/18/2012

Nuclide	RQ	Activity	±	Error	MDA
K-40		-2.98E+01	±	1.26E+02	9.33E+01
MN-54		0.00E+00	±	5.09E+00	8.37E+00
CO-58		1.12E-01	±	3.86E+00	6.33E+00
FE-59		0.00E+00	±	1.55E+01	2.55E+01
CO-60		1.24E+00	±	3.23E+00	4.93E+00
ZN-65		-5.83E+00	±	1.28E+01	2.01E+01
ZRNB-95		-1.81E+00	±	6.45E+00	1.02E+01
I-131		-7.98E-01	±	3.97E+00	6.40E+00
CS-134		-3.68E-01	±	1.38E+01	2.27E+01
CS-137		2.78E+00	±	3.93E+00	5.91E+00
BALA140		-6.49E-01	±	4.75E+00	7.62E+00
BI-214	+	1.22E+02	±	1.75E+01	1.72E+01

Station MW-12 collected 4/18/2012

Nuclide	RQ	Activity	±	Error	MDA
K-40		-2.53E+01	±	1.15E+02	9.82E+01
MN-54		7.97E-01	±	3.48E+00	5.54E+00
CO-58		-3.40E-01	±	3.63E+00	5.90E+00
FE-59		2.69E+00	±	8.53E+00	1.32E+01
CO-60		-1.23E+00	±	3.90E+00	6.10E+00
ZN-65		2.22E+00	±	5.68E+00	8.59E+00
ZRNB-95		-1.69E-01	±	5.79E+00	9.48E+00
I-131		4.92E-01	±	3.72E+00	6.03E+00
CS-134		-4.72E-01	±	4.12E+00	6.70E+00
CS-137		-2.84E-02	±	3.38E+00	5.55E+00
BALA140		-8.62E-01	±	5.05E+00	8.07E+00
BI-214	+	1.05E+02	±	1.68E+01	1.71E+01

Station MW-13 collected 4/18/2012

Nuclide	RQ	Activity	±	Error	MDA
K-40		-6.33E+01	±	8.84E+02	7.52E+01
MN-54		1.26E+00	±	3.02E+00	4.64E+00
CO-58		3.27E-01	±	3.49E+00	5.66E+00
FE-59		3.50E+00	±	1.03E+01	1.60E+01
CO-60		-8.13E-01	±	4.09E+00	6.52E+00
ZN-65		-4.70E+00	±	1.11E+01	1.75E+01
ZRNB-95		-1.09E+00	±	6.89E+00	1.11E+01
I-131		1.64E+00	±	5.03E+00	8.02E+00
CS-134		-1.91E+00	±	4.89E+00	7.80E+00
CS-137		-7.19E-01	±	3.83E+00	6.15E+00
BALA140		0.00E+00	±	8.42E+00	1.38E+01
BI-214	+	7.85E+01	±	1.57E+01	1.73E+01

Station MW-14 collected 4/18/2012

Nuclide	RQ	Activity	±	Error	MDA
K-40		-2.03E+01	±	7.25E+01	8.13E+01
MN-54		1.05E+00	±	3.02E+00	4.70E+00
CO-58		4.14E-01	±	3.31E+00	5.34E+00
FE-59		-1.27E+00	±	8.43E+00	1.35E+01
CO-60		1.31E+00	±	3.02E+00	4.54E+00
ZN-65		-5.82E+00	±	1.19E+01	1.86E+01
ZRNB-95		5.09E-02	±	6.18E+00	1.02E+01
I-131		2.28E+00	±	4.70E+00	7.34E+00
CS-134		5.41E-01	±	2.26E+00	3.57E+00
CS-137		-9.36E-01	±	3.60E+00	5.71E+00
BALA140		-1.34E+00	±	6.58E+00	1.05E+01
BI-214	+	5.50E+01	±	1.30E+01	1.75E+01

Station MW-3 collected 7/23/2012

Nuclide	RQ	Activity	±	Error	MDA
K-40		-6.81E+01	±	1.33E+03	1.02E+02
MN-54		-8.97E-01	±	4.57E+00	7.36E+00
CO-58		-1.64E+00	±	4.37E+00	6.90E+00
FE-59		0.00E+00	±	8.91E+00	1.47E+01
CO-60		-9.53E-02	±	4.15E+00	6.80E+00
ZN-65		-2.68E+00	±	5.04E+01	9.93E+00
ZRNB-95		9.12E-01	±	6.50E+00	1.05E+01
I-131		-2.11E+00	±	4.58E+00	7.28E+00
CS-134		-1.47E+00	±	2.64E+01	6.63E+00
CS-137		-1.64E+00	±	4.93E+00	7.85E+00
BALA140		6.33E-03	±	4.71E+00	7.75E+00
BI-214	+	4.33E+02	±	2.94E+01	1.94E+01

Station MW-5 collected 7/23/2012

Nuclide	RQ	Activity	±	Error	MDA
K-40		-9.49E+01	±	5.16E+02	9.51E+01
MN-54		7.46E-01	±	3.19E+00	5.10E+00
CO-58		4.38E-01	±	3.18E+00	5.14E+00
FE-59		-2.76E+00	±	7.30E+00	1.12E+01
CO-60		4.49E-02	±	2.71E+00	4.45E+00
ZN-65		-5.92E+00	±	1.06E+01	1.66E+01
ZRNB-95		-1.09E-01	±	4.92E+00	8.06E+00
I-131		1.91E+00	±	2.59E+00	3.95E+00
CS-134		1.51E+00	±	2.79E+00	4.31E+00
CS-137		-4.69E-02	±	3.80E+00	6.24E+00
BALA140		-4.90E-01	±	4.20E+00	6.77E+00
BI-214	+	2.36E+02	±	2.01E+01	1.43E+01

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

TABLE B-10.1

GAMMA SPECTROMETRY RESULTS OF GROUNDWATER MONITORING SAMPLES

Results in pCi per liter

Station MW-6 collected 7/23/2012

Nuclide	RQ	Activity	±	Error	MDA
K-40		-1.95E+01	±	1.00E+02	1.02E+02
MN-54		1.02E-01	±	4.04E+00	6.63E+00
CO-58		-2.23E+00	±	4.71E+00	7.37E+00
FE-59		1.19E+00	±	9.42E+00	1.52E+01
CO-60		-2.28E-01	±	4.11E+00	6.70E+00
ZN-65		-1.35E+00	±	3.57E+01	2.57E+00
ZRNB-95		1.64E-01	±	5.42E+00	8.87E+00
I-131		1.76E-01	±	4.24E+00	6.95E+00
CS-134		7.35E-01	±	2.35E+01	5.79E+00
CS-137		-2.82E+00	±	5.36E+00	8.41E+00
BALA140		-1.31E+00	±	5.39E+00	8.54E+00
BI-214	+	3.12E+02	±	2.59E+01	1.90E+01

Station MW-7 collected 7/18/2012

Nuclide	RQ	Activity	±	Error	MDA
K-40		-2.06E+01	±	6.11E+01	8.00E+01
MN-54		3.52E-02	±	2.65E+00	4.36E+00
CO-58		4.24E-01	±	2.92E+00	4.70E+00
FE-59		-1.88E+00	±	8.15E+00	1.29E+01
CO-60		-7.09E-01	±	2.57E+00	4.00E+00
ZN-65		8.17E-01	±	4.95E+00	7.89E+00
ZRNB-95		0.00E+00	±	4.87E+00	8.01E+00
I-131		6.78E-01	±	4.18E+00	6.76E+00
CS-134		6.05E-01	±	2.13E+00	3.36E+00
CS-137		-1.15E+00	±	3.32E+00	5.24E+00
BALA140		0.00E+00	±	7.26E+00	1.19E+01
BI-214	+	2.09E+01	±	8.45E+00	1.26E+01

Station MW-8 collected 7/18/2012

Nuclide	RQ	Activity	±	Error	MDA
K-40		-8.06E+01	±	3.59E+02	9.35E+01
MN-54		0.00E+00	±	4.48E+00	7.37E+00
CO-58		-1.68E+00	±	4.00E+00	6.24E+00
FE-59		3.50E+00	±	8.40E+00	1.27E+01
CO-60		-1.38E+00	±	3.35E+00	5.10E+00
ZN-65		-2.59E+00	±	9.43E+00	1.50E+01
ZRNB-95		0.00E+00	±	7.85E+00	1.29E+01
I-131		2.40E-01	±	4.86E+00	7.96E+00
CS-134		0.00E+00	±	9.11E+00	1.50E+01
CS-137		5.94E-01	±	3.25E+00	5.21E+00
BALA140		-7.83E-01	±	5.18E+00	8.25E+00
BI-214	+	1.75E+01	±	9.87E+00	1.64E+01

Station MW-9 collected 7/18/2012

Nuclide	RQ	Activity	±	Error	MDA
K-40		-2.67E+01	±	7.10E+01	8.04E+01
MN-54		-2.69E-01	±	2.45E+00	3.97E+00
CO-58		-2.01E-02	±	2.37E+00	3.89E+00
FE-59		-2.23E+00	±	9.11E+00	1.44E+01
CO-60		0.00E+00	±	3.74E+00	6.15E+00
ZN-65		-3.96E+00	±	8.49E+00	1.32E+01
ZRNB-95		7.55E-03	±	5.18E+00	8.53E+00
I-131		3.03E+00	±	4.10E+00	6.24E+00
CS-134		-1.11E+00	±	2.72E+00	4.26E+00
CS-137		-5.57E-01	±	2.96E+00	4.75E+00
BALA140		-3.96E-03	±	4.34E+00	7.17E+00
BI-214	+	3.19E+01	±	9.41E+00	1.29E+01

Station MW-10 collected 7/18/2012

Nuclide	RQ	Activity	±	Error	MDA
K-40		1.44E+01	±	4.79E+01	8.88E+01
MN-54		1.16E+00	±	3.13E+00	4.85E+00
CO-58		1.71E-01	±	2.91E+00	4.74E+00
FE-59		-2.39E+00	±	9.87E+00	1.56E+01
CO-60		-4.06E-01	±	3.61E+00	5.83E+00
ZN-65		-1.32E+00	±	7.28E+00	1.16E+01
ZRNB-95		1.30E+00	±	5.84E+00	9.30E+00
I-131		2.34E+00	±	4.81E+00	7.48E+00
CS-134		-1.28E+00	±	3.57E+00	5.64E+00
CS-137		-5.92E-01	±	3.52E+00	5.65E+00
BALA140		-2.08E+00	±	5.85E+00	8.97E+00
BI-214		-2.74E+00	±	1.07E+01	1.63E+01

Station MW-11 collected 7/18/2012

Nuclide	RQ	Activity	±	Error	MDA
K-40		-5.36E+01	±	1.72E+02	8.37E+01
MN-54		0.00E+00	±	2.12E+00	3.49E+00
CO-58		-7.66E-01	±	3.32E+00	5.31E+00
FE-59		2.62E+00	±	8.23E+00	1.28E+01
CO-60		-9.11E-01	±	3.05E+00	4.77E+00
ZN-65		0.00E+00	±	4.05E+00	6.65E+00
ZRNB-95		1.33E+00	±	4.91E+00	7.77E+00
I-131		-7.25E-02	±	4.03E+00	6.61E+00
CS-134		-1.17E+00	±	2.72E+00	4.26E+00
CS-137		7.31E-01	±	2.84E+00	4.52E+00
BALA140		1.64E+00	±	3.79E+00	5.56E+00
BI-214	+	1.51E+01	±	7.79E+00	1.22E+01

Station MW-12 collected 7/18/2012

Nuclide	RQ	Activity	±	Error	MDA
K-40		-2.28E+01	±	8.31E+01	8.41E+01
MN-54		-1.03E-01	±	3.55E+00	5.81E+00
CO-58		-9.31E-03	±	2.65E+00	4.36E+00
FE-59		4.57E+00	±	9.51E+00	1.43E+01
CO-60		4.12E-01	±	3.10E+00	4.97E+00
ZN-65		5.57E-01	±	9.44E+00	1.54E+01
ZRNB-95		-2.13E-01	±	4.60E+00	7.50E+00
I-131		0.00E+00	±	6.09E+00	1.00E+01
CS-134		-1.87E+00	±	3.98E+00	6.25E+00
CS-137		9.46E-01	±	3.44E+00	5.44E+00
BALA140		0.00E+00	±	1.50E+00	2.46E+00
BI-214		1.36E+01	±	9.58E+00	1.64E+01

Station MW-13 collected 7/23/2012

Nuclide	RQ	Activity	±	Error	MDA
K-40		-3.63E+01	±	1.11E+02	9.00E+01
MN-54		7.15E-02	±	3.04E+00	4.98E+00
CO-58		0.00E+00	±	4.03E+00	6.63E+00
FE-59		-6.40E-02	±	7.45E+00	1.22E+01
CO-60		0.00E+00	±	1.97E+00	3.23E+00
ZN-65		2.35E+00	±	3.53E+00	4.70E+00
ZRNB-95		-5.63E-01	±	4.00E+00	6.42E+00
I-131		7.54E-01	±	3.63E+00	5.86E+00
CS-134		2.37E+00	±	2.73E+00	4.04E+00
CS-137		-8.27E-01	±	3.06E+00	4.87E+00
BALA140		-1.53E+00	±	4.95E+00	7.75E+00
BI-214	+	9.40E+01	±	1.27E+01	1.23E+01

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

TABLE B-10.1

GAMMA SPECTROMETRY RESULTS OF GROUNDWATER MONITORING SAMPLES

Results in pCi per liter

Station MW-14 collected 7/23/2012

Nuclide	RQ	Activity	±	Error	MDA
K-40		-2.01E+01	±	8.75E+01	9.17E+01
MN-54		-2.62E-01	±	3.42E+00	5.56E+00
CO-58		-3.48E-01	±	3.84E+00	6.24E+00
FE-59		-4.60E+00	±	1.06E+01	1.64E+01
CO-60		-8.06E-01	±	3.83E+00	6.10E+00
ZN-65		-2.95E+00	±	1.19E+01	1.91E+01
ZRNB-95		-1.80E+00	±	6.38E+00	1.01E+01
I-131		2.73E+00	±	3.53E+00	5.27E+00
CS-134		-2.19E+00	±	4.89E+00	7.76E+00
CS-137		4.12E-01	±	3.39E+00	5.48E+00
BALA140		0.00E+00	±	5.39E+00	8.87E+00
BI-214	+	9.69E+01	±	1.77E+01	1.82E+01

Station MW-8 collected 11/7/2012

Nuclide	RQ	Activity	±	Error	MDA
K-40		-4.87E+01	±	1.42E+02	8.32E+01
MN-54		0.00E+00	±	2.74E+00	4.50E+00
CO-58		-7.64E-01	±	2.65E+00	4.17E+00
FE-59		7.42E-01	±	6.17E+00	9.88E+00
CO-60		-1.02E+00	±	3.14E+00	4.91E+00
ZN-65		-8.89E-02	±	7.41E+00	1.22E+01
ZRNB-95		1.65E-01	±	4.37E+00	7.14E+00
I-131		4.08E-01	±	3.89E+00	6.32E+00
CS-134		-6.79E-01	±	3.09E+00	4.97E+00
CS-137		-1.11E+00	±	2.95E+00	4.61E+00
BALA140		-3.39E-01	±	4.14E+00	6.68E+00
BI-214	+	1.68E+01	±	8.70E+00	1.36E+01

Station MW-3 collected 11/5/2012

Nuclide	RQ	Activity	±	Error	MDA
K-40		-4.52E+01	±	1.22E+02	8.19E+01
MN-54		-7.79E-02	±	2.45E+00	4.00E+00
CO-58		5.09E-02	±	2.54E+00	4.17E+00
FE-59		0.00E+00	±	6.69E+00	1.10E+01
CO-60		-6.19E-01	±	3.54E+00	5.67E+00
ZN-65		-1.38E+00	±	6.06E+00	9.61E+00
ZRNB-95		8.33E-01	±	4.45E+00	7.11E+00
I-131		0.00E+00	±	5.77E+00	9.49E+00
CS-134		8.02E-01	±	2.59E+00	4.10E+00
CS-137		1.19E+00	±	2.89E+00	4.49E+00
BALA140		2.45E-01	±	5.13E+00	8.37E+00
BI-214	+	1.54E+01	±	7.57E+00	1.18E+01

Station MW-9 collected 11/7/2012

Nuclide	RQ	Activity	±	Error	MDA
K-40		-4.92E+01	±	1.42E+02	8.28E+01
MN-54		0.00E+00	±	3.59E+00	5.90E+00
CO-58		-2.57E-01	±	2.06E+00	3.30E+00
FE-59		2.31E+00	±	7.89E+00	1.23E+01
CO-60		6.66E-01	±	2.81E+00	4.42E+00
ZN-65		-2.18E+00	±	6.74E+00	1.06E+01
ZRNB-95		-6.08E-02	±	4.58E+00	7.52E+00
I-131		1.94E+00	±	3.98E+00	6.17E+00
CS-134		9.61E-01	±	2.48E+00	3.89E+00
CS-137		-1.45E-01	±	2.69E+00	4.39E+00
BALA140		-1.65E+00	±	6.71E+00	1.06E+01
BI-214		8.88E+00	±	6.62E+00	1.12E+01

Station MW-5 collected 11/5/2012

Nuclide	RQ	Activity	±	Error	MDA
K-40		-2.44E+01	±	6.66E+01	7.99E+01
MN-54		-4.68E-01	±	2.88E+00	4.63E+00
CO-58		-2.16E-02	±	1.72E+00	2.82E+00
FE-59		1.62E+00	±	6.79E+00	1.06E+01
CO-60		1.04E+00	±	2.74E+00	4.19E+00
ZN-65		-9.90E-01	±	6.37E+00	1.02E+01
ZRNB-95		-7.61E-01	±	4.78E+00	7.67E+00
I-131		1.34E-01	±	4.43E+00	7.25E+00
CS-134		1.72E+00	±	2.39E+00	3.57E+00
CS-137		-2.37E-02	±	2.56E+00	4.21E+00
BALA140		-9.50E-01	±	5.31E+00	8.44E+00
BI-214		3.44E+00	±	6.13E+00	1.12E+01

Station MW-10 collected 11/7/2012

Nuclide	RQ	Activity	±	Error	MDA
K-40		-5.96E+01	±	2.51E+02	8.81E+01
MN-54		6.92E-01	±	2.30E+00	3.59E+00
CO-58		-3.27E-01	±	2.27E+00	3.64E+00
FE-59		-5.04E-01	±	7.50E+00	1.22E+01
CO-60		8.66E-01	±	3.22E+00	5.07E+00
ZN-65		2.41E+00	±	6.06E+00	9.35E+00
ZRNB-95		-1.91E+00	±	5.84E+00	9.24E+00
I-131		2.04E+00	±	3.92E+00	6.06E+00
CS-134		-6.53E-01	±	2.69E+00	4.31E+00
CS-137		3.39E-01	±	2.53E+00	4.08E+00
BALA140		0.00E+00	±	1.31E+00	2.16E+00
BI-214		1.59E-01	±	6.27E+00	1.19E+01

Station MW-6 collected 11/5/2012

Nuclide	RQ	Activity	±	Error	MDA
K-40		-2.40E+01	±	6.72E+01	8.08E+01
MN-54		-5.80E-01	±	3.21E+00	5.16E+00
CO-58		-1.93E-02	±	2.75E+00	4.52E+00
FE-59		1.14E+00	±	7.88E+00	1.26E+01
CO-60		1.27E+00	±	2.60E+00	3.87E+00
ZN-65		-1.37E+00	±	6.50E+00	1.04E+01
ZRNB-95		-7.02E-02	±	4.25E+00	6.98E+00
I-131		-1.67E+00	±	4.82E+00	7.64E+00
CS-134		1.74E+00	±	2.78E+00	4.25E+00
CS-137		3.49E-01	±	2.66E+00	4.30E+00
BALA140		-8.36E-01	±	5.23E+00	8.33E+00
BI-214		6.87E+00	±	7.19E+00	1.24E+01

Station MW-11 collected 11/7/2012

Nuclide	RQ	Activity	±	Error	MDA
K-40		-4.54E+01	±	1.30E+02	8.42E+01
MN-54		1.63E+00	±	2.74E+00	4.12E+00
CO-58		0.00E+00	±	3.23E+00	5.31E+00
FE-59		4.72E-01	±	6.40E+00	1.04E+01
CO-60		2.05E+00	±	2.97E+00	4.32E+00
ZN-65		-6.21E-02	±	7.49E+00	1.23E+01
ZRNB-95		1.01E-02	±	4.96E+00	8.15E+00
I-131		1.86E+00	±	4.92E+00	7.79E+00
CS-134		1.87E+00	±	1.99E+00	2.78E+00
CS-137		1.10E+00	±	2.60E+00	4.01E+00
BALA140		0.00E+00	±	1.37E+00	2.25E+00
BI-214		4.96E+00	±	6.71E+00	1.19E+01

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

TABLE B-10.1

GAMMA SPECTROMETRY RESULTS OF GROUNDWATER MONITORING SAMPLES

Results in pCi per liter

Station MW-12 collected 11/7/2012

Nuclide	RQ	Activity	±	Error	MDA
K-40		-5.85E+01	±	2.64E+02	9.29E+01
MN-54		1.66E+00	±	3.14E+00	4.83E+00
CO-58		3.75E-01	±	2.47E+00	3.96E+00
FE-59		2.98E+00	±	7.48E+00	1.14E+01
CO-60		1.33E+00	±	3.06E+00	4.68E+00
ZN-65		0.00E+00	±	7.23E+00	1.19E+01
ZRNB-95		1.14E+00	±	4.82E+00	7.66E+00
I-131		-1.91E+00	±	5.59E+00	8.92E+00
CS-134		1.40E+00	±	2.39E+00	3.62E+00
CS-137		1.08E-01	±	2.55E+00	4.17E+00
BALA140		0.00E+00	±	2.13E+00	3.50E+00
BI-214		6.01E+00	±	6.90E+00	1.20E+01

Station MW-14 collected 11/5/2012

Nuclide	RQ	Activity	±	Error	MDA
K-40		-3.63E+01	±	1.12E+02	9.11E+01
MN-54		-3.75E-01	±	3.26E+00	5.28E+00
CO-58		-6.16E-01	±	3.30E+00	5.28E+00
FE-59		-3.47E+00	±	9.69E+00	1.49E+01
CO-60		1.10E+00	±	3.46E+00	5.38E+00
ZN-65		-3.76E+00	±	9.62E+00	1.51E+01
ZRNB-95		2.50E+00	±	5.91E+00	9.09E+00
I-131		0.00E+00	±	8.24E+00	1.36E+01
CS-134		-1.17E+00	±	4.07E+00	6.52E+00
CS-137		1.89E-02	±	3.32E+00	5.45E+00
BALA140		-1.12E+00	±	7.60E+00	1.22E+01
BI-214		1.31E+00	±	7.81E+00	1.43E+01

Station MW-13 collected 11/5/2012

Nuclide	RQ	Activity	±	Error	MDA
K-40		-2.87E+01	±	8.31E+01	8.68E+01
MN-54		8.52E-01	±	3.24E+00	5.13E+00
CO-58		-2.28E-01	±	2.40E+00	3.87E+00
FE-59		-3.39E+00	±	1.03E+01	1.59E+01
CO-60		-6.47E-01	±	3.19E+00	5.05E+00
ZN-65		0.00E+00	±	1.08E+01	1.77E+01
ZRNB-95		-7.76E-01	±	5.81E+00	9.36E+00
I-131		-2.16E+00	±	7.31E+00	1.17E+01
CS-134		-1.12E+00	±	3.52E+00	5.60E+00
CS-137		1.32E-01	±	3.70E+00	6.05E+00
BALA140		-1.69E+00	±	7.44E+00	1.17E+01
BI-214		4.75E+00	±	7.09E+00	1.27E+01

Table B-10.2

GAMMA SPECTROMETRY RESULTS OF GROUNDWATER MONITORING SAMPLES - SUMMARY

Results in pCi/liter

Nuclide	Average Activity	Activity Low	Activity High	Average MDA	Number of Samples	Number of Positive IDs
BALA140	-2.81E-01	-2.08E+00	3.29E+00	7.95E+00	43	0
BI-214	1.04E+02	-2.74E+00	4.33E+02	1.54E+01	43	30
CO-58	-2.20E-01	-2.23E+00	2.40E+00	5.34E+00	43	0
CO-60	1.43E-01	-1.38E+00	3.49E+00	5.52E+00	43	0
CS-134	-9.88E-02	-4.90E+00	2.94E+00	9.89E+00	43	0
CS-137	-2.86E-01	-2.82E+00	2.78E+00	5.76E+00	43	0
FE-59	-8.89E-02	-4.60E+00	4.57E+00	1.44E+01	43	0
I-131	4.63E-01	-2.16E+00	3.03E+00	7.19E+00	43	0
K-40	-3.39E+01	-9.49E+01	1.78E+01	8.77E+01	43	0
MN-54	5.50E-02	-1.67E+00	1.66E+00	5.47E+00	43	0
ZN-65	-2.84E+00	-1.37E+01	2.98E+00	1.36E+01	43	0
ZRNB-95	-3.81E-02	-1.91E+00	2.53E+00	9.23E+00	43	0

RQ = Results Qualifier. If blank, result is less than detection limit. If "+", result is above detection limit.

TABLE B-11.1

TRITIUM IN MONITORING WELL SAMPLES

Results in pCi per liter

Location	Collection Date	RQ	Activity		Error
MW-3	01/25/12	+	1.19E+03	±	1.26E+02
	04/25/12	+	1.18E+03	±	1.32E+02
	07/23/12	+	1.34E+03	±	1.27E+02
	11/05/12	+	1.40E+03	±	1.30E+02
MW-5	01/25/12	+	1.67E+04	±	3.25E+02
	04/25/12	+	1.57E+04	±	3.18E+02
	07/23/12	+	1.59E+04	±	3.18E+02
	11/05/12	+	1.72E+04	±	3.28E+02
MW-6	01/25/12	+	5.93E+03	±	2.08E+02
	04/25/12	+	6.32E+03	±	2.17E+02
	07/23/12	+	6.04E+03	±	2.09E+02
	11/05/12	+	5.78E+03	±	2.07E+02
MW-7	01/25/12	+	3.63E+02	±	1.04E+02
	05/16/12	+	1.35E+03	±	1.35E+02
	07/18/12	+	8.78E+02	±	1.16E+02
	11/05/12		-		-
MW-8	01/25/12	+	1.42E+03	±	1.31E+02
	04/25/12	+	7.61E+02	±	1.21E+02
	07/18/12	+	1.36E+03	±	1.27E+02
	11/07/12	+	1.30E+03	±	1.29E+02
MW-9	01/25/12	+	3.51E+02	±	1.04E+02
	04/25/12		1.16E+02	±	1.04E+02
	07/18/12		2.85E+02	±	1.01E+02
	11/07/12		2.55E+02	±	1.02E+02
MW-10	01/30/12	+	4.73E+02	±	1.07E+02
	04/18/12		2.50E+02	±	1.07E+02
	07/18/12	+	4.31E+02	±	1.06E+02
	11/07/12		2.95E+02	±	1.04E+02
MW-11	01/30/12	+	1.07E+03	±	1.22E+02
	04/18/12	+	9.34E+02	±	1.24E+02
	07/18/12	+	1.02E+03	±	1.22E+02
	11/07/12	+	7.23E+02	±	1.15E+02
MW-12	01/30/12	+	6.76E+02	±	1.12E+02
	04/18/12	+	7.35E+02	±	1.20E+02
	07/18/12	+	5.74E+02	±	1.10E+02
	11/07/12	+	7.02E+02	±	1.15E+02
MW-13	01/30/12	+	1.17E+04	±	2.77E+02
	04/18/12	+	1.13E+04	±	2.74E+02
	07/23/12	+	1.15E+04	±	2.74E+02
	11/05/12	+	1.12E+04	±	2.72E+02
MW-14	01/30/12		1.95E+02	±	1.01E+02
	04/18/12	+	3.00E+02	±	1.08E+02
	07/23/12	+	3.96E+02	±	1.06E+02
	11/05/12	+	3.48E+02	±	1.05E+02

RQ= results Qualifier. If blank, result is less than detection limit. If "+", result is above the detection limit.
No MW-7 sample in 4th Quarter due to no water in well.