IEMA

Illinois Emergency Management Agency

Environmental Monitoring Program for Nuclear Power Stations
Report for Calendar Year 2015

October 2016

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Executive Summary

The Illinois Emergency Management Agency (IEMA) is mandated with protecting public health and safety and the environment from the potentially harmful effects of ionizing radiation. In support of that mission, IEMA conducts environmental monitoring for the presence of radionuclides around Illinois' six operating nuclear power stations and maintains a monitoring program in the environs of Zion Nuclear Power Station, which ceased operation in 1997 and is currently undergoing decommissioning.

IEMA's environmental monitoring program has three primary functions: 1) collection of diverse samples from carefully chosen locations on a routine basis, including simultaneous field surveillance; 2) testing of samples for radionuclides; and 3) evaluation of test results on both an individual and long-term basis.

Federal regulations establish standards for protection against ionizing radiation resulting from activities conducted under U.S. Nuclear Regulatory Commission (US NRC) licenses, such as operation of nuclear power stations. The U.S. Environmental Protection Agency (US EPA) sets drinking water standards for several types of radioactive contaminants; the limit for tritium in drinking water is used for comparison purposes within this report.

In 2015, 805 samples were collected, tested and evaluated. Sample types monitored by IEMA include water, sediment, soil, air, vegetation and fish. In addition, 1,649 environmental dosimeters were deployed around the nuclear power stations, then collected, tested and evaluated by IEMA.

In 2015, all test results for samples collected as part of IEMA's environmental monitoring program for nuclear power stations were below federal safety standards and guidelines.

Tritium was the only radionuclide detected attributable to nuclear power station operations. It was detected in several water samples. Tritium is a normal part of the effluent stream of nuclear power stations and the concentrations detected were well below the US EPA limit for tritium in drinking water.

Environmental dosimetry test results provide a baseline of ambient gamma radiation levels within a 10-mile radius of each nuclear power station and other background reference locations across the state.

In 2015, all test results for environmental dosimetry were consistent with established background levels, except for higher readings near the spent fuel storage casks in Zion, which were expected due to the close proximity of some dosimeters to the casks.

In parallel with environmental monitoring, IEMA operates a state-of-the-art Remote Monitoring System (RMS) at all six operating plants. The one-of-a-kind RMS consists of three separate subsystems: the Reactor Data Link (RDL), the Gaseous Effluent Monitoring System (GEMS) and Gamma Detection Network (GDN). The GEMS is capable of identifying and measuring the presence of radioactive materials leaving each nuclear power station through the effluent stack, and the GDN is capable of measuring radiation in the surrounding environment. Our environmental monitoring independently confirms that the environs around the Illinois nuclear power stations are safe and protective of public health, safety and the environment. Results from the GEMS and GDN are summarized in this report.

Illinois Emergency Management Agency

Environmental Monitoring Program for Nuclear Power Stations
Report for Calendar Year 2015

Introduction

With 11 operating reactors at six nuclear power stations, Illinois is home to more commercial nuclear power generation than any other state in the country. Although direct regulatory authority over all U.S. nuclear power stations resides with the U.S. Nuclear Regulatory Commission (US NRC), the Illinois Emergency Management Agency (IEMA) is mandated with protecting public health and safety and the environment from the potentially harmful effects of ionizing radiation. In support of that mission, IEMA conducts environmental monitoring for the presence of radionuclides around Illinois' six operating nuclear power stations. IEMA also maintains a monitoring program in the environs of Zion Nuclear Power Station, which ceased operation in 1997 and is currently undergoing decommissioning.

In addition to "traditional" environmental monitoring through sample collection and analysis, IEMA has deployed a Remote Monitoring System (RMS) around each nuclear power facility. IEMA's RMS is an advanced, integrated computer-based system that continually monitors selected plant operational parameters at each facility and is capable of identifying and measuring the presence of radioactive materials in the surrounding environment. This one-of-a-kind system consists of three separate subsystems: the Reactor Data Link (RDL), the Gaseous Effluent Monitoring System (GEMS) and the Gamma Detection Network (GDN).

Data from the RMS is collected and monitored 24/7. IEMA has developed software to continually monitor and analyze the RMS data and provide notification of unusual occurrences to on-call IEMA personnel.

This report details IEMA's Environmental Monitoring program, including data from the RMS, for the period January 2015 through December 2015 for the six operating nuclear power stations in Illinois and the one nuclear power station undergoing decommissioning.

Program Overview

Critical pathways for potential radiation exposure to the public include ingestion from drinking water and foodstuffs and external gamma radiation from noble gases. IEMA has identified sampling locations that provide sample types appropriate to determine if a public health or environmental radiological impact is detected in the environs of the nuclear power stations due to their operation. In addition, test results establish baseline data that can be used to perform exposure assessments if necessary and to compare environmental radioactivity measurements in the event of a significant release of radioactivity anywhere in the world.

IEMA collects samples from designated sampling locations on a routine basis. IEMA tests these samples for the presence of radionuclides. Test results are evaluated on both an individual and long-term basis.

Sample matrices monitored by IEMA include surface and public drinking water, sediment from nearby waterways, soil, air, vegetation and fish. In 2015, 805 samples were collected, tested and evaluated. In addition, 1,649 environmental dosimeters were deployed around the nuclear power stations, then collected, tested and evaluated by IEMA.

Program Update

In previous years, IEMA relied on a contractor for collection of the vast majority of samples taken in the environs of nuclear power stations. Following the Fukushima incident, IEMA commenced the process of moving toward independent sample collection. Since then, IEMA has developed and refined independent sampling plans in the environs of the six operating nuclear power stations and the one nuclear power station undergoing decommissioning. These sampling plans address all sample types (soil, vegetation, water, fish and sediment) and IEMA collected samples in accordance with these plans throughout 2015. IEMA plans to collect and analyze milk samples beginning in 2017.

In late 2013, IEMA established Sangchris Lake State Park near Kincaid, Illinois as a Background Reference Site and developed a corresponding sampling plan. This site was chosen due its distance from nuclear power stations and its close proximity to Springfield. In addition to Sangchris Lake State Park, the Springfield office at Knotts Street is a Background Reference Site for air sampling. Test results for samples collected at both Background Reference Sites can be found in Appendix H.

Results at a Glance

Federal regulations establish standards for protection against ionizing radiation resulting from activities conducted under US NRC licenses, such as operation of nuclear power stations. The U.S. Environmental Protection Agency (US EPA) sets drinking water standards for several types of radioactive contaminants; the limit for tritium in drinking water is used for comparison purposes within this report.

In 2015, all test results for samples collected as part of IEMA's environmental monitoring program for nuclear power stations were below federal and state safety standards and guidelines. No radionuclides associated with nuclear power station operations, except for tritium, were detected in samples collected near nuclear power stations. Other radionuclides detected were naturally occurring.

As stated above, tritium was the only radionuclide detected attributable to nuclear power station operations. It was detected in several water samples. Tritium is a normal part of the effluent stream of nuclear power stations and the concentrations detected were well below the US EPA limit for tritium in drinking water.

Environmental dosimetry test results provide a baseline of ambient gamma radiation levels within a 10-mile radius of each nuclear power station and other background reference locations across the state.

In 2015, all test results for environmental dosimetry were consistent with established background levels, except for higher readings near the spent fuel storage casks in Zion, which were expected due to the close proximity of some dosimeters to the casks.

Analysis of Data

Negative numbers in the tables of this report are the values reported by the IEMA Radiochemistry Laboratory. Each batch of samples is counted with a sample blank to determine a background for each analytical instrument and each type of medium being analyzed. That background reading is then subtracted from the analytical result. When the sample has very little radioactivity, subtracting background values may actually result in a negative number.

Limits of Detection

All analytical methods have limitations: amounts that are just too small to be detected. The Minimum Detectable Concentration (MDC) is an "a priori" measure of that limitation – an estimate of the lower limit of detection. It is defined as the smallest quantity that an analytical method has 95% likelihood of detecting. For example, the MDC for IEMA's method for tritium in water is 200 picocuries per liter (pCi/L). Given a sample with a tritium concentration of 200 pCi/L, our laboratory would detect that tritium approximately 95 times out of 100. Samples with less than 200 pCi/L could be detected, but with less certainty. Conversely, samples with more than 200 pCi/L would be more likely to be detected, approaching 100% as concentrations increase.

Analytical methods are chosen, in part, on their MDC. As a general rule, methods are chosen such that their MDC is less than 10% of any applicable regulatory limit. The MDCs for each analytical method are not included in this report.

Understanding a Test Result with a Confidence Interval

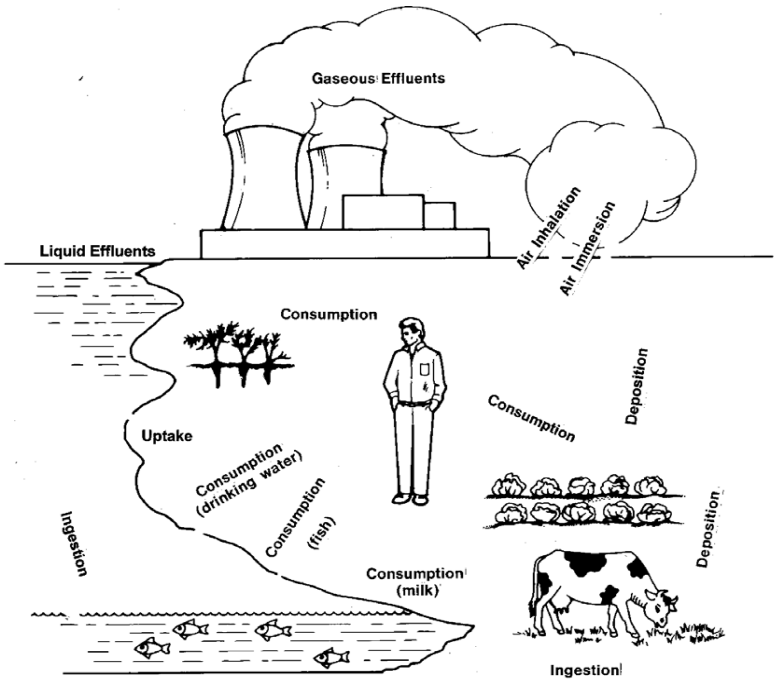
Test results in this report contain columns of information labeled Result and *U (Uncertainty at a 95% confidence level). This is a standard method for reporting laboratory analysis results, and it allows the reader to look at factors that may affect the results, or may put the results into perspective.

What does a tritium result of 519 ± 99.5 pCi/L, with 95% confidence, mean? First, the unit, pCi/L, is used to measure the amount of tritium, in picocuries (pCi), present in one liter (L) of water. Thus, the result tells us the analysis found that the sample contains 519 picocuries of tritium per liter. However, all measurements have some uncertainty associated with them – some range of values which the analysis, if repeated, could reasonably be expected to be the result. In this case, the uncertainty is ± 99.5 pCi/L. If repeated, the analysis could reasonably be expected to return values as low as 519 – 99.5 = 419.5 pCi/L and as high as 519 + 99.5 = 618.5 pCi/L. The statement "with 95% confidence" tells us just how certain we can be about that range of values. In this case, there is a 95% probability that the sample contains between 419.5 and 618.5 picocuries of tritium per liter of water.

Radiation Exposure Pathways to Humans

Samples collected for the IEMA environmental monitoring program reflect the critical pathways that radionuclides could be transported to and ingested by the general population: water, sediments and fish from lakes and rivers downstream, and groundwater from nearby wells. **Figure 1** depicts the different exposure pathways through which people may be exposed to radiation, or may ingest radioactive material.

Figure 1. Radiation Exposure Pathways to Humans



Water Samples

Nuclear power stations use large volumes of water and discharge this water to rivers and lakes. This discharge is regulated by the US NRC and the Illinois Environmental Protection Agency (IEPA). Impacted bodies of water include the Kankakee, Illinois, Rock and Mississippi Rivers, Lake Michigan and Clinton Lake. IEMA tests samples from these bodies of water and from public drinking systems that draw their water from them.

Plant operations can also impact groundwater; therefore, IEMA also analyzes samples collected from wells in and around the nuclear power stations. Groundwater samples are collected and analyzed quarterly. For all water samples, typically 3-4 liters are collected per quarter. Water samples are screened for gross alpha and gross beta activity, and are submitted for gamma spectroscopy analysis including, but not limited to, reactor-produced and naturally-occurring radionuclides such as H-3, Ba-140, Be-7, Co-58, Co-60, Cs-134, Cs-137, Fe-59, I-131, K-40, Mn-54, Nb-95, Zn-65 and Zr-95. (See Appendix I for Radionuclide Abbreviations.)

Tritium (H-3) is a normal component of the effluent stream of nuclear power plants. Liquid effluents from the nuclear power stations are released to waterways under permit from the IEPA. Water samples are analyzed for tritium and the results are compared to the US EPA drinking water standard of 20,000 pCi/L.

Soil Samples

Radionuclides released into the air would be expected to eventually settle to the ground in locations downwind. IEMA analyzes soil samples collected from land around the nuclear power stations. Soil samples are collected semi-annually in the spring and the fall. All soils are submitted for gamma spectroscopy analysis including, but not limited to, reactor-produced and naturally-occurring radionuclides such as Ac-228, Ba-140, Bi-212, Bi-214, Co-58, Co-60, Cs-134, Cs-137, Fe-59, K-40,

Mn-54, Nb-95, Pa-234m, Pb-210, Pb-212, Pb-214, Ra-226, Th-234, Tl-208, U-235, Zn-65 and Zr-95. It should be noted that as a remnant of atmospheric nuclear weapons testing, Cs-137 is routinely observed in soil and sediment at concentrations of 0.1-0.2 pCi/g.

Sediment Samples

Radionuclides released into rivers would be expected to accumulate in sediments downstream. IEMA analyzes sediment samples that are collected from the rivers and lakes downstream of the nuclear power stations' effluent points. Sediments are collected semi-annually in the spring and fall. All sediments are submitted for gamma spectroscopy analysis including, but not limited to, reactor-produced and naturally-occurring radionuclides such as Ac-228, Ba-140, Bi-212, Bi-214, Co-58, Co-60, Cs-134, Cs-137, Fe-59, K-40, Mn-54, Nb-95, Pa-234m, Pb-210, Pb-212, Pb-214, Ra-226, Th-234, Tl-208, U-235, Zn-65 and Zr-95. Again, it should be noted that as a remnant of atmospheric nuclear weapons testing, Cs-137 is routinely observed in sediment and soil at concentrations of 0.1-0.2 pCi/g.

Fish Samples

Fish are excellent bio accumulators of radionuclides. Fish samples were collected from rivers, near nuclear power station discharge points. At each location, two different species of fish were collected and are referenced as top-feeders and bottom-feeders. Edible portions of the fish were harvested and analyzed. Like sediments, fish samples were analyzed for reactor-produced and naturally-occurring radionuclides using gamma spectroscopy including, but not limited to, radionuclides such as Ba-140, Be-7, Co-58, Co-60, Cs-134, Cs-137, Fe-59, I-131, K-40, Mn-54, Nb-95, Zn-65 and Zr-95. The results showed no concentrations of reactor-produced radionuclides above background levels in any of the sampled fish.

Vegetation Samples

Radionuclides released into the atmosphere would be expected to deposit on the ground downwind from the nuclear power station, and are transported to the root system of plants when it rains. Plants may take up or metabolize radioactive materials in the soil. Vegetation samples were collected from the area around each station in the late summer or fall. All vegetation samples submitted for gamma spectroscopy analysis including, but not limited to, reactor-produced and naturally-occurring radionuclides such as Ba-140, Be-7, Co-58, Co-60, Cs-134, Cs-137, Fe-59, I-131, K-40, Mn-54, Nb-95, Zn-65 and Zr-95.

Air Samples

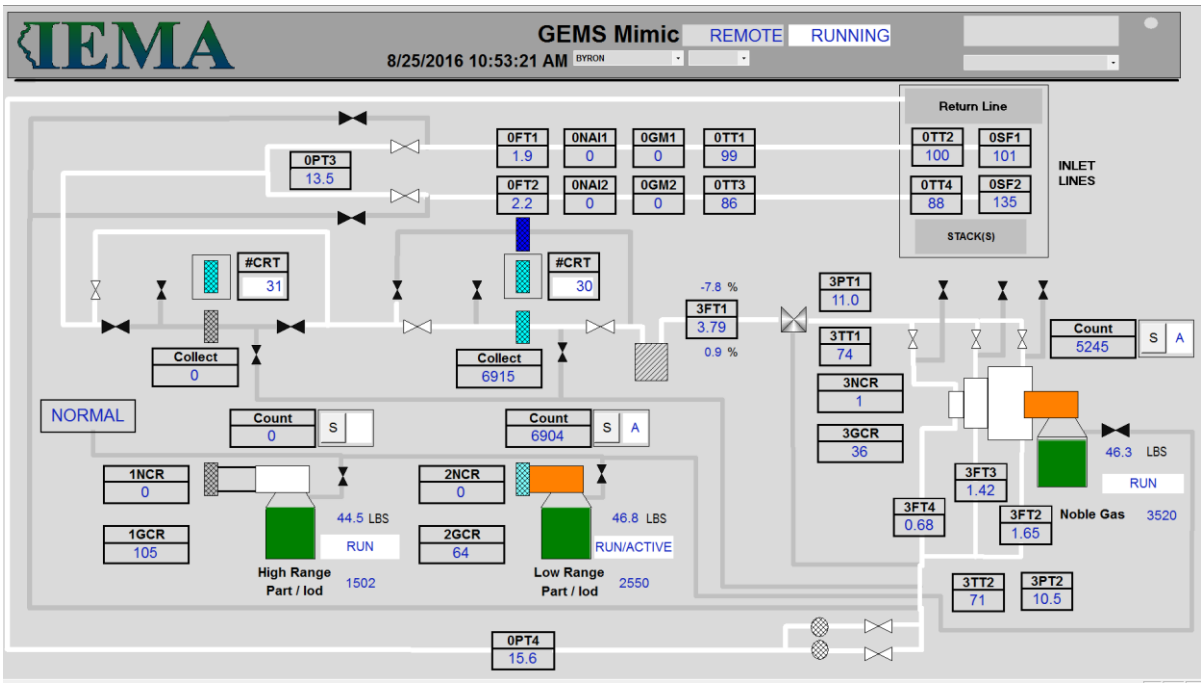
The Zion Nuclear Power Station permanently ceased operation in February 1998, and has been storing spent fuel on-site. Due to decommissioning activities, IEMA maintains a network of air monitoring stations around the Zion Station. Air samples are collected continuously, with the air filters being changed and analyzed weekly. The air filters are analyzed for gross alpha and beta through gas proportional counting. Both Zion and the Springfield background site also collect one air sample weekly on a charcoal cartridge. Cartridges are submitted for gamma spectroscopy analysis including, but not limited to reactor-produced and naturally-occurring radionuclides such as Be-7, Cs-137, I-131, K-40, Te-132 and Xe-131m. Appendix G includes the results of the air cartridge and filter analyses for Zion in 2015, and Appendix H includes comparative results for Background Reference Sites.

Gaseous Effluent Monitoring System

IEMA continuously monitors gaseous effluents from all operating nuclear power stations with the GEMS, which provides automatic, in-line, continuous sampling of each nuclear power plant effluent stack(s). The GEMS measures and identifies particulates, noble gases and iodines over a wide range of concentrations, from background levels to potential releases of radioactive material under emergency conditions.

The GEMS can be controlled remotely during nuclear power plant emergencies to provide flexibility in sampling. The screen shown in **Figure 2** below details the remote operation data for the Dresden Nuclear Station GEMS equipment.

Figure 2. Computer Display of GEMS Data



The GEMS equipment shown in **Figures 3A** and **3B** below were originally designed by SAIC and re-designed by IEMA personnel. The re-designed units were built, installed and are currently maintained by IEMA personnel.

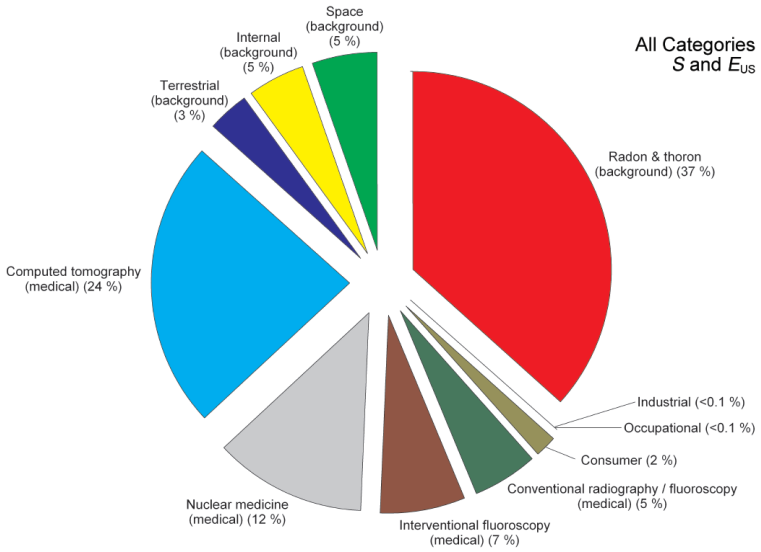
Figures 3A and B. Photos of GEMS Equipment

Ambient Gamma Monitoring

IEMA maintains a network of 515 environmental dosimeters around the six operating nuclear power stations and Zion. Unlike the environmental samples described previously, dosimeters do not provide information on what radionuclides are found in the environment. Instead, dosimeters provide a direct measurement of the total dose produced by all sources of gamma radiation, including naturally occurring radionuclides and cosmic rays, integrated over time. The dosimeters are arrayed within a 10-mile radius of each plant and are exchanged and analyzed quarterly. IEMA performs the analysis of the dosimeters. While the dosimeters are used to monitor for small changes in ambient background levels of gamma radiation that could result from nuclear power station activities, they also play another important role. In the event of a significant off-site release from a nuclear plant, the environmental dosimeters would be collected, read and used to determine the extent and magnitude of the release, along with an estimate of the radiation dose that may have been received by the general public.

Results tables for environmental dosimeters analyzed during 2015 are included in the site-specific sections of this report. In addition to the quarterly results, which are expressed as the average millirem per day, we have used those results to calculate the approximate millirem per year that would have been accrued by an individual at that location for an entire year. Those numbers can be compared to the average radiation exposure to an individual of 620 millirem per year from various sources (according to the 2009 National Council on Radiation Protection's Report). Approximately 8% of that exposure is from terrestrial and cosmic radiation (background radiation), and equals approximately 49.6 millirem per year.

Figure 4. Sources of Radiation Exposure to Man



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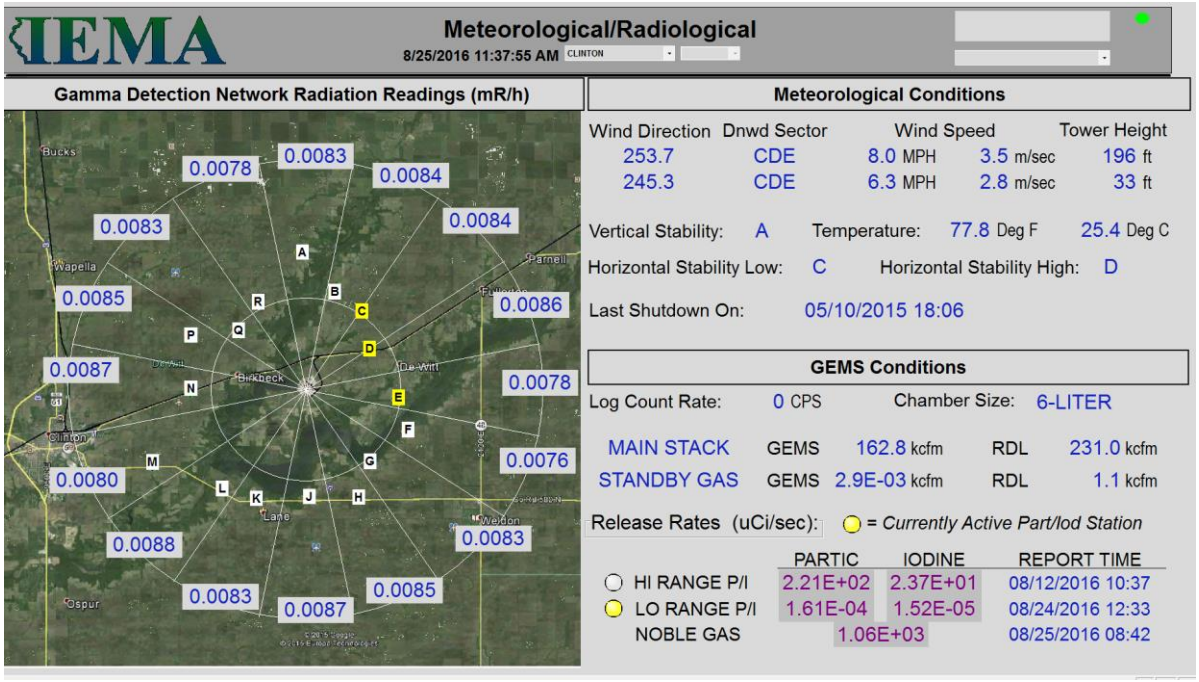
Gamma Detection Network

In addition to placing dosimeters around the nuclear power stations, IEMA manages the GDN, which is a network of Reuter-Stokes detectors placed radially around each of the nuclear power plants to detect gamma radiation levels in the environment. Sixteen detectors surround each nuclear plant site at approximately 2-5 miles from the plant. Each sensor is capable of detecting gamma radiation in the range of small background levels up to 10 R/hr. Shown in **Figure 5** is an analytical display for the Clinton Nuclear Station with meteorological and GDN radiation information, which would be utilized by IEMA health physicists to evaluate environmental impacts of a release. **Figure 6** is a photo of a typical GDN field installation.

Graphic representations of GDN data collected during 2015 from each ring of detectors around each nuclear power station are included in the site-specific Appendices of this report. Each of the 16 GDN stations is coded with a different color on the graph.

Figure 5. Display of Gamma Detection Network around Clinton Nuclear Station



The GDN provides real-time radiation measurements in millirem per hour (mRem/hr), and the environmental dosimeters deployed around the plants are radiation measurements integrated over the period of time they are deployed in the field (typically three months).

Figure 6. Typical IEMA GDN Field Installation

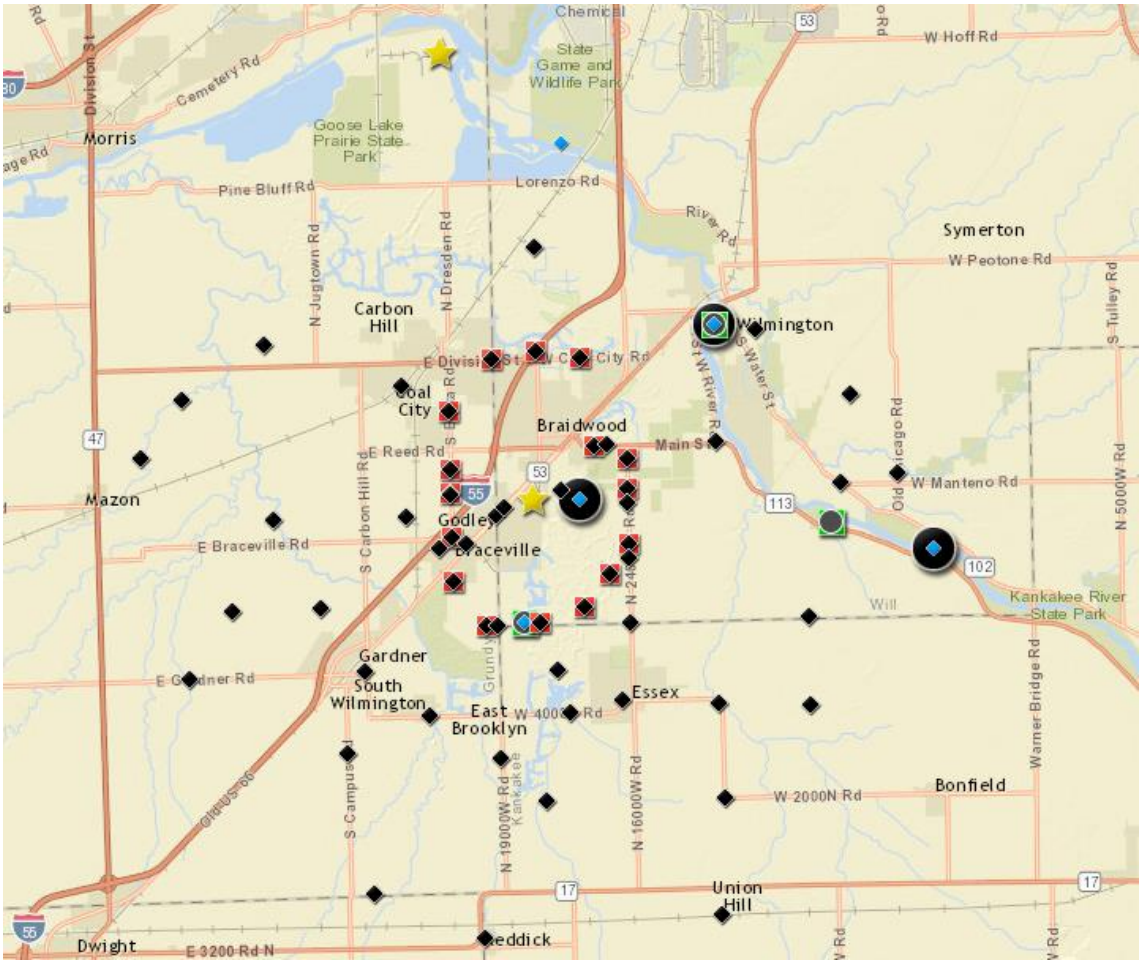
Braidwood Nuclear Power Station

Braidwood Station is located in Will County in northern Illinois, approximately 15 miles south-southwest of Joliet. This station utilizes two pressurized water reactors to generate electricity for Exelon. Unit 1 began operation in 1987 and Unit 2 in 1988.

Liquid effluents from the Braidwood Station are released in controlled batches to the Kankakee River. In 2005, it was discovered that a leak in the line that transported effluents to the Kankakee River had allowed for the unlicensed release of effluents to groundwater. As a result, tritium (H-3) was found in ground water and a pond outside the boundaries of the plant. As part of its efforts to identify releases and prevent future exposure to the public, IEMA continues to sample water from public waterways and analyzes samples to detect any further spread of the plume.

Figure 7 is an overview of all sampling locations in the vicinity of the Braidwood Nuclear Power Station (yellow star in the center). The second yellow star near the top of **Figure 7** is the Dresden Nuclear Power Station. Results for all samples collected in the environs of the Braidwood Nuclear Power Station can be found in **Appendix A**.

Figure 7. Overview of IEMA's Monitoring Locations for Braidwood



Map Key:

- OSL*
- GDN & OSL*
- Nuclear Power Plant
- Soil
- Sediment
- Vegetation
- Water

* OSL = Optically-Stimulated Luminescence Dosimeter

Sample icons are stacked to indicate multiple types of samples collected at the same location.

Dresden Nuclear Power Station

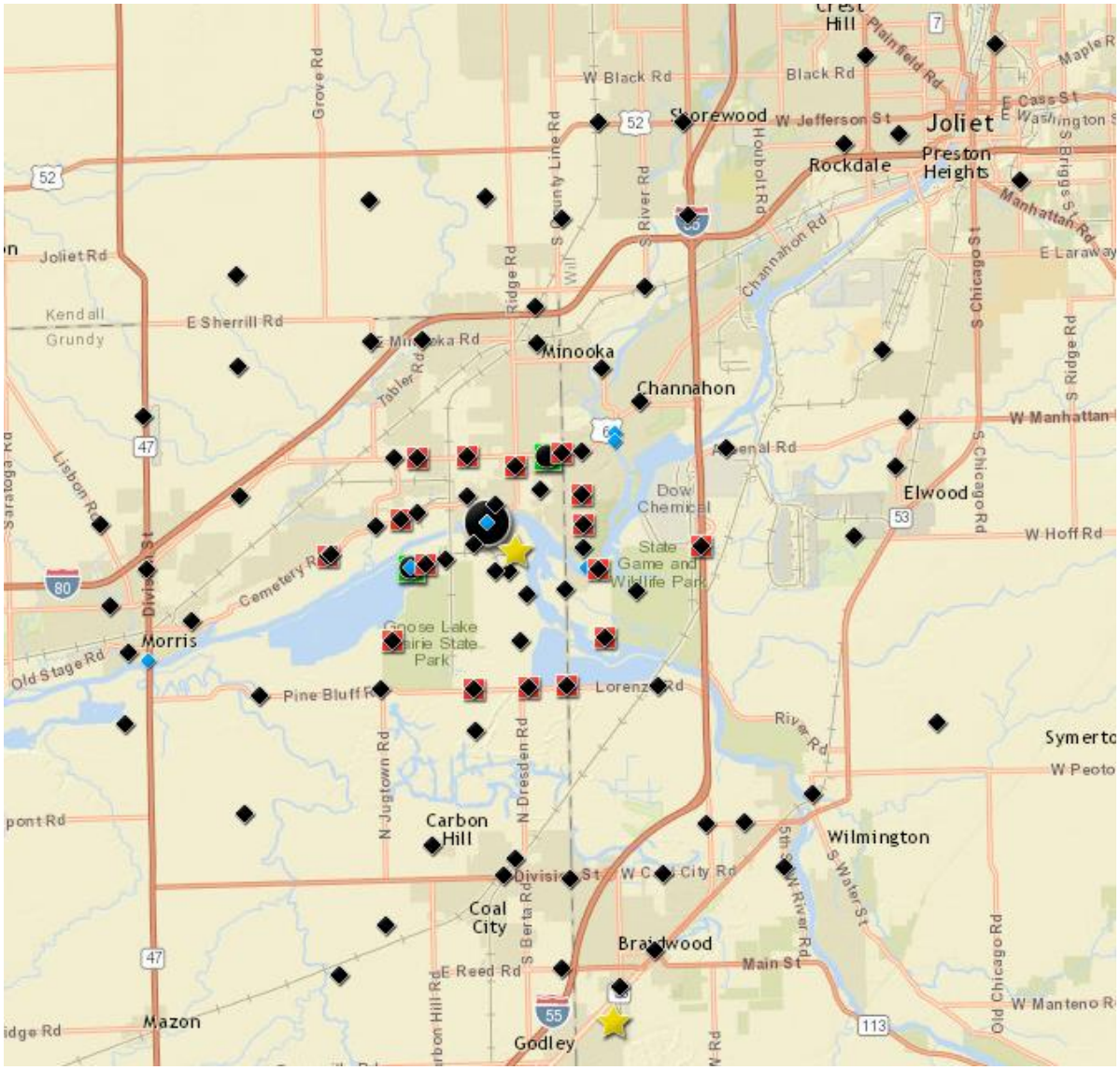
Dresden Station is located in Grundy County in northern Illinois, approximately 12 miles southwest of Joliet at the confluence of the Des Plaines and Kankakee rivers where they form the Illinois River. This station utilizes two boiling water reactors to generate electricity for Exelon.

Liquid effluents from the Dresden Station are released in controlled batches to the Illinois River.

Figure 8 is an overview of all sampling locations in the vicinity of the Dresden Nuclear Power Station (yellow star in the middle of the map). The second yellow star near the bottom of **Figure 8** is the Braidwood Nuclear Power Station.

Results for all samples collected in the environs of the Dresden Nuclear Power Station can be found in **Appendix B**.

Figure 8. Overview of IEMA Monitoring Locations for Dresden



Map Key:

- OSL*
- GDN & OSL*
- Nuclear Power Plant
- Soil
- Sediment
- Vegetation
- Water

* OSL = Optically-Stimulated Luminescence Dosimeter

Sample icons are stacked to indicate multiple types of samples collected at the same location.

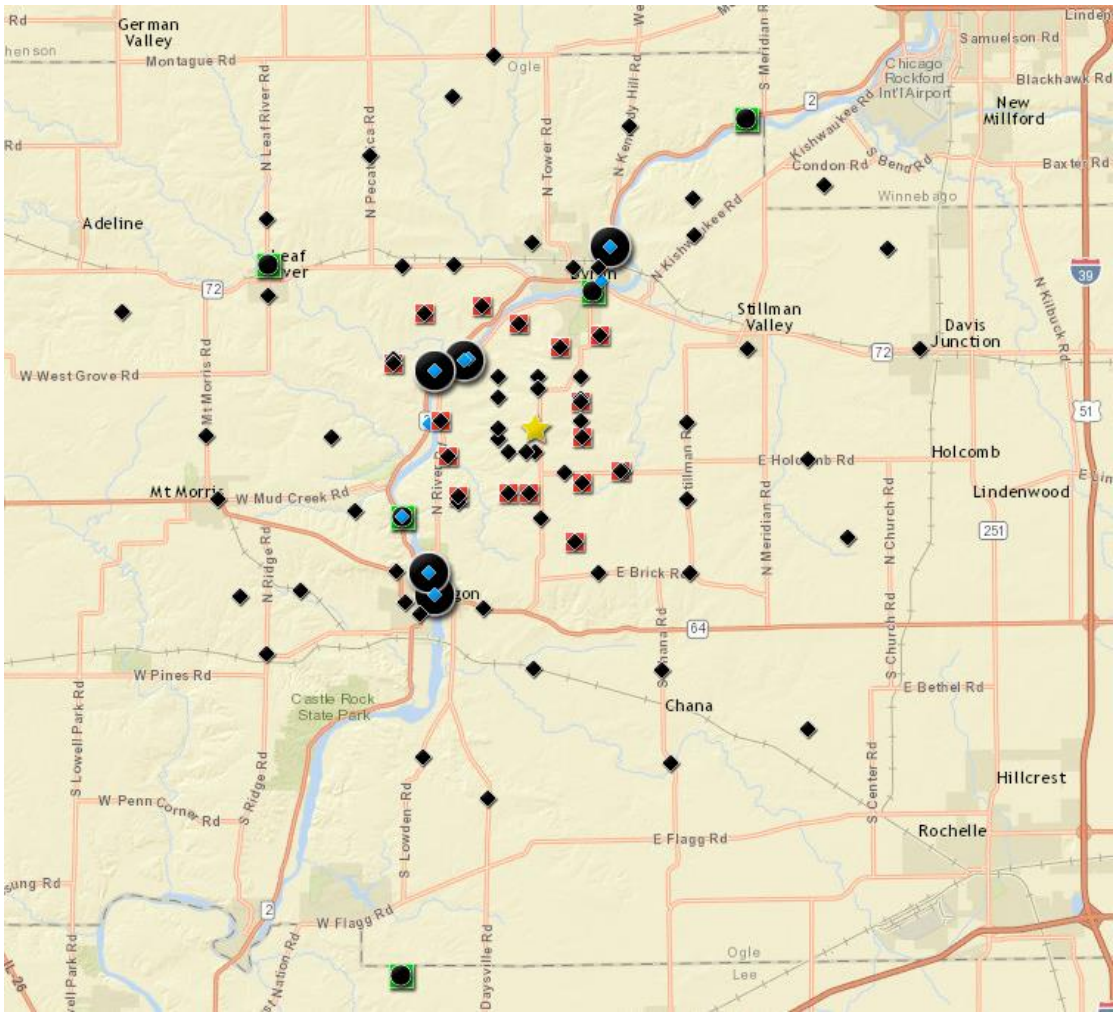
Byron Nuclear Power Station

Byron Station is located in Ogle County in northern Illinois, approximately 17 miles southwest of Rockford. This station utilizes two pressurized water reactors to generate electricity for Exelon. Unit 1 began operation in February 1985 and Unit 2 in January 1987.

Liquid effluents from the Byron Station are released to the Rock River.

Figure 9 is an overview of all sampling locations in the vicinity of the Byron Nuclear Power Station (yellow star). Results for all samples collected in the environs of the Byron Nuclear Power Station can be found in **Appendix C**.

Figure 9. Overview of IEMA Monitoring Locations for Byron



Map Key:

- OSL*
- GDN & OSL*
- Nuclear Power Plant
- Soil
- Sediment
- Vegetation
- Water

* OSL = Optically-Stimulated Luminescence Dosimeter

Sample icons are stacked to indicate multiple types of samples collected at the same location.

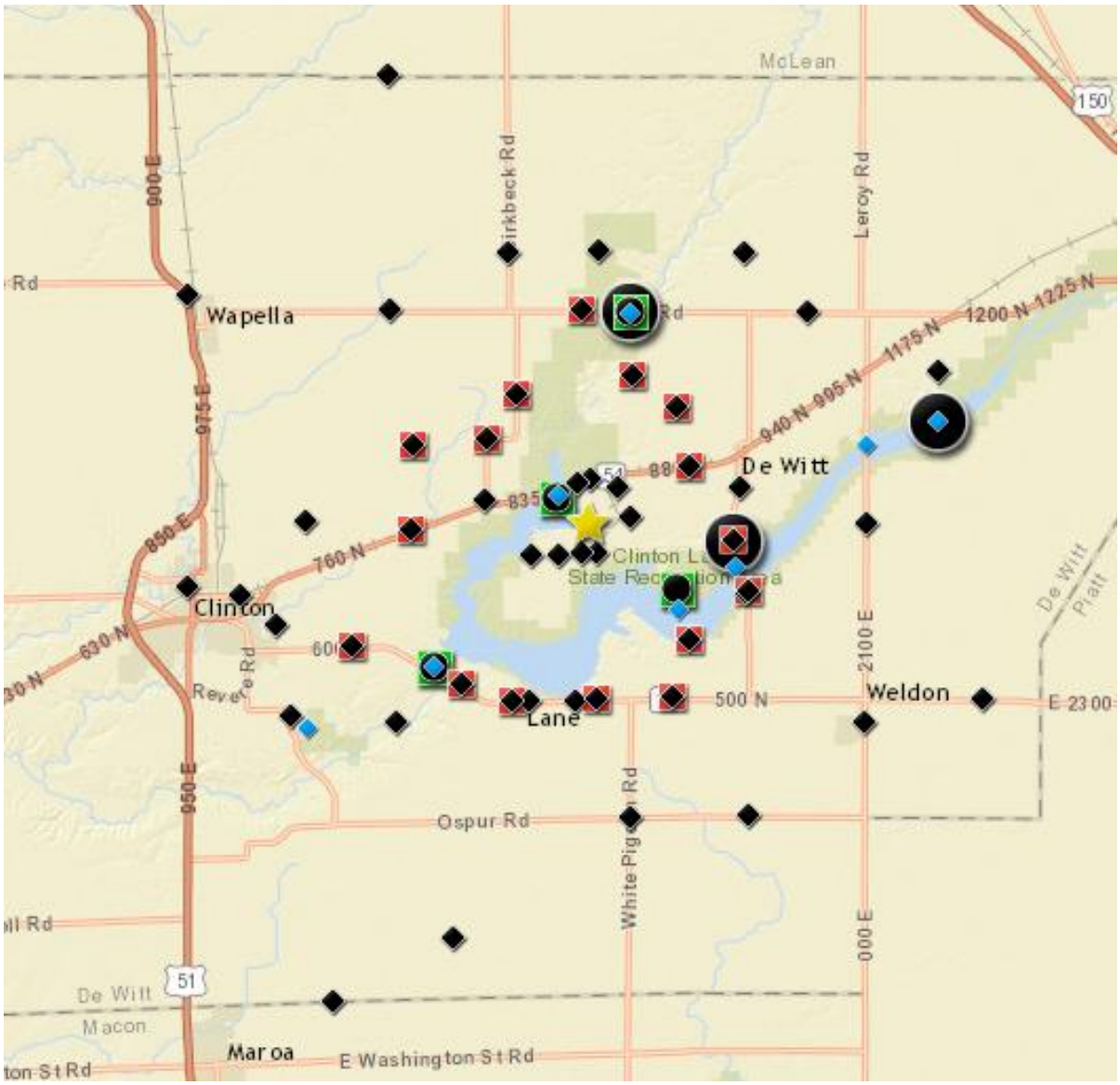
Clinton Nuclear Power Station

Clinton Station is located in DeWitt County, approximately six miles east of the city of Clinton in central Illinois. The station has one boiling water reactor used to generate electricity for Exelon.

Liquid effluents from the Clinton Station are released into the eastern arm of Clinton Lake, a 4,900-acre man-made cooling lake. Outflow from Lake Clinton falls into Salt Creek, a tributary of the Sangamon River.

Figure 10 is an overview of all sampling locations in the vicinity of the Clinton Nuclear Power Station (yellow star). Results for all samples collected in the environs of the Clinton Nuclear Power Station can be found in **Appendix D**.

Figure 10. Overview of IEMA Monitoring Locations for Clinton



Map Key:

- OSL*
- GDN & OSL*
- Nuclear Power Plant
- Soil
- Sediment
- Vegetation
- Water

* OSL = Optically-Stimulated Luminescence Dosimeter

Sample icons are stacked to indicate multiple types of samples collected at the same location.

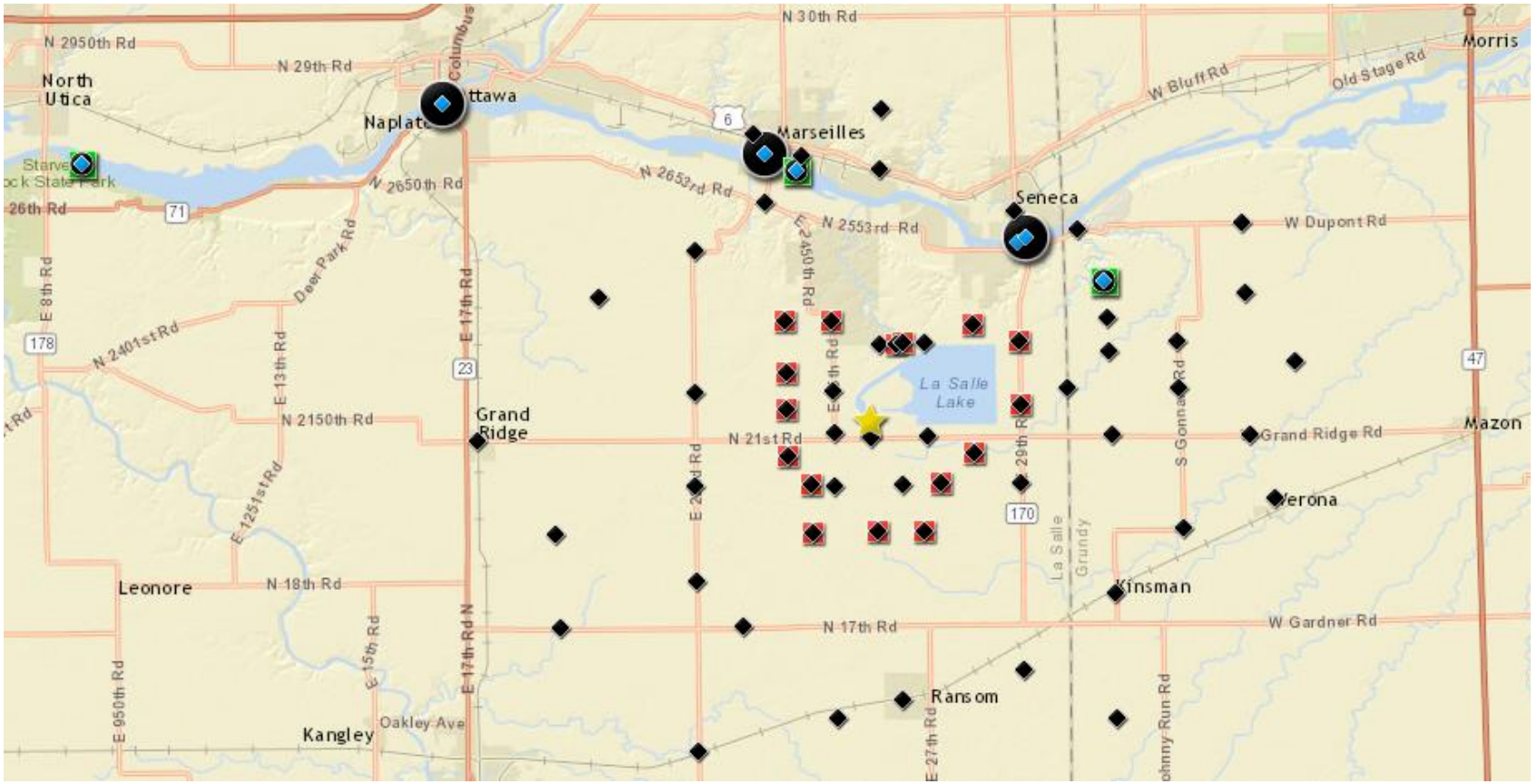
LaSalle Nuclear Power Station

LaSalle Station is located in LaSalle County, near Marseilles in northern Illinois. This station has two boiling water reactors used to generate electricity for Exelon. Unit 1 began operation in March 1982 and Unit 2 in late December of 1983.

Liquid effluents from the LaSalle Station are released to the LaSalle cooling lake and from there to the Illinois River at a point 3.5 miles north of the station. However, the discharge point is approximately 20 miles downriver of the Dresden Nuclear Power Station. Effectively, samples taken downstream of Dresden station are upstream controls for the LaSalle station.

Figure 11 is an overview of all sampling locations in the vicinity of the LaSalle Nuclear Power Station (yellow star). Results for all samples collected in the environs of the LaSalle Nuclear Power Station can be found in **Appendix E**.

Figure 11. Overview of IEMA Monitoring Locations for LaSalle



Map Key:

- OSL*
- GDN & OSL*
- Nuclear Power Plant
- Soil
- Sediment
- Vegetation
- Water

* OSL = Optically-Stimulated Luminescence Dosimeter

Sample icons are stacked to indicate multiple types of samples collected at the same location.

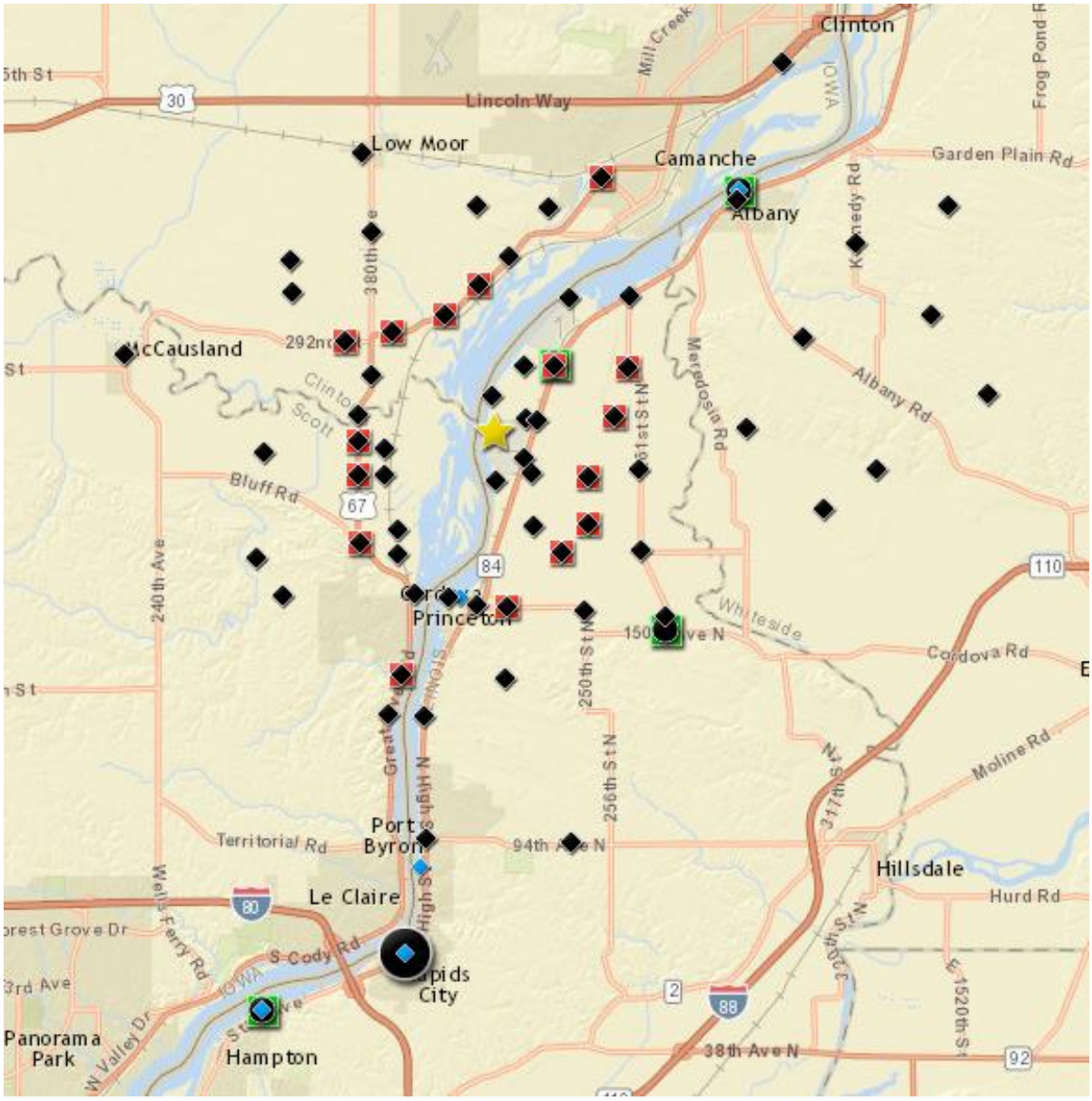
Quad Cities Nuclear Power Station

Quad Cities Station is located in Rock Island County in northwestern Illinois, approximately 20 miles northeast of Moline. This station utilizes two boiling water reactors to generate electricity for Exelon.

Liquid effluents from the Quad Cities Station are released to the adjacent Mississippi River.

Figure 12 is an overview of all sampling locations in the vicinity of the Quad Cities Nuclear Power Station (yellow star). Results for all samples collected in the environs of the Quad Cities Nuclear Power Station can be found in **Appendix F**.

Figure 12. Overview of IEMA Monitoring Locations for Quad Cities



Zion Nuclear Power Station

Zion Station is located next to Lake Michigan in Zion approximately 40 miles north of Chicago. Prior to 1998, the station utilized two pressurized water reactors to generate electricity. The plant ceased operation permanently in February 1998 and was defueled soon thereafter. In September 2010, the facility license was transferred from Exelon to ZionSolutions for the express purpose of expediting the decommissioning of the site. In 2015, the plant remained in SAFSTOR status allowing the facility to be safely stored, decontaminated and decommissioned to levels that permit release for unrestricted use. Decommissioning efforts progressed during 2015 and remain on schedule for a 2019 end date. Also in 2015, ZionSolutions finished loading and transferring 61 dry cask storage containers with spent nuclear fuel and four dry cask storage containers with Greater Than Class C Waste to the onsite Independent Spent Fuel Storage Installation (ISFSI). The ISFSI is within IEMA's environmental monitoring area for Zion.

Note: Photo of Zion Station prior to decommissioning.

Liquid effluents from the Zion Station were released to Lake Michigan at a point near Zion Beach during the time the Zion Station was operational. IEMA continues to sample Lake Michigan water from this location.

Figure 13 is an overview of all sampling locations in the vicinity of the Zion Nuclear Power Station (yellow star). Results for all samples collected in the environs of the Zion Nuclear Power Station can be found in **Appendix G**.

Figure 13. Overview of IEMA Monitoring Locations for Zion

Map Key:

- Nuclear Power Plant
- OSL*
- Air Sampler
- Vegetation
- Soil
- Sediment
- Water

* OSL = Optically-Stimulated Luminescence Dosimeter

Sample icons are stacked to indicate multiple types of samples collected at the same location.

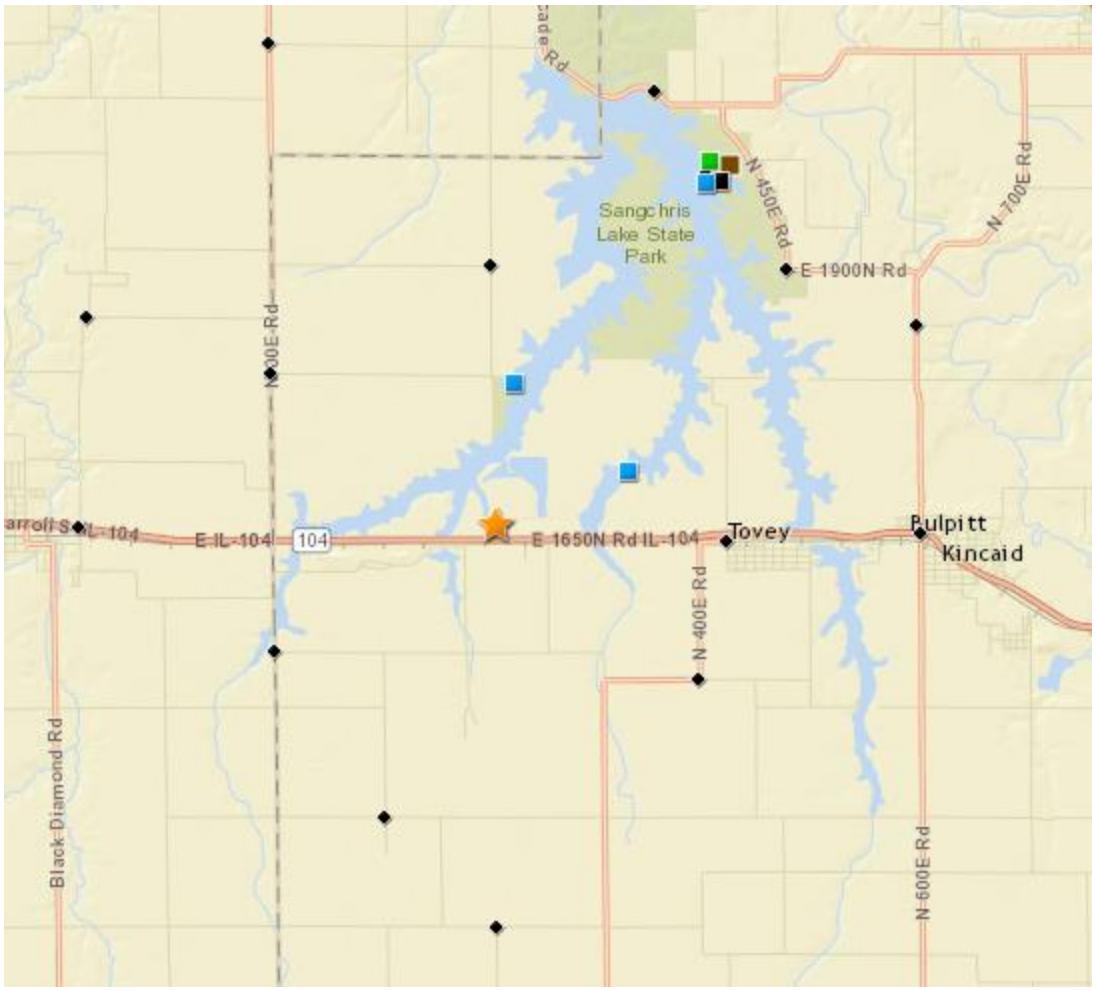
Background Sampling Locations

IEMA has established the environs of Sangchris Lake State Park, a cooling lake for a coal-fired power station, as a Background Sampling Location. To establish "background" radiation levels, water, soil, sediment, vegetation and fish samples are collected. In addition, there is an array of environmental dosimeters around the power plant, similar to what can be found around the nuclear power station.

Since we routinely take air samples around the Zion facility, we have also established a Background Sampling Location for air samples. A continuous air sampling station is located near the IEMA laboratory in Springfield, and samples are exchanged weekly, similar to the air samplers in the vicinity of Zion.

Figure 14 is an overview of all sampling locations in the vicinity of Sangchris Lake State Park. Results for background samples can be found in **Appendix H**.

Figure 14. Overview of IEMA Monitoring Locations for Sangchris Lake State Park



Map Key:

- OSL
- Power Plant
- Water
- Soil
- Sediment
- Vegetation

* OSL = Optically-Stimulated Luminescence Dosimeter

Appendix A
Braidwood Sample Results

Table A-1. Tritium in Water Sample Results for Braidwood Area
Results are in picocuries per liter (pCi/L)

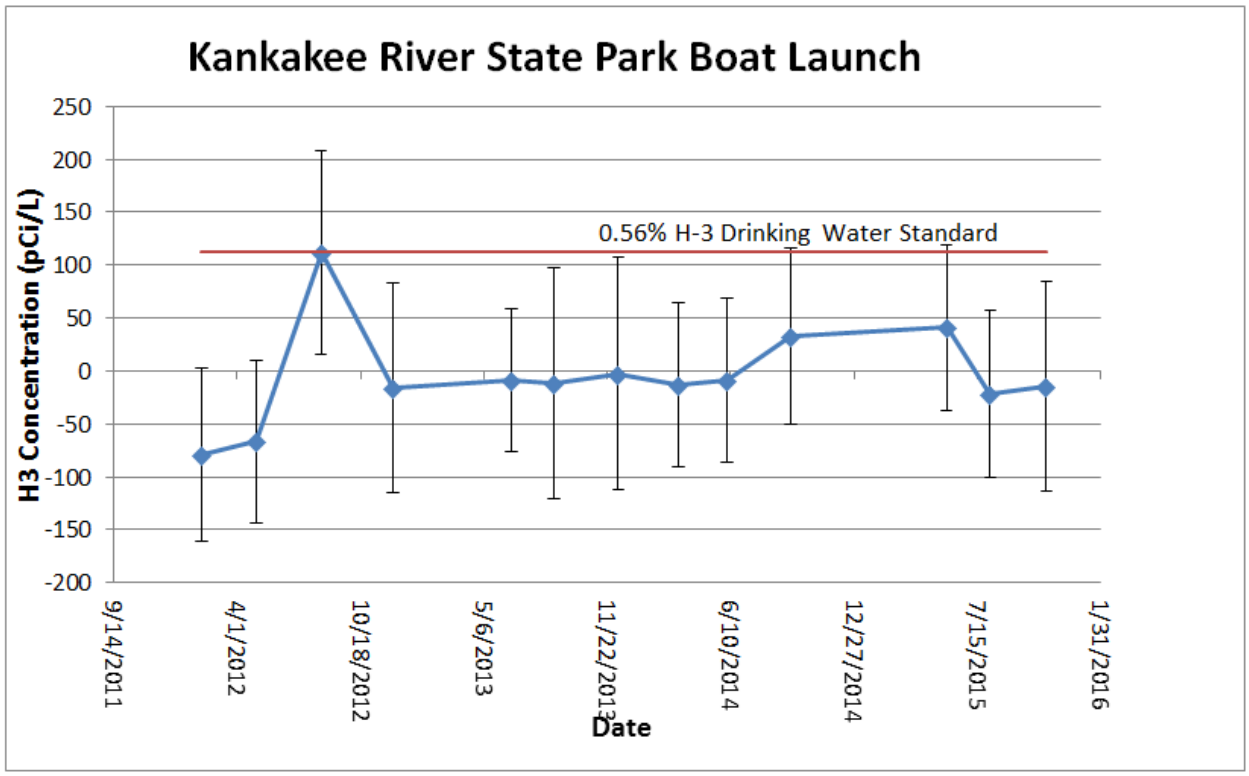
Location	Date	Result		*U
BD-51 (PW-015) Fatlan Well	4/8/2015	16.4	±	80.2
Braidwood Cooling Lake at N boat launch	1/28/2015	4.7	±	89.6
Braidwood Cooling Lake at N boat launch	5/26/2015	43.4	±	77.8
Braidwood Cooling Lake at N boat launch	8/5/2015	77.6	±	78.8
Braidwood Cooling Lake at N boat launch	11/5/2015	11.5	±	77.2
Braidwood Cooling Lake at S boat launch	1/28/2015	55.1	±	78.5
Braidwood Cooling Lake at S boat launch	5/26/2015	-11.4	±	76.3
Braidwood Cooling Lake at S boat launch	8/5/2015	89.0	±	79.1
Braidwood Cooling Lake at S boat launch	11/4/2015	16.6	±	99.8
DS-02	3/11/2015	136.0	±	81.0
DS-02	6/24/2015	116.0	±	80.9
DS-02	8/28/2015	229.0	±	83.2
DS-02	10/15/2015	20.7	±	77.9
Kankakee R. at Des Plaines Cons Area Boat Launch	5/26/2015	41.1	±	77.8
Kankakee R. at Des Plaines Cons Area Boat Launch	8/5/2015	262.0	±	83.8
Kankakee R. at Des Plaines Cons Area Boat Launch	11/4/2015	1780.0	±	117.0
Kankakee R. at Kankakee River State Park boat launch	5/26/2015	41.1	±	77.8
Kankakee R. at Kankakee River State Park boat launch	8/5/2015	-21.0	±	78.9
Kankakee R. at Kankakee River State Park boat launch	11/4/2015	-14.2	±	99.0
Kankakee R. at Wilmington Island Park, S end of island above dam	1/28/2015	21.0	±	90.0
Kankakee R. at Wilmington Island Park, S end of island above dam	5/26/2015	-38.8	±	75.5
Kankakee R. at Wilmington Island Park, S end of island above dam	8/5/2015	54.8	±	78.1
Kankakee R. at Wilmington Island Park, S end of island above dam	11/4/2015	21.3	±	99.9
MW-04	1/17/2015	1690.0	±	134.0
MW-04	4/18/2015	3420.0	±	146.0
MW-04	8/25/2015	1310.0	±	108.0
MW-04	10/22/2015	1440.0	±	111.0
MW-109 D	3/11/2015	150.0	±	103.0
MW-109 D	4/12/2015	85.4	±	101.0
MW-111 DR	3/9/2015	89.8	±	79.7
MW-111 DR	5/6/2015	113.0	±	80.3
MW-112 D	3/9/2015	11.9	±	100.0
MW-112 D	5/6/2015	11.5	±	77.7
MW-130 D	3/11/2015	183.0	±	104.0
MW-130 D	4/12/2015	36.6	±	77.9

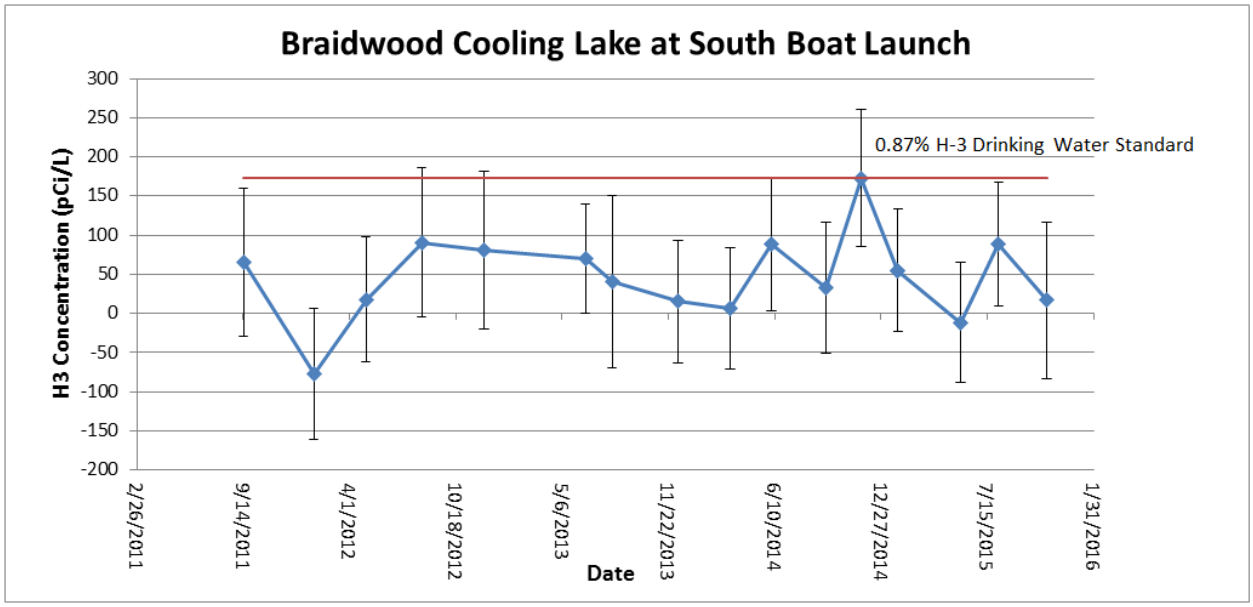
*U is Uncertainty at a 95% confidence level.

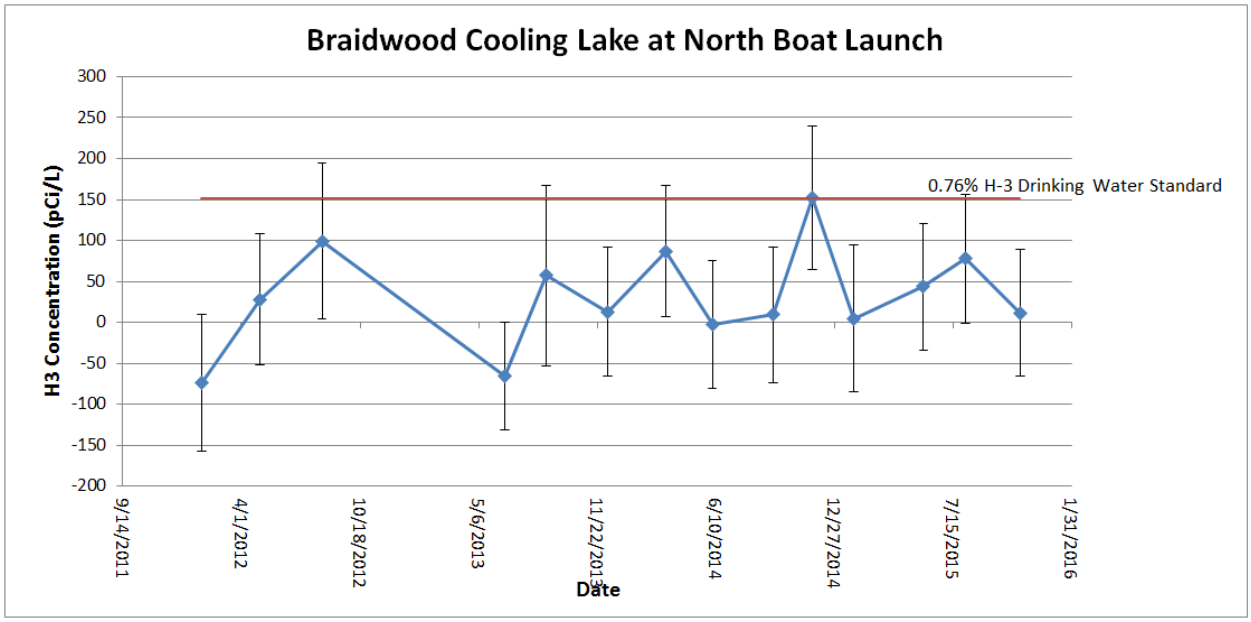
Location	Date	Result		*U
MW-131 D	3/11/2015	136.0	±	81.0
MW-131 D	4/12/2015	126.0	±	80.3
MW-134 D	3/9/2015	61.9	±	101.0
MW-134 D	5/6/2015	68.2	±	82.0
PW-006	1/20/2015	57.6	±	102.0
PW-006	4/8/2015	9.4	±	80.1
PW-006P	1/20/2015	55.1	±	102.0
PW-006P	4/8/2015	70.3	±	81.7
PW-011	1/20/2015	-43.2	±	99.6
PW-011	4/8/2015	-48.1	±	75.5
PW-013	1/20/2015	9.6	±	101.0
PW-013	4/8/2015	16.4	±	80.2
PW-016	1/20/2015	31.2	±	101.0
PW-016	4/8/2015	35.1	±	80.8
SW-005	1/20/2015	21.6	±	101.0
SW-005	4/8/2015	70.3	±	81.7

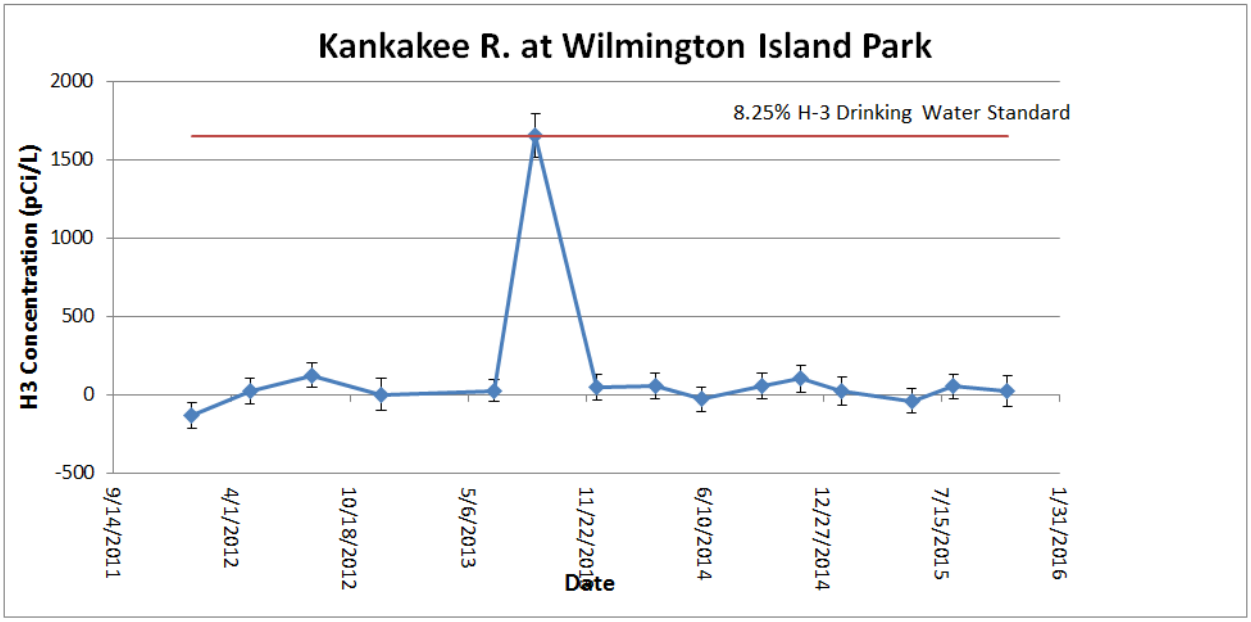
*U is Uncertainty at a 95% confidence level.

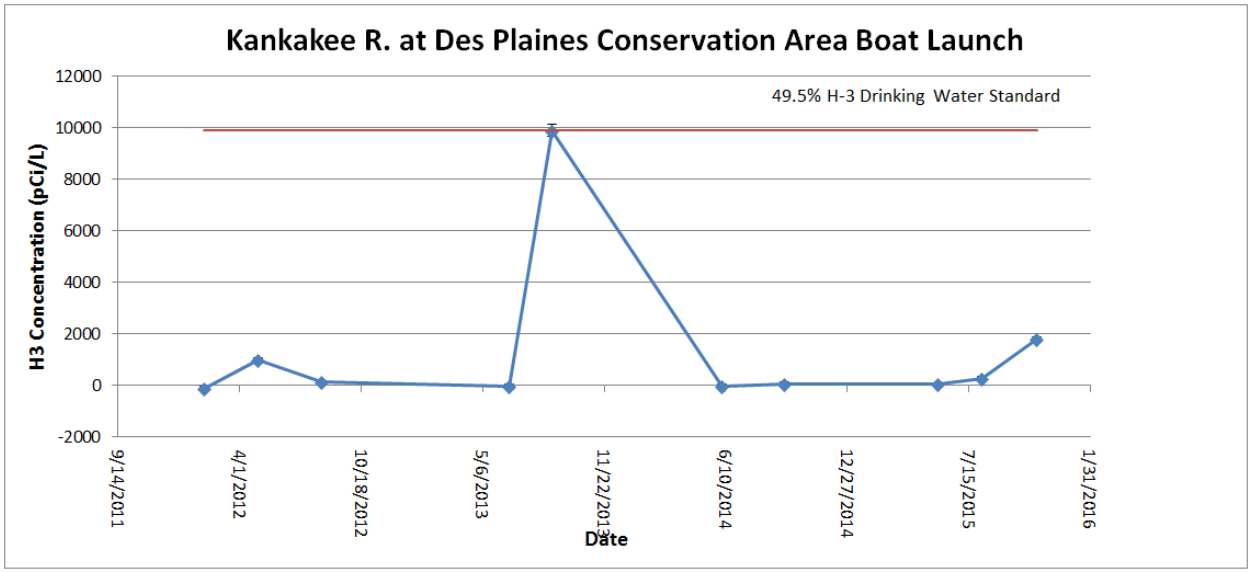
Tables A-2. Trending Graphs for Water from the Braidwood Area
(Highest results on graphs indicate percentage of US EPA Drinking Water Standard)

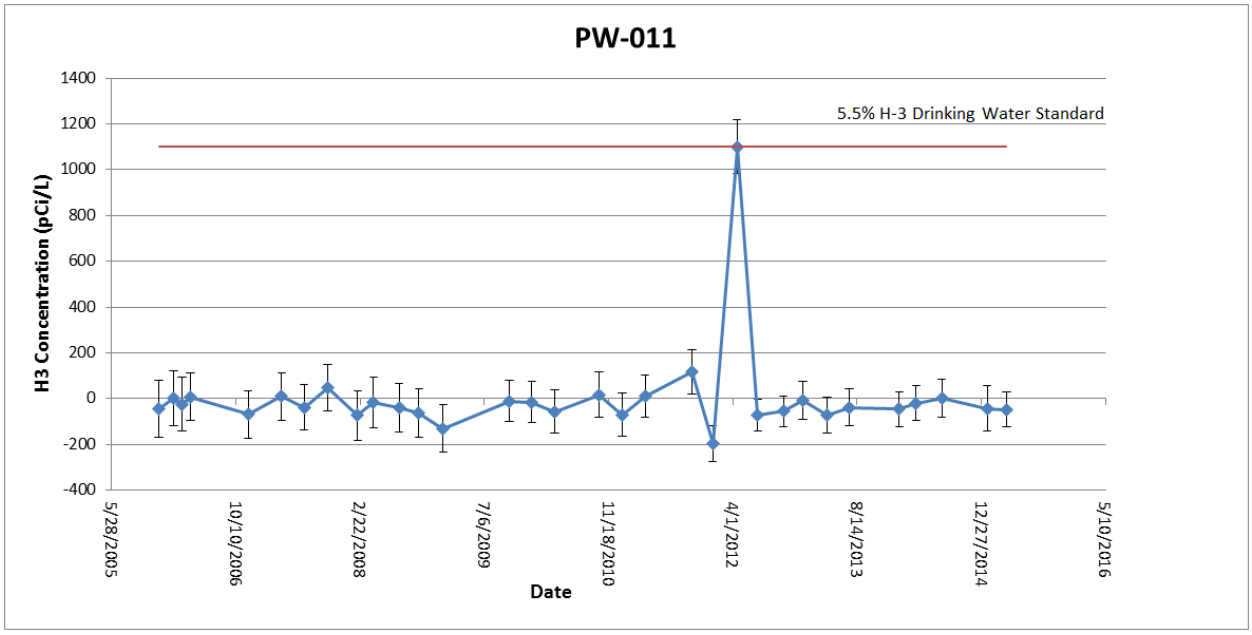


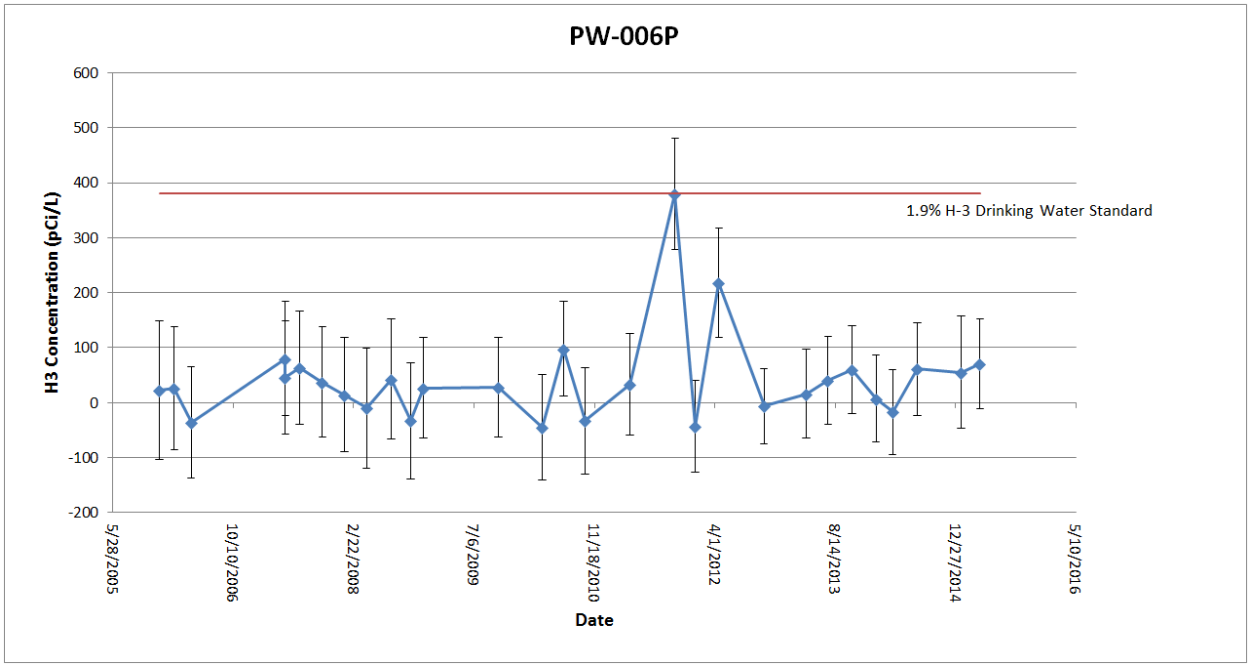


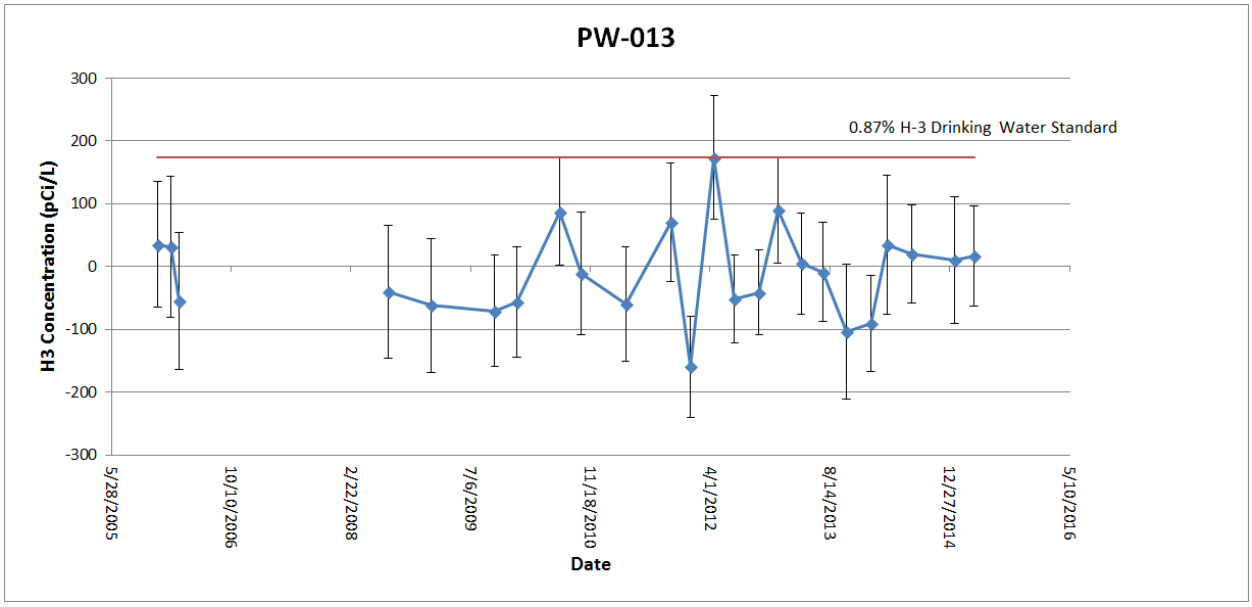

Braidwood Cooling Lake at North Boat Launch
H3 Concentration (pCi/L)
300
250
200
150
100
50
0
-50
-100
-150
-200
0.76% H-3 Drinking Water Standard
9/14/2011
4/1/2012
10/18/2012
5/6/2013
11/22/2013
6/10/2014
12/27/2014
7/15/2015
1/31/2016
Date

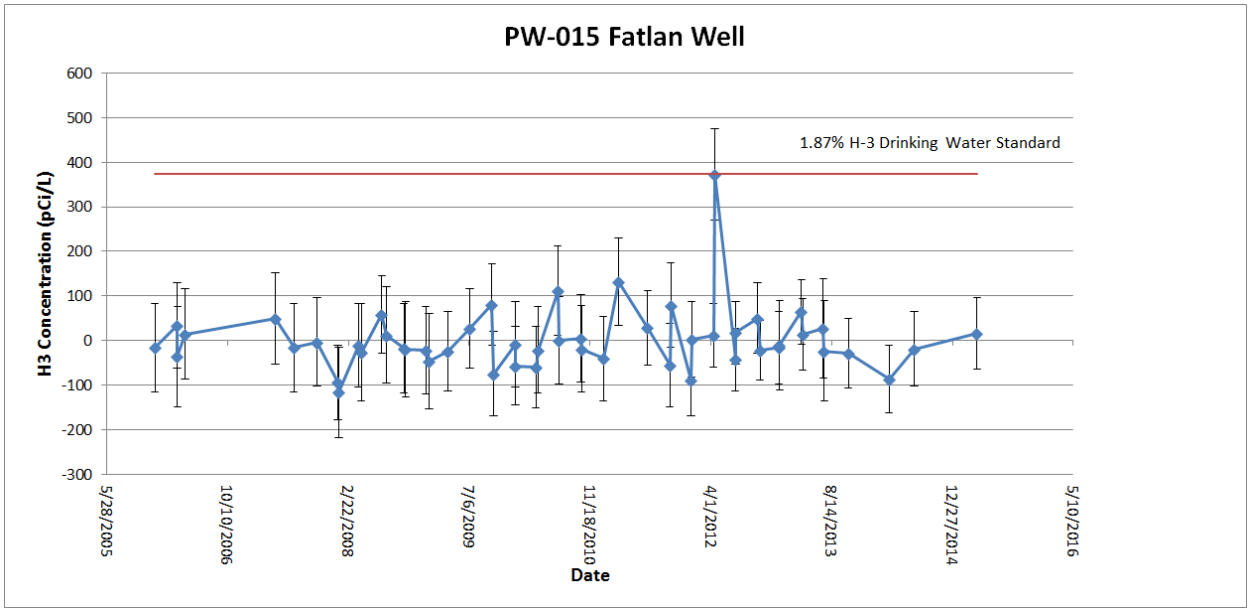

Kankakee R. at Wilmington Island Park
H3 Concentration (pCi/L)
2000
1500
1000
500
0
-500
8.25% H-3 Drinking Water Standard
9/14/2011
4/1/2012
10/18/2012
5/6/2013
11/22/2013
6/10/2014
12/27/2014
7/15/2015
1/31/2016
Date

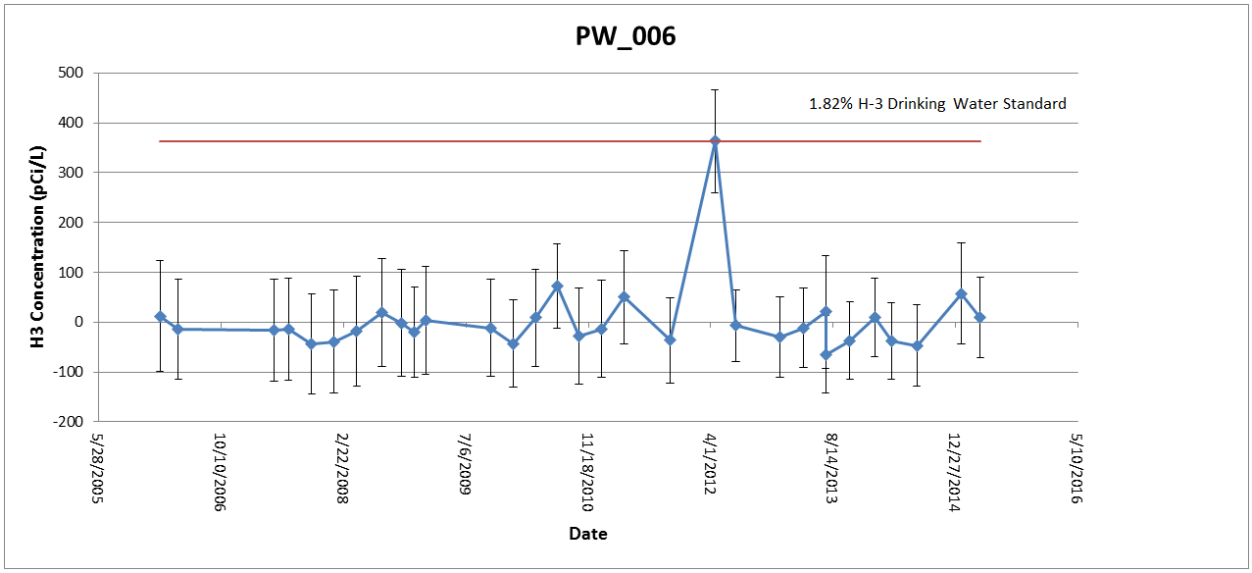

Kankakee R. at Des Plaines Conservation Area Boat Launch
49.5% H-3 Drinking Water Standard
H3 Concentration (pCi/L)
12000
10000
8000
6000
4000
2000
0
-2000
9/14/2011
4/1/2012
10/18/2012
5/6/2013
11/22/2013
6/10/2014
12/27/2014
7/15/2015
1/31/2016
Date

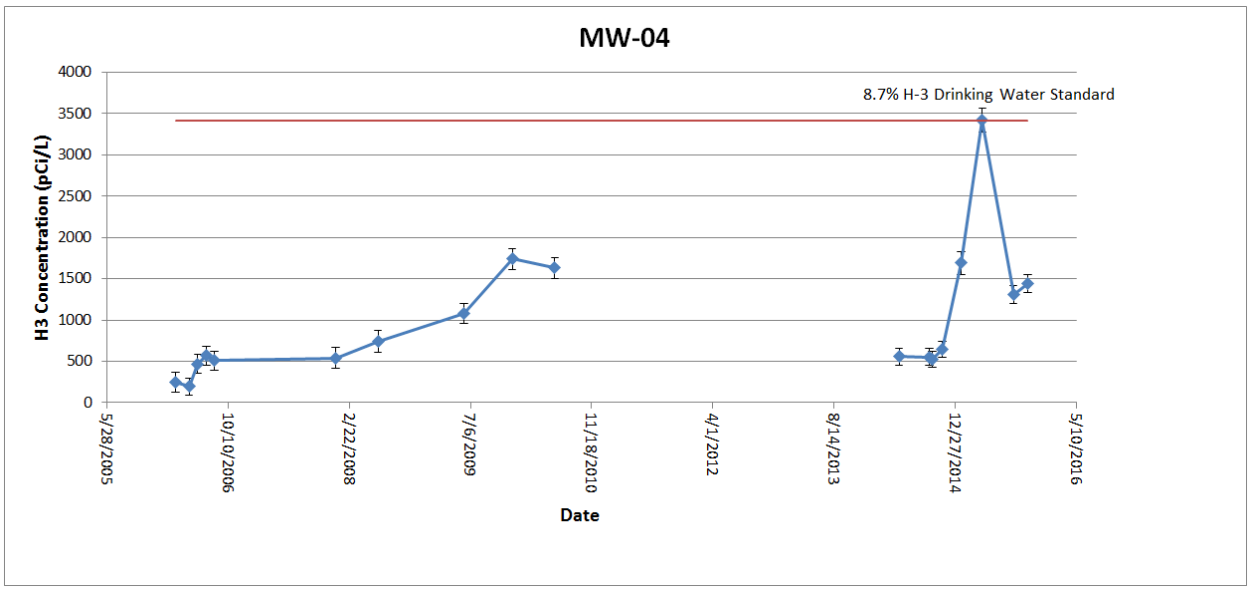

PW-011
5.5% H-3 Drinking Water Standard
H3 Concentration (pCi/L)
1400
1200
1000
800
600
400
200
0
-200
-400
5/28/2005
10/10/2006
2/22/2008
7/6/2009
11/18/2010
4/1/2012
8/14/2013
12/27/2014
5/10/2016
Date

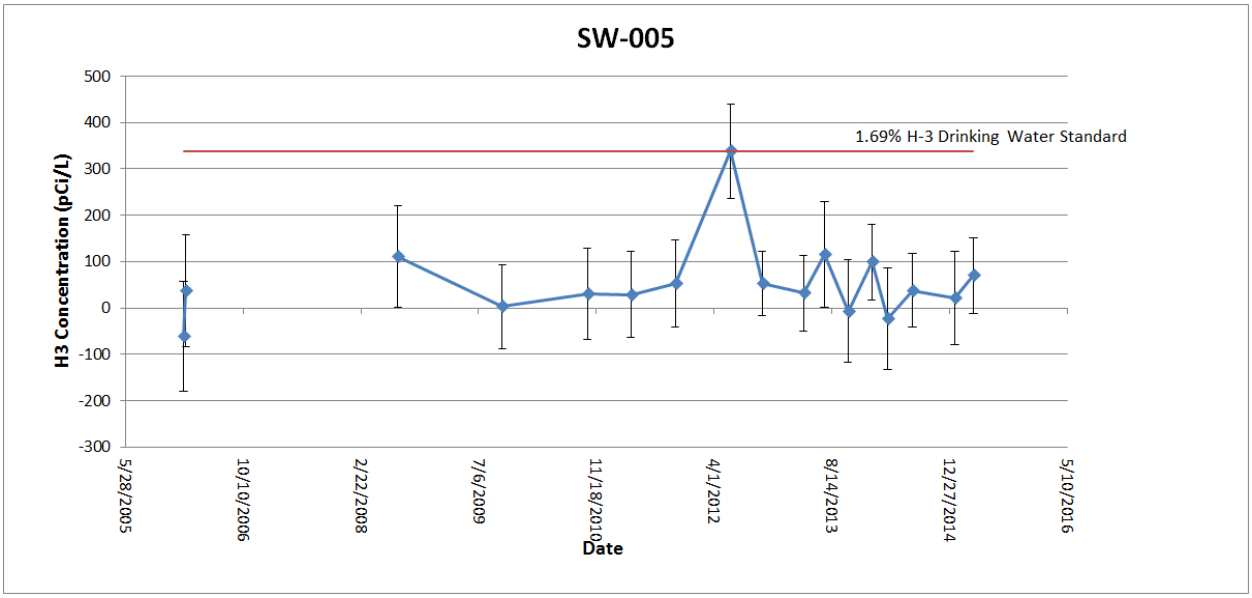

PW-006P
600
500
400
300
200
100
0
-100
-200
H3 Concentration (pCi/L)
1.9% H-3 Drinking Water Standard
5/28/2005
10/10/2006
2/22/2008
7/6/2009
11/18/2010
4/1/2012
8/14/2013
12/27/2014
5/10/2016
Date

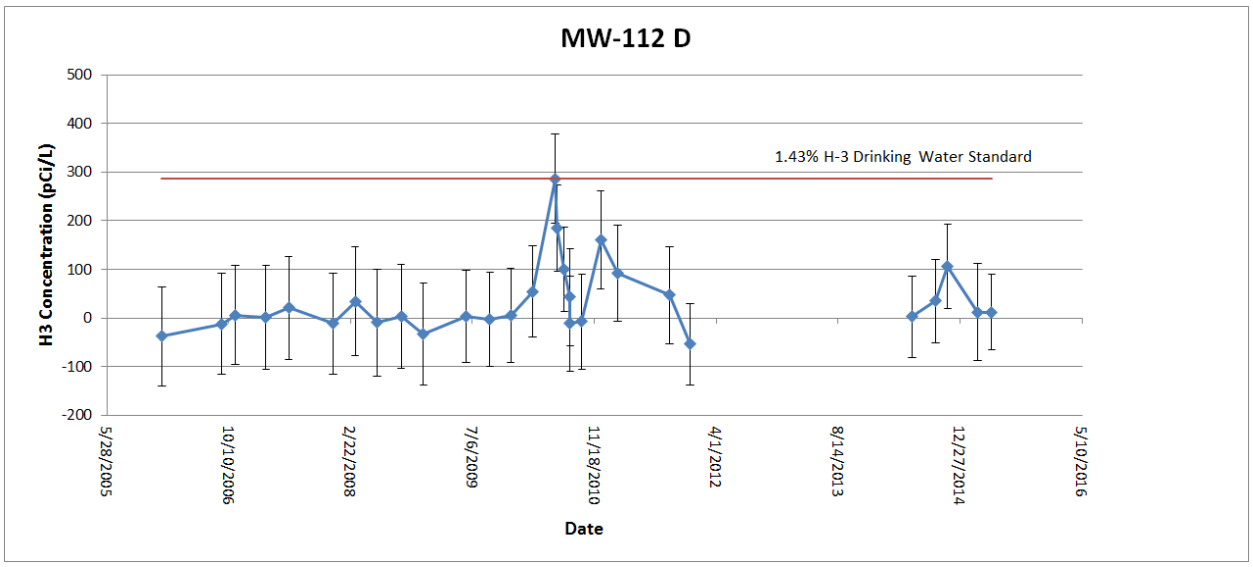

PW-013
300
200
100
0
-100
-200
-300
H3 Concentration (pCi/L)
0.87% H-3 Drinking Water Standard
5/28/2005
10/10/2006
2/22/2008
7/6/2009
11/18/2010
4/1/2012
8/14/2013
12/27/2014
5/10/2016
Date

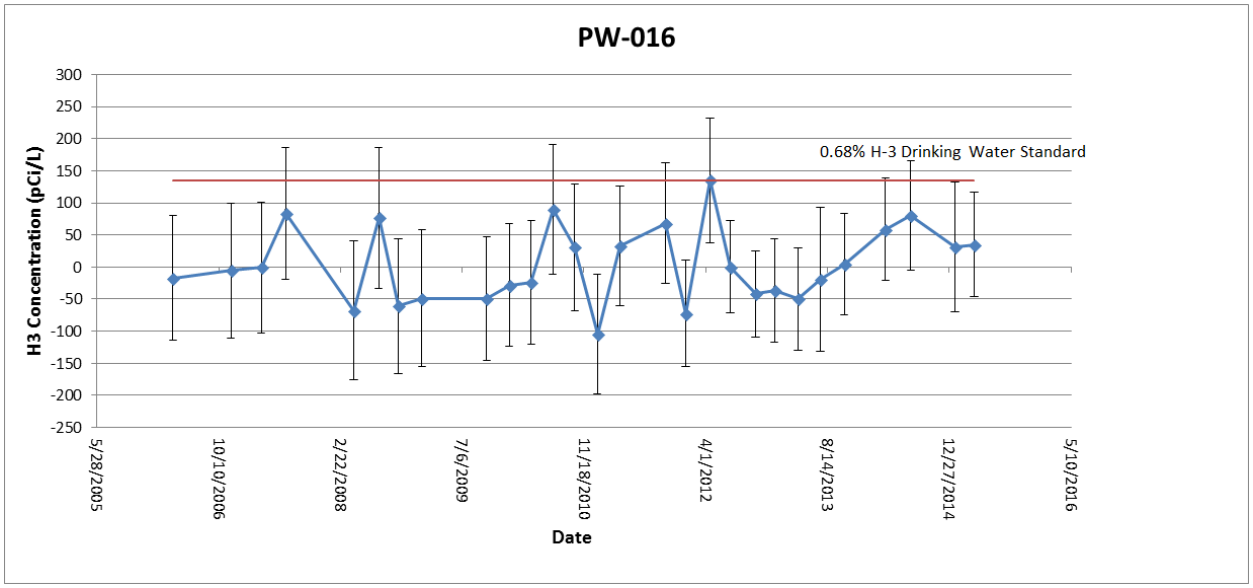

PW-015 Fatlan Well
1.87% H-3 Drinking Water Standard
H3 Concentration (pCi/L)
600
500
400
300
200
100
0
-100
-200
-300
5/28/2005
10/10/2006
2/22/2008
7/6/2009
11/18/2010
4/1/2012
8/14/2013
12/27/2014
5/10/2016
Date

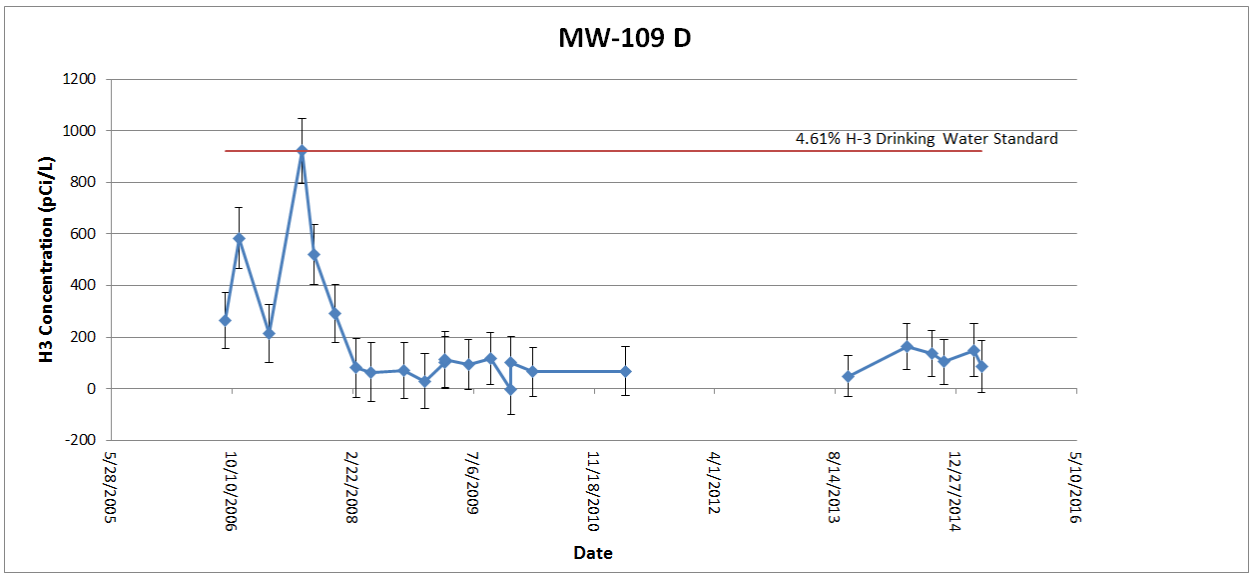

PW_006
1.82% H-3 Drinking Water Standard
H3 Concentration (pCi/L)
500
400
300
200
100
0
-100
-200
5/28/2005
10/10/2006
2/22/2008
7/6/2009
11/18/2010
4/1/2012
8/14/2013
12/27/2014
5/10/2016
Date

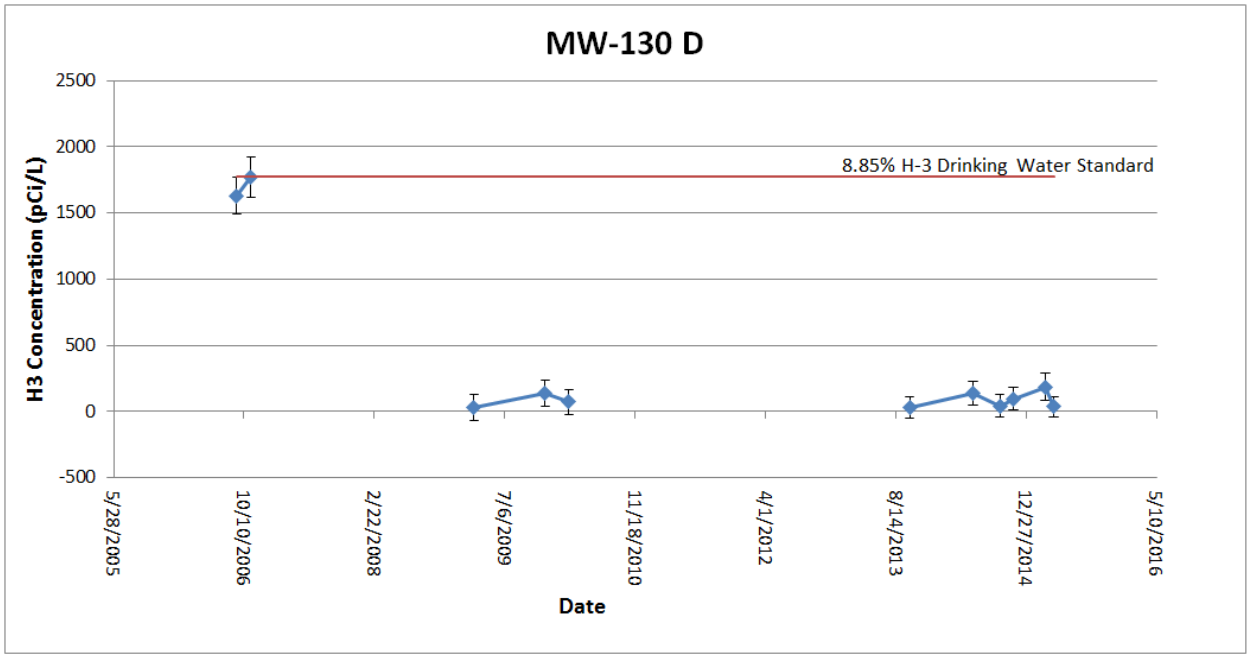

MW-04
8.7% H-3 Drinking Water Standard
H3 Concentration (pCi/L)
4000
3500
3000
2500
2000
1500
1000
500
0
5/28/2005
10/10/2006
2/22/2008
7/6/2009
11/18/2010
4/1/2012
8/14/2013
12/27/2014
5/10/2016
Date

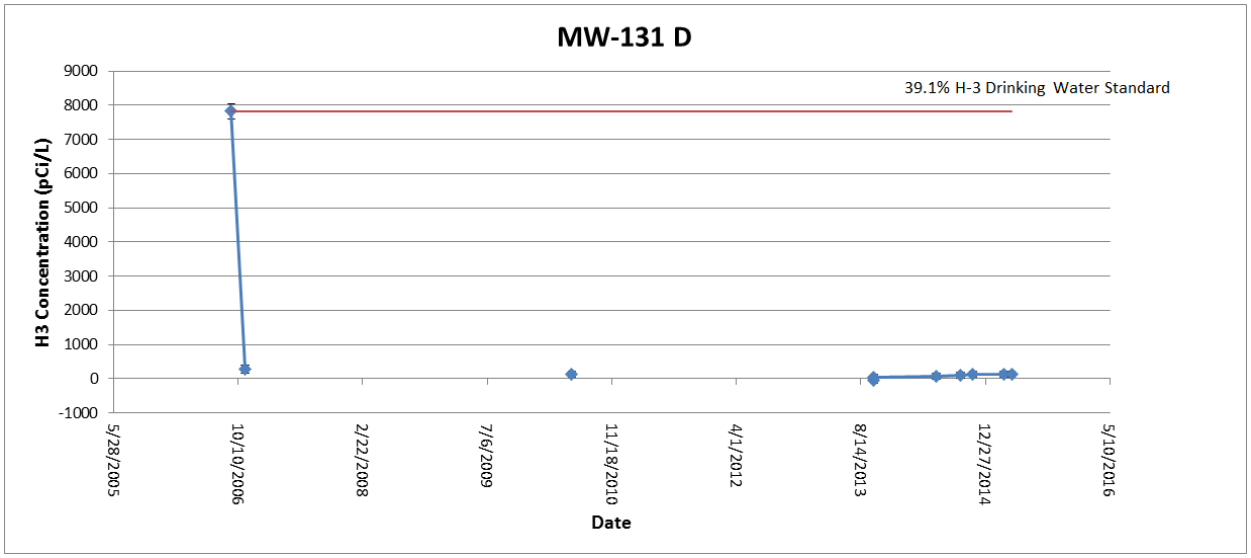

SW-005
1.69% H-3 Drinking Water Standard
H3 Concentration (pCi/L)
500
400
300
200
100
0
-100
-200
-300
5/28/2005
10/10/2006
2/22/2008
7/6/2009
11/18/2010
4/1/2012
8/14/2013
12/27/2014
5/10/2016
Date

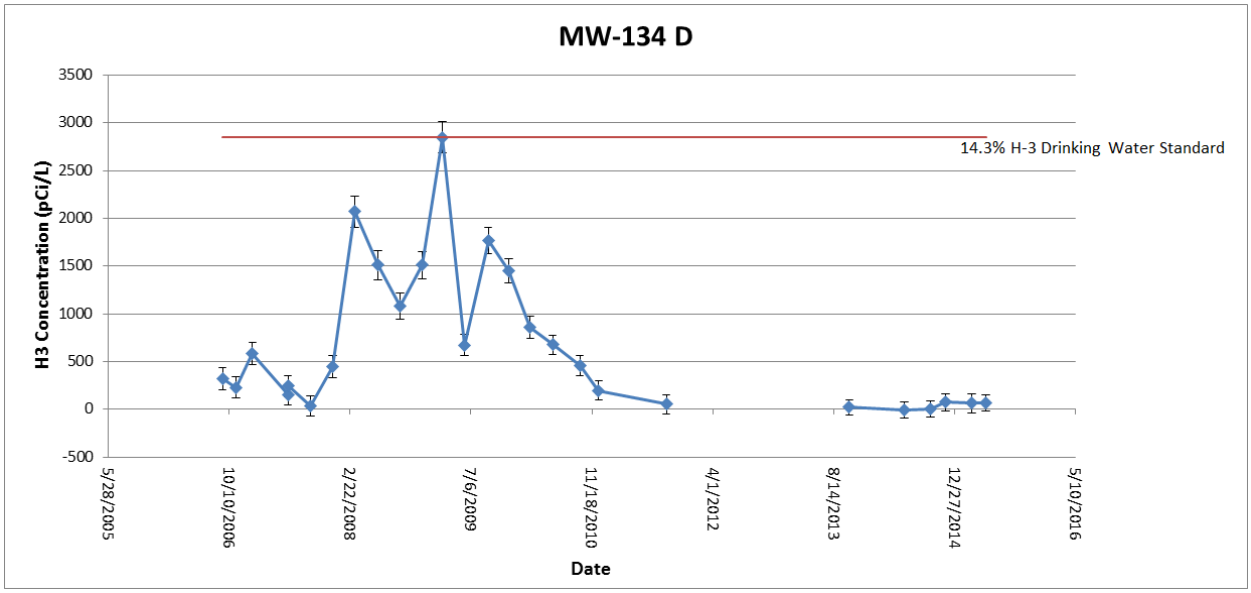

MW-112 D
H3 Concentration (pCi/L)
500
400
300
200
100
0
-100
-200
1.43% H-3 Drinking Water Standard
5/28/2005
10/10/2006
2/22/2008
7/6/2009
11/18/2010
4/1/2012
8/14/2013
12/27/2014
5/10/2016
Date

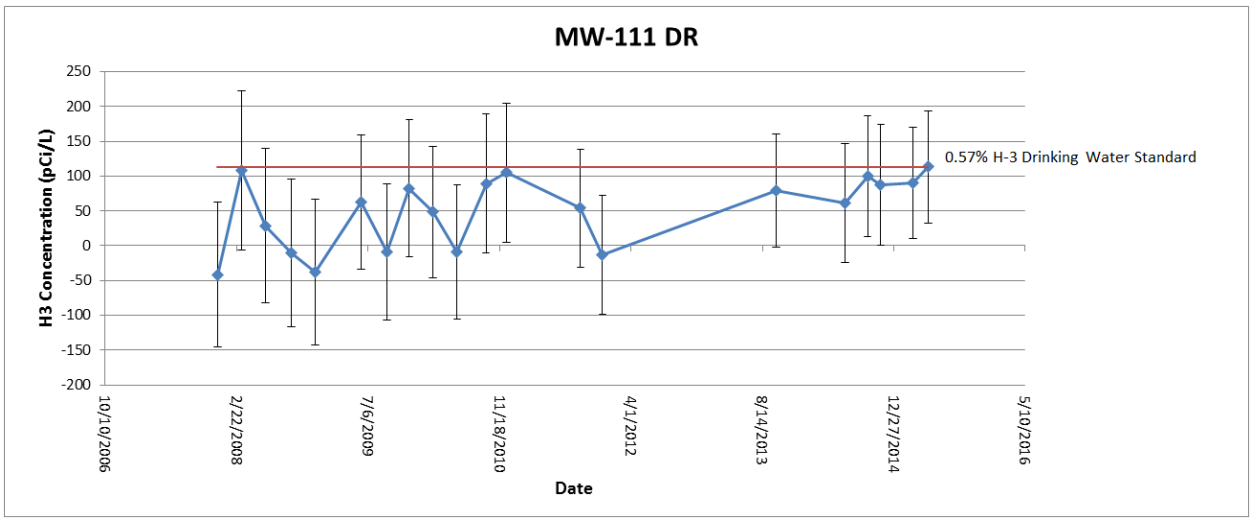

PW-016
H3 Concentration (pCi/L)
300
250
200
150
100
50
0
-50
-100
-150
-200
-250
0.68% H-3 Drinking Water Standard
5/28/2005
10/10/2006
2/22/2008
7/6/2009
11/18/2010
4/1/2012
8/14/2013
12/27/2014
5/10/2016
Date

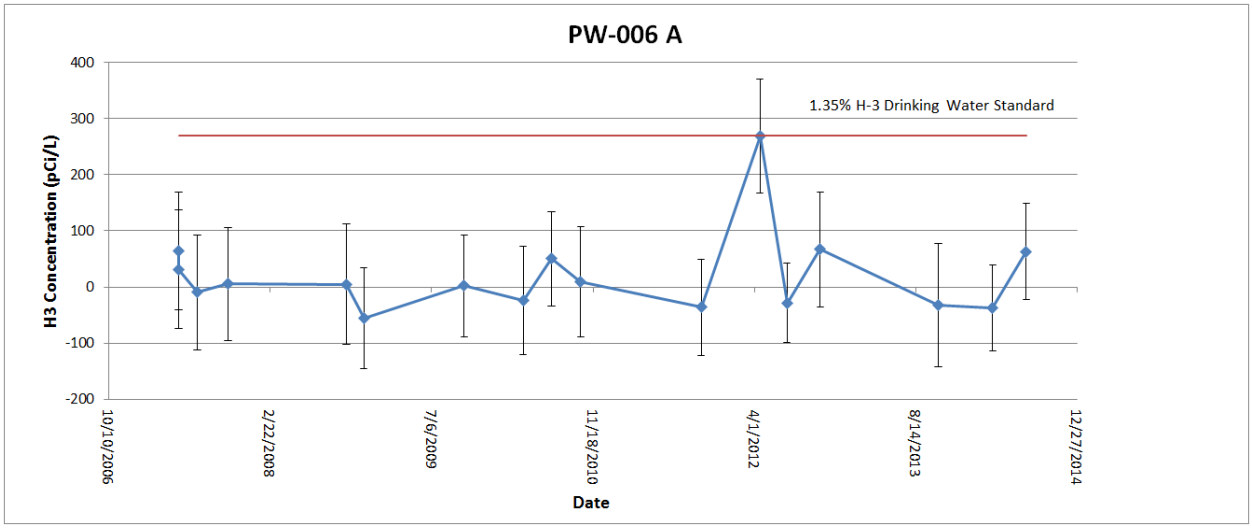

MW-109 D
1200
1000
800
600
400
200
0
-200
H3 Concentration (pCi/L)
4.61% H-3 Drinking Water Standard
5/28/2005
10/10/2006
2/22/2008
7/6/2009
11/18/2010
4/1/2012
8/14/2013
12/27/2014
5/10/2016
Date


MW-130 D
2500
2000
1500
1000
500
0
-500
H3 Concentration (pCi/L)
8.85% H-3 Drinking Water Standard
5/28/2005
10/10/2006
2/22/2008
7/6/2009
11/18/2010
4/1/2012
8/14/2013
12/27/2014
5/10/2016
Date


MW-131 D
39.1% H-3 Drinking Water Standard
H3 Concentration (pCi/L)
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
-1000
5/28/2005
10/10/2006
2/22/2008
7/6/2009
11/18/2010
4/1/2012
8/14/2013
12/27/2014
5/10/2016
Date


MW-134 D
14.3% H-3 Drinking Water Standard
H3 Concentration (pCi/L)
3500
3000
2500
2000
1500
1000
500
0
-500
5/28/2005
10/10/2006
2/22/2008
7/6/2009
11/18/2010
4/1/2012
8/14/2013
12/27/2014
5/10/2016
Date


MW-111 DR
H3 Concentration (pCi/L)
250
200
150
100
50
0
-50
-100
-150
-200
0.57% H-3 Drinking Water Standard
10/10/2006
2/22/2008
7/6/2009
11/18/2010
4/1/2012
8/14/2013
12/27/2014
5/10/2016
Date


PW-006 A
H3 Concentration (pCi/L)
400
300
200
100
0
-100
-200
1.35% H-3 Drinking Water Standard
10/10/2006
2/22/2008
7/6/2009
11/18/2010
4/1/2012
8/14/2013
12/27/2014
Date

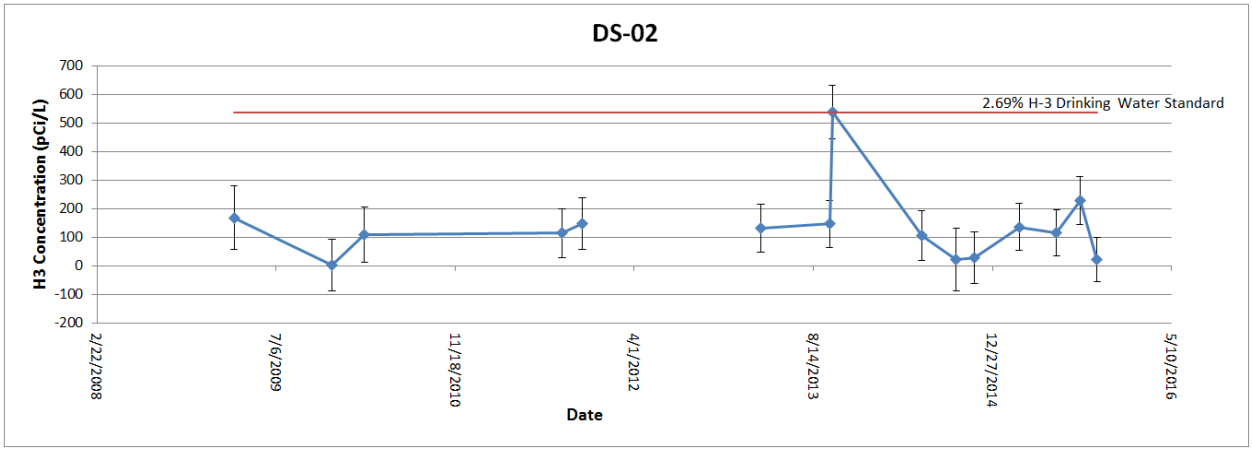

DS-02
H3 Concentration (pCi/L)
700
600
500
400
300
200
100
0
-100
-200
2.69% H-3 Drinking Water Standard
2/22/2008
7/6/2009
11/18/2010
4/1/2012
8/14/2013
12/27/2014
5/10/2016
Date

Table A-3. Sample Results for Gross Alpha/Beta Screening of Water from the Braidwood Area
Results are in picocuries per liter (pCi/L)

Location / Date	Alpha Result		*U	Beta Result		*U
Braidwood Cooling Lake at N boat launch						
1/28/2015	1.8	±	1.4	8.5	±	2.7
5/26/2015	4.1	±	1.4	6.0	±	2.3
8/5/2015	2.3	±	1.5	4.2	±	2.3
11/5/2015	2.1	±	1.4	6.0	±	2.3
Braidwood Cooling Lake at S boat launch						
1/28/2015	0.9	±	1.4	1.7	±	2.5
5/26/2015	3.3	±	1.4	5.3	±	2.3
8/5/2015	1.9	±	1.4	5.1	±	2.3
11/4/2015	2.6	±	1.6	4.5	±	2.4
Kankakee R. at Des Plaines Cons Area Boat Launch						
5/27/2015	0.8	±	1.3	-0.1	±	2.2
8/5/2015	0.6	±	1.4	3.2	±	2.3
11/4/2015	2.2	±	1.6	3.9	±	2.4
Kankakee R. at Kankakee River State Park boat launch						
5/26/2015	0.8	±	1.3	2.9	±	2.3
8/5/2015	0.0	±	1.3	2.4	±	2.3
11/4/2015	0.8	±	1.5	4.0	±	2.4
Kankakee R. at Wilmington Island Park, S end of island above dam						
1/28/2015	2.6	±	1.5	2.4	±	2.5
5/26/2015	0.5	±	1.3	1.6	±	2.2
8/5/2015	0.7	±	1.4	3.6	±	2.3
11/4/2015	0.7	±	1.5	2.9	±	2.4

*U is Uncertainty at a 95% confidence level.

Table A-4. Gamma Spectroscopy Sample Results for Other Radionuclides in Water from the Braidwood Area
Results are in picocuries per liter (pCi/L)

Location / Date	Ba-140 Result	Ba-140 *U	Be-7 Result	Be-7 *U	Co-58 Result	Co-58 *U	Co-60 Result	Co-60 *U	Cs-134 Result	Cs-134 *U	Cs-137 Result	Cs-137 *U	Fe-59 Result	Fe-59 *U	I-131 Result	I-131 *U	K-40 Result	K-40 *U	Mn-54 Result	Mn-54 *U	Nb-95 Result	Nb-95 *U	Zn-65 Result	Zn-65 *U	Zr-95 Result	Zr-95 *U
Braidwood Cooling Lake at N boat launch																										
1/28/2015	-10.9	8.4	3.5	13.5	0.6	1.8	1.9	1.7	1.1	1.7	-0.4	1.6	2.1	3.7	-0.3	3.1	168.0	29.4	0.4	1.7	0.0	1.7	-1.6	3.7	1.0	2.9
5/26/2015	15.0	44.0	19.0	14.0	-2.4	1.6	0.4	1.1	0.1	1.3	-0.4	1.0	1.1	3.9	44.0	60.0	-3.0	15.0	-1.0	1.2	-0.2	2.6	1.2	2.5	1.9	2.7
8/5/2015	5.6	8.7	-1.6	9.0	1.1	1.1	-1.1	1.3	-0.3	1.0	-0.3	1.1	3.2	2.1	1.6	4.8	24.0	11.0	0.2	1.0	0.1	1.4	-2.5	2.2	-2.7	2.1
11/5/2015	-1.0	26.0	-21.0	13.0	0.3	1.5	1.6	1.4	-0.3	1.4	0.1	1.3	0.7	3.7	0.0	23.0	63.0	14.0	-1.2	1.4	2.8	2.2	0.0	2.6	5.4	2.9
Braidwood Cooling Lake at S boat launch																										
1/28/2015	-4.8	15.7	-5.0	23.5	0.3	3.3	-0.2	3.3	0.4	3.1	-0.5	3.1	2.3	6.5	3.2	5.7	64.0	41.2	1.5	3.3	0.7	3.3	0.4	6.7	3.1	5.3
5/26/2015	-4.0	40.0	-7.0	13.0	-1.2	2.4	0.1	1.7	1.0	1.7	0.3	1.7	-0.3	5.4	28.0	34.0	13.0	27.0	-0.9	2.0	2.8	3.1	1.7	4.0	1.1	3.7
8/5/2015	5.0	10.0	-12.0	11.0	0.4	1.4	-3.8	1.5	1.5	1.3	-0.6	1.1	0.5	3.7	-3.8	4.5	34.0	16.0	1.6	1.1	0.8	1.8	1.4	3.1	-1.0	2.7
11/4/2015	4.0	33.0	3.0	13.0	0.5	2.3	1.2	1.7	0.0	1.7	-0.2	1.7	2.4	5.1	0.0	28.0	31.0	21.0	-1.5	2.0	1.1	2.9	-1.9	4.2	0.7	3.7
Kankakee R. at Des Plaines Cons Area Boat Launch																										
5/27/2015	7.0	22.0	-3.4	9.2	0.7	1.2	1.8	1.0	0.3	1.0	-0.1	1.0	-0.2	3.5	3.0	15.0	15.0	16.0	-0.1	0.9	2.7	1.8	-1.5	2.4	-0.1	2.1
8/5/2015	9.4	9.7	11.3	7.5	-1.0	1.0	0.3	1.1	1.7	0.9	-1.8	1.0	-2.3	2.4	2.4	4.1	-9.0	17.0	0.9	0.9	2.2	1.1	0.8	2.3	1.8	1.7
11/4/2015	20.0	22.0	3.0	12.0	-2.7	1.4	0.1	1.3	-0.1	1.2	-1.2	1.0	-3.7	3.6	-4.0	18.0	35.0	15.0	3.1	1.2	-3.1	2.0	4.5	2.4	1.6	2.6
Kankakee R. at Kankakee River State Park boat launch																										
5/26/2015	-83.0	49.0	4.0	15.0	-0.6	1.5	1.7	1.1	-1.0	1.2	-1.5	1.1	-9.0	4.9	-3.0	60.0	64.0	13.0	0.3	1.4	3.2	2.4	0.9	2.7	9.6	2.7
8/5/2015	1.3	8.4	-10.0	8.9	-0.9	1.0	0.8	0.8	1.0	1.0	-0.3	0.8	-3.7	2.1	1.4	4.8	19.0	11.0	0.0	0.9	-0.5	1.3	2.2	1.8	-1.7	1.9
11/4/2015	-2.0	34.0	-5.0	13.0	1.7	2.3	1.2	1.8	2.0	1.7	-0.6	1.7	-7.3	5.9	11.0	31.0	57.0	18.0	-2.1	1.9	3.2	2.9	0.4	4.3	2.0	3.9
Kankakee R. at Wilmington Island Park, S end of island above dam																										
1/28/2015	8.2	13.1	7.8	17.4	1.3	2.4	0.7	2.7	-0.4	2.5	1.4	2.0	-0.2	6.7	2.9	4.3	42.0	31.4	0.6	2.4	1.5	2.7	1.7	5.7	-0.4	4.7
5/26/2015	-4.0	49.0	-1.0	23.5	1.3	3.5	2.8	2.9	-1.2	2.9	-1.1	2.2	-1.7	9.2	-2.0	33.3	63.0	29.4	1.1	2.4	4.3	4.5	0.2	6.5	-1.3	6.1
8/5/2015	-0.1	8.3	5.1	8.6	1.1	1.0	-0.2	0.9	0.4	0.9	0.4	0.8	-1.0	2.4	-6.6	4.6	24.0	16.0	-1.2	1.0	1.6	1.2	-0.6	2.1	-2.0	1.6
11/4/2015	-24.0	23.0	10.0	13.0	0.7	1.6	-0.9	1.5	-0.1	1.3	2.4	1.2	4.9	3.4	3.0	20.0	61.0	14.0	0.8	1.3	-4.6	2.3	5.4	2.6	-3.4	3.0

*U is Uncertainty at a 95% confidence level.

Table A-5. Soil Sample Results for Braidwood Area
Results are in picocuries per gram (pCi/g)

Location / Date	Ac-228 Result	Ac-228 *U	Ba-140 Result	Ba-140 *U	Bi-212 Result	Bi-212 *U	Bi-214 Result	Bi-214 *U	Co-58 Result	Co-58 *U	Co-60 Result	Co-60 *U	Cs-134 Result	Cs-134 *U	Cs-137 Result	Cs-137 *U	Fe-59 Result	Fe-59 *U	K-40 Result	K-40 *U	Mn-54 Result	Mn-54 *U
Braidwood Cooling Lake at S boat launch																						
5/26/2015	1.1	0.0	0.0	0.3	1.1	0.2	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.1	0.5	0.0	0.0
8/5/2015	0.8	0.0	0.0	0.1	0.9	0.2	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.2	0.5	0.0	0.0
Evans-Judge Preserve																						
5/26/2015	0.2	0.0	0.4	0.2	0.4	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	11.3	0.4	0.0	0.0
8/5/2015	0.2	0.0	0.1	0.1	0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	11.7	0.4	0.0	0.0
Wilmington Island area																						
5/26/2015	0.6	0.0	0.2	0.4	0.6	0.1	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	14.8	0.4	0.0	0.0
8/5/2015	0.5	0.0	0.0	0.1	0.4	0.1	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	12.4	0.4	0.0	0.0

Location / Date	Nb-95 Result	Nb-95 *U	Pa-234m Result	Pa-234m *U	Pb-210 Result	Pb-210 *U	Pb-212 Result	Pb-212 *U	Pb-214 Result	Pb-214 *U	RA-226 Result	RA-226 *U	Th-234 Result	Th-234 *U	Tl-208 Result	Tl-208 *U	U-235 Result	U-235 *U	Zn-65 Result	Zn-65 *U	Zr-95 Result	Zr-95 *U
Braidwood Cooling Lake at S boat launch																						
5/26/2015	0.0	0.0	0.3	1.1	1.7	0.4	1.1	0.0	1.1	0.0	1.8	0.2	0.7	0.4	1.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
8/5/2015	0.0	0.0	-0.2	1.2	9.0	11.0	0.9	0.0	0.8	0.0	1.4	0.2	0.4	1.0	0.7	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Evans-Judge Preserve																						
5/26/2015	0.0	0.0	0.5	0.8	0.6	0.1	0.2	0.0	0.2	0.0	0.4	0.1	0.3	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8/5/2015	0.0	0.0	0.4	0.8	3.2	6.4	0.2	0.0	0.3	0.0	0.5	0.1	1.2	0.6	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wilmington Island area																						
5/26/2015	0.0	0.0	1.8	0.8	1.5	0.4	0.6	0.0	1.0	0.0	1.5	0.2	0.9	0.3	0.5	0.0	0.1	0.0	0.0	0.0	0.0	0.0
8/5/2015	0.0	0.0	0.9	0.9	1.2	0.1	0.5	0.0	0.6	0.0	1.2	0.1	0.6	0.2	0.5	0.0	0.1	0.0	0.0	0.0	0.0	0.0

*U is Uncertainty at a 95% confidence level.

Table A-6. Sediment Sample Results for Braidwood Area
Results are in picocuries per gram (pCi/g)

Location / Date	Ac-228 Result	Ac-228 *U	Ba-140 Result	Ba-140 *U	Be-7 Result	Be-7 *U	Bi-212 Result	Bi-212 *U	Bi-214 Result	Bi-214 *U	Co-58 Result	Co-58 *U	Co-60 Result	Co-60 *U	Cs-134 Result	Cs-134 *U	Cs-137 Result	Cs-137 *U	Fe-59 Result	Fe-59 *U	K-40 Result	K-40 *U	Mn-54 Result	Mn-54 *U
Braidwood Cooling Lake at N boat launch																								
5/26/2015	0.1 ±	0.1	0.0 ±	1.2	±		0.5 ±	0.3	0.3 ±	0.1	0.1 ±	0.0	0.0 ±	0.0	0.0 ±	0.0	0.0 ±	0.0	-0.2 ±	0.1	10.7 ±	0.9	0.0 ±	0.0
8/28/2015	0.3 ±	0.0	-0.4 ±	0.3	0.1 ±	0.1	0.1 ±	0.1	0.2 ±	0.0	0.0 ±	0.0	0.0 ±	0.0	0.0 ±	0.0	0.0 ±	0.0	0.0 ±	0.0	12.4 ±	0.4	0.0 ±	0.0
Kankakee R. at Kankakee River State Park boat launch																								
5/26/2015	0.6 ±	0.1	0.0 ±	0.2	±		0.6 ±	0.3	1.0 ±	0.1	0.0 ±	0.0	0.0 ±	0.0	0.0 ±	0.0	0.1 ±	0.0	0.0 ±	0.1	15.5 ±	0.9	0.0 ±	0.0
8/5/2015	0.3 ±	0.0	-0.1 ±	0.1	0.8 ±	0.1	0.4 ±	0.1	0.6 ±	0.0	0.0 ±	0.0	0.0 ±	0.0	0.0 ±	0.0	0.1 ±	0.0	0.0 ±	0.0	14.0 ±	0.5	0.0 ±	0.0
Kankakee R. at Wilmington Island Park, S end of island above dam																								
5/26/2015	0.8 ±	0.0	-1.0 ±	0.7	3.1 ±	0.2	0.9 ±	0.2	1.4 ±	0.0	0.0 ±	0.0	0.0 ±	0.0	0.0 ±	0.0	0.1 ±	0.0	0.0 ±	0.1	16.9 ±	0.6	0.0 ±	0.0
8/5/2015	0.7 ±	0.0	-0.1 ±	0.1	0.9 ±	0.1	0.6 ±	0.1	1.0 ±	0.0	0.0 ±	0.0	0.0 ±	0.0	0.0 ±	0.0	0.1 ±	0.0	0.0 ±	0.0	16.9 ±	0.5	0.0 ±	0.0

Location / Date	Nb-95 Result	Nb-95 *U	Pa-234m Result	Pa-234m *U	Pb-210 Result	Pb-210 *U	Pb-212 Result	Pb-212 *U	Pb-214 Result	Pb-214 *U	Ra-226 Result	Ra-226 *U	Th-234 Result	Th-234 *U	Tl-208 Result	Tl-208 *U	U-235 Result	U-235 *U	Zn-65 Result	Zn-65 *U	Zr-95 Result	Zr-95 *U
Braidwood Cooling Lake at N boat launch																						
5/26/2015	0.0 ±	0.1	2.1 ±	3.1	0.5 ±	0.3	0.2 ±	0.0	0.4 ±	0.1	0.7 ±	0.4	0.3 ±	0.3	0.2 ±	0.1	0.0 ±	0.0	-0.2 ±	0.1	-0.1 ±	0.1
8/28/2015	0.0 ±	0.0	2.1 ±	0.7	3.8 ±	6.5	0.2 ±	0.0	0.2 ±	0.0	0.2 ±	0.1	0.3 ±	0.6	0.2 ±	0.0	0.0 ±	0.0	0.0 ±	0.0	0.0 ±	0.0
Kankakee R. at Kankakee River State Park boat launch																						
5/26/2015	0.0 ±	0.0	1.5 ±	1.9	1.8 ±	0.6	0.7 ±	0.0	1.1 ±	0.1	1.3 ±	0.4	1.0 ±	0.6	0.6 ±	0.1	0.1 ±	0.0	-0.1 ±	0.0	0.0 ±	0.0
8/5/2015	0.0 ±	0.0	0.8 ±	1.0	1.2 ±	0.1	0.4 ±	0.0	0.6 ±	0.0	1.2 ±	0.1	0.5 ±	0.1	0.3 ±	0.0	0.1 ±	0.0	0.0 ±	0.0	0.0 ±	0.0
Kankakee R. at Wilmington Island Park, S end of island above dam																						
5/26/2015	0.0 ±	0.0	1.8 ±	1.5	2.7 ±	0.2	1.0 ±	0.0	1.6 ±	0.0	2.4 ±	0.2	1.1 ±	0.2	0.8 ±	0.1	0.1 ±	0.0	0.0 ±	0.0	0.0 ±	0.0
8/5/2015	0.0 ±	0.0	1.0 ±	1.1	9.0 ±	11.0	0.8 ±	0.0	1.2 ±	0.0	1.8 ±	0.2	0.7 ±	1.0	0.7 ±	0.0	0.1 ±	0.0	0.0 ±	0.0	0.0 ±	0.0

*U is Uncertainty at a 95% confidence level.

Table A-7. Fish Sample Results for Braidwood Area
Results are in picocuries per kilogram (pCi/kg)

Location	Ba-140		Be-7		Co-58		Co-60		Cs-134		Cs-137		Fe-59	
Date	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U
Braidwood Plant Effluent (Bottom Feeder)														
8/5/2015	-80.0	110.0	-99.0	60.0	-6.8	6.5	1.0	6.3	7.6	5.7	-14.0	5.5	8.0	17.0
Braidwood Plant Effluent (Top Feeder)														
8/5/2015	-40.0	110.0	-42.0	60.0	15.1	7.2	-4.2	6.8	4.8	6.3	-7.4	6.6	-7.0	19.0

Location	I-131		K-40		Mn-54		Nb-95		Zn-65		Zr-95	
Date	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U
Braidwood Plant Effluent (Bottom Feeder)												
8/5/2015	64.0	85.0	3010.0	150.0	-0.3	6.1	3.2	9.2	1.0	15.0	25.0	12.0
Braidwood Plant Effluent (Top Feeder)												
8/5/2015	69.0	86.0	3010.0	160.0	-4.9	6.1	-2.0	11.0	7.0	13.0	28.0	14.0

*U is Uncertainty at a 95% confidence level.

Table A-8. Vegetation Sample Results for Braidwood Area
Results are in picocuries per kilogram (pCi/kg)

Location	Ba-140		Be-7		Co-58		Co-60		Cs-134		Cs-137		Fe-59		I-131		K-40		Mn-54		Nb-95		Zn-65		Zr-95	
Date	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U
Braidwood Cooling Lake at S boat launch																										
5/26/2015	0.1	0.4	1.3	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.0	0.3	28.0	1.7	0.0	0.0	0.0	0.1	-0.1	0.1	0.0	0.1
8/5/2015	-0.1	0.1	6.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.2	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Evans-Judge Preserve																										
5/26/2015	0.1	0.3	0.8	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	21.3	1.2	0.0	0.0	0.0	0.0	-0.1	0.1	0.0	0.0
8/5/2015	0.0	0.1	2.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	16.6	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wilmington Island area																										
5/26/2015	0.1	0.4	1.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.2	0.3	24.0	1.6	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.1
8/5/2015	0.1	0.1	2.6	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	13.2	0.6	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0

*U is Uncertainty at a 95% confidence level.

Table A-9. Braidwood Gamma Detection Network Results

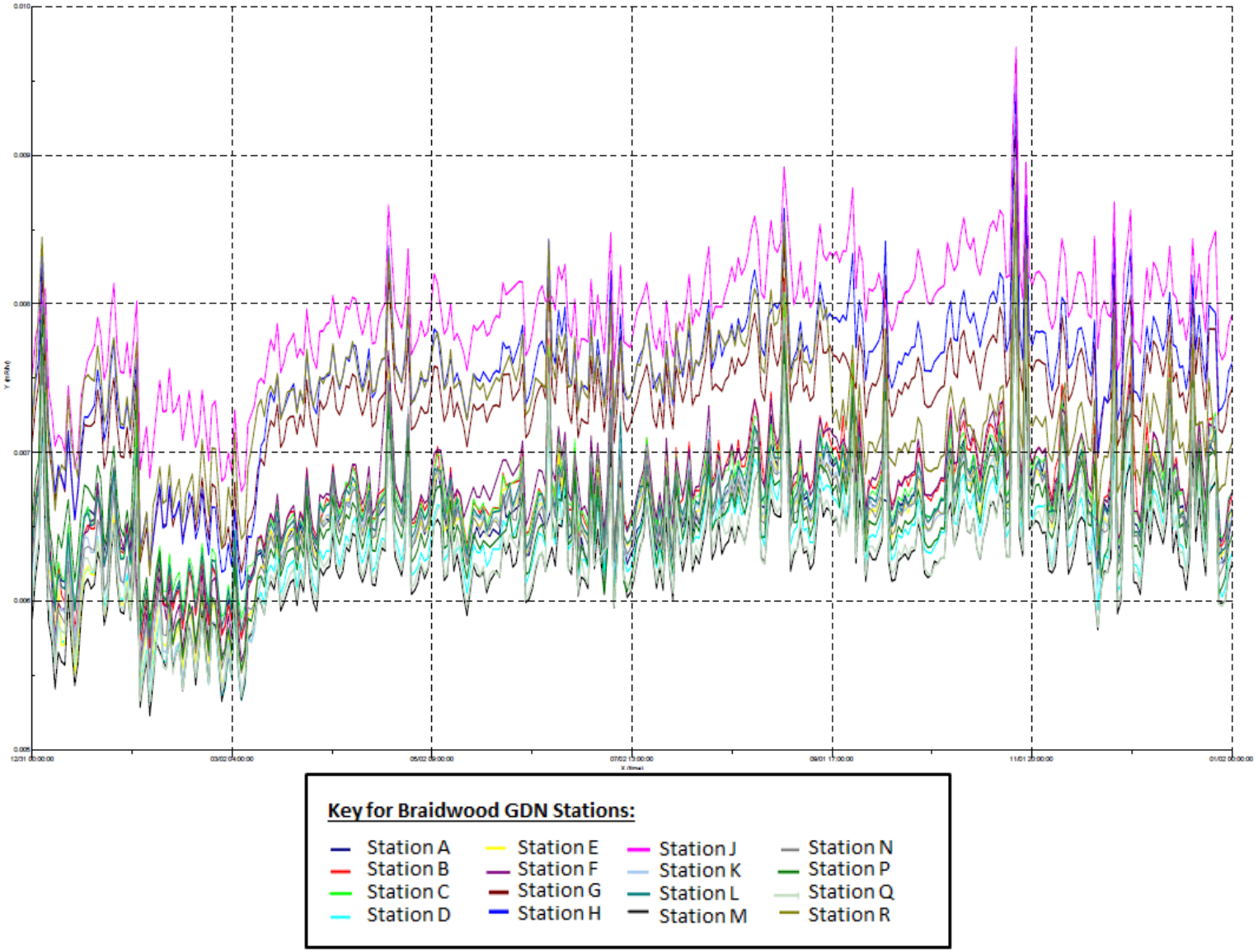


Table A-10. Summary of Ambient Gamma Results for Braidwood Area

Location	Quarter 1 mrem/day	Quarter 2 mrem/day	Quarter 3 mrem/day	Quarter 4 mrem/day	Annual Dose mrem/year
BR001		0.104	0.144	0.137	46.8
BR005	0.093	0.099	0.118	0.102	37.6
BR008	0.108	0.086	0.126	0.124	40.5
BR010	0.090	0.077	0.124	0.101	35.8
BR012	0.064	0.062	0.080	0.073	25.5
BR014	0.071	0.056	0.083	0.067	25.3
BR015	0.049	0.066	0.065	0.058	21.7
BR016	0.072	0.049	0.099	0.083	27.6
BR017	0.066	0.070	0.084	0.059	25.5
BR020	0.080	0.062	0.084	0.060	26.1
BR025	0.101	0.057	0.106	0.095	32.8
BR027	0.067	0.058	0.082	0.069	25.2
BR029	0.076	0.060	0.088	0.067	26.6
BR031	0.058	0.036	0.073	0.075	22.1
BR032	0.070	0.050	0.068	0.055	22.2
BR033	0.082	0.060	0.088	0.083	28.6
BR034	0.101	0.075	0.124	0.110	37.4
BR035	0.101	0.094	0.144	0.122	42.1
BR036	0.064	0.062	0.089	0.055	24.6
BR037	0.070	0.060		0.076	25.1
BR038	0.073	0.071	0.081	0.077	27.6
BR039	0.093	0.106	0.117	0.109	38.8
BR040	0.112	0.114	0.159	0.118	45.9
BR041	0.075	0.064	0.085	0.071	26.9
BR042	0.095		0.100		35.6
BR043	0.058		0.073	0.075	25.1
BR044	0.063	0.044	0.086	0.054	22.5
BR045	0.069	0.037	0.072	0.065	22.2
BR046	0.067	0.040	0.093	0.051	22.9
BR047	0.068	0.045	0.064		21.5
BR048	0.067	0.049	0.081	0.055	23.0
BR049	0.069	0.027	0.079	0.061	21.5
BR050	0.080	0.071	0.112	0.083	31.6
BR051	0.051	0.038	0.074	0.060	20.3
BR052			0.090	0.063	27.9
BR053	0.105	0.096	0.123	0.094	38.1
BR054	0.059	0.078	0.082	0.055	25.0
BR055	0.074	0.054	0.085	0.072	26.0
BR056	0.091	0.075	0.092	0.086	31.4
BR057		0.123	0.126	0.117	44.5
BR058	0.100	0.089	0.135	0.113	39.9

Location	Quarter 1 mrem/day	Quarter 2 mrem/day	Quarter 3 mrem/day	Quarter 4 mrem/day	Annual Dose mrem/year
BR-RSA	0.060	0.053	0.076	0.069	23.5
BR-RSB	0.055	0.049	0.075	0.050	20.9
BR-RSC	0.057	0.075	0.079	0.068	25.5
BR-RSD	0.059	0.069	0.078	0.064	24.6
BR-RSE	0.067	0.041	0.080	0.066	23.2
BR-RSF	0.059		0.073	0.061	23.5
BR-RSG	0.077	0.045	0.090	0.064	25.2
BR-RSH	0.077	0.081	0.096	0.087	31.1
BR-RSJ	0.092	0.086	0.113	0.086	34.4
BR-RSK	0.070	0.075	0.085	0.055	26.0
BR-RSL	0.065	0.062	0.086	0.080	26.7
BR-RSM	0.064	0.060	0.076	0.068	24.5
BR-RSN	0.051	0.055	0.078	0.062	22.4
BR-RSP	0.053	0.039	0.075	0.059	20.6
BR-RSQ	0.062	0.048	0.071	0.047	20.8
BR-RSR		0.064	0.099	0.074	28.8

Blanks in the table indicate that dosimeters were missing at the end of the quarter.
Annual Dose column based on averages of all available data.

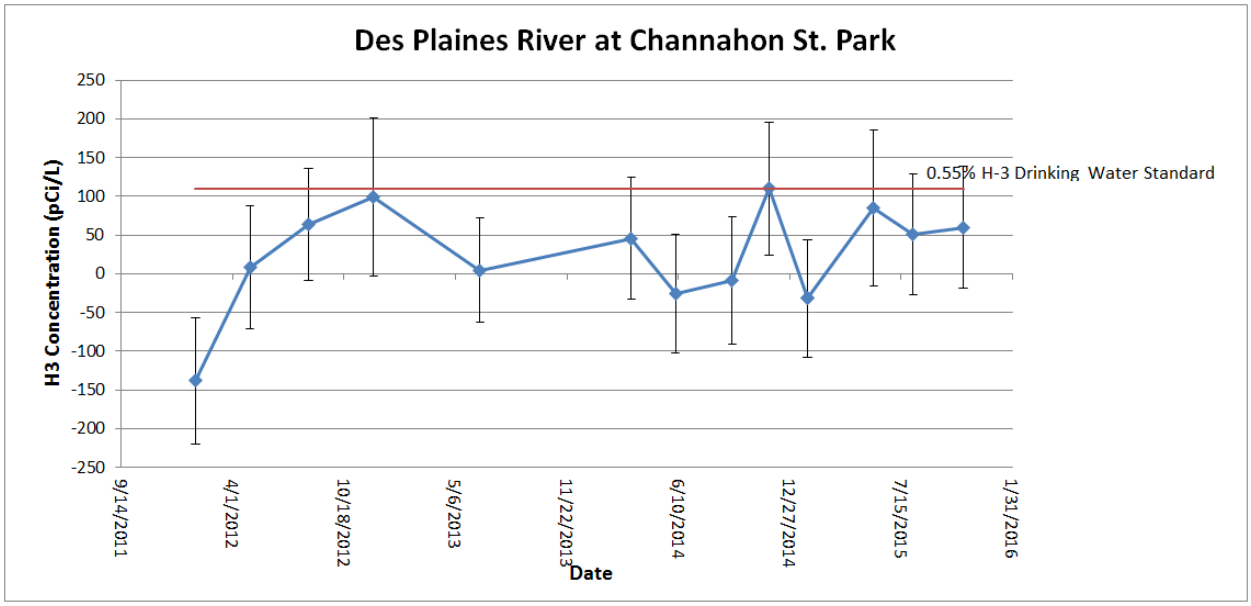
Appendix B
Dresden Sample Results

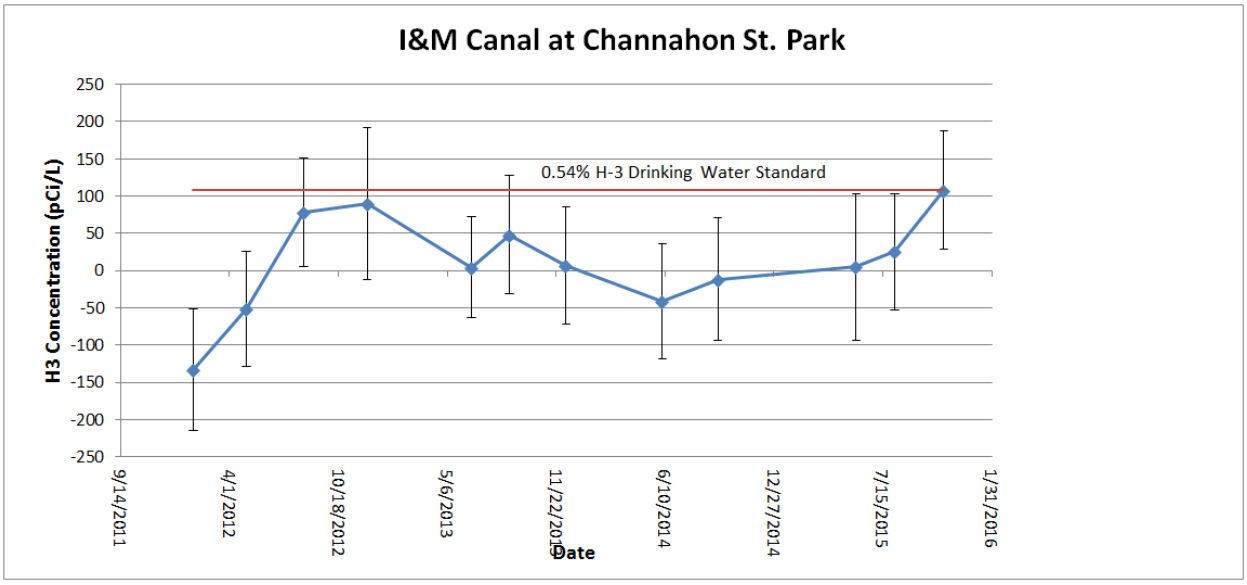
Table B-1. Tritium in Water Sample Results for Dresden Area
Results are in picocuries per liter (pCi/L)

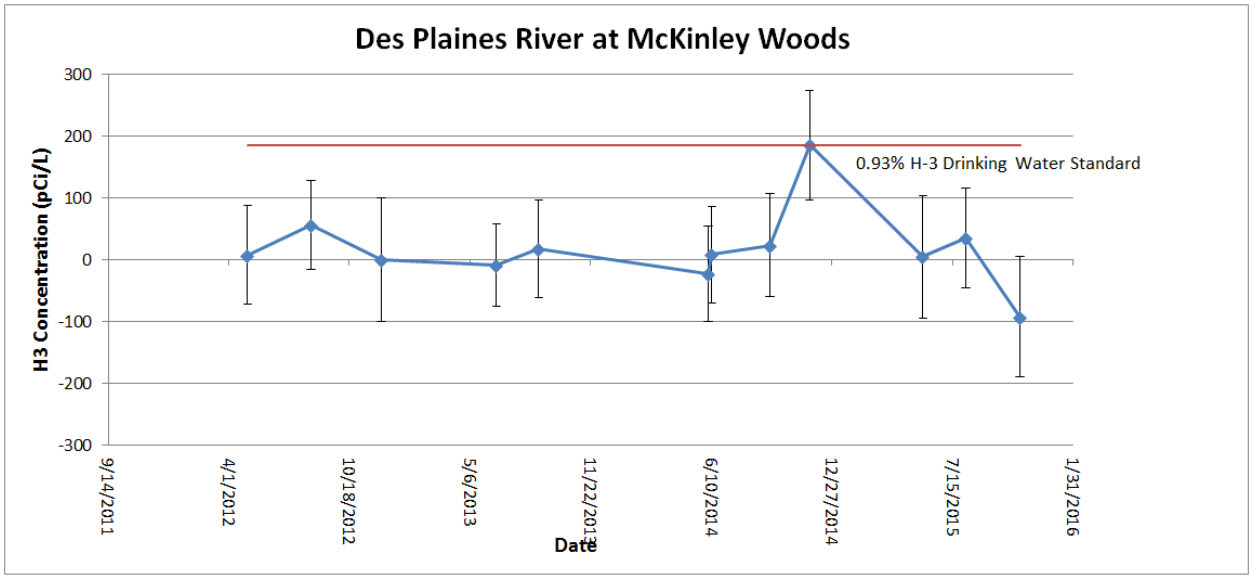
Location	Date	Result		*U
Des Plaines R. at Channahon St. Park (I&M Canal Trail)	1/28/2015	-32.1	±	76.0
Des Plaines R. at Channahon St. Park (I&M Canal Trail)	5/27/2015	85.0	±	101.0
Des Plaines R. at Channahon St. Park (I&M Canal Trail)	8/6/2015	50.2	±	78.0
Des Plaines R. at Channahon St. Park (I&M Canal Trail)	11/4/2015	59.6	±	78.6
Des Plaines R. at McKinley Woods Will Co. Forest Preserve	5/27/2015	4.7	±	99.0
Des Plaines R. at McKinley Woods Will Co. Forest Preserve	8/6/2015	35.0	±	80.5
Des Plaines R. at McKinley Woods Will Co. Forest Preserve	11/4/2015	-92.5	±	97.2
Heideke Lake Bank Fish area	5/26/2015	40.1	±	99.8
Heideke Lake Bank Fish area	8/6/2015	23.3	±	80.2
I&M Canal above Chann. St. Park	5/27/2015	4.7	±	99.0
I&M Canal above Chann. St. Park	8/6/2015	25.1	±	77.3
I&M Canal above Chann. St. Park	11/4/2015	108.0	±	79.9
Illinois R. at Dresden Island Lock and Dam	1/28/2015	-35.0	±	88.6
Illinois R. at Dresden Island Lock and Dam	5/26/2015	418.0	±	108.0
Illinois R. at Dresden Island Lock and Dam	8/6/2015	366.0	±	89.2
Illinois R. at Dresden Island Lock and Dam	11/4/2015	323.0	±	107.0
Illinois R. at Morris boat launch (Rte 47 bridge)	1/28/2015	0.0	±	89.5
Illinois R. at Morris boat launch (Rte 47 bridge)	5/26/2015	208.0	±	104.0
Illinois R. at Morris boat launch (Rte 47 bridge)	8/6/2015	343.0	±	88.7
Illinois R. at Morris boat launch (Rte 47 bridge)	11/4/2015	194.0	±	104.0
Well @ Dresden Island Lock & Dam	5/26/2015	-54.3	±	97.7
Well @ Dresden Island Lock & Dam	8/6/2015	35.0	±	80.5
Well @ Dresden Island Lock & Dam	11/4/2015	-4.7	±	99.3

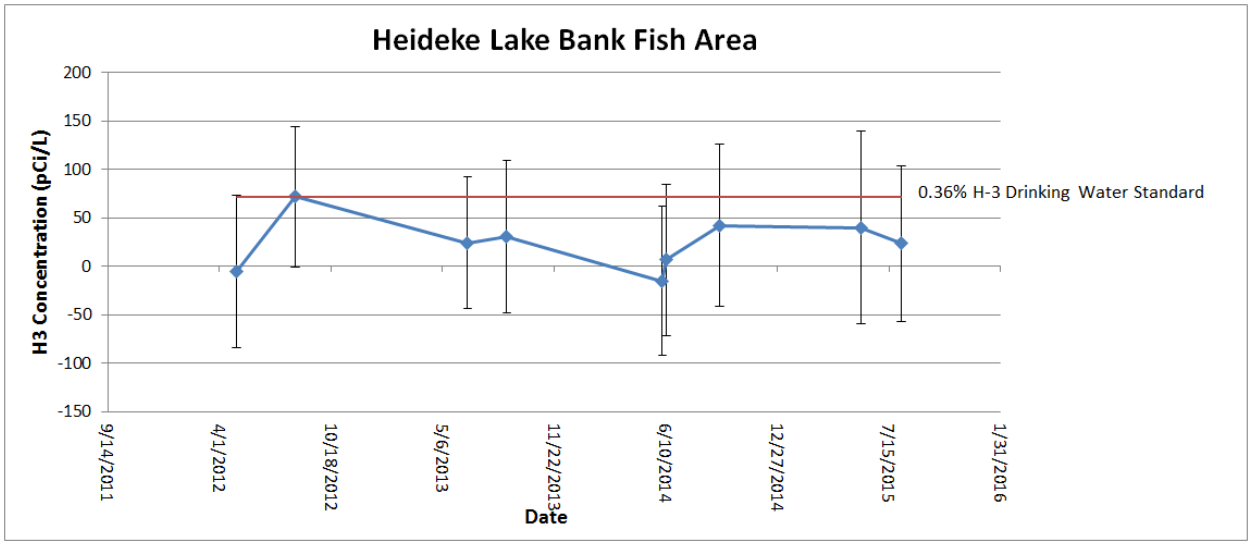
*U is Uncertainty at a 95% confidence level.

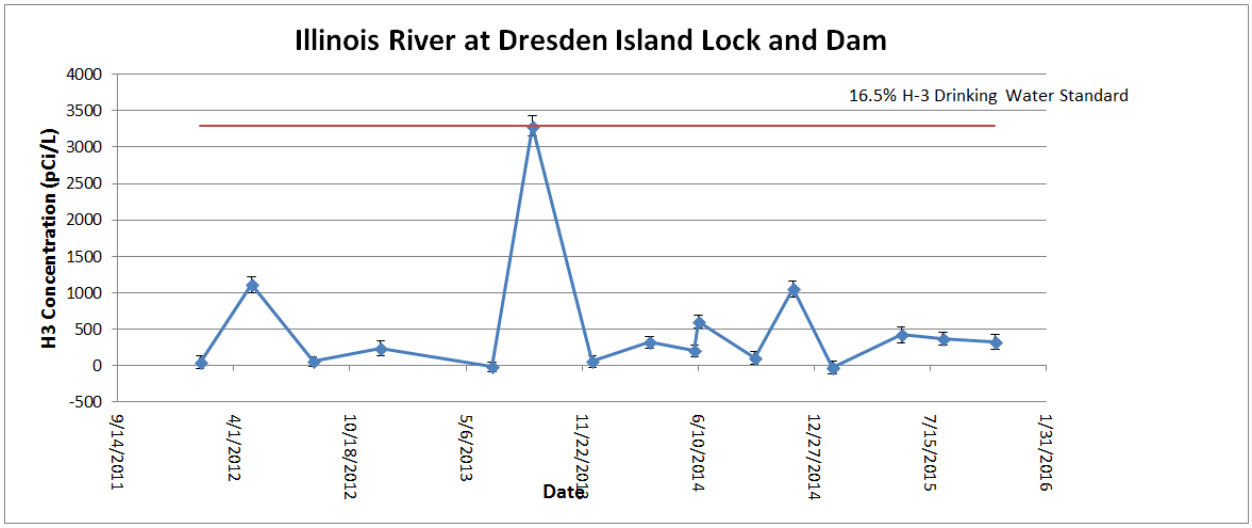
Tables B-2. Trending Graphs for Water from the Dresden Area
(Highest results on graphs indicate percentage of US EPA Drinking Water Standard)






Des Plaines River at McKinley Woods
H3 Concentration (pCi/L)
300
200
100
0
-100
-200
-300
0.93% H-3 Drinking Water Standard
9/14/2011
4/1/2012
10/18/2012
5/6/2013
11/22/2013
6/10/2014
12/27/2014
7/15/2015
1/31/2016
Date


Heideke Lake Bank Fish Area
H3 Concentration (pCi/L)
200
150
100
50
0
-50
-100
-150
0.36% H-3 Drinking Water Standard
9/14/2011
4/1/2012
10/18/2012
5/6/2013
11/22/2013
6/10/2014
12/27/2014
7/15/2015
1/31/2016
Date


Illinois River at Dresden Island Lock and Dam
16.5% H-3 Drinking Water Standard
H3 Concentration (pCi/L)
4000
3500
3000
2500
2000
1500
1000
500
0
-500
9/14/2011
4/1/2012
10/18/2012
5/6/2013
11/22/2013
6/10/2014
12/27/2014
7/15/2015
1/31/2016
Date

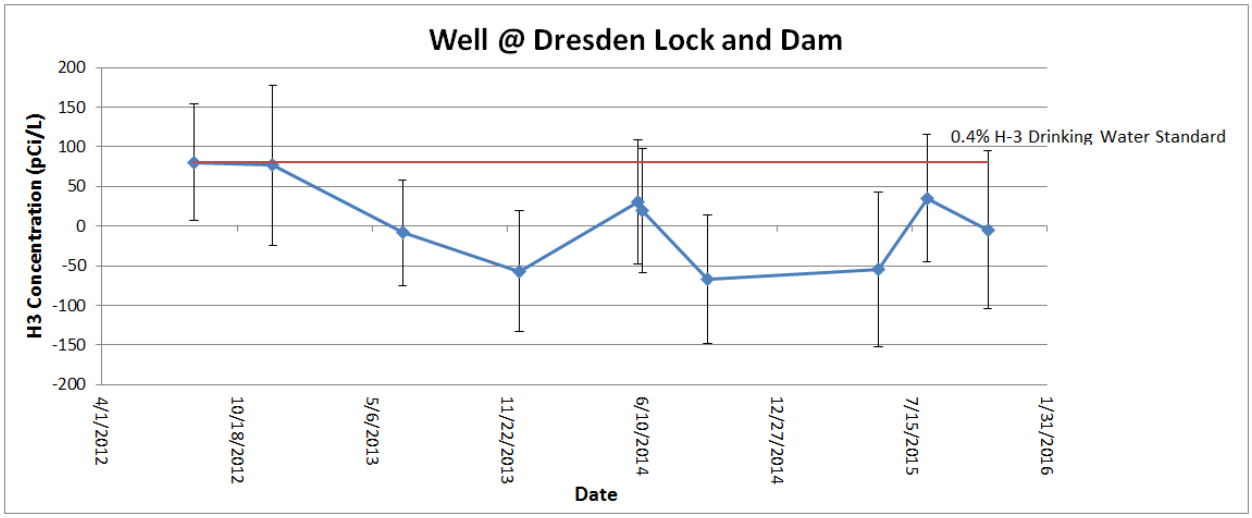

Well @ Dresden Lock and Dam
0.4% H-3 Drinking Water Standard
H3 Concentration (pCi/L)
200
150
100
50
0
-50
-100
-150
-200
4/1/2012
10/18/2012
5/6/2013
11/22/2013
6/10/2014
12/27/2014
7/15/2015
1/31/2016
Date

Table B-3. Sample Results for Alpha/Beta Screening of Water from the Dresden Area
Results are in picocuries per liter (pCi/L)

Location / Date	Alpha Result		*U	Beta Result		*U
Des Plaines R. at Channahon St. Park (I&M Canal Trail)						
1/28/2015	0.3	±	1.4	3.0	±	2.6
5/27/2015	0.1	±	1.4	4.6	±	2.3
8/6/2015	-0.7	±	1.3	3.9	±	2.3
11/4/2015	1.0	±	1.3	5.4	±	2.3
Des Plaines R. at McKinley Woods Will Co. Forest Preserve						
5/27/2015	0.8	±	1.4	4.9	±	2.3
8/6/2015	0.9	±	1.3	5.5	±	2.5
11/4/2015	1.1	±	1.3	5.6	±	2.3
Heideke Lake Bank Fish area						
5/26/2015	0.2	±	1.4	3.4	±	2.2
8/6/2015	1.0	±	1.3	6.3	±	2.5
I&M Canal above Chann. St. Park						
5/27/2015	0.1	±	1.4	2.4	±	2.2
8/6/2015	0.6	±	1.3	6.5	±	2.5
11/4/2015	1.1	±	1.3	5.7	±	2.3
Illinois R. at Dresden Island Lock and Dam						
1/28/2015	1.1	±	1.4	4.2	±	2.6
5/26/2015	0.5	±	1.4	2.1	±	2.2
8/6/2015	0.3	±	1.3	5.0	±	2.5
11/4/2015	1.4	±	1.3	4.4	±	2.3
Illinois R. at Morris boat launch (Rte 47 bridge)						
1/28/2015	1.4	±	1.4	6.2	±	2.6
5/26/2015	0.1	±	1.4	2.8	±	2.2
8/6/2015	0.5	±	1.3	4.7	±	2.5
11/4/2015	0.9	±	1.3	5.1	±	2.3
Well @ Dresden Island Lock & Dam						
5/26/2015	12.7	±	1.8	13.6	±	2.5
8/6/2015	12.6	±	1.8	13.3	±	2.7
11/4/2015	11.5	±	1.7	11.8	±	2.5

*U is Uncertainty at a 95% confidence level.

Table B-4. Gamma Spectroscopy Sample Results for Other Radionuclides in Water from the Dresden Area
Results are in picocuries per liter (pCi/L)

Location	Ba-140		Be-7		Co-58		Co-60		Cs-134		Cs-137		Fe-59		I-131		K-40		Mn-54		Nb-95		Zn-65		ZR-95	
Date	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U
Des Plaines R. at Channahon St. Park (I&M Canal Trail)																										
1/28/2015	5.7	8.0	2.4	14.3	1.4	1.9	-0.1	1.5	1.9	1.8	-0.6	1.6	0.0	3.3	0.7	3.1	22.0	21.6	0.0	1.7	0.4	1.9	1.8	2.9	-0.7	3.3
5/27/2015	-26.0	43.1	-2.0	23.5	-3.1	2.5	-0.7	2.4	0.1	2.2	-2.2	2.2	-2.6	7.3	20.0	33.3	-40.0	35.3	0.1	2.4	2.0	3.7	-1.2	5.1	-1.2	4.7
8/6/2015	-12.7	9.6	6.3	7.4	-0.3	1.0	1.0	1.0	-0.8	0.9	-1.1	1.0	1.1	2.5	5.9	4.5	8.0	16.0	-0.5	0.9	2.7	1.3	-2.9	2.2	3.5	1.9
11/4/2015	33.0	18.0	-2.0	10.0	1.1	1.3	0.7	0.9	0.1	0.9	0.0	0.9	-0.1	3.0	7.0	16.0	42.0	17.0	-0.1	1.0	-1.3	1.6	-0.9	2.2	3.9	1.9
Des Plaines R. at McKinley Woods Will Co. Forest Preserve																										
5/27/2015	29.0	37.2	-4.0	23.5	1.6	2.7	0.6	2.2	1.2	2.4	0.6	1.9	2.3	5.7	-14.0	35.3	73.0	29.4	0.3	2.2	2.1	3.9	-4.6	4.9	0.5	5.1
8/6/2015	2.1	8.4	2.5	8.5	0.1	1.0	0.6	0.8	-0.8	1.0	0.2	0.9	-0.8	2.3	4.1	5.0	27.8	9.4	-0.2	0.9	0.9	1.3	4.4	1.7	-1.6	1.9
11/4/2015	-6.0	24.0	33.0	12.0	1.0	1.7	-0.8	1.6	2.3	1.3	-0.8	1.1	2.6	4.7	11.0	16.0	12.0	18.0	-1.3	1.3	0.7	2.6	-2.3	4.0	-4.1	3.1
Heideke Lake Bank Fish area																										
5/26/2015	1.0	39.2	6.3	18.2	0.9	2.4	2.2	1.9	-0.9	1.9	2.2	1.8	1.4	6.1	-5.0	29.4	-7.0	35.3	-0.8	2.2	1.3	3.1	0.4	4.9	-3.5	4.3
8/6/2015	13.0	11.0	-8.0	10.0	-1.3	1.5	-2.3	1.8	0.4	1.3	-1.2	1.1	5.0	3.5	-0.5	4.6	23.0	17.0	0.3	1.3	0.1	1.8	-7.4	4.1	2.4	2.7
I&M Canal above Chann. St. Park																										
5/27/2015	14.0	35.3	7.0	19.6	-1.5	2.5	0.1	1.6	-0.3	2.0	0.5	1.6	1.7	5.1	10.0	31.4	33.0	19.6	-1.0	1.9	-2.2	3.5	-1.6	3.9	-1.3	4.3
8/6/2015	6.8	9.0	7.1	9.5	-0.9	1.1	-1.3	1.1	-0.4	1.1	1.2	1.1	-3.1	2.6	9.2	4.8	16.0	11.0	-0.2	0.9	0.9	1.3	2.9	2.0	1.4	2.0
11/4/2015	7.0	21.0	-15.0	12.0	0.9	1.4	1.5	0.9	-0.1	1.3	0.5	1.0	-4.1	3.6	-15.0	18.0	37.0	16.0	-1.5	1.2	-2.0	2.2	-0.5	2.4	0.4	2.6
Illinois R. at Dresden Island Lock and Dam																										
1/28/2015	1.9	8.8	-3.2	15.9	2.1	1.9	0.9	2.2	0.5	2.2	0.8	1.8	-0.7	3.9	3.6	3.3	55.0	25.5	0.1	2.0	1.7	2.2	1.2	3.5	1.7	3.5
5/26/2015	23.0	49.0	-3.0	11.0	0.6	2.3	0.9	1.8	-0.4	1.7	1.0	1.6	-0.4	5.9	55.0	52.0	-21.0	29.0	0.1	1.9	1.4	3.1	-1.6	3.8	-3.0	3.9
8/6/2015	-1.7	9.1	3.5	8.6	0.1	1.1	1.1	1.0	0.5	0.8	0.7	0.9	-0.6	2.4	-4.9	5.5	3.0	17.0	-0.4	0.9	-1.4	1.2	2.8	2.0	-2.1	1.7
11/4/2015	-33.0	20.0	-11.0	11.0	1.5	1.3	1.6	1.1	-0.1	1.1	0.1	1.0	1.3	2.8	22.0	18.0	-8.0	13.0	0.1	1.0	-1.9	1.9	4.6	2.1	-3.3	2.7
Illinois R. at Morris boat launch (Rte 47 bridge)																										
1/28/2015	3.1	8.6	-2.8	14.9	1.4	2.0	1.4	2.2	-0.1	2.0	0.5	2.0	-0.5	3.9	0.5	3.1	26.0	21.6	-0.1	1.9	-0.2	2.0	-2.2	4.3	-2.2	3.5
5/26/2015	21.0	39.2	11.8	16.9	-1.4	2.4	0.8	2.0	-0.2	2.0	0.8	1.8	2.2	6.3	5.0	27.4	24.0	33.3	1.1	1.8	-0.8	3.5	-2.4	4.9	0.5	4.1
8/6/2015	1.1	9.0	-3.2	8.9	0.1	1.1	0.3	1.2	0.9	1.0	-0.1	1.1	2.6	2.4	7.1	5.1	4.0	12.0	-0.6	1.0	-0.6	1.4	0.8	2.1	1.2	1.9
11/4/2015	24.0	20.0	-13.5	9.3	-1.1	1.3	1.7	1.0	-0.6	1.0	1.8	0.9	1.1	3.2	12.0	14.0	17.0	18.0	-0.4	1.0	-2.2	1.7	-1.9	2.5	-0.5	2.2
Well @ Dresden Island Lock & Dam																										
5/26/2015	3.0	50.0	-1.0	12.0	-0.2	2.4	0.3	1.7	-1.0	1.8	1.1	1.5	-5.3	6.6	47.0	60.0	7.0	23.0	0.4	1.9	-0.3	3.5	-0.2	4.2	-1.6	4.3
8/6/2015	-1.0	10.0	2.4	9.1	1.6	1.1	-2.1	1.2	-0.6	1.1	2.1	1.0	-2.1	2.5	-7.9	5.9	19.0	12.0	-1.0	1.0	0.6	1.5	-1.8	2.3	1.1	2.1
11/4/2015	-22.0	19.0	4.0	10.0	0.4	1.2	-0.1	0.9	-3.0	1.0	2.4	0.8	-4.7	2.8	8.0	17.0	46.0	11.0	0.2	0.9	-3.6	1.7	1.3	1.9	-0.1	2.2

*U is Uncertainty at a 95% confidence level.

Table B-5. Soil Sample Results for Dresden Area
Results are in picocuries per gram (pCi/g)

Location / Date	Ac-228 Result	Ac-228 *U	Ba-140 Result	Ba-140 *U	Bi-212 Result	Bi-212 *U	Bi-214 Result	Bi-214 *U	Co-58 Result	Co-58 *U	Co-60 Result	Co-60 *U	Cs-134 Result	Cs-134 *U	Cs-137 Result	Cs-137 *U	Fe-59 Result	Fe-59 *U	K-40 Result	K-40 *U	Mn-54 Result	Mn-54 *U
Heideke Lake Boat Launch																						
5/26/2015	0.7	0.0	0.1	0.3	1.0	0.1	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	22.2	0.6	0.0	0.0
8/6/2015	0.6	0.0	-0.1	0.1	0.5	0.1	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	16.3	0.5	0.0	0.0
Minooka Comm HS																						
5/27/2015	1.0	0.0	0.1	0.4	1.3	0.2	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.1	0.0	16.7	0.5	0.0	0.0
8/6/2015	1.1	0.0	-0.1	0.1	1.0	0.2	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	17.7	0.5	0.0	0.0

Location / Date	Nb-95 Result	Nb-95 *U	PA-234m Result	PA-234m *U	Pb-210 Result	Pb-210 *U	Pb-212 Result	Pb-212 *U	Pb-214 Result	Pb-214 *U	Ra-226 Result	Ra-226 *U	Th-234 Result	Th-234 *U	TL-208 Result	TL-208 *U	U-235 Result	U-235 *U	Zn-65 Result	Zn-65 *U	ZR-95 Result	ZR-95 *U
Heideke Lake Boat Launch																						
5/26/2015	0.0	0.0	0.6	1.0	1.6	0.5	0.8	0.0	1.5	0.0	2.9	0.2	1.1	0.4	0.7	0.0	0.2	0.0	0.0	0.0	0.0	0.0
8/6/2015	0.0	0.0	0.7	1.1	1.6	0.2	0.6	0.0	1.1	0.0	2.0	0.2	1.0	0.2	0.6	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Minooka Comm HS																						
5/27/2015	0.0	0.0	-0.9	1.3	1.2	0.2	1.0	0.0	1.4	0.0	2.5	0.2	1.4	0.3	1.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0
8/6/2015	0.0	0.0	0.5	1.3	12.0	12.0	1.1	0.0	1.4	0.0	2.4	0.3	2.1	1.1	0.9	0.0	0.1	0.0	0.0	0.0	0.0	0.0

*U is Uncertainty at a 95% confidence level.

Table B-6. Sediment Sample Results for Dresden Area
Results are in picocuries per gram (pCi/g)

Location / Date	Ac-228 Result	Ac-228 *U	Ba-140 Result	Ba-140 *U	Be-7 Result	Be-7 *U	Bi-212 Result	Bi-212 *U	Bi-214 Result	Bi-214 *U	Co-58 Result	Co-58 *U	Co-60 Result	Co-60 *U	Cs-134 Result	Cs-134 *U	Cs-137 Result	Cs-137 *U	Fe-59 Result	Fe-59 *U	K-40 Result	K-40 *U	Mn-54 Result	Mn-54 *U
Dresden Lock and Dam																								
5/26/2015	1.1	0.1	-1.0	1.2			1.0	0.3	1.8	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.1	0.0	0.1	19.1	1.1	0.0	0.0
8/28/2015	0.9	0.0	0.6	0.5	1.9	0.2	0.8	0.2	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	19.5	0.6	0.0	0.0

Location / Date	Nb-95 Result	Nb-95 *U	PA-234m Result	PA-234m *U	Pb-210 Result	Pb-210 *U	Pb-212 Result	Pb-212 *U	Pb-214 Result	Pb-214 *U	Ra-226 Result	Ra-226 *U	Th-234 Result	Th-234 *U	TL-208 Result	TL-208 *U	U-235 Result	U-235 *U	Zn-65 Result	Zn-65 *U	ZR-95 Result	ZR-95 *U
Dresden Lock and Dam																						
5/26/2015	0.0	0.0	3.9	2.8	4.6	0.5	1.1	0.1	2.1	0.1	3.4	0.5	1.1	0.6	1.0	0.1	0.2	0.0	0.1	0.0	0.0	0.0
8/28/2015	0.0	0.0	-0.4	1.3	2.7	0.4	1.0	0.0	1.4	0.0	3.0	0.3	0.8	0.4	0.9	0.0	0.2	0.0	0.0	0.0	0.0	0.0

*U is Uncertainty at a 95% confidence level.

Table B-7. Vegetation Sample Results for Dresden Area
Results are in picocuries per kilogram (pCi/kg)

Location	Ba-140			Be-7			Co-58			Co-60			Cs-134			Cs-137			Fe-59		
Date	Result		*U	Result		*U	Result		*U	Result		*U	Result		*U	Result		*U	Result		*U
Heideke Lake Boat Launch Area																					
5/26/2015	0.0	±	0.1	1.0	±	0.2	0.0	±	0.0	0.0	±	0.0	0.0	±	0.0	0.0	±	0.0	0.0	±	0.1
8/6/2015	0.8	±	0.5	4.8	±	0.5	0.0	±	0.0	-0.1	±	0.0	0.0	±	0.0	0.0	±	0.0	0.2	±	0.1
Minooka Community High School																					
5/27/2015	-0.1	±	0.2	3.6	±	0.4	0.0	±	0.0	0.0	±	0.0	0.0	±	0.0	0.0	±	0.0	-0.1	±	0.1
8/6/2015	0.1	±	0.2	2.7	±	0.2	0.0	±	0.0	0.0	±	0.0	0.0	±	0.0	0.0	±	0.0	0.0	±	0.0

Location	I-131			K-40			Mn-54			Nb-95			Zn-65			ZR-95		
Date	Result		*U	Result		*U	Result		*U	Result		*U	Result		*U	Result		*U
Heideke Lake Boat Launch Area																		
5/26/2015	0.0	±	0.1	23.9	±	1.3	0.0	±	0.0	0.0	±	0.0	0.0	±	0.1	0.0	±	0.0
8/6/2015	-0.1	±	0.3	23.5	±	1.2	0.0	±	0.0	0.0	±	0.1	0.0	±	0.1	-0.1	±	0.1
Minooka Community High School																		
5/27/2015	0.0	±	0.1	27.5	±	1.6	0.0	±	0.0	0.0	±	0.0	0.0	±	0.1	0.0	±	0.0
8/6/2015	0.1	±	0.1	9.6	±	0.4	0.0	±	0.0	0.0	±	0.0	0.0	±	0.0	0.0	±	0.0

*U is Uncertainty at a 95% confidence level.

Table B-8. Gamma Detection Network Results for Dresden Area

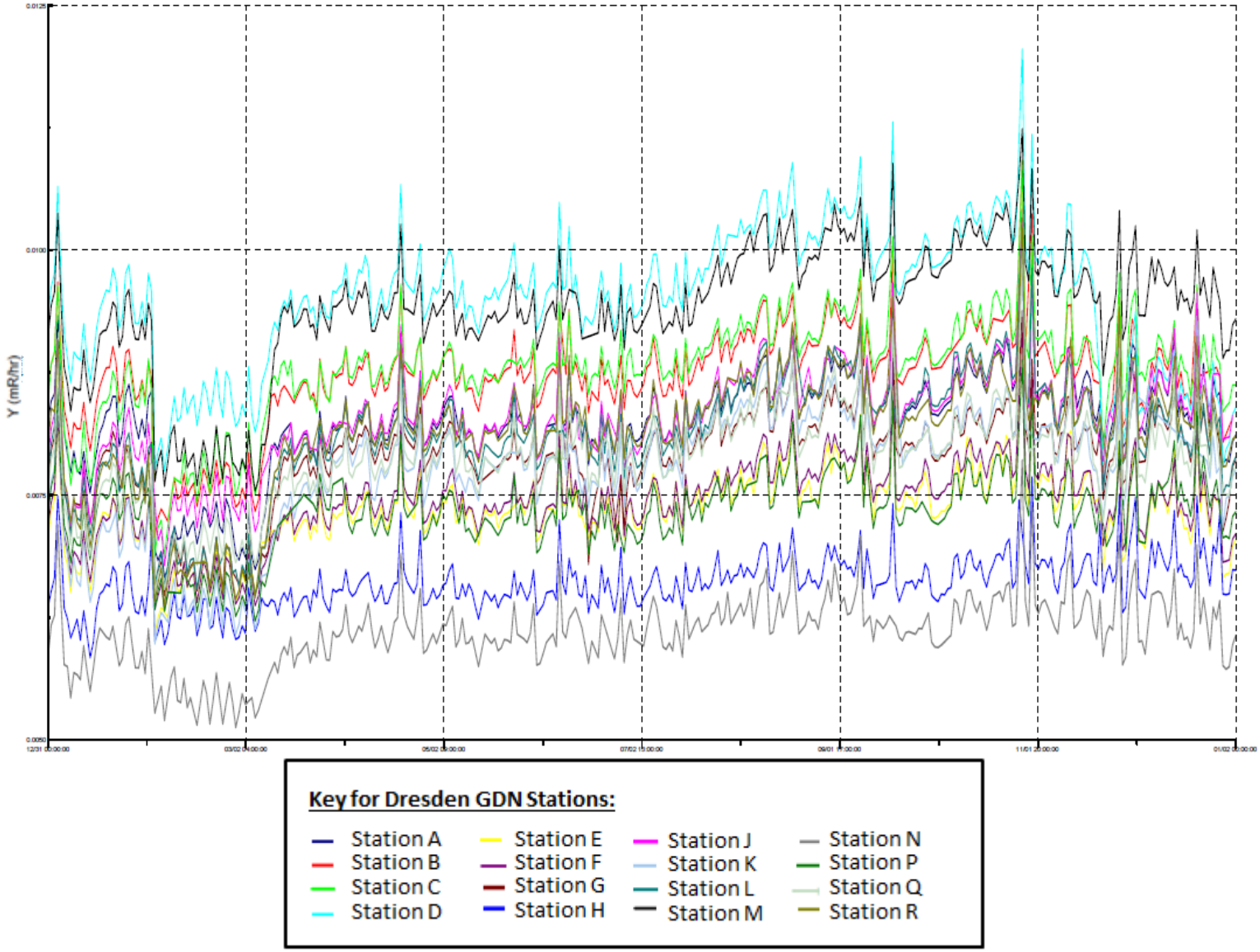


Table B-9. Summary of Ambient Gamma Results for Dresden Area

Location	Quarter 1 mrem/day	Quarter 2 mrem/day	Quarter 3 mrem/day	Quarter 4 mrem/day	Annual Dose mrem/year
DR001	0.066	0.099	0.071	0.062	27.19
DR002	0.057	0.095	0.075	0.058	26.01
DR003	0.064	0.119	0.085	0.071	30.93
DR004	0.121	0.133	0.1	0.174	48.18
DR007	0.073	0.128	0.082	0.063	31.57
DR009	0.078	0.105	0.092	0.064	30.93
DR013	0.068	0.119	0.089	0.088	33.22
DR020	0.086	0.119	0.1	0.088	35.86
DR021	0.05	0.093	0.072	0.053	24.46
DR022	0.05	0.087	0.06	0.065	23.91
DR023	0.072	0.078	0.091	0.05	26.55
DR025	0.05	0.056	0.063	0.046	19.62
DR026	0.047	0.068	0.088	0.05	23.09
DR027	0.062	0.077	0.091	0.084	28.65
DR031	0.066	0.063	0.076	0.061	24.27
DR033	0.056	0.063	0.059	0.061	21.81
DR036	0.085	0.092	0.113	0.114	36.87
DR039	0.092	0.118	0.111	0.108	39.15
DR040	0.109	0.124	0.134	0.1	42.61
DR041	0.084	0.087	0.083	0.089	31.30
DR043	0.096	0.127	0.113	0.107	40.42
DR046	0.049	0.048	0.054	0.053	18.62
DR048		0.095	0.101	0.092	35.04
DR050	0.051	0.069	0.07	0.079	24.55
DR052		0.107	0.109	0.117	40.52
DR053		0.074	0.082	0.07	27.50
DR056	0.103	0.103	0.104	0.106	37.96
DR060		0.089	0.087	0.072	30.17
DR062	0.057	0.1	0.104	0.097	32.67
DR065	0.102	0.111	0.124	0.103	40.15
DR066	0.041	0.085	0.077	0.064	24.36
DR068	0.078	0.081	0.083	0.078	29.20
DR070	0.063	0.069	0.093	0.104	30.02
DR073	0.081	0.12	0.117	0.085	36.77
DR075	0.073	0.103	0.111	0.097	35.04
DR076	0.039	0.045	0.066	0.073	20.35
DR077	0.06	0.092	0.105	0.089	31.57
DR078	0.08	0.103	0.113	0.102	36.32
DR080	0.09	0.123	0.113	0.123	40.97
DR081	0.067	0.105	0.108	0.116	36.14
DR082	0.076	0.104	0.099		33.95
DR083	0.069	0.089	0.099	0.097	32.30
DR084	0.069	0.109	0.086	0.086	31.94
DR087	0.087	0.091	0.096	0.102	34.31
DR089	0.064	0.098	0.082		29.69

Location	Quarter 1 mrem/day	Quarter 2 mrem/day	Quarter 3 mrem/day	Quarter 4 mrem/day	Annual Dose mrem/year
DR091	0.065	0.104	0.088	0.073	30.11
DR093	0.066	0.092	0.099	0.07	29.84
DR095	0.078	0.113	0.107	0.101	36.41
DR096	0.083	0.083	0.1	0.082	31.76
DR097	0.103	0.134	0.124	0.109	42.89
DR098	0.055	0.085	0.061	0.06	23.82
DR099	0.105	0.109	0.119	0.109	40.33
DR100	0.075	0.09	0.109	0.098	33.95
DR102	0.069	0.131	0.107	0.104	37.50
DR103	0.103	0.114	0.132	0.133	43.98
DR104	0.117	0.116	0.132	0.128	44.99
DR105	0.049	0.067	0.064	0.062	22.08
DR106	0.035		0.068	0.064	20.32
DR107	0.075		0.09	0.074	29.08
DR108	0.088	0.07	0.105	0.106	33.67
DR109	0.092	0.13	0.12	0.097	40.06
DR110	0.054	0.047	0.066	0.056	20.35
DR111	0.057	0.056	0.066	0.067	22.45
DR112	0.072	0.102	0.098	0.088	32.85
DR113	0.099	0.125	0.13	0.113	42.61
DR114	0.086	0.129	0.144	0.128	44.44
DR115	0.092	0.118	0.107	0.095	37.60
DR116	0.053	0.068	0.08	0.082	25.82
DR117	0.074		0.082	0.077	28.35
DR118	0.061	0.088	0.075	0.074	27.19
DR-RSA	0.089	0.107	0.085	0.096	34.40
DR-RSB	0.1	0.126	0.104	0.101	39.33
DR-RSC	0.096	0.098	0.134	0.107	39.69
DR-RSD	0.099	0.11	0.121	0.113	40.42
DR-RSE	0.07	0.082	0.1		30.66
DR-RSF	0.058	0.075	0.078	0.089	27.38
DR-RSG	0.056	0.107	0.081	0.09	30.48
DR-RSH	0.049	0.067	0.072	0.057	22.36
DR-RSJ	0.064	0.101	0.091	0.081	30.75
DR-RSK	0.07	0.118	0.081	0.084	32.21
DR-RSL	0.074	0.111	0.085	0.101	33.85
DR-RSM	0.102	0.155	0.133	0.136	48.00
DR-RSN	0.053	0.092	0.065	0.046	23.36
DR-RSP	0.071	0.096	0.092	0.078	30.75
DR-RSQ	0.064	0.113	0.087	0.075	30.93
DR-RSR	0.08	0.125	0.118	0.106	39.15

Blanks in the table indicate that dosimeters were missing at the end of the quarter.
Annual Dose column based on averages of all available data.

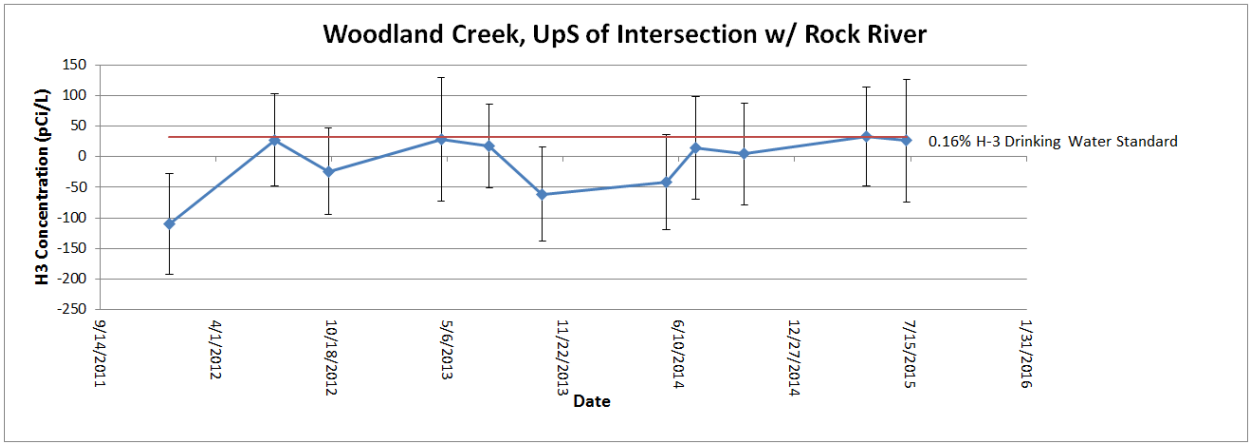
Appendix C
Byron Sample Results

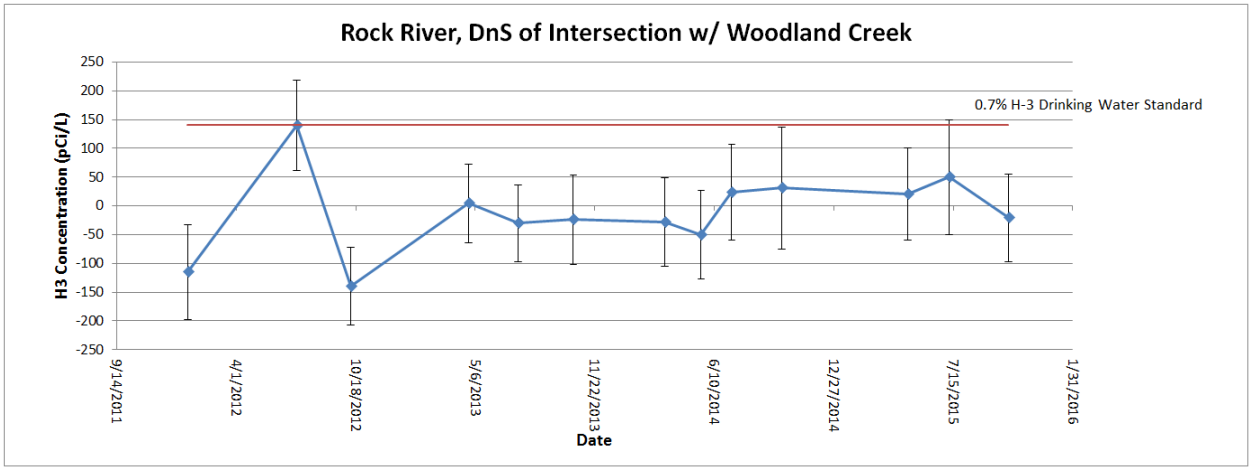
Table C-1. Tritium in Water Sample Results for Byron Area
Results are in picocuries per liter (pCi/L)

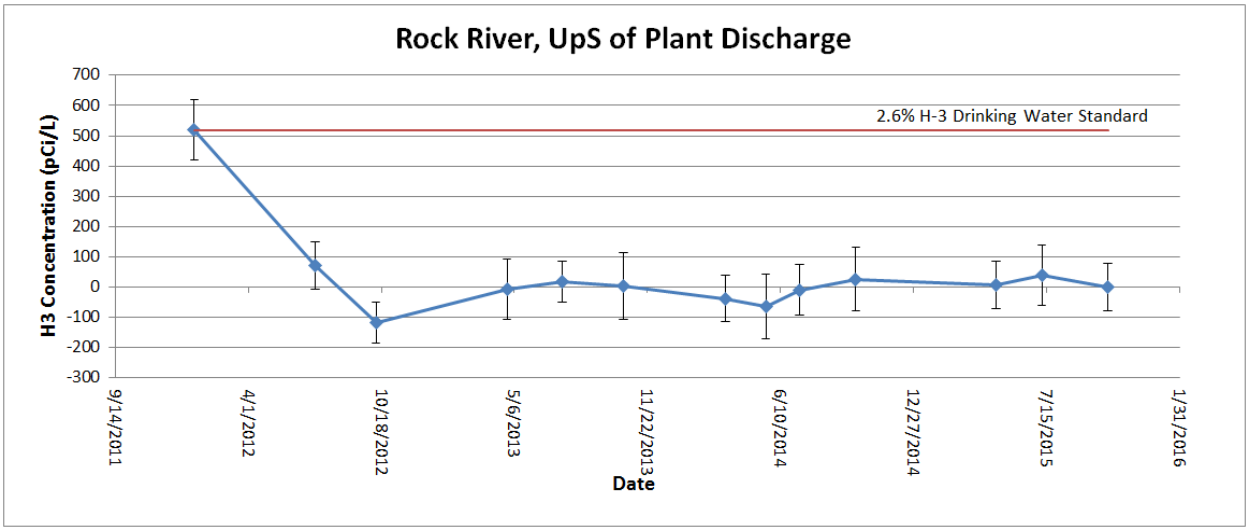
Location	Date	Result		*U
DnS Lowden State Park Boat Ramp W of Rock River	4/30/2015	23.4	±	80.2
DnS Lowden State Park Boat Ramp W of Rock River	7/8/2015	84.6	±	79.1
DnS Lowden State Park Boat Ramp W of Rock River	10/15/2015	41.3	±	78.2
DnS Public Parking W of Rock River	4/30/2015	74.7	±	81.6
DnS Public Parking W of Rock River	7/8/2015	73.2	±	78.8
DnS Public Parking W of Rock River	10/15/2015	-27.6	±	76.3
Oregon Park East	10/15/2015	77.9	±	79.0
Pool of the Rock R., Oregon	4/30/2015	25.7	±	80.3
Pool of the Rock R., Oregon	7/8/2015	66.1	±	100.0
Pool of the Rock R., Oregon	10/15/2015	-20.7	±	76.5
Rock R. Boat Ramp Near the Lake Louise Sample Point	4/30/2015	30.4	±	80.4
Rock R. Boat Ramp Near the Lake Louise Sample Point	7/8/2015	-14.2	±	98.6
Rock R. Boat Ramp Near the Lake Louise Sample Point	10/15/2015	11.5	±	77.4
Rock R., DnS of the Intersection With Woodland Creek (UpS)	4/30/2015	21.0	±	80.1
Rock R., DnS of the Intersection With Woodland Creek (UpS)	7/8/2015	49.6	±	100.0
Rock R., DnS of the Intersection With Woodland Creek (UpS)	10/15/2015	-20.7	±	76.5
Rock R., Just UpS of the Byron Cooling Water Discharge (UpS)	4/30/2015	7.0	±	79.8
Rock R., Just UpS of the Byron Cooling Water Discharge (UpS)	7/8/2015	40.1	±	99.9
Rock R., Just UpS of the Byron Cooling Water Discharge (UpS)	10/15/2015	0.0	±	77.1
Woodland Creek, UpS of the Intersection With Rock R. (UpS)	4/30/2015	32.7	±	80.5
Woodland Creek, UpS of the Intersection With Rock R. (UpS)	7/8/2015	26.0	±	99.5

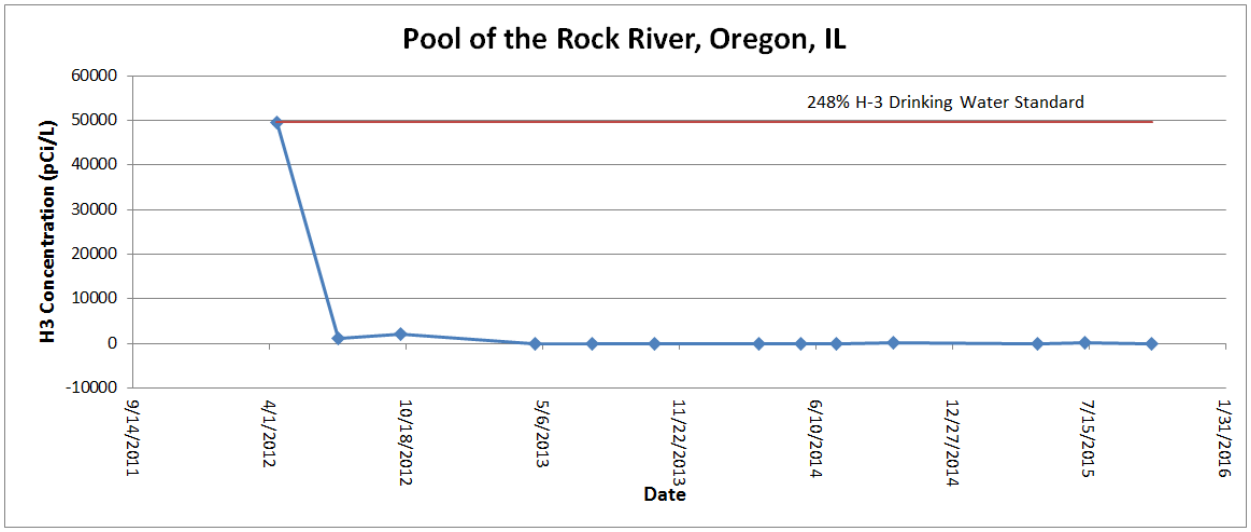
*U is Uncertainty at a 95% confidence level.

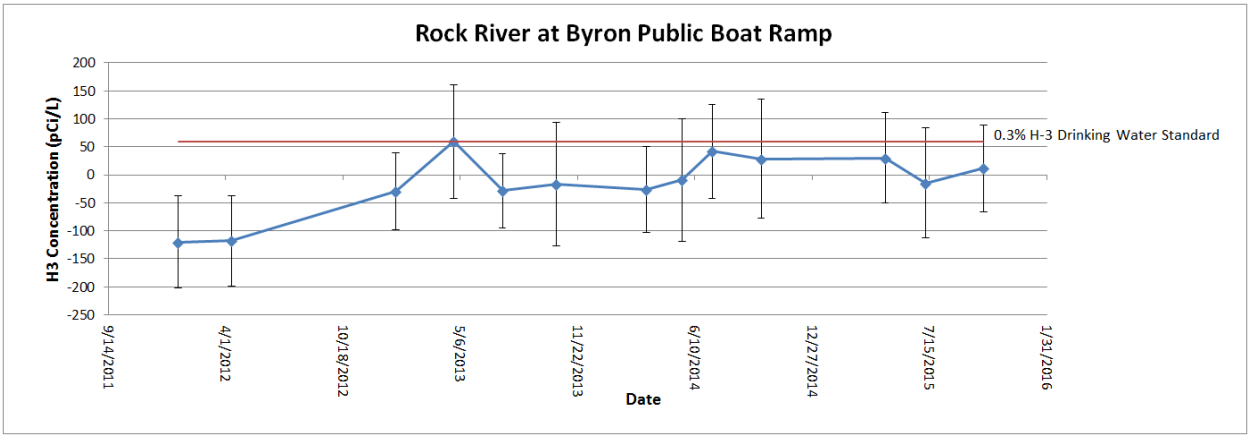
Tables C-2. Trending Graphs for Water from the Byron Area
(Highest results on graphs indicate percentage of US EPA Drinking Water Standard)

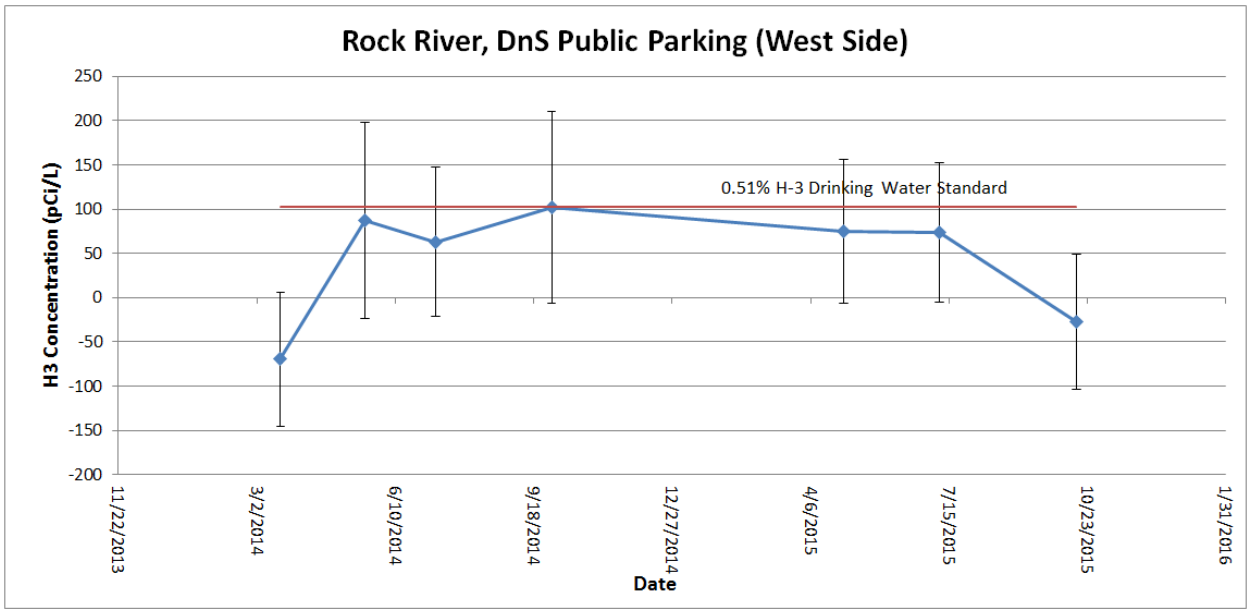







Pool of the Rock River, Oregon, IL
248% H-3 Drinking Water Standard
H3 Concentration (pCi/L)
60000
50000
40000
30000
20000
10000
0
-10000
9/14/2011
4/1/2012
10/18/2012
5/6/2013
11/22/2013
6/10/2014
12/27/2014
7/15/2015
1/31/2016
Date


Rock River at Byron Public Boat Ramp
0.3% H-3 Drinking Water Standard
H3 Concentration (pCi/L)
200
150
100
50
0
-50
-100
-150
-200
-250
9/14/2011
4/1/2012
10/18/2012
5/6/2013
11/22/2013
6/10/2014
12/27/2014
7/15/2015
1/31/2016
Date


Rock River, DnS Public Parking (West Side)
0.51% H-3 Drinking Water Standard
H3 Concentration (pCi/L)
250
200
150
100
50
0
-50
-100
-150
-200
11/22/2013
3/2/2014
6/10/2014
9/18/2014
12/27/2014
4/6/2015
7/15/2015
10/23/2015
1/31/2016
Date

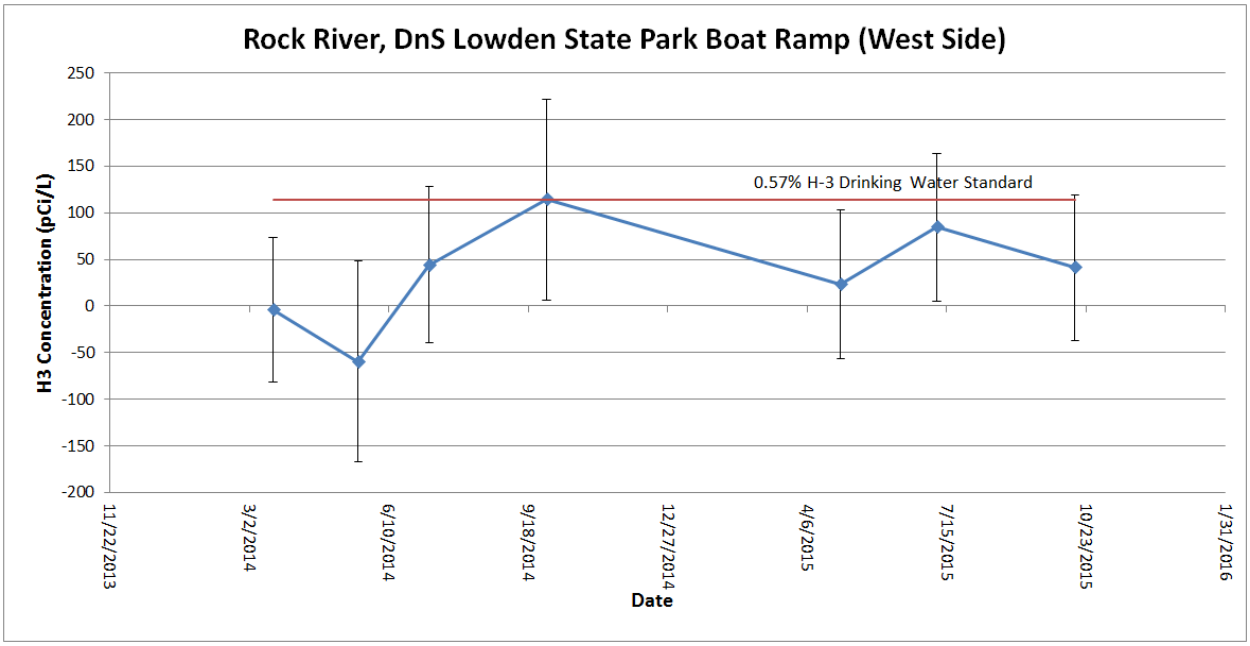

Rock River, DnS Lowden State Park Boat Ramp (West Side)
250
200
150
100
50
0
-50
-100
-150
-200
H3 Concentration (pCi/L)
0.57% H-3 Drinking Water Standard
11/22/2013
3/2/2014
6/10/2014
9/18/2014
12/27/2014
4/6/2015
7/15/2015
10/23/2015
1/31/2016
Date

Table C-3. Sample Results for Alpha/Beta Screening of Water from the Byron Area
Results are in picocuries per liter (pCi/L)

Location / Date	Alpha Result		*U	Beta Result		*U
DnS Lowden State Park Boat Ramp W of Rock River						
4/30/2015	-0.3	±	1.3	1.9	±	2.2
7/8/2015	-0.5	±	1.3	3.4	±	2.3
10/15/2015	-0.2	±	1.4	3.3	±	2.1
DnS Public Parking W of Rock River						
4/30/2015	-0.6	±	1.3	2.5	±	2.2
7/8/2015	-0.4	±	1.3	3.9	±	2.3
10/15/2015	-0.2	±	1.4	5.8	±	2.2
Oregon Park East						
10/15/2015	-0.7	±	1.4	3.0	±	2.2
Pool of the Rock R., Oregon						
4/30/2015	0.0	±	1.3	2.4	±	2.2
7/8/2015	1.0	±	1.4	2.2	±	2.2
10/15/2015	0.4	±	1.4	3.5	±	2.2
Rock R. Boat Ramp Near the Lake Louise Sample Point						
4/30/2015	-0.7	±	1.3	4.6	±	2.3
7/8/2015	-0.7	±	1.3	2.5	±	2.2
10/15/2015	0.2	±	1.4	3.1	±	2.1
Rock R., DnS of the Intersection With Woodland Creek (UpS)						
4/30/2015	0.2	±	1.3	1.3	±	2.2
7/8/2015	0.3	±	1.4	2.8	±	2.3
10/15/2015	0.2	±	1.4	2.1	±	2.1
Rock R., Just UpS of the Byron Cooling Water Discharge (UpS)						
4/30/2015	-0.6	±	1.3	4.1	±	2.3
7/8/2015	-0.3	±	1.3	1.8	±	2.2
10/15/2015	0.7	±	1.4	5.0	±	2.2
Woodland Creek, UpS of the Intersection With Rock R. (UpS)						
4/30/2015	-0.4	±	1.3	2.8	±	2.2
7/8/2015	-0.7	±	1.3	0.6	±	2.2

*U is Uncertainty at a 95% confidence level.

Table C-4. Gamma Spectroscopy Sample Results for Other Radionuclides in Water from the Byron Area
Results are in picocuries per liter (pCi/L)

Location / Date	Ba-140 Result	Ba-140 *U	Be-7 Result	Be-7 *U	Co-58 Result	Co-58 *U	Co-60 Result	Co-60 *U	Cs-134 Result	Cs-134 *U	Cs-137 Result	Cs-137 *U	Fe-59 Result	Fe-59 *U	I-131 Result	I-131 *U	K-40 Result	K-40 *U	Mn-54 Result	Mn-54 *U	Nb-95 Result	Nb-95 *U	Zn-65 Result	Zn-65 *U	Zr-95 Result	Zr-95 *U
DnS Lowden State Park Boat Ramp W of Rock River																										
4/30/2015	8.9	12.2	7.2	15.1	-0.3	1.9	-0.4	1.7	-0.5	1.9	0.3	1.6	0.9	3.9	-5.9	6.3	33.0	21.6	0.3	1.9	0.6	2.2	2.2	3.5	2.5	3.3
7/8/2015	5.0	16.0	-15.0	12.0	-1.5	1.4	-0.7	1.4	-0.2	1.3	-3.4	1.3	-0.7	3.1	8.0	12.0	2.0	14.0	0.2	1.2	1.0	1.8	-0.3	2.4	0.2	2.6
10/15/2015	15.0	15.0	-16.0	11.0	0.1	1.3	1.4	1.1	0.5	1.1	-1.6	1.0	-3.9	3.0	18.0	11.0	-5.0	15.0	0.1	1.1	2.0	1.7	-4.5	2.6	4.0	2.2
DnS Public Parking W of Rock River																										
4/30/2015	1.4	14.5	11.3	18.2	0.7	2.0	-0.1	2.4	1.7	2.2	-0.9	2.2	-2.3	5.5	3.8	6.5	53.0	27.4	-0.2	2.4	0.4	2.5	-5.0	5.3	-0.9	4.1
7/8/2015	4.0	12.0	-22.3	9.2	-0.3	1.1	0.2	0.9	0.7	0.9	0.4	0.9	-3.0	2.6	-4.2	7.9	19.0	17.0	-0.2	1.0	-0.4	1.3	2.4	2.1	-0.7	1.7
10/15/2015	6.0	6.8	-9.1	8.6	3.1	1.0	-0.3	1.0	1.1	1.0	-0.2	1.1	-2.7	2.1	-6.2	3.3	15.0	12.0	-0.2	1.0	-0.3	1.3	-0.2	2.1	-0.6	2.1
Oregon Park East																										
10/15/2015	6.2	8.6	3.8	7.5	1.1	0.9	-1.6	1.0	0.1	1.0	2.5	1.0	1.1	2.5	4.6	3.6	-33.0	17.0	1.8	0.9	2.6	1.3	-4.8	2.4	2.4	1.8
Pool of the Rock R., Oregon																										
4/30/2015	2.3	12.5	3.1	13.7	-0.7	1.9	-1.4	2.0	-0.4	1.9	-1.2	1.9	-0.3	4.7	-0.1	5.3	10.0	31.4	-1.1	1.8	-0.6	2.4	-3.5	4.7	1.0	3.5
7/8/2015	12.0	12.0	-3.6	9.3	-0.2	1.1	1.0	0.8	-0.7	1.0	-0.1	0.9	3.1	2.3	7.3	8.1	6.0	10.0	-0.8	0.9	-1.5	1.5	-1.5	2.0	-2.9	2.2
10/15/2015	-7.3	7.9	-5.3	8.3	0.7	1.1	2.7	0.8	1.4	0.9	1.1	0.9	-0.1	2.2	0.7	4.2	-32.0	16.0	0.1	0.9	0.7	1.2	-0.5	2.1	-3.6	1.7
Rock R. Boat Ramp Near the Lake Louise Sample Point																										
4/30/2015	6.5	13.9	4.5	14.3	2.3	1.9	-0.2	2.0	1.0	1.7	1.0	1.8	-0.5	4.9	-1.6	5.5	-1.0	33.3	-0.4	1.7	1.4	2.2	1.3	4.1	-0.3	3.5
7/8/2015	5.0	12.0	11.0	10.0	-3.7	1.3	-0.2	1.2	0.5	1.0	-1.4	0.9	3.3	2.4	-1.4	8.9	35.0	12.0	0.1	1.0	2.1	1.5	4.6	2.2	1.0	2.2
10/15/2015	6.0	42.0	1.0	12.0	-0.7	1.4	0.3	0.8	0.6	1.0	-1.1	0.9	0.0	3.4	50.0	59.0	26.1	9.9	-0.8	0.9	0.0	2.3	1.5	2.0	1.4	2.5
Rock R., DnS of the Intersection With Woodland Creek (UpS)																										
4/30/2015	-1.8	12.3	-2.6	15.5	1.1	1.9	-0.2	1.6	-1.6	2.0	0.4	1.6	-1.8	3.9	3.2	5.5	28.0	19.6	0.2	1.8	1.0	2.2	2.0	3.7	0.3	3.5
7/8/2015	2.2	8.1	6.4	6.8	0.4	1.0	0.6	1.0	-0.6	1.0	0.5	1.0	0.4	2.5	-5.3	3.5	11.0	18.0	1.4	0.9	0.6	1.2	0.5	2.3	0.5	1.8
10/15/2015	-12.0	10.0	5.5	7.6	-0.3	1.0	0.4	1.0	0.3	1.0	2.2	0.9	2.0	2.7	1.9	4.4	-4.0	18.0	0.8	0.9	0.9	1.4	0.2	2.2	3.4	1.9
Rock R., Just UpS of the Byron Cooling Water Discharge (UpS)																										
4/30/2015	3.5	12.3	-7.6	16.1	-0.5	2.2	-0.3	2.0	-0.4	1.8	0.4	1.7	-2.7	4.3	-5.7	5.9	-8.0	31.4	-0.3	2.0	-0.6	2.0	3.2	3.7	1.1	3.1
7/8/2015	28.0	14.0	5.0	11.0	-0.5	1.2	1.0	1.1	1.7	1.1	-0.9	1.1	-2.6	3.3	3.0	9.3	50.0	14.0	-1.1	1.3	0.8	1.6	1.3	2.4	1.9	2.3
10/15/2015	-3.9	8.8	7.2	8.9	-0.6	1.1	-0.3	1.1	0.5	1.0	1.2	1.0	1.4	2.3	6.8	4.9	34.0	11.0	-0.6	1.0	0.7	1.4	-6.2	2.3	-0.2	2.0
Woodland Creek, UpS of the Intersection With Rock R. (UpS)																										
4/30/2015	13.2	15.7	4.0	17.2	-0.9	2.4	1.7	2.0	1.6	2.2	-1.2	2.2	2.5	5.3	-0.6	6.1	42.0	27.4	0.2	2.4	-1.5	2.5	-1.1	4.7	0.9	3.7
7/8/2015	0.7	8.7	0.0	7.8	0.5	1.0	1.2	1.1	2.1	1.0	-0.6	1.0	2.3	2.4	0.7	3.7	3.0	16.0	-0.8	0.9	0.3	1.3	-1.3	2.4	1.1	1.9

*U is Uncertainty at a 95% confidence level.

Table C-5. Soil Sample Results for Byron Area
Results are in picocuries per gram (pCi/g)

Location / Date	Ac-228 Result	Ac-228 *U	Ba-140 Result	Ba-140 *U	Bi-212 Result	Bi-212 *U	Bi-214 Result	Bi-214 *U	Co-58 Result	Co-58 *U	Co-60 Result	Co-60 *U	Cs-134 Result	Cs-134 *U	Cs-137 Result	Cs-137 *U	Fe-59 Result	Fe-59 *U	K-40 Result	K-40 *U	Mn-54 Result	Mn-54 *U
Flood Plain NE of intersection of N River & N German Church (NE Quadrant)																						
4/30/2015	0.5	0.0	0.1	0.2	0.4	0.2	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	9.2	0.6	0.0	0.0
7/8/2015	0.6	0.0	-0.1	0.2	0.4	0.1	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	10.8	0.4	0.0	0.0
Lot SE of intersection of W Pond & N Main (NW Quadrant, Leaf River)																						
4/30/2015	0.7	0.1	0.0	0.2	0.8	0.3	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	13.4	0.8	0.0	0.0
7/8/2015	0.7	0.0	0.1	0.1	0.6	0.1	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	12.8	0.4	0.0	0.0
Lowden State Park (SW Quadrant)																						
4/30/2015	0.8	0.1	-0.1	0.2	0.7	0.3	0.7	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	12.4	0.8	0.0	0.0
7/8/2015	0.8	0.0	0.0	0.2	1.2	0.2	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	14.2	0.5	0.0	0.0
Nachusa Grasslands Area (UpW)																						
4/30/2015	0.4	0.0	0.1	0.2	0.4	0.2	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	6.8	0.5	0.0	0.0
7/8/2015	0.4	0.0	-0.1	0.1	0.5	0.1	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	8.2	0.3	0.0	0.0
Southwest of Rockford (DnW)																						
4/30/2015	0.8	0.1	-0.1	0.2	0.8	0.2	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	13.8	0.8	0.0	0.0
7/8/2015	0.9	0.0	-0.3	0.2	0.8	0.2	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	13.6	0.5	0.0	0.0

Location / Date	Nb-95 Result	Nb-95 *U	Pa-234m Result	Pa-234m *U	Pb-210 Result	Pb-210 *U	Pb-212 Result	Pb-212 *U	Pb-214 Result	Pb-214 *U	Ra-226 Result	Ra-226 *U	TH-234 Result	TH-234 *U	Tl-208 Result	Tl-208 *U	U-235 Result	U-235 *U	Zn-65 Result	Zn-65 *U	Zr-95 Result	Zr-95 *U
Flood Plain NE of intersection of N River & N German Church (NE Quadrant)																						
4/30/2015	0.0	0.0	0.2	1.6	1.0	0.2	0.5	0.0	0.5	0.0	1.1	0.2	0.7	0.3	0.4	0.1	0.1	0.0	-0.1	0.0	0.0	0.0
7/8/2015	0.0	0.0	-0.4	0.9	-3.3	8.6	0.5	0.0	0.7	0.0	1.1	0.2	1.3	0.8	0.5	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Lot SE of intersection of W Pond & N Main (NW Quadrant, Leaf River)																						
4/30/2015	0.0	0.0	0.6	1.9	0.8	0.5	0.6	0.1	0.7	0.0	1.2	0.3	0.3	0.5	0.6	0.1	0.1	0.0	0.0	0.0	0.0	0.0
7/8/2015	0.0	0.0	0.5	1.0	9.2	9.5	0.7	0.0	0.9	0.0	1.6	0.2	2.0	0.9	0.6	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Lowden State Park (SW Quadrant)																						
4/30/2015	0.0	0.0	0.0	2.0	0.4	0.5	0.5	0.1	0.7	0.0	1.3	0.4	0.7	0.5	0.7	0.1	0.1	0.0	0.0	0.0	0.0	0.0
7/8/2015	-0.1	0.0	0.9	1.1	1.2	0.2	0.9	0.0	1.0	0.0	1.6	0.2	0.6	0.2	0.8	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Nachusa Grasslands Area (UpW)																						
4/30/2015	0.0	0.0	1.5	1.5	1.0	0.2	0.4	0.0	0.4	0.0	1.0	0.2	0.6	0.3	0.4	0.1	0.1	0.0	0.0	0.0	0.0	0.0
7/8/2015	0.0	0.0	2.0	0.6	0.6	0.3	0.4	0.0	0.5	0.0	0.8	0.1	0.6	0.3	0.4	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Southwest of Rockford (DnW)																						
4/30/2015	0.0	0.0	0.4	1.6	1.2	0.7	0.9	0.0	0.8	0.0	1.9	0.4	1.0	0.6	0.7	0.1	0.1	0.0	0.0	0.0	0.0	0.0
7/8/2015	0.0	0.0	0.2	1.2	-4.0	11.0	0.9	0.0	1.0	0.0	1.5	0.2	1.3	1.0	0.7	0.0	0.1	0.0	0.0	0.0	0.0	0.0

*U is Uncertainty at a 95% confidence level.

Table C-6. Sediment Sample Results for Byron Area
Results are in picocuries per gram (pCi/g)

Location / Date	Ac-228 Result	Ac-228 *U	Ba-140 Result	Ba-140 *U	Bi-212 Result	Bi-212 *U	Bi-214 Result	Bi-214 *U	Co-58 Result	Co-58 *U	Co-60 Result	Co-60 *U	Cs-134 Result	Cs-134 *U	Cs-137 Result	Cs-137 *U	Fe-59 Result	Fe-59 *U	K-40 Result	K-40 *U	Mn-54 Result	Mn-54 *U
Oregon Park East																						
10/15/2015	0.2	0.0	0.0	0.1	0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	0.2	0.0	0.0
Pool of the Rock R., Oregon																						
4/30/2015	0.2	0.0	-0.1	0.1	0.4	0.2	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.9	0.5	0.0	0.0
Rock R., Just UpS of the Byron Cooling Water Discharge (UpS)																						
4/30/2015	0.2	0.0	0.0	0.1	0.3	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.1	0.4	0.0	0.0
7/8/2015	0.1	0.0	-0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.2	0.2	0.0	0.0

Location / Date	Nb-95 Result	Nb-95 *U	Pa-234m Result	Pa-234m *U	Pb-210 Result	Pb-210 *U	Pb-212 Result	Pb-212 *U	Pb-214 Result	Pb-214 *U	Ra-226 Result	Ra-226 *U	Th-234 Result	Th-234 *U	Tl-208 Result	Tl-208 *U	U-235 Result	U-235 *U	Zn-65 Result	Zn-65 *U	Zr-95 Result	Zr-95 *U
Oregon Park East																						
10/15/2015	0.0	0.0	0.3	0.6	0.1	0.2	0.1	0.0	0.2	0.0	0.4	0.1	0.3	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pool of the Rock R., Oregon																						
4/30/2015	0.0	0.0	0.6	1.3	2.6	2.2	0.3	0.0	0.3	0.0	0.7	0.2	0.4	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rock R., Just UpS of the Byron Cooling Water Discharge (UpS)																						
4/30/2015	0.0	0.0	-0.7	1.2	0.2	0.1	0.1	0.0	0.2	0.0	0.3	0.2	0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7/8/2015	0.0	0.0	-0.4	0.6	0.2	0.1	0.1	0.0	0.1	0.0	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0

*U is Uncertainty at a 95% confidence level.

Table C-7. Vegetation Sample Results for Byron Area
Results are in picocuries per kilogram (pCi/kg)

Location / Date	Ba-140 Result	Ba-140 *U	Be-7 Result	Be-7 *U	Co-58 Result	Co-58 *U	Co-60 Result	Co-60 *U	Cs-134 Result	Cs-134 *U	Cs-137 Result	Cs-137 *U	Fe-59 Result	Fe-59 *U	I-131 Result	I-131 *U	K-40 Result	K-40 *U	Mn-54 Result	Mn-54 *U	Nb-95 Result	Nb-95 *U	Zn-65 Result	Zn-65 *U	Zr-95 Result	Zr-95 *U
Flood Plain NE of intersection of N River & N German Church (NE Quadrant)																										
4/30/2015	0.2	0.3	5.6	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	13.0	1.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
7/8/2015	0.6	0.4	5.8	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.3	15.4	0.7	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.0
Lot SE of intersection of W Pond & N Main (NW Quadrant, Leaf River)																										
4/30/2015	0.3	0.5	2.9	0.7	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1	-0.1	0.2	22.9	1.8	0.0	0.1	0.0	0.1	0.1	0.1	-0.1	0.1
7/8/2015	-0.4	0.7	4.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.1	0.6	16.5	0.9	0.0	0.0	0.0	0.1	-0.1	0.1	-0.1	0.1
Lowden State Park (SW Quadrant)																										
4/30/2015	0.1	0.5	2.8	0.6	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	-0.2	0.2	27.6	2.0	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1
7/8/2015	-0.2	0.6	4.3	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.6	0.5	12.6	0.7	0.0	0.0	-0.1	0.1	0.1	0.1	0.0	0.1
Nachusa Grasslands Area (UpW)																										
4/30/2015	-0.2	0.4	4.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	21.2	1.4	0.0	0.0	0.0	0.0	-0.1	0.1	0.0	0.1
7/8/2015	0.0	0.6	9.7	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.7	0.5	14.0	0.8	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.1
Southwest of Rockford (DnW)																										
4/30/2015	0.0	0.4	2.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	24.5	1.6	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.1
7/8/2015	0.3	0.4	6.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	0.1	0.1	0.3	15.7	0.7	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	0.1

*U is Uncertainty at a 95% confidence level.

Table C-8. Gamma Detection Network Results for Byron

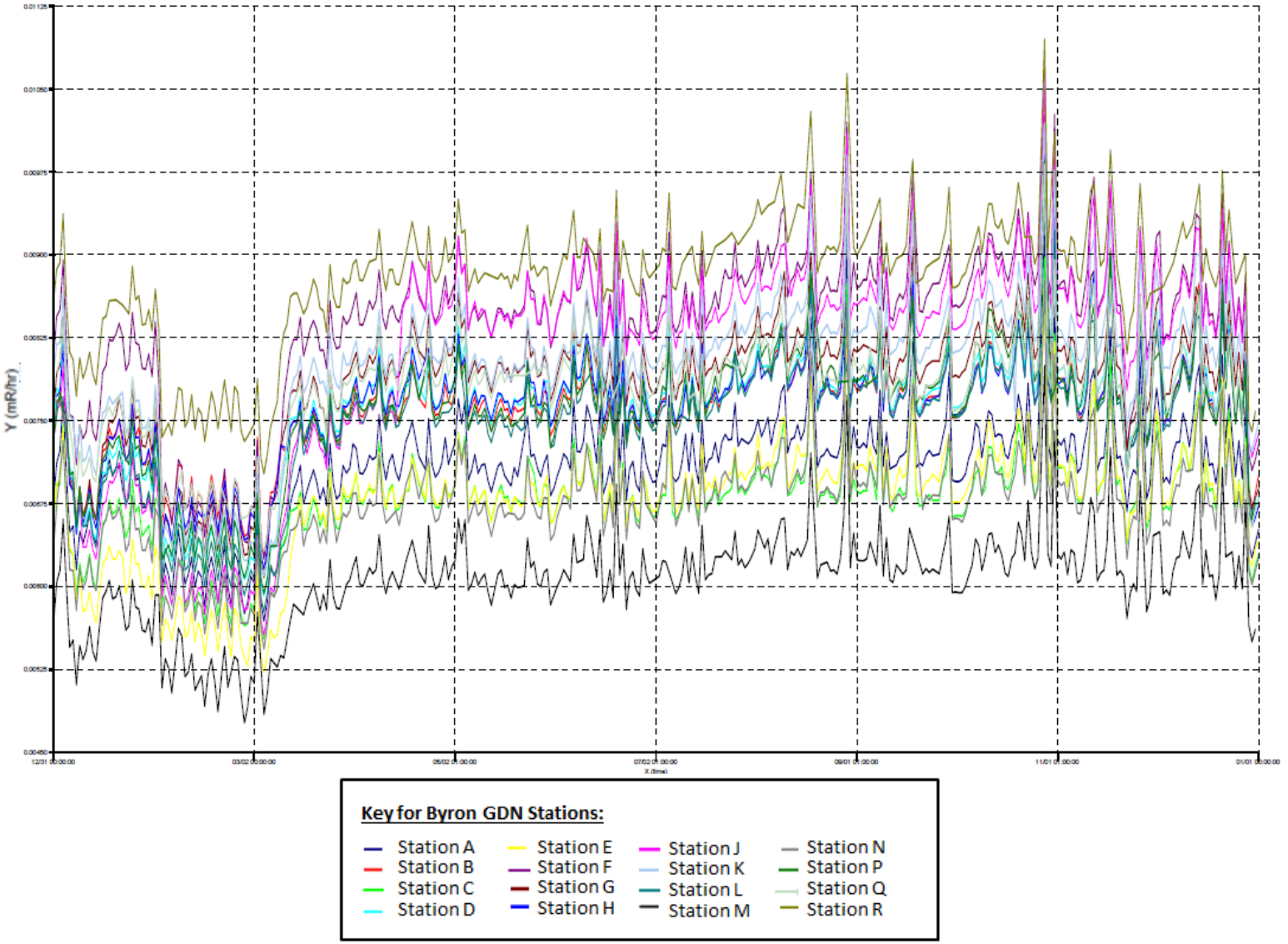


Table C-9. Summary of Ambient Gamma Results for Byron Area

Location	Quarter 1 mrem/day	Quarter 2 mrem/day	Quarter 3 mrem/day	Quarter 4 mrem/day	Annual Dose mrem/year
BY001	0.09	0.088	0.104	0.089	33.85
BY003	0.082	0.057	0.083	0.071	26.74
BY004	0.076	0.085	0.115	0.084	32.85
BY005	0.085	0.08	0.082	0.076	29.47
BY006	0.094	0.081	0.093	0.08	31.76
BY007	0.09	0.083	0.099	0.073	31.48
BY008	0.082	0.069	0.105	0.074	30.11
BY011	0.086	0.085	0.09	0.056	28.93
BY013	0.096	0.11	0.142	0.097	40.61
BY014	0.093	0.071	0.097	0.076	30.75
BY015	0.102		0.194	0.082	45.99
BY018	0.076	0.054	0.091	0.068	26.37
BY020	0.11	0.093	0.122	0.094	38.23
BY022	0.107	0.096	0.122	0.105	39.24
BY023	0.103			0.075	32.49
BY026	0.102	0.082	0.106	0.086	34.31
BY027	0.114			0.084	36.14
BY029	0.102	0.094	0.102	0.09	35.41
BY030	0.112	0.087	0.104	0.095	36.32
BY033	0.109	0.088	0.116	0.089	36.68
BY034	0.087	0.078	0.108	0.077	31.94
BY035	0.072	0.055	0.103	0.066	27.01
BY037	0.082	0.068	0.079	0.061	26.46
BY040	0.122	0.094	0.126	0.089	39.33
BY041	0.088	0.07	0.093	0.086	30.75
BY044	0.078	0.075	0.074	0.069	27.01
BY045	0.091	0.085	0.107	0.068	32.03
BY049	0.077	0.061	0.094	0.078	28.29
BY050	0.083	0.097	0.115	0.105	36.50
BY051	0.075	0.078	0.094	0.065	28.47
BY052	0.088	0.086	0.103	0.098	34.22
BY053		0.09	0.115	0.097	36.74
BY055	0.116	0.1	0.127	0.101	40.52
BY056	0.09	0.071	0.096		31.27
BY057	0.113	0.096	0.118	0.088	37.87
BY058	0.085	0.081	0.11	0.095	33.85
BY059	0.104	0.1	0.12		39.42
BY060	0.098		0.108		37.60
BY061	0.111	0.106	0.161	0.112	44.71
BY062	0.095	0.095	0.108	0.107	36.96
BY063	0.102	0.103	0.119	0.114	39.97
BY064	0.094	0.111	0.143	0.106	41.43
BY065	0.099	0.099	0.104	0.099	36.59
BY066	0.1	0.083	0.114	0.083	34.68

Location	Quarter 1 mrem/day	Quarter 2 mrem/day	Quarter 3 mrem/day	Quarter 4 mrem/day	Annual Dose mrem/year
BY067	0.094	0.082	0.111	0.076	33.12
BY068	0.091	0.082	0.122	0.082	34.40
BY069	0.1	0.077	0.109	0.081	33.49
BY070	0.09	0.076	0.118	0.102	35.22
BY071	0.068	0.058	0.083	0.07	25.46
BY072	0.1	0.109	0.122	0.102	39.51
BY073	0.102	0.093	0.111	0.094	36.50
BY074	0.095	0.092	0.113	0.11	37.41
BY075	0.086	0.073	0.109	0.078	31.57
BY076	0.088	0.057	0.093	0.074	28.47
BY077	0.082	0.08	0.105	0.087	32.30
BY078	0.092	0.09	0.113	0.093	35.41
BY079	0.08	0.06	0.088	0.066	26.83
BY080	0.063			0.066	23.54
BY-RSA	0.092	0.072	0.087	0.086	30.75
BY-RSB	0.088	0.086	0.1	0.063	30.75
BY-RSC	0.068	0.069	0.085	0.08	27.56
BY-RSD	0.098	0.088	0.106	0.1	35.77
BY-RSE	0.08	0.072	0.094	0.08	29.75
BY-RSF	0.093	0.097	0.121	0.099	37.41
BY-RSG	0.081	0.089	0.101	0.074	31.48
BY-RSH	0.1	0.089	0.116	0.079	35.04
BY-RSJ	0.071	0.087	0.1	0.097	32.39
BY-RSK	0.1	0.081	0.108	0.087	34.31
BY-RSL	0.066	0.091	0.09	0.083	30.11
BY-RSM	0.067	0.059	0.074	0.05	22.81
BY-RSN	0.068	0.056	0.07	0.057	22.90
BY-RSP	0.076	0.064	0.104	0.08	29.57
BY-RSQ	0.084	0.07	0.116	0.093	33.12
BY-RSR	0.116	0.099	0.121	0.11	40.70

Blanks in the table indicate that dosimeters were missing at the end of the quarter.
Annual Dose column based on averages of all available data.

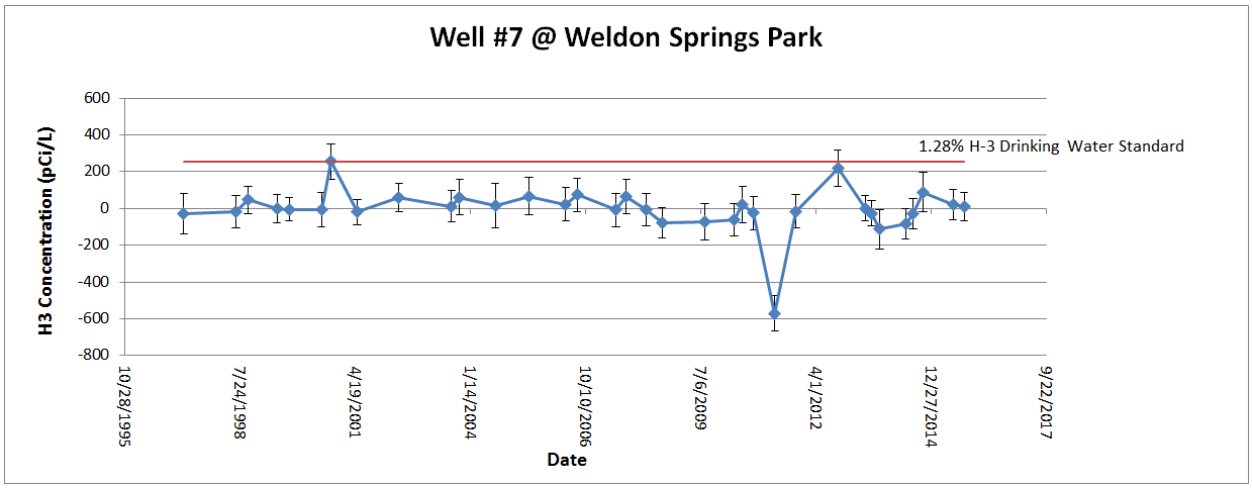
Appendix D
Clinton Sample Results

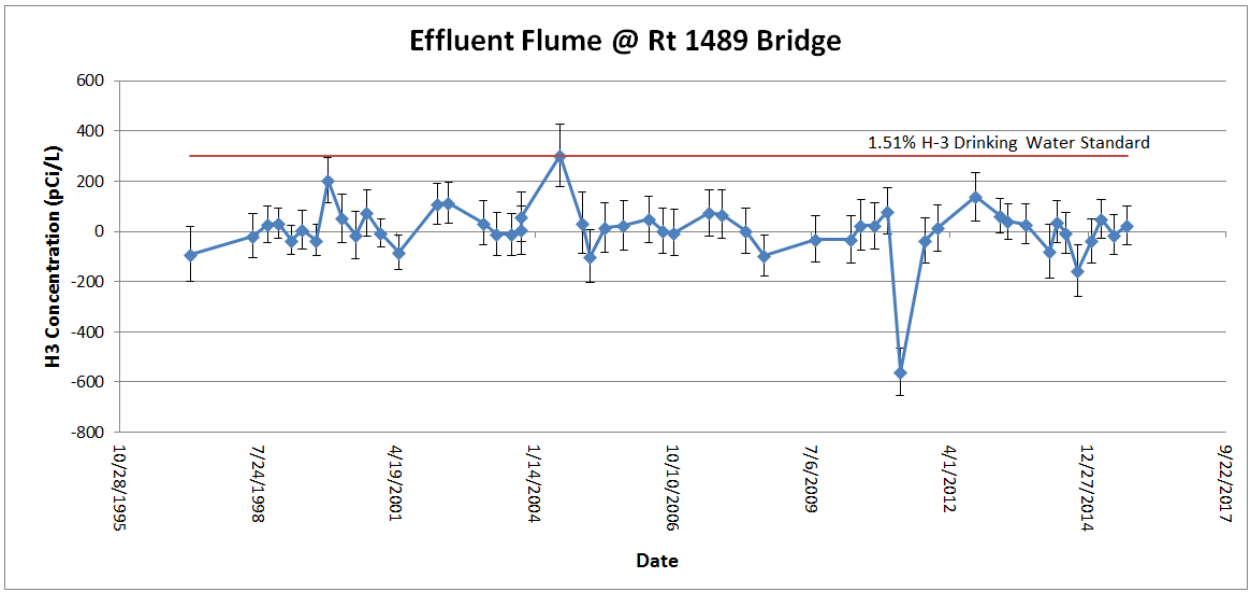
Table D-1. Tritium in Water Sample Results for Clinton Area
Results are in picocuries per liter (pCi/L)

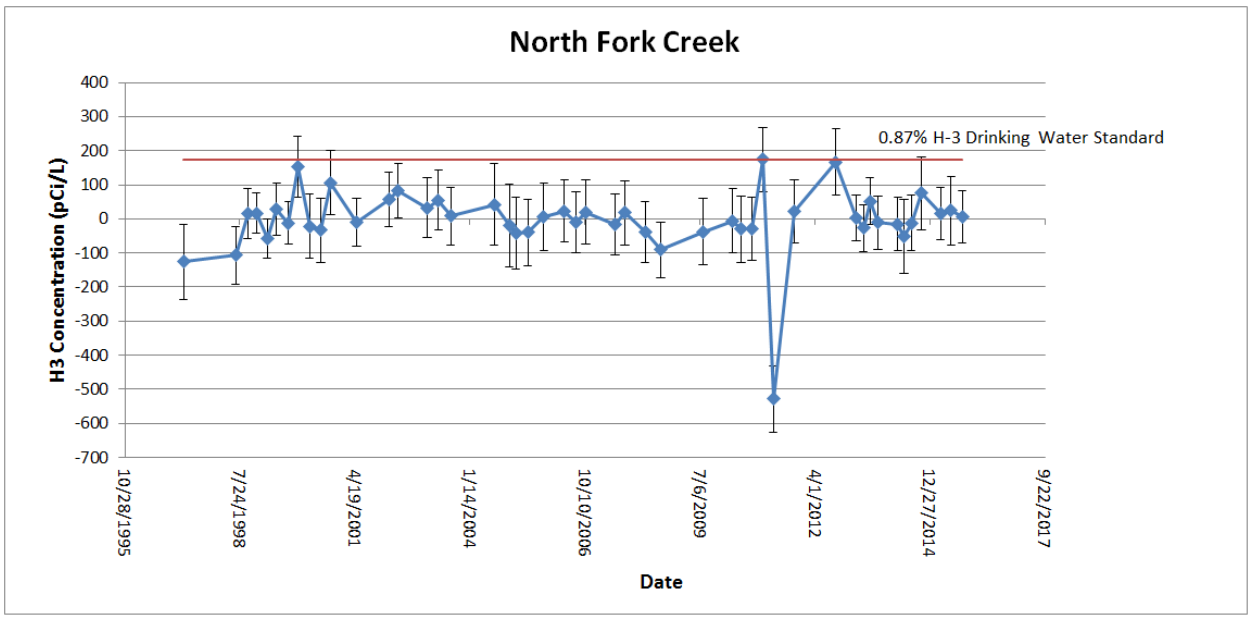
Location	Date	Result	*U
Clinton Lake: Bridge Over Lake At Rte 1489	1/22/2015	-58.4 ±	88.1
Clinton Lake: Bridge Over Lake At Rte 1489	4/1/2015	-18.9 ±	98.8
Clinton Lake: Bridge Over Lake At Rte 1489	7/1/2015	7.0 ±	79.8
Clinton Lake: Bridge Over Lake At Rte 1489	10/6/2015	59.6 ±	78.6
Clinton Lake: Bridge Over Lake At Rte 48	1/22/2015	-11.7 ±	89.3
Clinton Lake: Bridge Over Lake At Rte 48	4/1/2015	28.4 ±	99.9
Clinton Lake: Bridge Over Lake At Rte 48	7/1/2015	21.0 ±	80.2
Clinton Lake: Bridge Over Lake At Rte 48	10/6/2015	50.2 ±	78.0
Clinton Lake: North Branch @ Rte 54 Bridge	1/22/2015	7.0 ±	89.8
Clinton Lake: North Branch @ Rte 54 Bridge	4/1/2015	30.8 ±	99.9
Clinton Lake: North Branch @ Rte 54 Bridge	7/1/2015	-23.6 ±	98.5
Clinton Lake: North Branch @ Rte 54 Bridge	10/6/2015	25.2 ±	77.6
Clinton Lake: Parnell Boat Ramp	4/1/2015	23.7 ±	99.8
Clinton Lake: Parnell Boat Ramp	7/1/2015	-23.4 ±	78.9
Clinton Lake: Parnell Boat Ramp	10/6/2015	-4.6 ±	76.5
Effluent Flume @ Bridge Rt 1489	1/22/2015	-37.4 ±	88.7
Effluent Flume @ Bridge Rt 1489	4/1/2015	50.4 ±	78.3
Effluent Flume @ Bridge Rt 1489	7/1/2015	-14.0 ±	79.2
Effluent Flume @ Bridge Rt 1489	10/6/2015	25.2 ±	77.6
Mascutin Recreation Area Well	4/1/2015	21.3 ±	99.7
Mascutin Recreation Area Well	7/1/2015	28.0 ±	80.4
North Fork Creek	4/1/2015	16.0 ±	77.3
North Fork Creek	7/1/2015	23.6 ±	99.6
North Fork Creek	10/6/2015	6.9 ±	77.1
Salt Creek DnS From Spillway	1/22/2015	9.3 ±	89.8
Salt Creek DnS From Spillway	4/1/2015	63.9 ±	101.0
Salt Creek DnS From Spillway	7/1/2015	-44.4 ±	78.3
Salt Creek DnS From Spillway	10/6/2015	36.5 ±	77.6
Well#7 At Weldon Springs Park	7/1/2015	21.0 ±	80.2
Well#7 At Weldon Springs Park	10/6/2015	11.4 ±	76.9

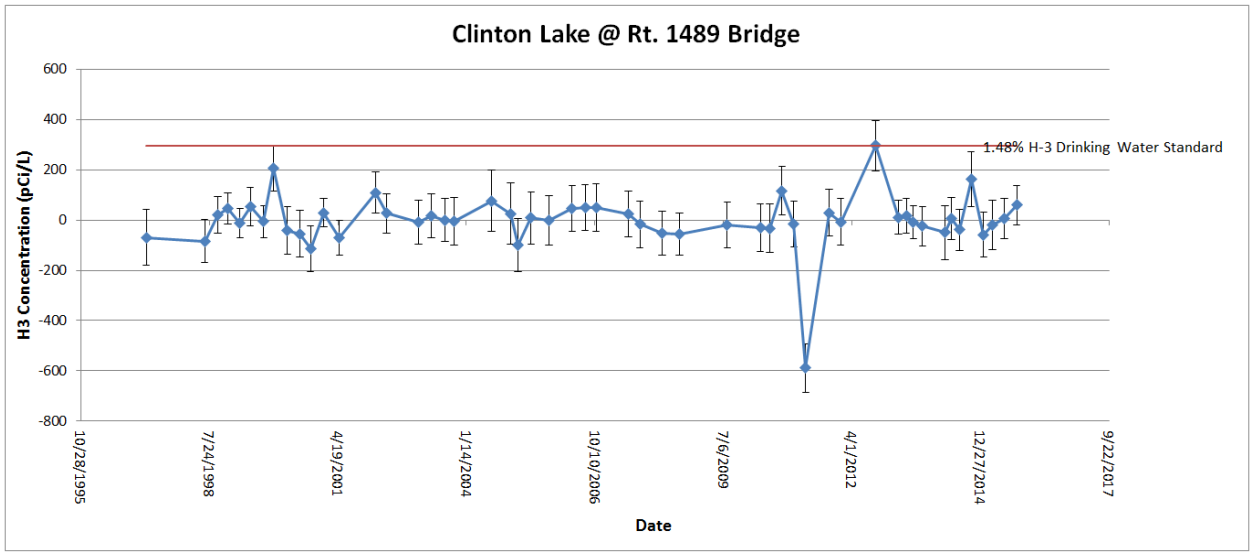
*U is Uncertainty at a 95% confidence level.

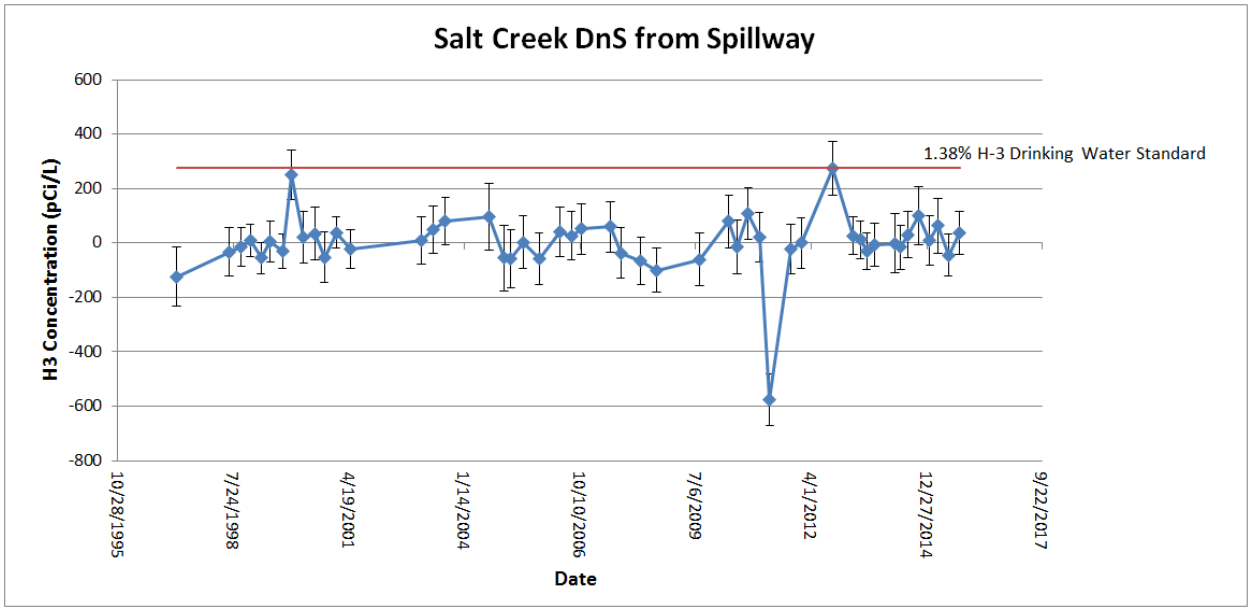
Tables D-2. Trending Graphs for Water from the Clinton Area
(Highest results on graphs indicate percentage of US EPA Drinking Water Standard)

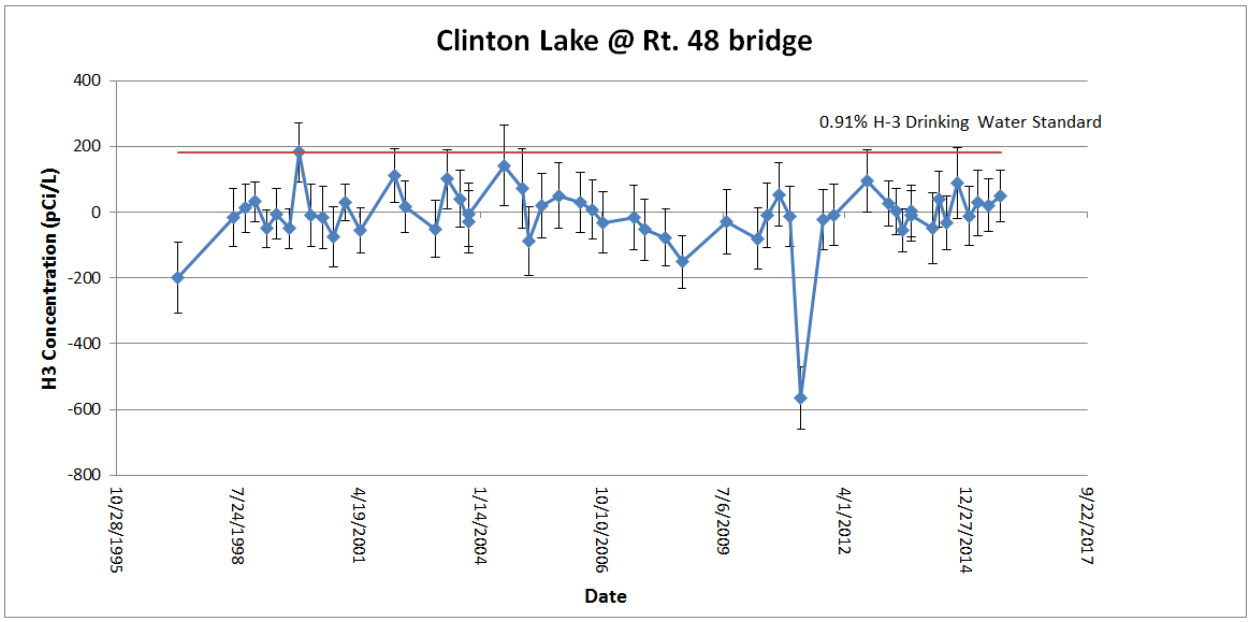


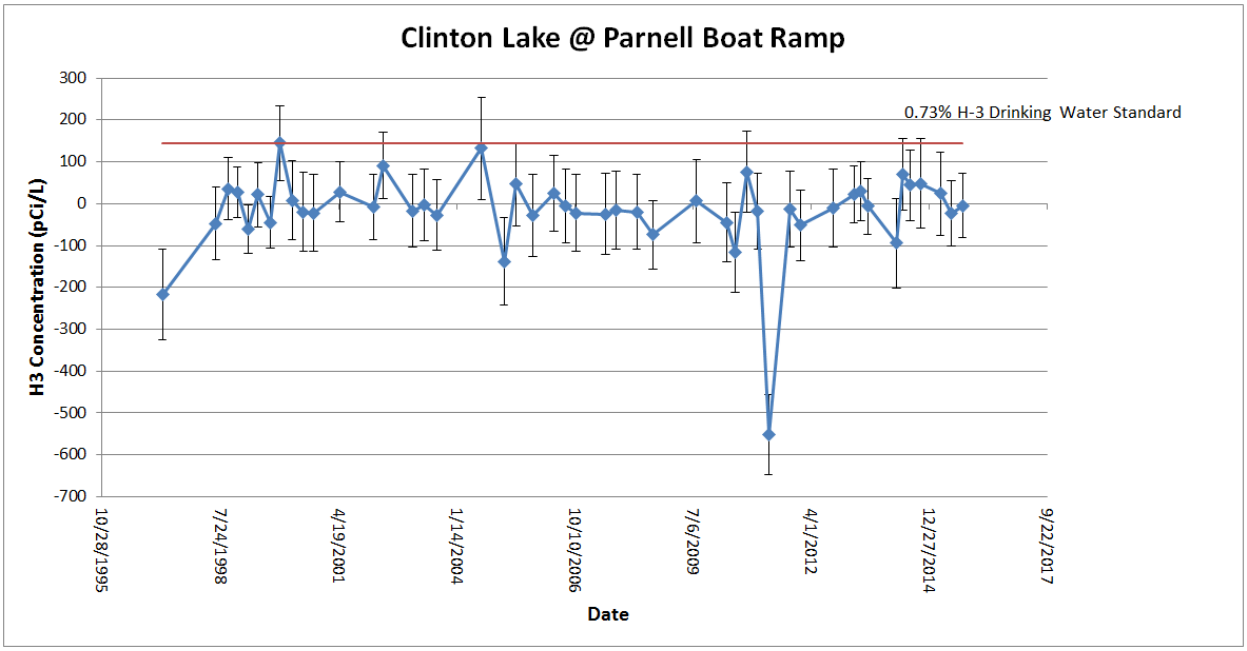


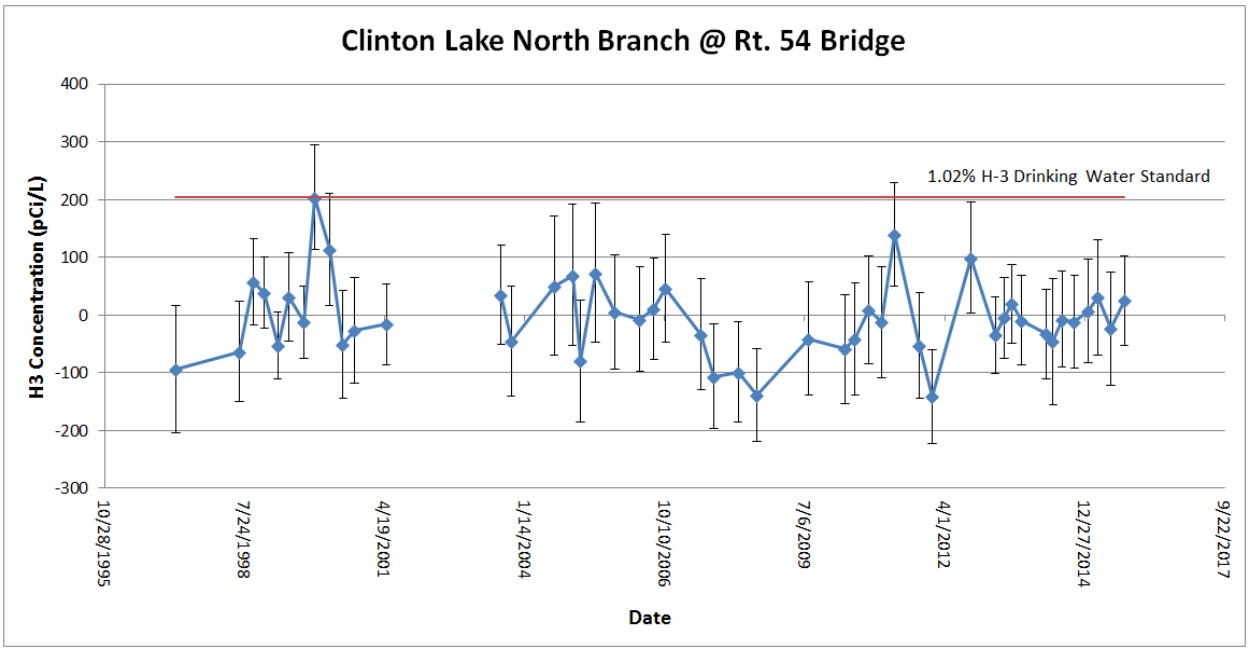

North Fork Creek
400
300
200
100
0
-100
-200
-300
-400
-500
-600
-700
H3 Concentration (pCi/L)
0.87% H-3 Drinking Water Standard
10/28/1995
7/24/1998
4/19/2001
1/14/2004
10/10/2006
7/6/2009
4/1/2012
12/27/2014
9/22/2017
Date


Clinton Lake @ Rt. 1489 Bridge
600
400
200
0
-200
-400
-600
-800
H3 Concentration (pCi/L)
1.48% H-3 Drinking Water Standard
10/28/1995
7/24/1998
4/19/2001
1/14/2004
10/10/2006
7/6/2009
4/1/2012
12/27/2014
9/22/2017
Date


Salt Creek DnS from Spillway
600
400
200
0
-200
-400
-600
-800
H3 Concentration (pCi/L)
1.38% H-3 Drinking Water Standard
10/28/1995
7/24/1998
4/19/2001
1/14/2004
10/10/2006
7/6/2009
4/1/2012
12/27/2014
9/22/2017
Date


Clinton Lake @ Rt. 48 bridge
400
200
0
-200
-400
-600
-800
H3 Concentration (pCi/L)
0.91% H-3 Drinking Water Standard
10/28/1995
7/24/1998
4/19/2001
1/14/2004
10/10/2006
7/6/2009
4/1/2012
12/27/2014
9/22/2017
Date


Clinton Lake @ Parnell Boat Ramp
0.73% H-3 Drinking Water Standard
H3 Concentration (pCi/L)
300
200
100
0
-100
-200
-300
-400
-500
-600
-700
10/28/1995
7/24/1998
4/19/2001
1/14/2004
10/10/2006
7/6/2009
4/1/2012
12/27/2014
9/22/2017
Date


Clinton Lake North Branch @ Rt. 54 Bridge
1.02% H-3 Drinking Water Standard
H3 Concentration (pCi/L)
400
300
200
100
0
-100
-200
-300
10/28/1995
7/24/1998
4/19/2001
1/14/2004
10/10/2006
7/6/2009
4/1/2012
12/27/2014
9/22/2017
Date

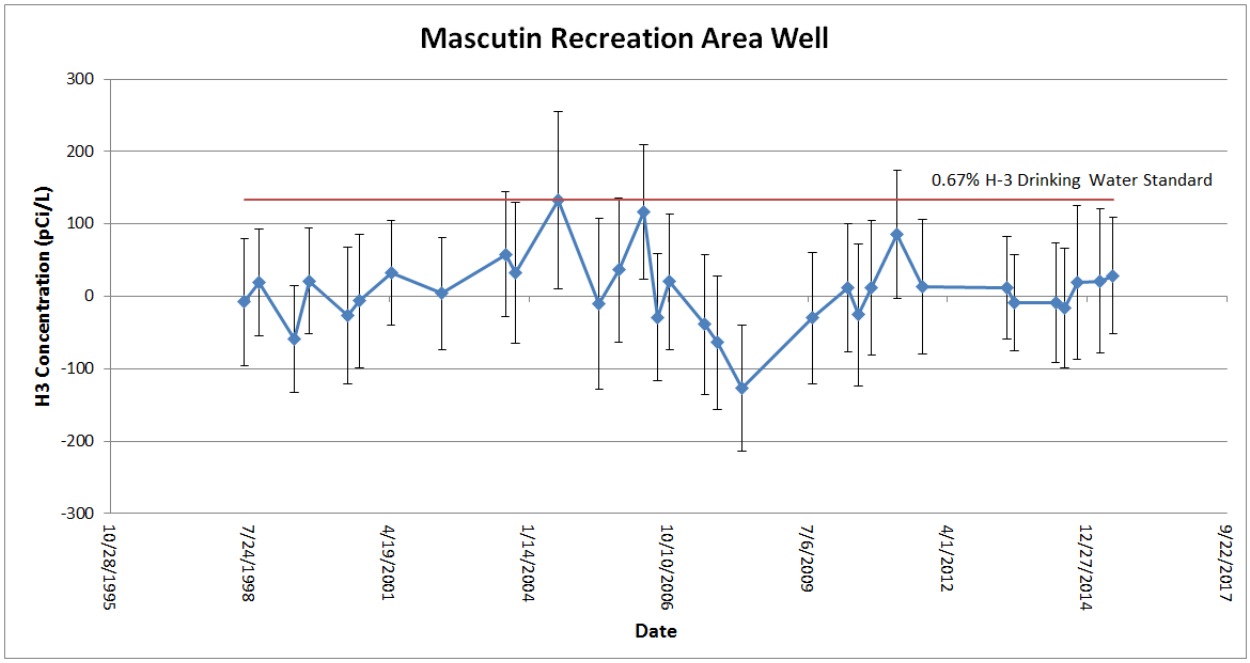

Mascutin Recreation Area Well
300
200
100
0
-100
-200
-300
H3 Concentration (pCi/L)
0.67% H-3 Drinking Water Standard
10/28/1995
7/24/1998
4/19/2001
1/14/2004
10/10/2006
7/6/2009
4/1/2012
12/27/2014
9/22/2017
Date

Table D-3. Sample Results for Alpha/Beta Screening of Water from the Clinton Area
Results are in picocuries per liter (pCi/L)

Location / Date	Alpha Result	Alpha *U	Beta Result	Beta *U
Clinton Lake: Bridge Over Lake At Rte 1489				
1/22/2015	0.6	1.4	4.9	2.7
4/1/2015	0.6	1.3	2.7	2.4
7/1/2015	0.0	1.4	1.6	2.2
10/6/2015	1.0	1.5	4.1	2.2
Clinton Lake: Bridge Over Lake At Rte 48				
1/22/2015	1.7	1.4	5.2	2.7
4/1/2015	0.7	1.3	2.2	2.3
7/1/2015	-0.8	1.3	3.5	2.3
10/6/2015	-0.6	1.4	3.7	2.2
Clinton Lake: North Branch @ Rte 54 Bridge				
1/22/2015	0.8	1.4	3.2	2.6
4/1/2015	-0.4	1.3	1.4	2.3
7/1/2015	-0.1	1.4	2.4	2.2
10/6/2015	-0.2	1.4	1.4	2.2
Clinton Lake: Parnell Boat Ramp				
4/1/2015	0.7	1.3	1.1	2.3
7/1/2015	-0.4	1.3	2.7	2.2
10/6/2015	0.1	1.5	1.9	2.2
Effluent Flume @ Bridge Rt 1489				
1/22/2015	0.0	1.3	2.1	2.6
4/1/2015	0.9	1.3	0.6	2.3
7/1/2015	-0.1	1.4	2.2	2.2
10/6/2015	-0.7	1.4	3.5	2.2
Mascutin Recreation Area Well				
4/1/2015	-0.8	1.3	1.0	2.3
7/1/2015	-0.7	1.3	1.8	2.2
North Fork Creek				
4/1/2015	0.6	1.3	0.9	2.3
7/1/2015	-0.1	1.4	1.2	2.2
10/6/2015	0.8	1.5	3.1	2.2
Salt Creek DnS From Spillway				
1/22/2015	1.2	1.4	4.4	2.7
4/1/2015	1.2	1.4	1.8	2.3
7/1/2015	0.4	1.4	1.1	2.2
10/6/2015	0.6	1.5	4.3	2.2
Well#7 At Weldon Springs Park				
7/1/2015	0.2	1.4	0.4	2.2
10/6/2015	0.8	1.5	2.3	2.2

*U is Uncertainty at a 95% confidence level.

Table D-4. Gamma Spectroscopy Sample Results for Other Radionuclides in Water from the Clinton Area
Results are in picocuries per liter (pCi/L)

Location / Date	Ba-140 Result	Ba-140 *U	Be-7 Result	Be-7 *U	Co-58 Result	Co-58 *U	Co-60 Result	Co-60 *U	Cs-134 Result	Cs-134 *U	Cs-137 Result	Cs-137 *U	Fe-59 Result	Fe-59 *U	I-131 Result	I-131 *U	K-40 Result	K-40 *U	Mn-54 Result	Mn-54 *U	Nb-95 Result	Nb-95 *U	Zn-65 Result	Zn-65 *U	Zr-95 Result	Zr-95 *U
Clinton Lake: Bridge Over Lake At Rte 1489																										
1/22/2015	-2.2	11.2	16.5	15.1	1.1	1.9	-0.4	1.9	1.3	1.8	-0.1	1.6	-1.3	3.9	2.9	4.7	167.0	29.4	0.6	1.9	-1.5	2.0	-1.6	4.1	2.4	2.7
4/1/2015	10.0	19.6	9.0	21.6	2.9	2.5	-1.8	2.9	-1.3	2.7	0.1	2.5	2.1	5.5	-4.3	12.2	49.0	31.4	0.8	2.4	0.7	3.3	-0.9	4.9	1.0	4.7
7/1/2015	6.0	13.0	5.3	9.4	0.1	1.3	-0.7	1.1	-0.4	1.1	-0.5	1.0	2.2	2.5	-10.4	9.1	18.0	11.0	-0.5	1.1	-0.9	1.5	-1.9	2.1	-1.2	2.2
10/6/2015	4.0	23.0	-7.0	13.0	0.1	2.2	-1.2	2.0	2.0	1.7	0.6	1.6	0.9	4.5	-3.0	16.0	35.0	20.0	0.7	1.9	-0.6	2.6	0.4	3.8	2.6	3.5
Clinton Lake: Bridge Over Lake At Rte 48																										
1/22/2015	-3.4	14.5	-4.2	18.4	-0.5	2.5	0.8	2.7	0.3	2.5	-0.5	2.4	2.6	6.3	0.4	4.7	35.0	27.4	0.3	2.4	-1.6	3.1	0.9	6.1	-4.6	4.7
4/1/2015	5.4	15.7	2.8	16.9	1.3	1.9	-1.0	1.7	1.1	1.9	0.8	1.6	-6.3	4.9	-3.3	10.2	17.0	19.6	-0.9	1.7	2.0	2.5	1.8	3.7	-2.2	3.9
7/1/2015	5.0	11.0	-2.9	7.5	0.1	1.0	-1.1	1.1	0.4	1.0	2.7	1.0	5.8	2.8	3.1	5.4	-15.0	18.0	-0.5	0.9	-2.0	1.4	-0.4	2.3	-0.8	1.8
10/6/2015	29.0	10.0	-4.7	9.6	-2.0	1.2	-0.3	1.1	-0.9	1.1	1.1	1.1	-4.7	2.6	1.1	6.5	11.0	11.0	-0.6	1.0	0.5	1.6	2.4	2.2	-7.8	2.5
Clinton Lake: North Branch @ Rte 54 Bridge																										
1/22/2015	3.0	19.6	10.0	23.5	-1.0	3.7	1.0	3.3	0.6	3.1	0.0	3.1	0.2	7.8	-0.5	8.6	38.0	43.1	-0.7	3.5	0.8	3.7	2.6	6.9	1.5	5.9
4/1/2015	17.0	21.6	5.0	19.6	-1.9	2.9	-1.0	2.7	1.8	2.7	0.5	2.2	1.9	6.7	1.8	9.2	37.0	29.4	-1.2	2.5	-3.8	3.3	3.0	6.1	2.1	4.7
7/1/2015	-2.0	34.0	-4.0	12.0	3.7	2.2	0.0	1.6	-0.3	1.8	-0.9	1.6	1.2	5.2	0.0	27.0	-5.0	26.0	-0.2	2.0	0.4	3.0	-0.2	4.5	4.7	3.4
10/6/2015	-2.0	15.0	-4.0	11.0	-1.8	1.3	-0.5	1.2	2.3	1.1	1.0	1.1	-1.2	3.3	-2.5	9.8	32.0	14.0	1.8	1.3	3.3	1.7	0.5	2.6	0.3	2.4
Clinton Lake: Parnell Boat Ramp																										
4/1/2015	11.8	17.2	8.9	17.8	-0.3	2.2	-0.6	2.4	0.4	2.2	0.3	2.2	-6.3	5.3	-0.7	10.6	31.0	21.6	-0.2	2.2	3.4	2.5	1.1	4.1	1.3	4.3
7/1/2015	-8.0	12.0	-4.2	8.2	0.0	1.0	-0.3	1.1	0.5	1.0	0.3	0.9	-3.1	3.1	-1.0	5.7	2.0	17.0	1.2	0.9	1.4	1.4	1.4	2.4	2.0	1.9
10/6/2015	34.0	12.0	6.0	11.0	-1.5	1.5	1.9	1.4	-1.3	1.4	-0.2	1.1	4.4	3.6	-9.4	6.2	49.0	16.0	-2.5	1.4	-3.5	1.9	5.2	2.9	-1.3	2.6
Effluent Flume @ Bridge Rt 1489																										
1/22/2015	4.8	11.2	6.0	14.7	1.2	1.9	0.6	2.0	-1.2	2.2	0.0	2.2	3.6	4.1	2.2	5.1	4.0	21.6	0.5	2.0	-1.3	2.4	2.8	3.7	-1.9	3.9
4/1/2015	-0.3	17.4	-4.6	18.8	0.7	2.4	0.3	2.2	-0.7	2.4	0.4	1.9	2.9	4.7	-2.4	9.8	56.0	23.5	-1.0	2.2	1.0	2.9	1.7	3.9	-0.5	4.3
7/1/2015	11.0	14.0	-1.0	11.0	-1.1	1.3	-0.2	1.3	2.0	1.1	-0.7	1.1	0.8	3.1	-0.3	8.9	1.0	18.0	-0.8	1.2	3.7	1.6	4.0	2.3	1.1	2.3
10/6/2015	-2.0	11.0	5.9	8.1	-0.5	1.0	0.6	1.0	0.7	1.0	-1.8	1.0	5.4	2.5	0.7	5.4	-32.0	17.0	-1.3	0.9	1.3	1.3	0.5	2.4	2.7	1.9
Mascutin Recreation Area Well																										
4/1/2015	-11.8	19.2	-3.7	14.7	-1.1	2.0	3.1	1.9	1.1	1.8	1.5	1.8	3.0	5.1	-4.3	7.8	-28.0	33.3	-0.3	1.8	-0.3	2.4	5.4	4.3	-0.1	3.9
7/1/2015	-8.0	12.0	8.3	9.3	0.6	1.1	0.8	0.9	-0.8	1.1	-0.7	0.8	0.1	2.2	1.9	8.1	45.9	9.9	-1.4	1.0	1.4	1.4	-1.9	2.0	-1.2	2.0
North Fork Creek																										
4/1/2015	-19.9	16.9	3.2	16.5	1.9	2.2	0.4	1.7	1.0	1.8	1.4	1.7	0.2	4.5	-1.7	8.4	31.0	31.4	-0.5	2.0	0.0	2.2	2.4	4.1	1.9	3.1
7/1/2015	23.0	11.0	5.2	8.9	-0.4	1.1	0.7	0.9	-0.7	0.9	1.7	0.9	-0.5	2.6	6.6	7.9	-11.0	16.0	-0.6	1.0	2.2	1.3	-0.3	2.1	0.0	1.8
10/6/2015	36.0	16.0	2.0	11.0	-0.2	1.4	1.4	1.4	-1.4	1.3	-0.6	1.2	-3.1	3.3	9.0	11.0	52.0	15.0	0.3	1.1	3.3	1.9	-3.0	2.4	3.8	2.5
Salt Creek D.S. From Spillway																										
1/22/2015	1.6	13.1	8.7	16.9	-0.2	2.2	-0.9	2.2	-0.4	2.2	-0.9	2.0	-2.0	4.7	0.3	5.1	2.0	27.4	0.7	2.2	-0.2	2.5	0.7	4.5	1.9	4.1
4/1/2015	7.0	19.6	9.0	19.6	-2.1	2.4	-1.4	2.5	0.0	2.4	-1.7	2.2	4.0	5.3	2.8	10.6	4.0	33.3	0.6	2.5	1.3	2.7	-0.3	5.3	1.2	3.9
7/1/2015	-8.0	11.0	-4.5	9.7	1.2	1.1	-0.4	1.1	-0.8	1.1	-0.7	1.1	2.0	2.3	6.2	6.6	15.0	12.0	0.1	1.0	1.1	1.4	3.0	2.0	-0.1	2.0
10/6/2015	9.3	9.9	-11.4	9.1	-0.5	1.0	0.2	0.8	-0.7	1.1	-0.1	0.9	-3.4	2.4	2.5	6.2	1.0	12.0	-1.7	0.9	0.2	1.4	-5.4	2.4	1.8	2.0
Well#7 At Weldon Springs Park																										
7/1/2015	-7.2	9.9	-5.8	8.7	0.7	1.1	0.7	0.9	1.6	1.0	0.0	0.8	-0.3	2.2	0.6	6.6	24.2	9.9	-0.9	0.9	0.9	1.4	1.0	1.8	2.8	1.9
10/6/2015	-13.0	12.0	5.0	10.0	0.3	1.1	-0.1	1.2	-0.5	1.1	-0.7	1.1	4.7	3.1	-4.1	6.5	7.0	17.0	-0.3	1.3	-0.4	1.5	1.2	2.5	2.1	2.1

*U is Uncertainty at a 95% confidence level.

Table D-5. Soil Sample Results for Clinton Area
Results are in picocuries per gram (pCi/g)

Location	AC-228			BA-140			BI-212			BI-214			Co-58			CO-60			CS-134			CS-137			FE-59			K-40			MN-54		
Date	Result		*U	Result		*U	Result		*U	Result		*U	Result		*U	Result		*U	Result		*U	Result		*U	Result		*U	Result		*U	Result		*U
Clinton Lake: North Branch @ Rte 54 Bridge																																	
7/1/2015	0.8	±	0.0	0.0	±	0.2	0.8	±	0.2	0.9	±	0.0	0.0	±	0.0	0.0	±	0.0	0.0	±	0.0	0.0	±	0.0	0.0	±	0.0	15.3	±	0.5	0.0	±	0.0
Mascoutin Recreation Area																																	
4/1/2015	1.1	±	0.1	0.0	±	0.2	1.1	±	0.3	1.1	±	0.1	0.0	±	0.0	0.0	±	0.0	0.0	±	0.0	0.0	±	0.0	0.0	±	0.0	16.1	±	0.9	0.0	±	0.0
7/1/2015	1.1	±	0.0	0.2	±	0.2	0.9	±	0.2	1.3	±	0.0	0.0	±	0.0	0.0	±	0.0	0.0	±	0.0	0.0	±	0.0	0.0	±	0.0	15.5	±	0.5	0.0	±	0.0
North Fork Creek																																	
4/1/2015	0.8	±	0.1	-0.2	±	0.2	0.9	±	0.3	0.7	±	0.1	0.0	±	0.0	0.0	±	0.0	0.0	±	0.0	0.1	±	0.0	-0.1	±	0.1	15.9	±	1.0	0.0	±	0.0
7/1/2015	0.5	±	0.0	0.2	±	0.1	0.5	±	0.1	0.6	±	0.0	0.0	±	0.0	0.0	±	0.0	0.0	±	0.0	0.1	±	0.0	0.0	±	0.0	13.4	±	0.4	0.0	±	0.0
Weldon Springs Entrance																																	
4/1/2015	1.0	±	0.1	0.1	±	0.2	1.3	±	0.3	1.0	±	0.1	0.0	±	0.0	0.0	±	0.0	0.0	±	0.0	0.1	±	0.0	0.0	±	0.1	15.9	±	1.0	0.0	±	0.0
7/1/2015	2.2	±	0.1	-0.4	±	0.4	2.3	±	0.4	2.5	±	0.1	0.0	±	0.0	0.0	±	0.0	0.0	±	0.0	0.2	±	0.0	-0.1	±	0.1	33.3	±	1.1	0.0	±	0.0

Location	NB-95			PA-234M			PB-210			PB-212			PB-214			RA-226			TH-234			TL-208			U-235			Zn-65			ZR-95		
Date	Result		*U	Result		*U	Result		*U	Result		*U	Result		*U	Result		*U	Result		*U	Result		*U	Result		*U	Result		*U	Result		*U
Clinton Lake: North Branch @ Rte 54 Bridge																																	
7/1/2015	0.0	±	0.0	1.5	±	1.2	1.1	±	0.2	0.8	±	0.0	1.0	±	0.0	1.9	±	0.2	1.1	±	0.2	0.7	±	0.0	0.1	±	0.0	-0.1	±	0.0	0.0	±	0.0
Mascoutin Recreation Area																																	
4/1/2015	0.0	±	0.0	1.0	±	2.0	1.5	±	0.8	1.2	±	0.1	1.2	±	0.0	2.3	±	0.5	1.4	±	0.8	0.9	±	0.1	0.1	±	0.0	0.0	±	0.0	0.0	±	0.0
7/1/2015	0.0	±	0.0	0.5	±	1.4	-2.0	±	13.0	1.2	±	0.0	1.4	±	0.0	2.1	±	0.3	2.7	±	1.2	1.0	±	0.1	0.1	±	0.0	0.0	±	0.0	0.0	±	0.0
North Fork Creek																																	
4/1/2015	0.0	±	0.0	-1.2	±	2.2	1.3	±	0.6	0.7	±	0.1	0.7	±	0.0	1.6	±	0.4	1.0	±	0.6	0.7	±	0.1	0.1	±	0.0	0.0	±	0.0	0.0	±	0.0
7/1/2015	0.0	±	0.0	0.4	±	1.0	1.0	±	0.1	0.6	±	0.0	0.6	±	0.0	1.1	±	0.1	0.6	±	0.2	0.6	±	0.0	0.1	±	0.0	0.0	±	0.0	0.0	±	0.0
Weldon Springs Entrance																																	
4/1/2015	0.0	±	0.0	4.3	±	2.4	1.9	±	0.3	1.1	±	0.1	1.2	±	0.1	2.4	±	0.4	1.4	±	0.5	1.0	±	0.1	0.2	±	0.0	0.0	±	0.0	0.0	±	0.0
7/1/2015	0.0	±	0.0	3.0	±	2.6	13.2	±	15.1	2.3	±	0.1	2.8	±	0.1	5.0	±	0.5	2.5	±	1.8	2.1	±	0.1	0.3	±	0.0	-0.1	±	0.1	0.0	±	0.0

*U is Uncertainty at a 95% confidence level.

Table D-6. Sediment Sample Results for Clinton Area
Results are in picocuries per gram (pCi/g)

Location / Date	AC-228 Result	AC-228 *U	BA-140 Result	BA-140 *U	Be-7 Result	Be-7 *U	BI-212 Result	BI-212 *U	BI-214 Result	BI-214 *U	Co-58 Result	Co-58 *U	CO-60 Result	CO-60 *U	CS-134 Result	CS-134 *U	CS-137 Result	CS-137 *U	FE-59 Result	FE-59 *U	K-40 Result	K-40 *U	MN-54 Result	MN-54 *U
Clinton Lake: Deepest Channel near Spillway																								
4/1/2015	0.9	0.1	0.3	0.5			0.6	0.3	0.9	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.1	0.1	16.6	1.1	0.0	0.0
7/1/2015	0.9	0.0	-0.1	0.3	1.3	0.2	1.1	0.2	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	17.8	0.6	0.0	0.0
Parnell Boat Ramp																								
4/1/2015	0.3	0.0	-0.1	0.3			0.4	0.2	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.3	0.7	0.0	0.0
7/1/2015	0.6	0.0	0.2	0.2	0.4	0.1	0.7	0.2	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23.5	0.7	0.0	0.0

Location / Date	NB-95 Result	NB-95 *U	PA-234M Result	PA-234M *U	PB-210 Result	PB-210 *U	PB-212 Result	PB-212 *U	PB-214 Result	PB-214 *U	RA-226 Result	RA-226 *U	TH-234 Result	TH-234 *U	TL-208 Result	TL-208 *U	U-235 Result	U-235 *U	Zn-65 Result	Zn-65 *U	ZR-95 Result	ZR-95 *U
Clinton Lake: Deepest Channel near Spillway																						
4/1/2015	0.0	0.0	1.8	2.4	1.7	0.4	0.9	0.1	1.1	0.0	1.9	0.4	1.0	0.4	0.8	0.1	0.1	0.0	0.0	0.0	0.0	0.0
7/1/2015	0.0	0.0	1.5	1.3	10.0	12.0	0.9	0.0	1.1	0.0	1.3	0.2	0.8	1.1	0.8	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Parnell Boat Ramp																						
4/1/2015	0.0	0.0	0.7	1.2	0.4	0.5	0.3	0.0	0.4	0.0	0.7	0.3	0.5	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7/1/2015	0.0	0.0	0.7	1.3	0.7	0.4	0.6	0.0	0.7	0.0	1.5	0.3	0.0	0.4	0.5	0.0	0.1	0.0	0.0	0.0	-0.1	0.0

*U is Uncertainty at a 95% confidence level.

Table D-7. Fish Sample Results for Clinton Area
Results are in picocuries per kilogram (pCi/kg)

Location / Date	Ba-140 Result	Ba-140 *U	Be-7 Result	Be-7 *U	Co-58 Result	Co-58 *U	Co-60 Result	Co-60 *U	Cs-134 Result	Cs-134 *U	Cs-137 Result	Cs-137 *U	Fe-59 Result	Fe-59 *U	I-131 Result	I-131 *U	K-40 Result	K-40 *U	Mn-54 Result	Mn-54 *U	Nb-95 Result	Nb-95 *U	Zn-65 Result	Zn-65 *U	Zr-95 Result	Zr-95 *U
Clinton Lake Bottom Feeder																										
4/16/2015	124.0	154.8	36.0	158.8	13.0	21.6	0.0	23.5	18.0	21.6	-10.8	18.0	0.0	56.8	67.0	62.7	2820.0	470.4	-3.0	19.6	2.0	25.5	-26.0	56.8	3.0	39.2
Clinton Lake Top Feeder																										
4/16/2015	90.0	98.0	-30.0	94.1	4.3	10.6	1.9	11.2	1.6	10.8	4.7	10.0	-3.0	29.4	-1.0	45.1	3720.0	333.2	2.0	11.4	-3.0	14.1	7.0	25.5	-17.0	21.6

*U is Uncertainty at a 95% confidence level.

Table D-8. Vegetation Sample Results for Clinton Area
Results are in picocuries per kilogram (pCi/kg)

Location / Date	Ba-140 Result	Ba-140 *U	Be-7 Result	Be-7 *U	Co-58 Result	Co-58 *U	Co-60 Result	Co-60 *U	Cs-134 Result	Cs-134 *U	Cs-137 Result	Cs-137 *U	Fe-59 Result	Fe-59 *U	I-131 Result	I-131 *U	K-40 Result	K-40 *U	Mn-54 Result	Mn-54 *U	Nb-95 Result	Nb-95 *U	Zn-65 Result	Zn-65 *U	Zr-95 Result	Zr-95 *U
Clinton Lake: North Branch @ Rte 54 Bridge																										
7/1/2015	-0.9	0.5	6.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.8	0.4	16.3	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mascoutin Recreation Area																										
7/1/2015	-0.1	0.5	6.6	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	0.3	14.3	0.8	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.1
North Fork Creek																										
7/1/2015	1.1	1.0	11.5	0.7	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.2	-0.1	1.1	16.5	0.9	0.0	0.0	-0.1	0.1	-0.1	0.1	0.1	0.1
Weldon Springs Entrance																										
7/1/2015	0.1	0.4	11.8	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	0.3	12.9	0.7	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.0

*U is Uncertainty at a 95% confidence level.

Table D-9. Gamma Detection Network Results for Clinton

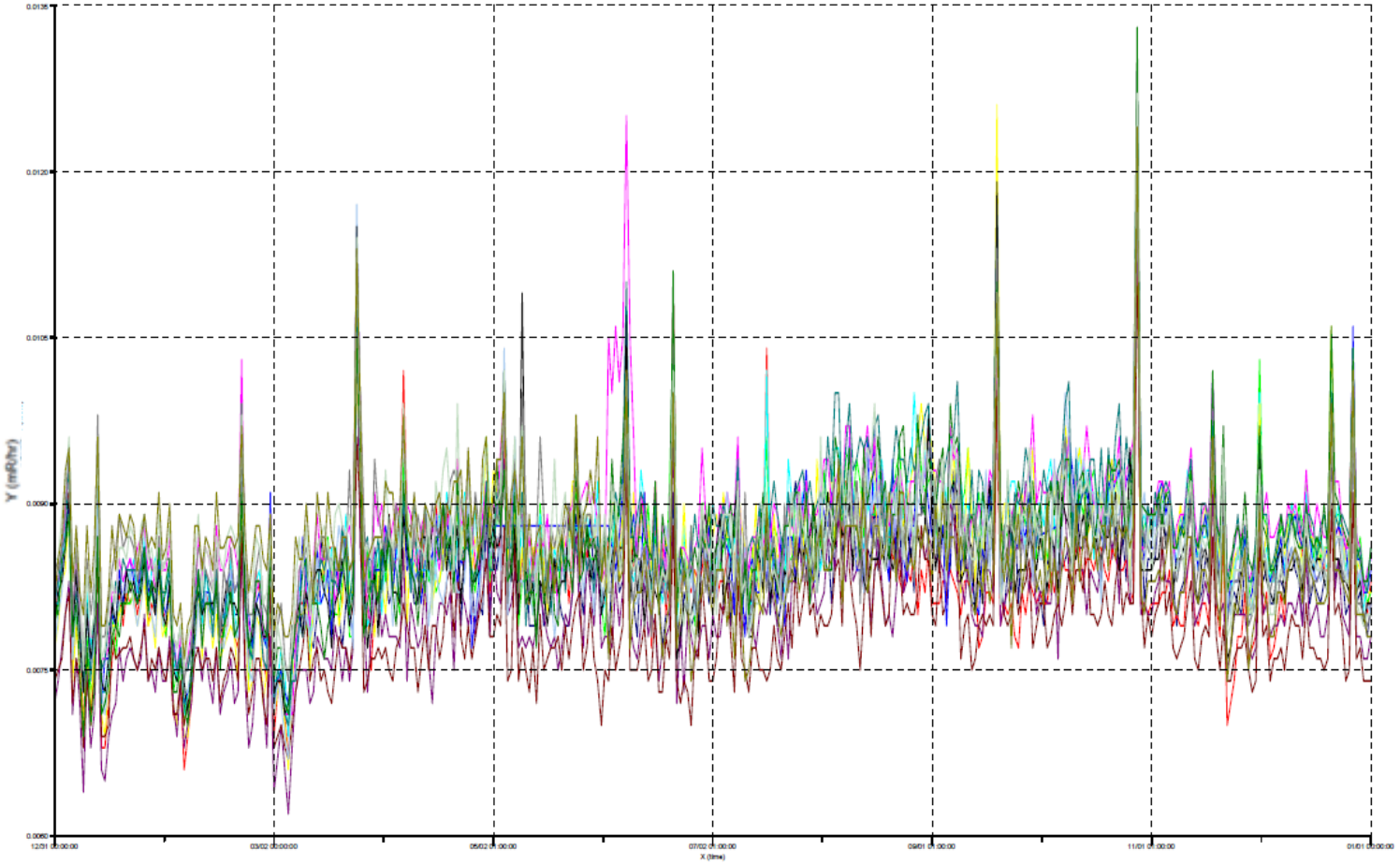


Table D-10. Summary of Ambient Gamma Results for Clinton Area

Location	Quarter 1 mrem/day	Quarter 2 mrem/day	Quarter 3 mrem/day	Quarter 4 mrem/day	Annual Dose mrem/year
CP001	0.09	0.13	0.116	0.111	40.79
CP003	0.082	0.108	0.11		36.50
CP006	0.073	0.082	0.095	0.069	29.11
CP009	0.075	0.08	0.084	0.09	30.02
CP011	0.098	0.104	0.113	0.115	39.24
CP013	0.072	0.085	0.089	0.079	29.66
CP016	0.094	0.141	0.113	0.111	41.88
CP018	0.084	0.116	0.138	0.128	42.52
CP019		0.117	0.102	0.104	39.30
CP022	0.097	0.1	0.095	0.114	37.05
CP025	0.099	0.117	0.104	0.116	39.79
CP027	0.076	0.09	0.095	0.096	32.58
CP028	0.095	0.101	0.122	0.11	39.06
CP031	0.082	0.116	0.098	0.108	36.87
CP032	0.087	0.105	0.107	0.12	38.23
CP033	0.076	0.092	0.088	0.096	32.12
CP034	0.095	0.118	0.099	0.099	37.50
CP035	0.063	0.082	0.091	0.093	30.02
CP036	0.097	0.105	0.103	0.108	37.69
CP037	0.102	0.107		0.119	39.91
CP038	0.1	0.103	0.091	0.095	35.50
CP039	0.096	0.118	0.108	0.1	38.51
CP040	0.103	0.096	0.108	0.105	37.60
CP041	0.1	0.118	0.12	0.128	42.52
CP042	0.096	0.115	0.106	0.108	38.78
CP043	0.1	0.118	0.112	0.096	38.87
CP044	0.113	0.125	0.116	0.123	43.53
CP045	0.107	0.119	0.118	0.106	41.06
CP046	0.098	0.127	0.115	0.117	41.70
CP047	0.1	0.101	0.117	0.11	39.06
CP048	0.092	0.12	0.111	0.112	39.69
CP049	0.095	0.119	0.113	0.116	40.42
CP050	0.113	0.103	0.12	0.1	39.79
CP051	0.105	0.12	0.107	0.115	40.79

Location	Quarter 1 mrem/day	Quarter 2 mrem/day	Quarter 3 mrem/day	Quarter 4 mrem/day	Annual Dose mrem/year
CP-RSA	0.109	0.119	0.095	0.094	38.05
CP-RSB	0.086	0.105	0.106	0.101	36.32
CP-RSC	0.1	0.115	0.112	0.108	39.69
CP-RSD	0.094	0.116	0.107	0.124	40.24
CP-RSE	0.09	0.095	0.09	0.094	33.67
CP-RSF	0.086	0.082	0.085	0.092	31.48
CP-RSG	0.074	0.097	0.108	0.098	34.40
CP-RSH	0.08	0.113	0.118	0.116	38.96
CP-RSJ	0.094	0.112	0.116	0.109	39.33
CP-RSK	0.091	0.097	0.116	0.117	38.42
CP-RSL	0.087	0.113	0.113	0.102	37.87
CP-RSM	0.081	0.096	0.104	0.105	35.22
CP-RSN	0.096	0.103	0.1	0.107	37.05
CP-RSP	0.109	0.126	0.103	0.127	42.43
CP-RSQ	0.092	0.107	0.111	0.107	38.05
CP-RSR	0.077	0.102	0.107	0.109	36.04

Blanks in the table indicate that dosimeters were missing at the end of the quarter.
Annual Dose column based on averages of all available data.

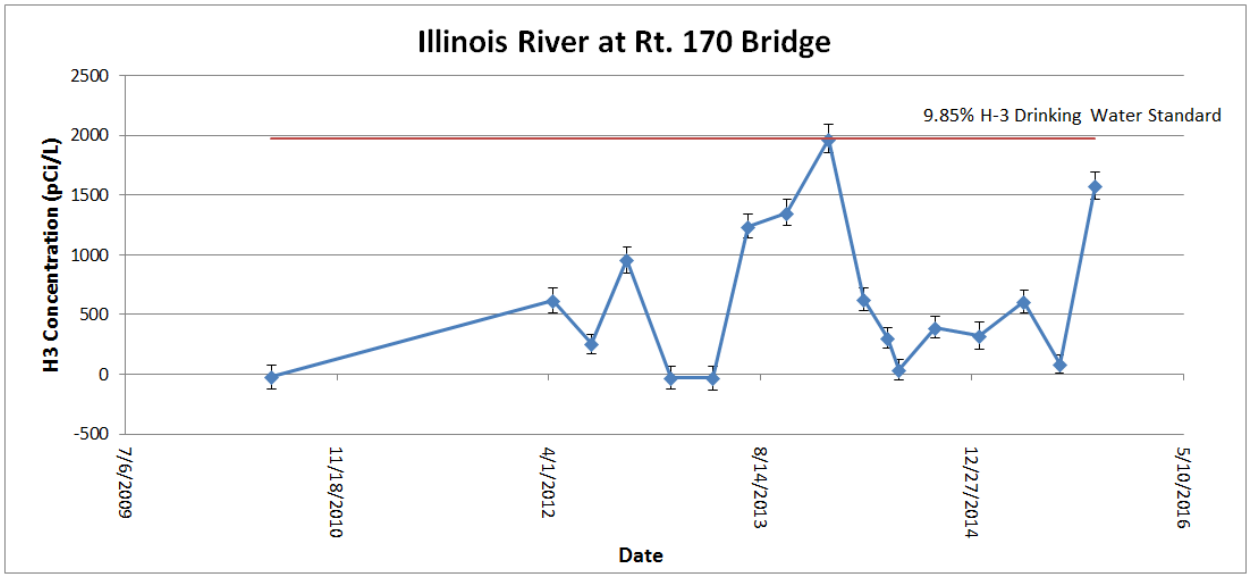
Appendix E
LaSalle Sample Results

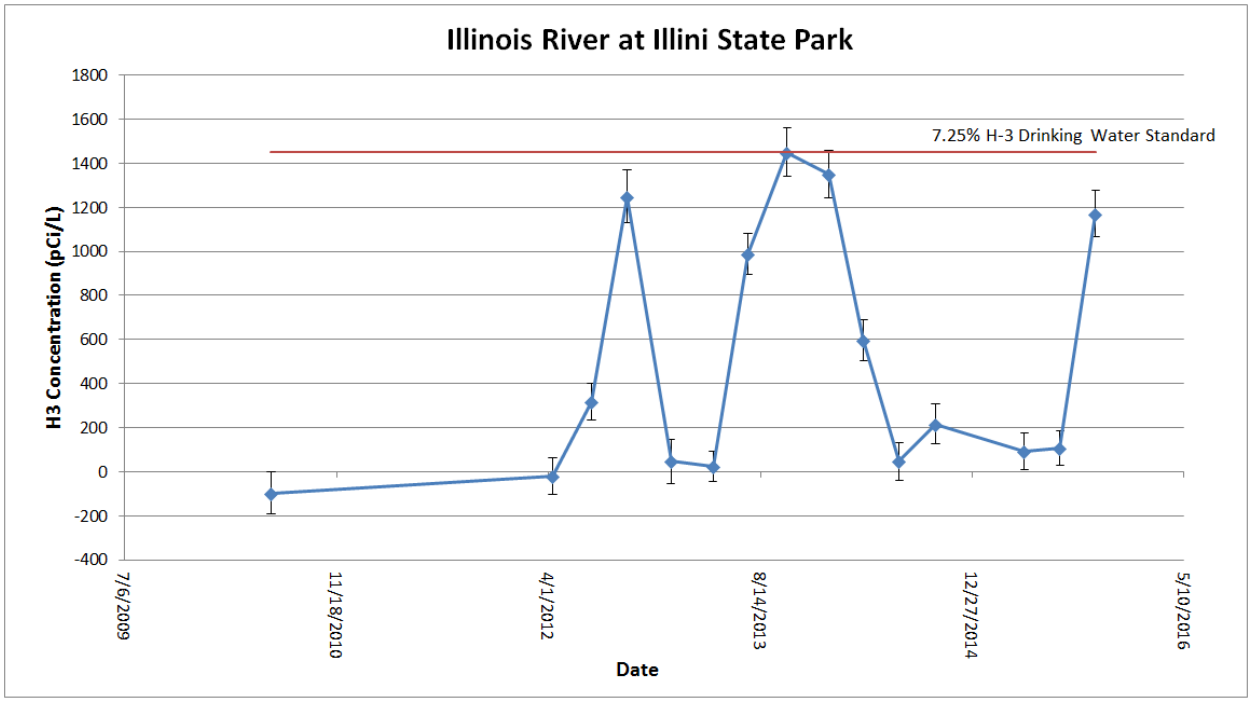
Table E-1. Tritium in Water Sample Results for LaSalle Area
Results are in picocuries per liter (pCi/L)

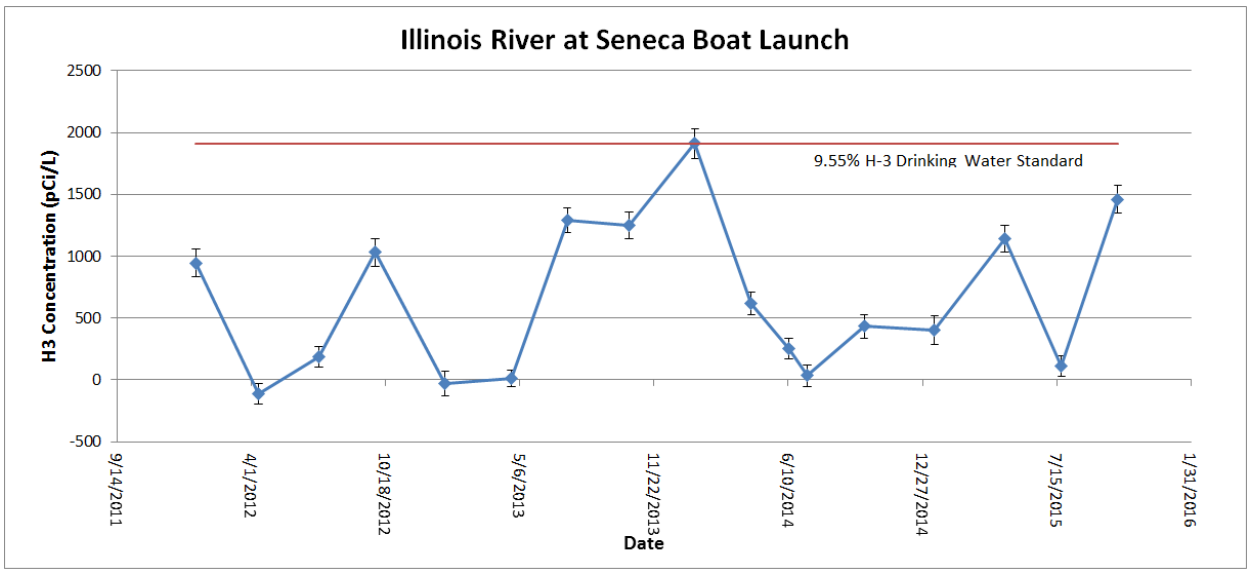
Location	Date	Result		*U
Illinois R. near Rt. 170 Bridge	1/14/2015	322.0	±	114.0
Illinois R. near Rt. 170 Bridge	4/29/2015	610.0	±	95.2
Illinois R. near Rt. 170 Bridge	7/22/2015	84.5	±	79.0
Illinois R. near Rt. 170 Bridge	10/14/2015	1580.0	±	113.0
Illinois R. at Illini State Park River Access	4/29/2015	93.4	±	82.2
Illinois R. at Illini State Park River Access	7/22/2015	107.0	±	79.6
Illinois R. at Illini State Park River Access	10/14/2015	1170.0	±	105.0
Seneca, Illinois Boat Launch (UpS)	1/14/2015	402.0	±	116.0
Seneca, Illinois Boat Launch (UpS)	4/29/2015	1140.0	±	107.0
Seneca, Illinois Boat Launch (UpS)	7/22/2015	112.0	±	82.6
Seneca, Illinois Boat Launch (UpS)	10/14/2015	1460.0	±	111.0
Middle East Conflicts Wall Memorial, Marseilles (DnS)	4/29/2015	126.0	±	83.0
Middle East Conflicts Wall Memorial, Marseilles (DnS)	7/22/2015	107.0	±	82.5
Middle East Conflicts Wall Memorial, Marseilles (DnS)	10/14/2015	930.0	±	100.0
Allen Park, South Ottawa (DnS)	4/29/2015	79.4	±	81.8
Allen Park, South Ottawa (DnS)	7/22/2015	147.0	±	83.5
Allen Park, South Ottawa (DnS)	10/14/2015	944.0	±	100.0
Starved Rock State Park, Illinois R. (DnS)	4/29/2015	9.5	±	99.4
Starved Rock State Park, Illinois R. (DnS)	10/14/2015	930.0	±	100.0

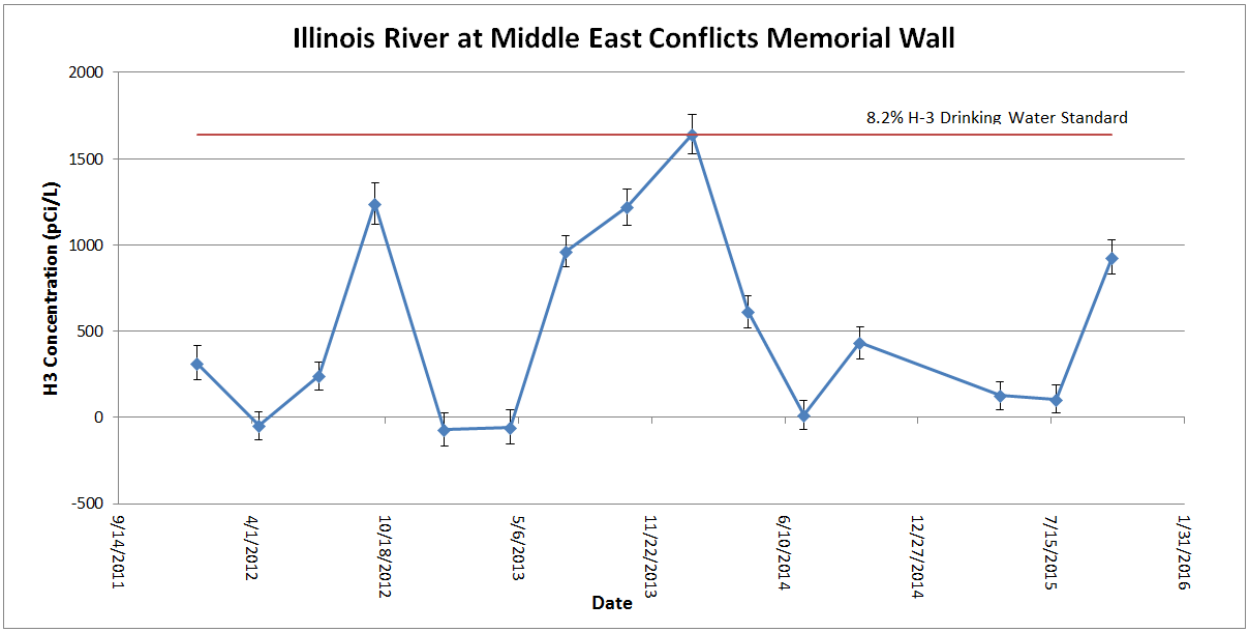
*U is Uncertainty at a 95% confidence level.

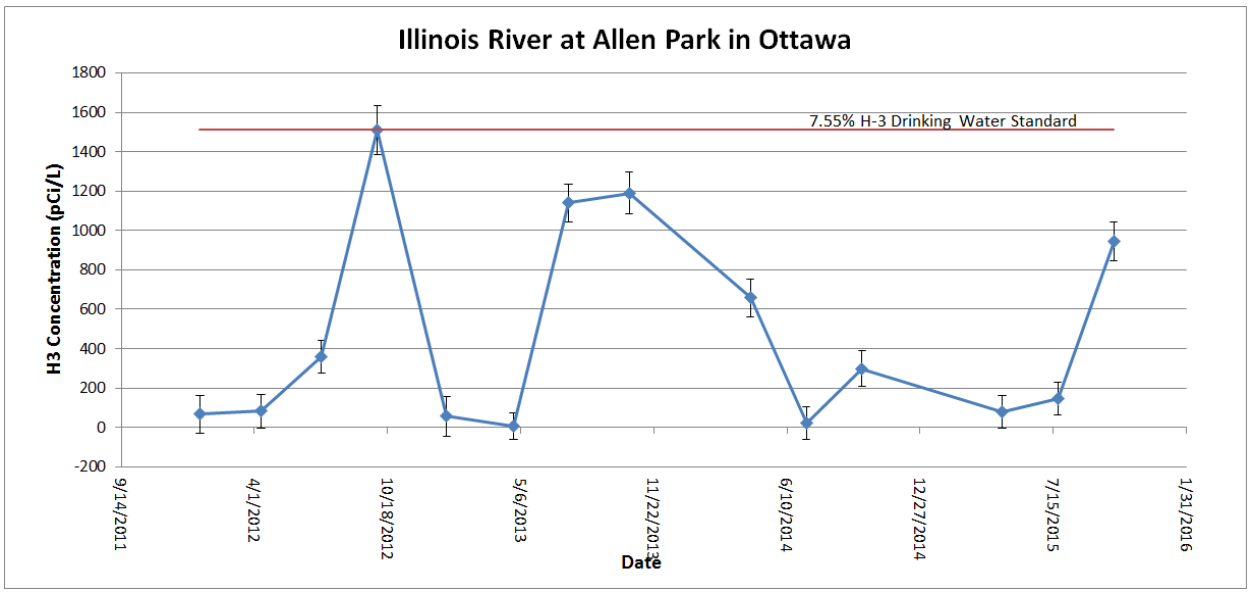
Tables E-2. Trending Graphs for Water from the LaSalle Area
(Highest results on graphs indicate percentage of US EPA Drinking Water Standard)






Illinois River at Seneca Boat Launch
H3 Concentration (pCi/L)
2500
2000
1500
1000
500
0
-500
9.55% H-3 Drinking Water Standard
9/14/2011
4/1/2012
10/18/2012
5/6/2013
11/22/2013
6/10/2014
12/27/2014
7/15/2015
1/31/2016
Date


Illinois River at Middle East Conflicts Memorial Wall
H3 Concentration (pCi/L)
2000
1500
1000
500
0
-500
8.2% H-3 Drinking Water Standard
9/14/2011
4/1/2012
10/18/2012
5/6/2013
11/22/2013
6/10/2014
12/27/2014
7/15/2015
1/31/2016
Date


Illinois River at Allen Park in Ottawa
7.55% H-3 Drinking Water Standard
H3 Concentration (pCi/L)
1800
1600
1400
1200
1000
800
600
400
200
0
-200
9/14/2011
4/1/2012
10/18/2012
5/6/2013
11/22/2013
6/10/2014
12/27/2014
7/15/2015
1/31/2016
Date

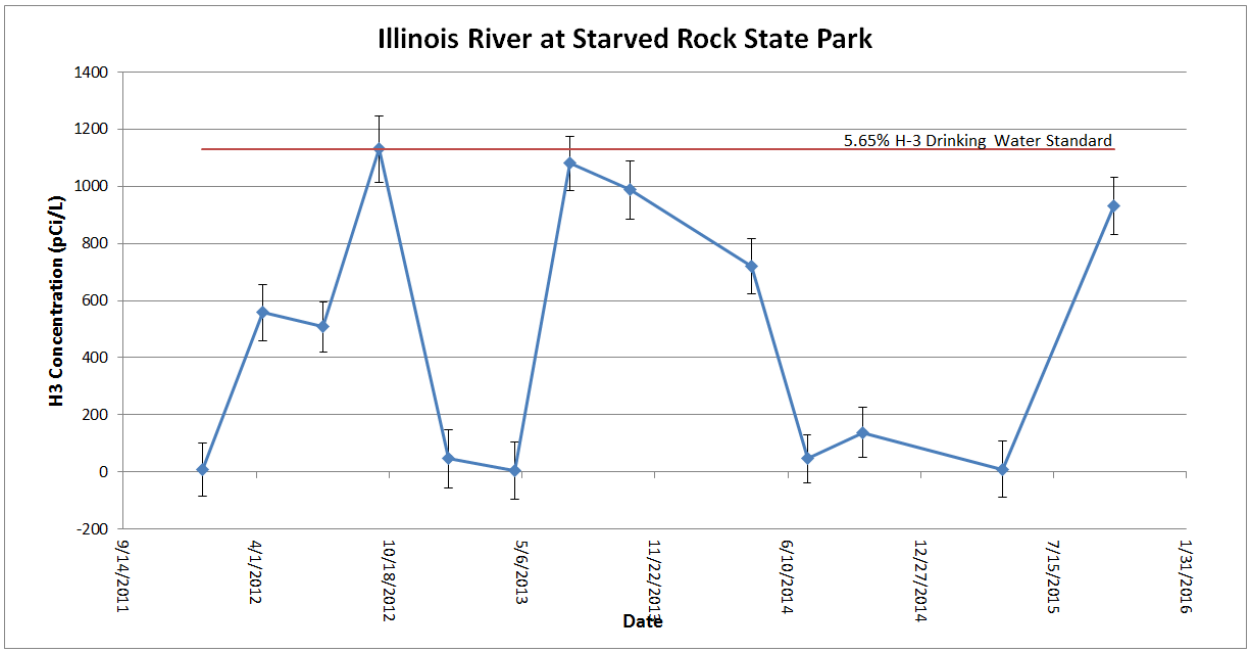

Illinois River at Starved Rock State Park
5.65% H-3 Drinking Water Standard
H3 Concentration (pCi/L)
1400
1200
1000
800
600
400
200
0
-200
9/14/2011
4/1/2012
10/18/2012
5/6/2013
11/22/2013
6/10/2014
12/27/2014
7/15/2015
1/31/2016
Date

Table E-3. Sample Results for Alpha/Beta Screening of Water from the LaSalle Area
Results are in picocuries per liter (pCi/L)

Location Date	Alpha Result		*U	Beta Result		*U
Allen Park, South Ottawa (DnS)						
4/29/2015	0.6	±	1.3	3.5	±	2.3
7/22/2015	-0.6	±	1.3	3.0	±	2.3
10/14/2015	1.8	±	1.5	2.9	±	2.2
Illinois R. at Illini State Park River Access						
4/29/2015	0.3	±	1.3	2.8	±	2.2
7/22/2015	0.3	±	1.4	3.6	±	2.3
10/14/2015	1.6	±	1.6	6.2	±	2.3
Illinois R. near Rt. 170 Bridge						
1/14/2015	0.8	±	1.4	6.6	±	2.7
4/29/2015	0.9	±	1.4	3.3	±	2.2
7/22/2015	1.6	±	1.3	1.2	±	2.4
10/14/2015	0.3	±	1.5	6.0	±	2.3
Middle East Conflicts Wall Memorial, Marseilles (DnS)						
4/29/2015	-0.2	±	1.3	3.5	±	2.3
7/22/2015	-0.1	±	1.3	3.7	±	2.3
10/14/2015	1.4	±	1.5	7.4	±	2.3
Seneca, Illinois Boat Launch (UpS)						
1/14/2015	1.2	±	1.4	5.6	±	2.7
4/29/2015	0.8	±	1.3	3.5	±	2.3
7/22/2015	-0.2	±	1.3	3.5	±	2.3
10/14/2015	1.3	±	1.5	3.3	±	2.2
Starved Rock State Park, Illinois R. (DnS)						
4/29/2015	0.6	±	1.4	2.9	±	2.2
10/14/2015	0.2	±	1.5	4.0	±	2.2

*U is Uncertainty at a 95% confidence level.

Table E-4. Gamma Spectroscopy Sample Results for Other Radionuclides in Water from the LaSalle Area
Results are in picocuries per liter (pCi/L)

Location / Date	Ba-140 Result	Ba-140 *U	Be-7 Result	Be-7 *U	Co-58 Result	Co-58 *U	Co-60 Result	Co-60 *U	Cs-134 Result	Cs-134 *U	Cs-137 Result	Cs-137 *U	Fe-59 Result	Fe-59 *U	I-131 Result	I-131 *U	K-40 Result	K-40 *U	Mn-54 Result	Mn-54 *U	Nb-95 Result	Nb-95 *U	Zn-65 Result	Zn-65 *U	Zr-95 Result	Zr-95 *U
Allen Park, South Ottawa (DnS)																										
4/29/2015	1.4	14.1	-10.5	18.4	-0.1	2.4	0.3	2.2	0.4	2.4	0.4	1.8	0.2	4.7	5.1	7.1	-24.0	33.3	0.2	2.0	0.7	2.5	-3.6	4.9	-2.2	4.1
7/22/2015	21.0	14.0	-15.0	8.4	-0.1	1.1	-1.0	1.1	1.0	1.1	-0.6	1.0	0.0	2.8	1.8	7.6	23.0	17.0	1.0	0.9	-1.7	1.5	-1.3	2.4	1.7	2.0
10/14/2015	5.0	10.0	11.0	10.0	-0.8	1.5	-0.9	1.5	-0.5	1.3	0.8	1.1	-2.6	3.6	7.3	4.7	23.0	17.0	-0.7	1.2	2.2	1.6	-2.4	3.4	-3.5	2.7
Illinois R. at Illini State Park River Access																										
4/29/2015	-2.3	12.2	7.6	15.7	-0.2	2.0	-0.9	1.8	0.6	1.7	-1.0	1.7	0.8	3.7	2.0	6.1	-23.0	31.4	-1.9	2.0	-2.0	2.2	-2.2	4.1	-4.7	3.1
7/22/2015	14.0	8.3	-4.2	8.7	-0.4	1.0	-0.3	0.8	-0.5	1.0	0.2	0.8	0.9	2.0	1.8	4.7	26.0	10.0	-0.3	0.9	-2.6	1.3	0.4	1.8	-0.7	1.9
10/14/2015	-1.8	8.9	-3.2	9.4	-0.5	1.1	0.6	1.1	1.5	1.1	-1.5	1.1	-1.5	2.4	6.4	4.8	14.0	11.0	0.3	1.0	0.9	1.3	2.0	1.9	-3.9	2.1
Illinois R. near Rt. 170 Bridge																										
1/14/2015	-3.6	18.0	9.5	18.8	-0.2	2.2	-0.8	2.2	1.0	2.0	-1.6	2.0	-2.0	5.5	8.9	9.4	-18.0	33.3	-1.1	2.4	0.2	2.7	-3.6	4.9	-4.5	4.3
4/29/2015	-4.3	13.9	-2.4	17.4	-0.3	2.2	0.7	2.0	-0.2	2.2	-0.1	2.0	0.5	4.5	2.5	7.3	19.0	21.6	0.0	1.9	0.6	2.5	-2.3	4.1	1.6	3.5
7/22/2015	-9.0	13.0	-9.5	8.4	-0.8	1.1	0.5	1.1	-1.0	1.0	-0.5	0.9	-3.3	3.1	3.2	7.4	-10.0	17.0	0.8	0.9	1.5	1.3	2.2	2.3	2.6	2.0
10/14/2015	0.1	7.8	-2.2	8.4	-0.2	1.1	-0.2	0.9	0.4	1.0	-1.3	0.9	2.2	2.1	4.4	4.6	35.0	10.0	0.6	0.9	-1.2	1.3	3.2	1.8	-1.6	1.9
Middle East Conflicts Wall Memorial, Marseilles (DnS)																										
4/29/2015	-2.0	17.2	-6.0	19.6	0.3	2.5	0.1	2.9	-0.7	2.9	1.9	2.2	1.7	6.3	-4.3	6.5	28.0	31.4	-2.0	2.5	-1.1	3.1	1.2	6.3	1.4	4.9
7/22/2015	-23.0	16.0	-3.0	12.0	0.3	2.0	1.4	1.6	0.5	1.6	0.1	1.6	-0.8	4.4	-2.4	9.0	11.0	26.0	1.1	1.8	0.9	2.2	0.9	3.8	-1.2	3.1
10/14/2015	1.0	10.0	-14.0	10.0	-0.4	1.4	-0.7	1.5	-0.1	1.4	-1.8	1.1	-3.3	3.5	-3.9	4.4	15.0	14.0	0.3	1.4	0.5	1.6	-0.9	3.6	3.7	2.4
Seneca, Illinois Boat Launch (UpS)																										
1/14/2015	20.1	14.7	-2.0	16.3	-0.1	2.0	-0.1	1.7	-0.6	2.0	-0.4	1.6	-1.8	4.3	4.6	8.4	17.0	21.6	-0.3	1.8	-0.5	2.4	0.5	3.7	0.1	3.9
4/29/2015	-3.7	15.3	11.5	13.5	-1.1	1.9	0.8	2.0	0.0	2.0	0.6	1.9	-2.2	5.1	0.9	6.3	3.0	35.3	-0.1	1.8	-1.2	2.4	2.4	4.5	1.0	3.3
7/22/2015	-5.8	9.3	1.4	9.1	1.0	1.1	0.2	1.0	-0.2	1.1	-1.5	1.1	1.2	2.2	5.9	5.0	11.0	11.0	-0.3	1.0	-1.0	1.4	0.5	2.1	1.7	2.0
10/14/2015	3.0	9.3	0.7	9.4	-1.3	1.2	0.3	1.1	0.9	1.2	-0.6	1.0	-3.7	2.7	3.7	4.7	36.0	17.0	-0.8	1.1	-0.1	1.6	-2.6	2.4	-0.2	2.1
Starved Rock State Park, Illinois R. (DnS)																										
4/29/2015	-17.0	19.6	-2.2	18.8	0.7	2.4	-0.6	2.5	0.6	2.2	-1.4	2.2	-3.8	6.3	6.2	9.8	-25.0	27.4	1.4	2.4	3.0	2.7	1.9	4.9	2.7	3.7
10/14/2015	5.5	9.8	13.0	11.0	-1.9	1.4	-0.6	1.3	-0.8	1.3	-0.5	1.2	3.3	2.8	-3.9	6.0	11.0	17.0	-0.4	1.2	-1.0	1.6	-1.2	2.5	-3.4	2.4

*U is Uncertainty at a 95% confidence level.

Table E-5. Soil Sample Results for LaSalle Area
Results are in picocuries per gram (pCi/g)

Location / Date	Ac-228 Result	Ac-228 *U	Ba-140 Result	Ba-140 *U	Bi-212 Result	Bi-212 *U	Bi-214 Result	Bi-214 *U	Co-58 Result	Co-58 *U	Co-60 Result	Co-60 *U	Cs-134 Result	Cs-134 *U	Cs-137 Result	Cs-137 *U	Fe-59 Result	Fe-59 *U	K-40 Result	K-40 *U	Mn-54 Result	Mn-54 *U
Illini State Park (NW Quadrant)																						
4/29/2015	0.9	0.1	-0.1	0.5	1.2	0.5	1.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	20.0	2.2	0.0	0.0
7/22/2015	0.8	0.0	0.1	0.1	1.0	0.2	1.6	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	19.4	0.6	0.0	0.0
Lot off of Kinsman Road (NE Quadrant)																						
4/29/2015	1.0	0.1	0.1	0.3	0.9	0.3	1.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.1	18.0	1.1	0.0	0.0
7/22/2015	1.1	0.0	0.0	0.1	0.9	0.2	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	18.6	0.5	0.0	0.0
Starved Rock State Park (UpW)																						
4/29/2015	0.7	0.1	0.1	0.2	0.8	0.3	0.9	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	14.3	0.9	0.0	0.0

Location / Date	Nb-95 Result	Nb-95 *U	Pa-234m Result	Pa-234m *U	Pb-210 Result	Pb-210 *U	Pb-212 Result	Pb-212 *U	Pb-214 Result	Pb-214 *U	Ra-226 Result	Ra-226 *U	Th-234 Result	Th-234 *U	Tl-208 Result	Tl-208 *U	U-235 Result	U-235 *U	Zn-65 Result	Zn-65 *U	Zr-95 Result	Zr-95 *U
Illini State Park (NW Quadrant)																						
4/29/2015	0.0	0.0	1.6	4.3	1.7	0.7	0.9	0.1	1.6	0.1	2.8	0.8	1.7	1.0	0.7	0.1	0.2	0.0	0.0	0.1	0.0	0.1
7/22/2015	0.0	0.0	-1.1	1.4	1.4	0.4	0.9	0.0	1.8	0.0	3.2	0.3	1.2	0.4	0.7	0.0	0.2	0.0	0.0	0.0	0.0	0.0
Lot off of Kinsman Road (NE Quadrant)																						
4/29/2015	0.0	0.0	3.8	2.4	-1.4	4.1	1.0	0.1	1.3	0.1	2.1	0.5	1.5	1.1	1.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0
7/22/2015	0.0	0.0	0.9	1.1	2.1	0.4	1.1	0.0	1.3	0.0	2.5	0.2	1.6	0.5	1.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0
Starved Rock State Park (UpW)																						
4/29/2015	0.0	0.0	0.4	2.0	3.8	3.3	0.7	0.0	1.0	0.0	1.9	0.4	1.0	0.8	0.6	0.1	0.1	0.0	0.0	0.0	0.0	0.0

*U is Uncertainty at a 95% confidence level.

Table E-6. Sediment Sample Results for LaSalle Area
Results are in picocuries per gram (pCi/g)

Location / Date	Ac-228 Result	Ac-228 *U	Ba-140 Result	Ba-140 *U	Be-7 Result	Be-7 *U	Bi-212 Result	Bi-212 *U	Bi-214 Result	Bi-214 *U	Co-58 Result	Co-58 *U	Co-60 Result	Co-60 *U	Cs-134 Result	Cs-134 *U	Cs-137 Result	Cs-137 *U	Fe-59 Result	Fe-59 *U	K-40 Result	K-40 *U	Mn-54 Result	Mn-54 *U
Allen Park, South Ottawa (DnS)																								
4/29/2015	0.1	0.0	-0.1	0.1			0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0	0.5	0.0	0.0
7/22/2015	0.2	0.0	0.1	0.1	0.1	0.0	0.2	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.6	0.3	0.0	0.0
Seneca, Illinois Boat Launch (UpS)																								
4/29/2015	0.5	0.1	0.0	0.3			0.3	0.3	0.6	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	18.8	1.2	0.0	0.0
7/22/2015	0.4	0.0	0.1	0.1	0.3	0.1	0.5	0.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.1	0.4	0.0	0.0

Location / Date	Nb-95 Result	Nb-95 *U	Pa-234m Result	Pa-234m *U	Pb-210 Result	Pb-210 *U	Pb-212 Result	Pb-212 *U	Pb-214 Result	Pb-214 *U	Ra-226 Result	Ra-226 *U	Th-234 Result	Th-234 *U	Tl-208 Result	Tl-208 *U	U-235 Result	U-235 *U	Zn-65 Result	Zn-65 *U	Zr-95 Result	Zr-95 *U
Allen Park, South Ottawa (DnS)																						
4/29/2015	0.0	0.0	-0.2	1.4	0.3	0.3	0.1	0.0	0.3	0.0	0.3	0.2	0.1	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7/22/2015	0.0	0.0	-0.1	0.6	-0.1	0.2	0.2	0.0	0.3	0.0	0.6	0.1	-0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Seneca, Illinois Boat Launch (UpS)																						
4/29/2015	0.0	0.0	0.1	2.8	0.6	0.6	0.5	0.0	0.6	0.1	1.2	0.4	0.4	0.6	0.4	0.1	0.1	0.0	0.0	0.1	-0.1	0.1
7/22/2015	0.0	0.0	-0.5	1.0	30.8	8.5	0.5	0.0	0.6	0.0	1.0	0.2	1.2	0.8	0.4	0.0	0.1	0.0	0.0	0.0	-0.1	0.0

*U is Uncertainty at a 95% confidence level.

Table E-7. Vegetation Sample Results for LaSalle Area
Results are in picocuries per kilogram (pCi/kg)

Location / Date	Ba-140 Result	Ba-140 *U	Be-7 Result	Be-7 *U	Co-58 Result	Co-58 *U	Co-60 Result	Co-60 *U	Cs-134 Result	Cs-134 *U	Cs-137 Result	Cs-137 *U	Fe-59 Result	Fe-59 *U	I-131 Result	I-131 *U	K-40 Result	K-40 *U	Mn-54 Result	Mn-54 *U	Nb-95 Result	Nb-95 *U	Zn-65 Result	Zn-65 *U	Zr-95 Result	Zr-95 *U
Illini State Park (NW Quadrant)																										
4/29/2015	0.2	0.4	3.9	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.0	0.2	24.9	1.7	0.0	0.0	0.0	0.1	-0.1	0.1	0.0	0.1
7/22/2015	0.4	0.3	1.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-0.3	0.2	17.6	0.8	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0
Lot off of Kinsman Road (NE Quadrant)																										
4/29/2015	1.5	1.6	10.5	1.8	0.1	0.1	0.1	0.1	-0.1	0.1	0.0	0.1	-0.1	0.3	0.1	1.1	9.0	2.0	0.0	0.1	0.0	0.2	0.4	0.3	0.0	0.3
7/22/2015	-0.3	0.3	10.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.0	0.2	11.3	0.6	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1
Starved Rock State Park (UpW)																										
4/29/2015	0.2	1.1	2.0	0.8	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.1	0.2	0.5	0.8	24.1	2.0	0.0	0.1	0.0	0.1	0.1	0.1	-0.1	0.1

*U is Uncertainty at a 95% confidence level.

Table E-8. Gamma Detection Network Results for LaSalle

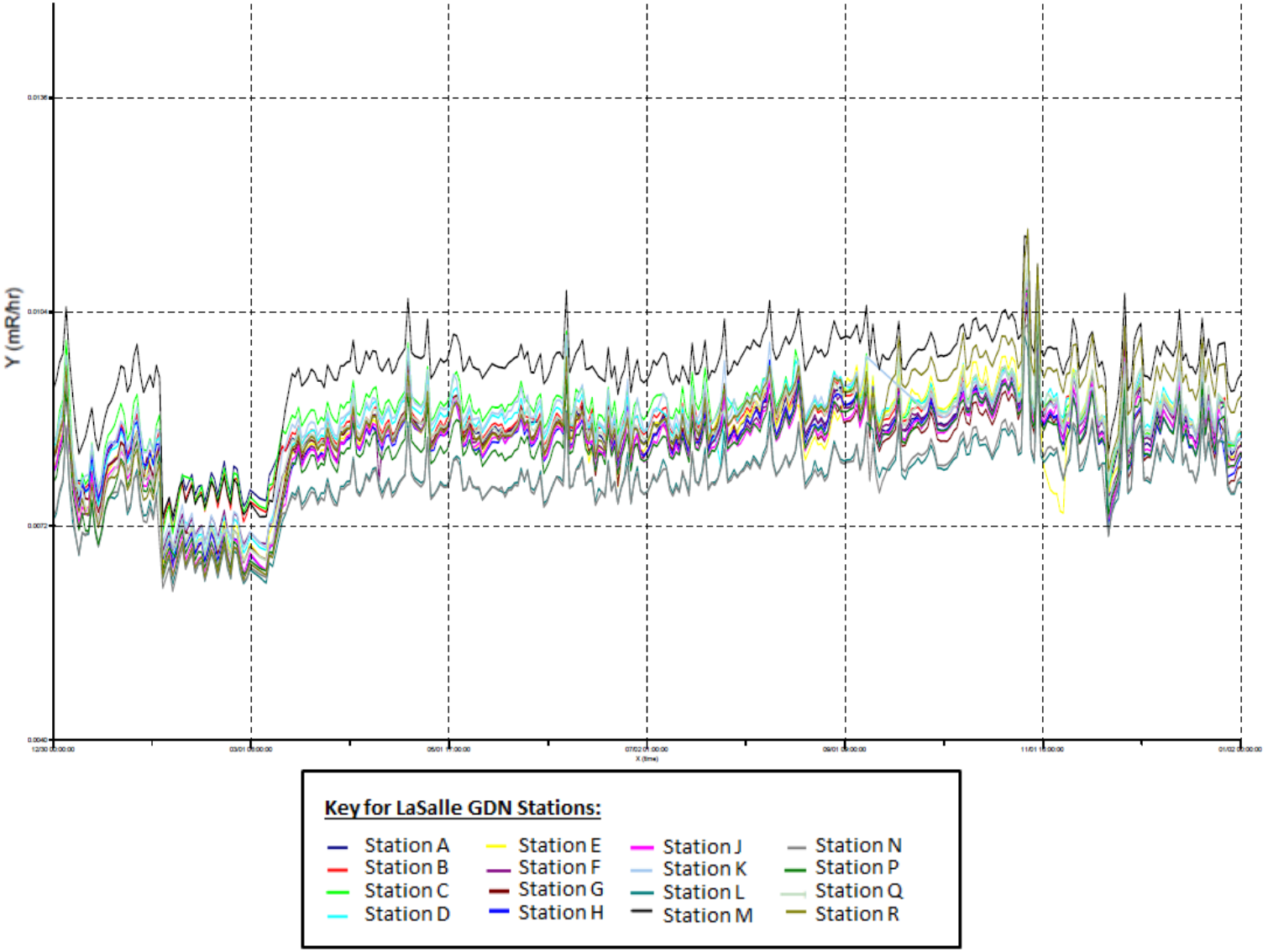


Table E-9. Summary of Ambient Gamma Results for LaSalle Area

Location	Quarter 1 mrem/day	Quarter 2 mrem/day	Quarter 3 mrem/day	Quarter 4 mrem/day	Annual Dose mrem/year
LS001	0.091	0.122	0.117	0.095	38.78
LS002	0.118	0.112	0.117	0.088	39.69
LS003		0.108	0.11	0.093	37.84
LS004	0.109	0.127	0.122	0.104	42.16
LS005	0.077	0.109	0.103	0.099	35.41
LS007	0.101	0.128	0.122	0.102	41.34
LS009	0.063	0.101	0.095	0.072	30.20
LS011	0.087	0.111	0.11	0.099	37.14
LS012	0.075	0.103	0.081	0.095	32.30
LS014	0.076	0.097	0.127	0.092	35.77
LS015	0.112	0.112	0.127	0.095	40.70
LS016	0.071	0.103	0.09		32.12
LS017	0.111	0.128	0.124	0.119	43.98
LS018	0.097	0.122	0.13	0.105	41.43
LS019	0.096	0.109	0.111	0.095	37.50
LS021	0.077	0.109	0.117	0.08	34.95
LS023	0.104	0.118	0.106	0.087	37.87
LS024	0.105	0.123	0.125	0.096	40.97
LS025	0.098	0.113	0.118	0.115	40.52
LS027	0.087	0.086	0.102	0.075	31.94
LS030	0.097	0.098	0.112	0.096	36.77
LS031	0.078	0.105		0.068	30.54
LS034	0.075	0.073	0.079	0.066	26.74
LS036	0.107	0.131	0.131	0.119	44.53
LS037	0.104	0.116	0.117	0.085	38.51
LS038	0.096	0.139	0.131	0.089	41.52
LS039	0.084	0.109	0.111	0.084	35.41
LS040	0.087	0.096	0.089	0.07	31.21
LS041	0.097	0.113	0.116	0.09	37.96
LS042	0.099	0.124	0.114	0.123	41.98
LS043	0.098	0.122	0.12	0.101	40.24
LS046	0.088	0.113	0.121	0.107	39.15
LS047	0.085	0.131	0.11	0.102	39.06
LS048	0.087	0.113	0.094	0.123	38.05
LS049	0.088	0.1	0.115	0.104	37.14
LS050	0.086	0.095	0.109	0.081	33.85
LS051	0.096	0.122	0.125	0.107	41.06
LS052	0.094	0.109	0.088	0.072	33.12
LS053	0.108	0.108	0.106	0.076	36.32
LS054	0.075	0.098	0.084	0.09	31.66
LS055	0.106		0.126	0.1	40.39
LS056	0.081	0.092	0.108	0.076	32.58
LS057	0.096	0.118	0.114	0.096	38.69

Location	Quarter 1 mrem/day	Quarter 2 mrem/day	Quarter 3 mrem/day	Quarter 4 mrem/day	Annual Dose mrem/year
LS-RSA	0.091	0.127	0.104	0.104	38.87
LS-RSB	0.103	0.123	0.107	0.093	38.87
LS-RSC	0.111	0.11	0.087	0.104	37.60
LS-RSD	0.078	0.121	0.122	0.092	37.69
LS-RSE	0.089	0.11	0.107	0.104	37.41
LS-RSF	0.099	0.114	0.091	0.084	35.41
LS-RSG	0.083	0.116	0.099	0.084	34.86
LS-RSH	0.092	0.122	0.107	0.09	37.50
LS-RSJ	0.092	0.12	0.11	0.086	37.23
LS-RSK	0.102	0.105	0.117	0.102	38.87
LS-RSL	0.086	0.132	0.122	0.107	40.79
LS-RSM	0.12	0.134	0.123	0.135	46.72
LS-RSN	0.111	0.111	0.099	0.088	37.32
LS-RSP	0.093	0.105	0.115	0.111	38.69
LS-RSQ	0.092	0.104	0.117	0.106	38.23
LS-RSR	0.091	0.121	0.125	0.106	40.42

Blanks in the table indicate that dosimeters were missing at the end of the quarter.
Annual Dose column based on averages of all available data.

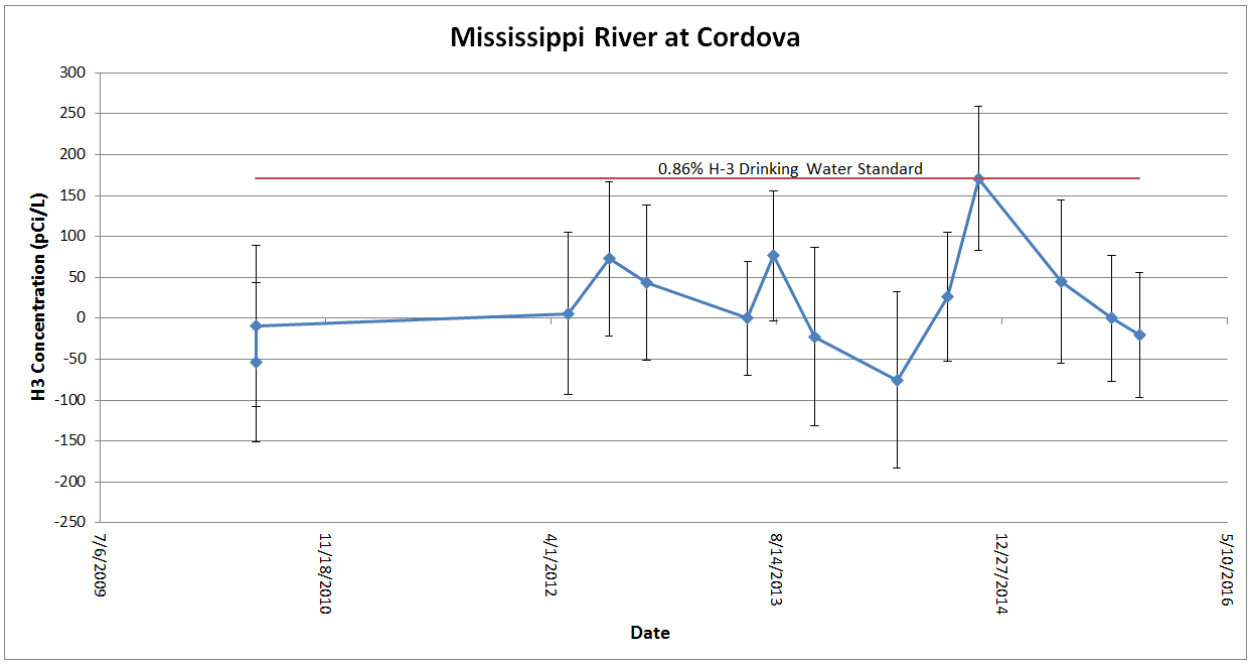
Appendix F
Quad Cities Sample Results

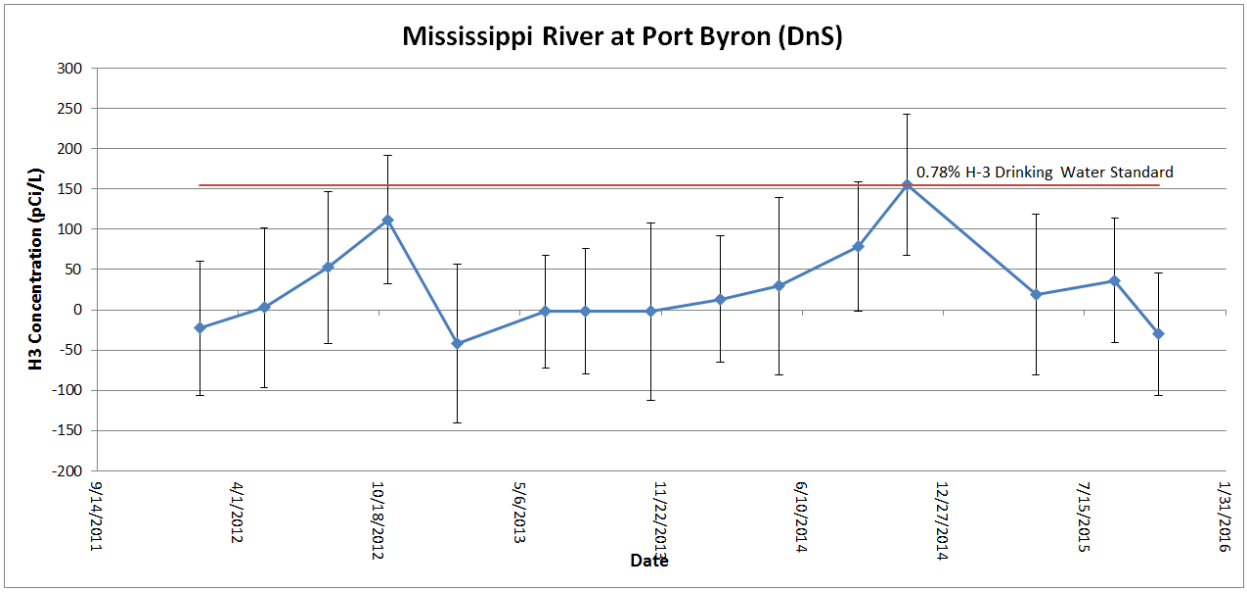
Table F-1. Tritium in Water Sample Results for Quad Cities Area
Results are in picocuries per liter (pCi/L)

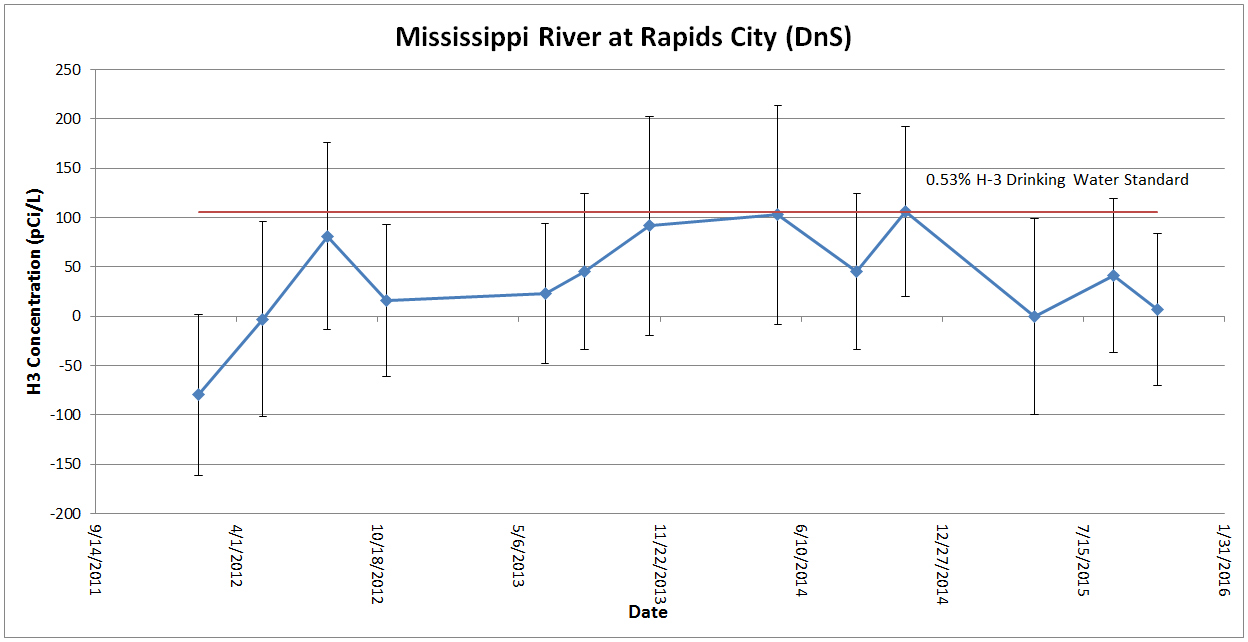
Location	Date	Result		*U
Mississippi R. at Cordova	5/7/2015	44.9	±	100.0
Mississippi R. at Cordova	8/27/2015	0.0	±	76.6
Mississippi R. at Cordova	10/28/2015	-20.6	±	76.3
Mississippi R. DnS @ Lock&Dam 14	5/7/2015	21.3	±	99.5
Mississippi R. DnS @ Lock&Dam 14	8/27/2015	79.9	±	78.9
Mississippi R. DnS @ Lock&Dam 14	10/28/2015	41.3	±	78.1
Mississippi R. DnS @ Port Byron	5/7/2015	18.9	±	99.5
Mississippi R. DnS @ Port Byron	8/27/2015	36.5	±	77.7
Mississippi R. DnS @ Port Byron	10/28/2015	-29.8	±	76.1
Mississippi R. DnS @ Rapid City	5/7/2015	0.0	±	99.0
Mississippi R. DnS @ Rapid City	8/27/2015	41.1	±	77.8
Mississippi R. DnS @ Rapid City	10/28/2015	6.9	±	77.1
Mississippi R. UpS @ Albany	5/7/2015	9.5	±	99.3
Mississippi R. UpS @ Albany	8/27/2015	20.6	±	77.2
Mississippi R. UpS @ Albany	10/28/2015	29.8	±	77.8

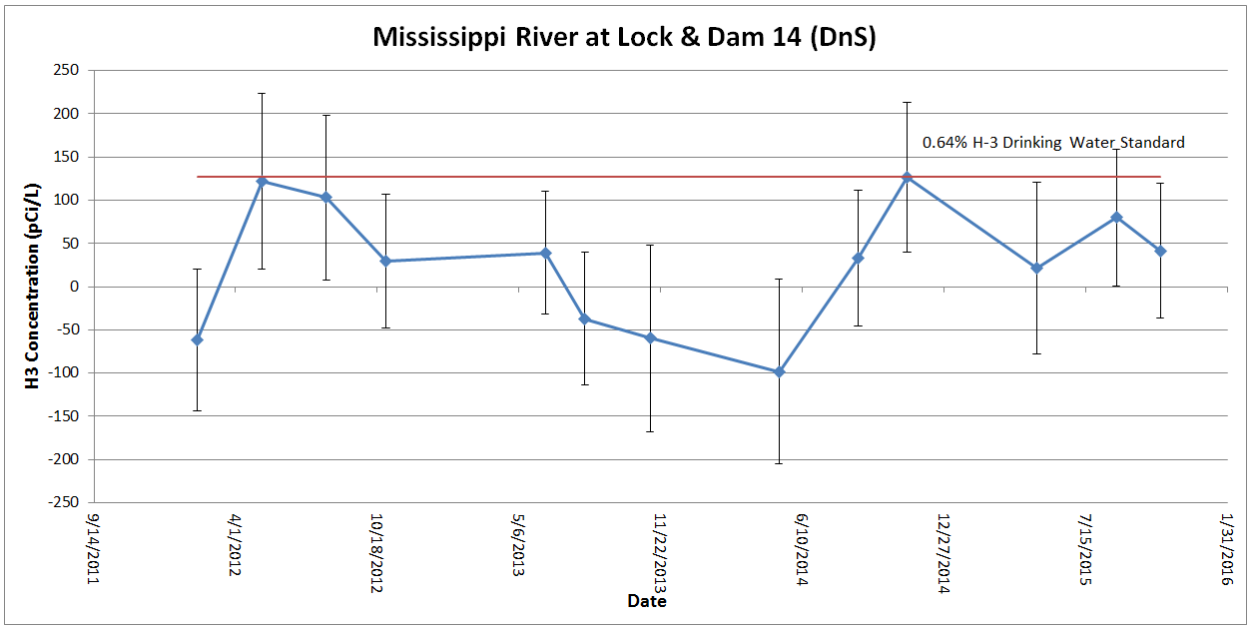
*U is Uncertainty at a 95% confidence level.

Tables F-2. Trending Graphs for Water from the Quad Cities Area
(Highest results on graphs indicate percentage of US EPA Drinking Water Standard)






Mississippi River at Rapids City (DnS)
H3 Concentration (pCi/L)
250
200
150
100
50
0
-50
-100
-150
-200
0.53% H-3 Drinking Water Standard
9/14/2011
4/1/2012
10/18/2012
5/6/2013
11/22/2013
6/10/2014
12/27/2014
7/15/2015
1/31/2016
Date


Mississippi River at Lock & Dam 14 (DnS)
H3 Concentration (pCi/L)
250
200
150
100
50
0
-50
-100
-150
-200
-250
0.64% H-3 Drinking Water Standard
9/14/2011
4/1/2012
10/18/2012
5/6/2013
11/22/2013
6/10/2014
12/27/2014
7/15/2015
1/31/2016
Date

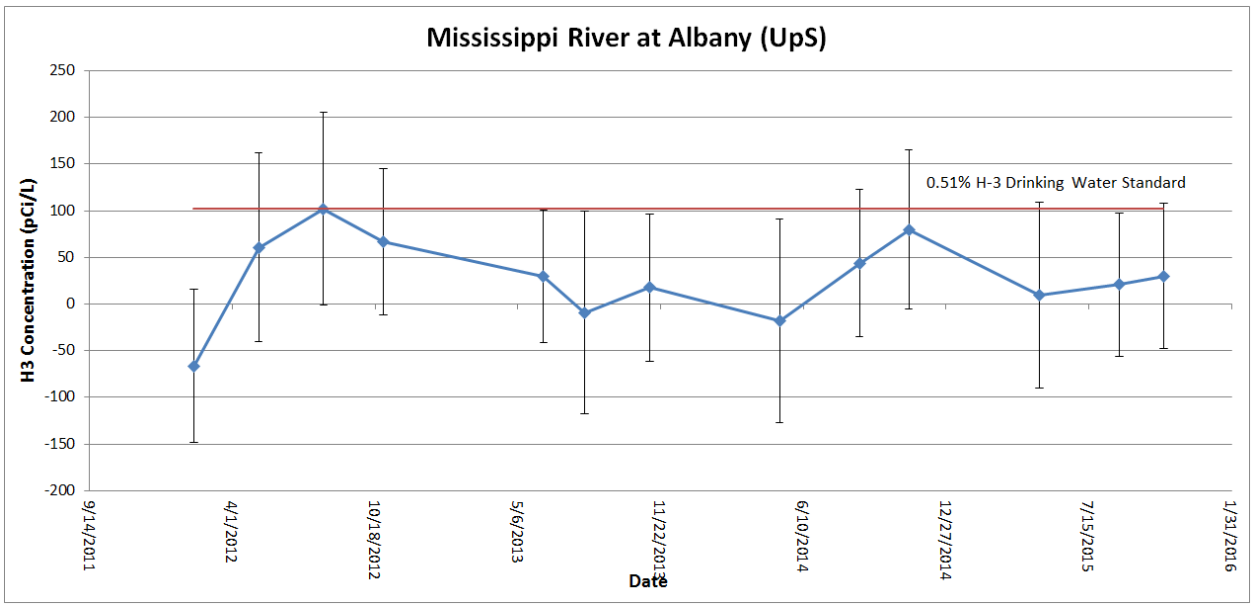

Mississippi River at Albany (UpS)
250
200
150
100
50
0
-50
-100
-150
-200
H3 Concentration (pCi/L)
0.51% H-3 Drinking Water Standard
9/14/2011
4/1/2012
10/18/2012
5/6/2013
11/22/2013
6/10/2014
12/27/2014
7/15/2015
1/31/2016
Date

Table F-3. Sample Results for Alpha/Beta Screening of Water from the Quad Cities Area
Results are in picocuries per liter (pCi/L)

Location / Date	Alpha Result		*U	Beta Result		*U
Mississippi R. at Cordova						
5/7/2015	-0.6	±	1.4	3.1	±	2.2
8/27/2015	-1.0	±	1.3	3.2	±	2.4
10/28/2015	-0.2	±	1.4	3.9	±	2.4
Mississippi R. DnS @ Lock&Dam 14						
5/7/2015	-1.0	±	1.3	2.9	±	2.2
8/27/2015	-0.3	±	1.4	4.0	±	2.4
10/28/2015	0.8	±	1.5	3.4	±	2.4
Mississippi R. DnS @ Port Byron						
5/7/2015	-0.5	±	1.4	1.5	±	2.2
8/27/2015	-1.0	±	1.3	2.5	±	2.4
10/28/2015	0.0	±	1.4	2.6	±	2.4
Mississippi R. DnS @ Rapids City						
5/7/2015	-0.2	±	1.4	2.1	±	2.2
8/27/2015	-1.5	±	1.3	5.2	±	2.5
10/28/2015	-0.6	±	1.4	1.0	±	2.3
Mississippi R. UpS @ Albany						
5/7/2015	-0.6	±	1.3	1.3	±	2.2
8/27/2015	-1.1	±	1.3	4.4	±	2.4
10/28/2015	-0.3	±	1.2	3.8	±	2.3

*U is Uncertainty at a 95% confidence level.

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Table F-4. Gamma Spectroscopy Sample Results for Other Radionuclides in Water from the Quad Cities Area
Results are in picocuries per liter (pCi/L)

Location / Date	Ba-140 Result	Ba-140 *U	Be-7 Result	Be-7 *U	Co-58 Result	Co-58 *U	Co-60 Result	Co-60 *U	Cs-134 Result	Cs-134 *U	Cs-137 Result	Cs-137 *U	Fe-59 Result	Fe-59 *U	I-131 Result	I-131 *U	K-40 Result	K-40 *U	Mn-54 Result	Mn-54 *U	Nb-95 Result	Nb-95 *U	Zn-65 Result	Zn-65 *U	Zr-95 Result	Zr-95 *U
Mississippi R. at Cordova																										
5/7/2015	2.0	21.6	-9.6	19.4	-0.5	2.9	1.3	2.9	-0.6	2.7	0.3	2.0	0.8	6.9	-1.7	9.2	17.0	31.4	1.5	2.4	0.0	3.5	-0.8	6.5	-4.5	5.3
8/27/2015	21.0	22.0	-16.0	12.0	-0.9	1.5	1.4	1.3	0.5	1.3	-0.5	1.3	-2.3	3.7	24.0	20.0	10.0	15.0	1.5	1.2	2.5	2.1	3.6	2.5	0.8	2.7
10/28/2015	-4.0	44.0	-6.0	13.0	-0.1	1.4	-0.1	0.8	-0.3	1.0	-0.2	0.8	1.3	3.3	104.0	65.0	21.0	12.0	-0.8	0.9	0.0	2.1	1.4	2.0	-3.2	2.7
Mississippi R. DnS @ Lock&Dam 14																										
5/7/2015	-2.7	17.1	5.5	17.1	0.2	2.2	-1.3	2.2	0.4	1.8	-0.4	1.6	3.2	4.3	-2.1	9.4	20.0	31.4	-0.8	1.9	0.6	2.5	-2.0	4.1	-3.0	3.1
8/27/2015	-3.0	24.0	-1.0	12.0	-1.3	1.7	1.7	1.3	-0.9	1.4	0.4	1.0	-3.1	4.3	7.0	16.0	47.0	16.0	-1.7	1.4	2.4	2.3	0.2	3.3	0.2	2.9
10/28/2015	3.3	7.0	-2.0	8.1	-1.3	1.1	2.0	0.8	0.4	0.9	-0.7	0.8	-1.4	2.1	3.6	3.3	-3.0	16.0	-0.5	1.0	0.3	1.0	-4.1	2.2	1.0	1.6
Mississippi R. DnS @ Port Byron																										
5/7/2015	-7.0	29.4	2.0	21.6	1.7	2.7	-2.2	3.1	1.9	2.5	-0.1	2.2	-1.2	7.6	-9.4	13.9	32.0	27.4	0.7	2.4	3.0	3.7	-1.3	7.3	-1.9	5.3
8/27/2015	-7.0	22.0	-4.0	12.0	-1.1	1.3	0.5	1.2	2.6	1.1	1.7	0.9	0.6	3.7	-20.0	18.0	38.0	16.0	-0.6	1.3	2.1	1.9	-4.3	2.7	1.2	2.4
10/28/2015	-14.5	7.9	-4.8	8.6	0.6	1.1	0.0	1.0	1.1	1.1	1.2	1.0	-0.7	2.6	-3.2	3.7	2.0	17.0	1.3	1.0	0.5	1.5	-5.0	2.3	-0.4	2.1
Mississippi R. DnS @ Rapid City																										
5/7/2015	12.8	17.6	2.2	18.4	-0.2	2.4	-1.0	2.4	1.6	2.0	1.7	2.0	0.0	4.7	4.7	10.0	6.0	25.5	-1.0	2.2	-1.1	2.7	2.4	4.3	-2.5	4.1
8/27/2015	31.0	20.0	12.0	12.0	0.6	1.3	1.4	1.0	0.8	1.1	0.6	1.0	0.4	2.8	-10.0	17.0	6.0	12.0	1.2	0.9	-3.6	1.7	-0.4	2.0	1.0	2.3
10/28/2015	17.7	6.0	-3.7	6.8	-0.7	1.0	-1.2	1.0	-1.4	1.1	1.1	0.9	1.0	2.3	-0.5	2.3	14.0	17.0	-2.1	1.0	-1.2	1.1	-1.1	2.4	1.6	1.6
Mississippi R. UpS @ Albany																										
5/7/2015	12.0	23.5	2.2	18.6	-0.5	2.2	-0.2	1.9	0.6	1.8	0.2	1.7	0.4	5.1	-4.7	17.6	24.0	31.4	-0.5	1.9	1.4	2.5	-2.2	4.1	1.7	3.5
8/27/2015	8.0	19.0	5.0	12.0	0.1	1.5	-0.4	1.3	-2.2	1.4	-0.4	1.3	0.9	3.4	-3.0	17.0	55.0	14.0	-2.0	1.3	-0.2	2.2	-4.9	2.7	4.4	2.5
10/28/2015	16.6	7.0	-10.9	9.1	-0.8	1.1	-0.1	1.1	1.4	1.0	1.5	1.0	0.9	2.2	-1.4	3.6	29.0	11.0	0.3	1.0	-1.7	1.4	2.6	1.9	-3.3	2.0

*U is Uncertainty at a 95% confidence level.

Table F-5. Soil Sample Results for Quad Cities Area
Results are in picocuries per gram (pCi/g)

Location / Date	Ac-228 Result	Ac-228 *U	Ba-140 Result	Ba-140 *U	Bi-212 Result	Bi-212 *U	Bi-214 Result	Bi-214 *U	Co-58 Result	Co-58 *U	Co-60 Result	Co-60 *U	Cs-134 Result	Cs-134 *U	Cs-137 Result	Cs-137 *U	Fe-59 Result	Fe-59 *U	K-40 Result	K-40 *U	Mn-54 Result	Mn-54 *U
DnW @ Albany																						
5/7/2015	0.4	0.0	0.0	0.1	0.4	0.2	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	8.4	0.5	0.0	0.0
Quad Cities Intersection 150th Ave N & 266th St. N																						
5/7/2015	0.4	0.1	0.0	0.4	0.5	0.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	11.6	0.8	0.0	0.0
8/27/2015	0.5	0.0	0.0	0.0	0.7	0.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	12.0	0.4	0.0	0.0
Quad Cities Near RSC																						
5/7/2015	0.3	0.0	0.0	0.2	0.4	0.2	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	10.3	0.7	0.0	0.0
8/27/2015	0.3	0.0	0.0	0.0	0.4	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	10.5	0.4	0.0	0.0
UpW @ Lock&Dam 14																						
8/27/2015	0.9	0.0	0.0	0.0	0.8	0.2	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.0	0.5	0.0	0.0

Location / Date	Nb-95 Result	Nb-95 *U	Pa-234m Result	Pa-234m *U	Pb-210 Result	Pb-210 *U	Pb-212 Result	Pb-212 *U	Pb-214 Result	Pb-214 *U	Ra-226 Result	Ra-226 *U	Th-234 Result	Th-234 *U	Tl-208 Result	Tl-208 *U	U-235 Result	U-235 *U	Zn-65 Result	Zn-65 *U	Zr-95 Result	Zr-95 *U
DnW @ Albany																						
5/7/2015	0.0	0.0	0.3	1.2	1.8	0.6	0.3	0.0	0.5	0.0	1.3	0.3	0.2	0.5	0.3	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Quad Cities Intersection 150th Ave N & 266th St. N																						
5/7/2015	0.0	0.0	-1.6	1.9	1.3	0.3	0.5	0.0	0.5	0.0	0.6	0.3	0.3	0.3	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0
8/27/2015	0.0	0.0	-1.7	1.0	1.5	0.1	0.6	0.0	0.4	0.0	0.8	0.1	0.4	0.1	0.6	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Quad Cities Near RSC																						
5/7/2015	0.0	0.0	1.9	1.4	1.0	0.4	0.2	0.0	0.3	0.0	0.6	0.2	0.2	0.4	0.3	0.1	0.0	0.0	0.0	0.0	-0.1	0.0
8/27/2015	0.0	0.0	-0.3	0.8	4.5	6.5	0.2	0.0	0.2	0.0	0.4	0.1	0.7	0.6	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
UpW @ Lock&Dam 14																						
8/27/2015	0.0	0.0	1.7	1.1	-13.0	11.0	1.0	0.0	0.8	0.0	2.0	0.2	1.4	1.0	0.8	0.0	0.1	0.0	0.0	0.0	0.0	0.0

*U is Uncertainty at a 95% confidence level.

Table F-6. Sediment Sample Results for Quad Cities Area
Results are in picocuries per gram (pCi/g)

Location / Date	Ac-228 Result	Ac-228 *U	Ba-140 Result	Ba-140 *U	Be-7 Result	Be-7 *U	Bi-212 Result	Bi-212 *U	Bi-214 Result	Bi-214 *U	Co-58 Result	Co-58 *U	Co-60 Result	Co-60 *U	Cs-134 Result	Cs-134 *U	Cs-137 Result	Cs-137 *U	Fe-59 Result	Fe-59 *U	K-40 Result	K-40 *U	Mn-54 Result	Mn-54 *U
Mississippi R. DnS @ Rapid City																								
5/7/2015	0.3	0.1	0.0	0.1			0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0	0.6	0.0	0.0
8/27/2015	0.5	0.0	0.0	0.0	0.5	0.1	0.5	0.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0	0.4	0.0	0.0

Location / Date	Nb-95 Result	Nb-95 *U	Pa-234m Result	Pa-234m *U	Pb-210 Result	Pb-210 *U	Pb-212 Result	Pb-212 *U	Pb-214 Result	Pb-214 *U	Ra-226 Result	Ra-226 *U	Th-234 Result	Th-234 *U	Tl-208 Result	Tl-208 *U	U-235 Result	U-235 *U	Zn-65 Result	Zn-65 *U	Zr-95 Result	Zr-95 *U
Mississippi R. DnS @ Rapid City																						
5/7/2015	0.0	0.0	0.0	1.2	0.3	0.1	0.2	0.0	0.3	0.0	0.5	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	-0.1	0.0
8/27/2015	0.0	0.0	0.8	0.8	8.0	7.7	0.5	0.0	0.5	0.0	1.0	0.2	0.0	0.7	0.4	0.0	0.1	0.0	0.0	0.0	0.0	0.0

*U is Uncertainty at a 95% confidence level.

Table F-7. Fish Sample Results for Quad Cities Area
Results are in picocuries per kilogram (pCi/kg)

Location / Date	Ba-140 Result	Ba-140 *U	Be-7 Result	Be-7 *U	Co-58 Result	Co-58 *U	Co-60 Result	Co-60 *U	Cs-134 Result	Cs-134 *U	Cs-137 Result	Cs-137 *U	Fe-59 Result	Fe-59 *U	I-131 Result	I-131 *U	K-40 Result	K-40 *U	Mn-54 Result	Mn-54 *U	Nb-95 Result	Nb-95 *U	Zn-65 Result	Zn-65 *U	Zr-95 Result	Zr-95 *U
Quad Cities Plant Effluent (Bottom Feeder)																										
8/27/2015	-49.0	51.0	66.0	60.0	-17.8	8.7	12.4	9.4	-7.0	9.3	11.2	8.5	-40.0	22.0	-15.0	18.0	3370.0	220.0	14.1	7.8	-15.0	10.0	4.0	21.0	-4.0	15.0
Quad Cities Plant Effluent (Top Feeder)																										
8/27/2015	-25.0	56.0	-101.0	83.0	5.0	11.0	9.0	12.0	16.0	11.0	2.6	9.3	37.0	27.0	-10.0	18.0	2670.0	230.0	15.0	10.0	-2.0	12.0	41.0	28.0	34.0	21.0

*U is Uncertainty at a 95% confidence level.

Table F-8. Vegetation Sample Results for Quad Cities Area
Results are in picocuries per kilogram (pCi/kg)

Location / Date	Ba-140 Result	Ba-140 *U	Be-7 Result	Be-7 *U	Co-58 Result	Co-58 *U	Co-60 Result	Co-60 *U	Cs-134 Result	Cs-134 *U	Cs-137 Result	Cs-137 *U	Fe-59 Result	Fe-59 *U	I-131 Result	I-131 *U	K-40 Result	K-40 *U	Mn-54 Result	Mn-54 *U	Nb-95 Result	Nb-95 *U	Zn-65 Result	Zn-65 *U	Zr-95 Result	Zr-95 *U
DnW @ Albany																										
5/7/2015	0.2	0.3	5.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	0.2	19.0	1.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
Quad Cities Intersection 150th Ave N & 266th St. N																										
5/7/2015	0.1	0.4	2.6	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	22.7	1.5	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
8/27/2015	0.6	0.4	4.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.4	7.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Quad Cities Near RSC																										
5/7/2015	0.1	0.6	9.4	0.9	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.0	-0.2	0.1	-0.1	0.4	16.5	1.5	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1
8/27/2015	0.0	0.0	2.7	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.2	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
UpW @ Lock&Dam 14																										
8/27/2015	0.1	0.1	3.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.2	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

*U is Uncertainty at a 95% confidence level.

Table F-9. Gamma Detection Network Results for Quad Cities

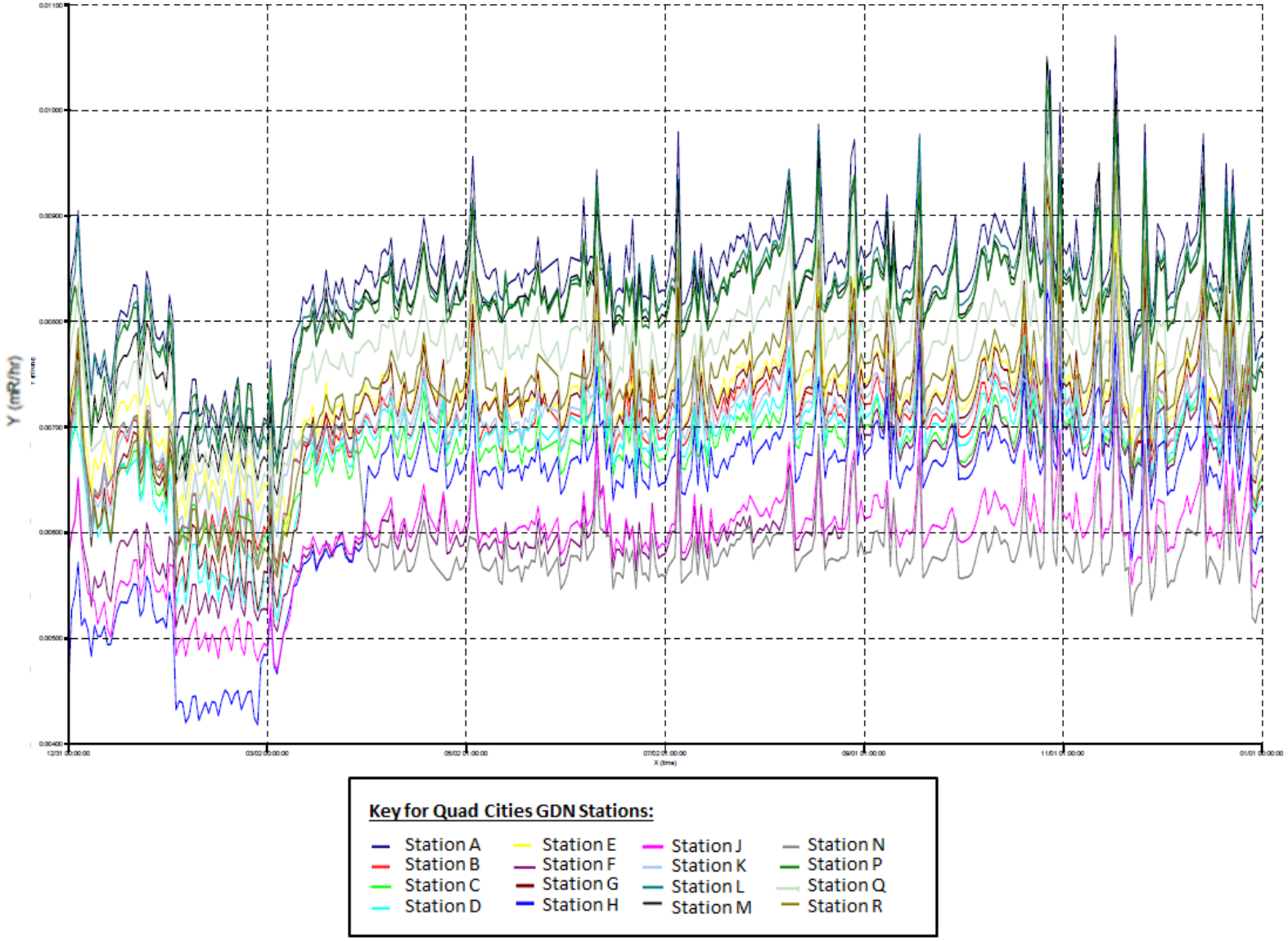


Table F-10. Summary of Ambient Gamma Results for Quad Cities Area

Location	Quarter 1 mrem/day	Quarter 2 mrem/day	Quarter 3 mrem/day	Quarter 4 mrem/day	Annual Dose mrem/year
QC001	0.093	0.108	0.108	0.081	35.59
QC004	0.078	0.1	0.093	0.076	31.66
QC007	0.06	0.09	0.089	0.071	28.29
QC010		0.08	0.083	0.061	27.25
QC011	0.04	0.057	0.049	0.061	18.89
QC012	0.047	0.063	0.076	0.057	22.17
QC014		0.058	0.063	0.057	21.66
QC016	0.04	0.061	0.074	0.055	20.99
QC018	0.093	0.124	0.143	0.091	41.15
QC025	0.083	0.088	0.097	0.078	31.57
QC026	0.084		0.143	0.093	38.93
QC027		0.1	0.112	0.081	35.65
QC028	0.055	0.08	0.105	0.055	26.92
QC029	0.061	0.096	0.102	0.086	31.48
QC031	0.072	0.089	0.083	0.063	28.01
QC032	0.068	0.076	0.078	0.07	26.65
QC033	0.063	0.076	0.094	0.077	28.29
QC034	0.065	0.082	0.086	0.06	26.74
QC036	0.074	0.097	0.103	0.089	33.12
QC037	0.071	0.063	0.089	0.064	26.19
QC038	0.079	0.091	0.094	0.065	30.02
QC039	0.077	0.066	0.077	0.063	25.82
QC040	0.093	0.107	0.116	0.083	36.41
QC041	0.067	0.08	0.103	0.08	30.11
QC042	0.098	0.081	0.107	0.073	32.76
QC043	0.066	0.08	0.101	0.066	28.56
QC044	0.078	0.085	0.099	0.068	30.11
QC045	0.072	0.076	0.085	0.072	27.83
QC046	0.09	0.099	0.102	0.082	34.04
QC049	0.07	0.083	0.117	0.078	31.76
QC050	0.066	0.089	0.09	0.063	28.11
QC051	0.065	0.074	0.087	0.062	26.28
QC052		0.108	0.112	0.084	36.99
QC053	0.052		0.067	0.055	21.17
QC054	0.07	0.092	0.1	0.071	30.39
QC055	0.066	0.091	0.106	0.074	30.75
QC056	0.062	0.072		0.065	24.21
QC057	0.047	0.074	0.079	0.063	24.00
QC058	0.068	0.078	0.108	0.066	29.20
QC059	0.076	0.079	0.106	0.063	29.57
QC060	0.066	0.096	0.105	0.079	31.57
QC061	0.063	0.089	0.098	0.076	29.75
QC062	0.083	0.116	0.11	0.093	36.68
QC063	0.075	0.09	0.104	0.081	31.94
QC064	0.059	0.082	0.088	0.075	27.74

Location	Quarter 1 mrem/day	Quarter 2 mrem/day	Quarter 3 mrem/day	Quarter 4 mrem/day	Annual Dose mrem/year
QC065	0.068	0.09	0.118	0.074	31.94
QC066	0.087	0.108	0.118	0.095	37.23
QC067		0.102	0.107	0.103	37.96
QC068	0.087	0.124	0.12	0.093	38.69
QC-RSA	0.08	0.092	0.115	0.077	33.22
QC-RSB	0.078	0.079	0.103	0.078	30.84
QC-RSC	0.063	0.083	0.093	0.064	27.65
QC-RSD	0.065	0.083	0.091	0.072	28.38
QC-RSE	0.069	0.089	0.08	0.082	29.20
QC-RSF	0.061	0.071	0.075	0.054	23.82
QC-RSG	0.064	0.083	0.097	0.089	30.39
QC-RSH	0.094	0.103	0.105	0.085	35.31
QC-RSJ	0.07	0.088	0.102	0.082	31.21
QC-RSK	0.08	0.079	0.085	0.076	29.20
QC-RSL	0.078	0.11	0.098	0.086	33.95
QC-RSM	0.083	0.104	0.1	0.087	34.13
QC-RSN	0.045	0.092	0.082	0.066	26.01
QC-RSP	0.088	0.1	0.11	0.095	35.86
QC-RSQ	0.073	0.097	0.1	0.085	32.39
QC-RSR	0.072	0.088	0.094	0.068	29.38

Blanks in the table indicate that dosimeters were missing at the end of the quarter.
Annual Dose column based on averages of all available data.

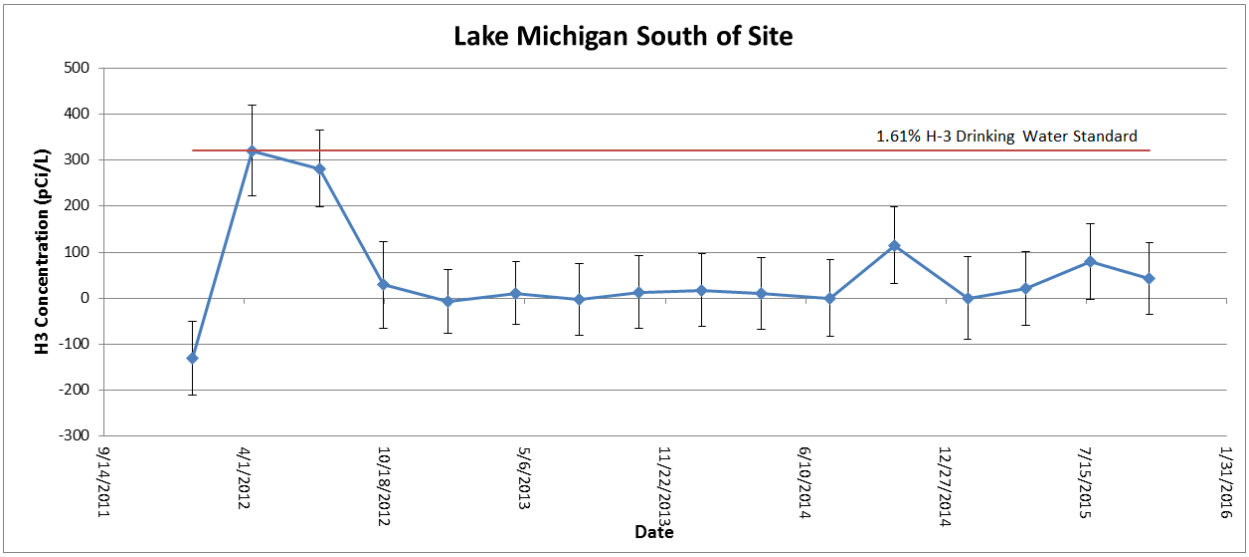
Appendix G
Zion Sample Results

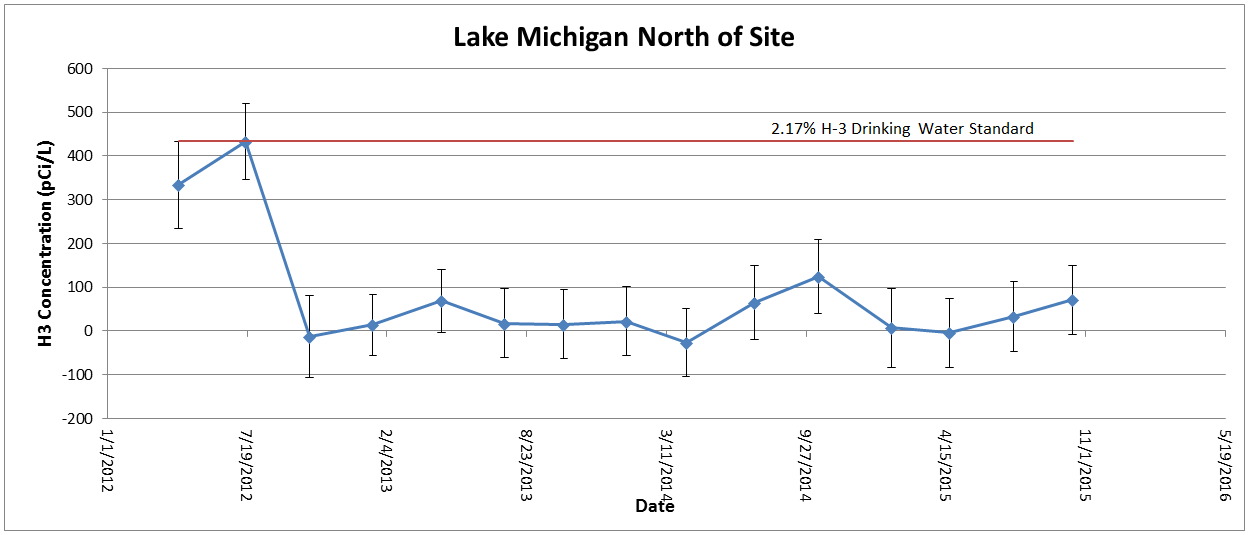
Table G-1. Tritium in Water Sample Results for Zion Area
Results are in picocuries per liter (pCi/L)

Location	Date	Result		*U
Lake Michigan S. of Zion site	1/27/2015	0.0	±	89.5
Lake Michigan S. of Zion site	4/20/2015	21.0	±	80.2
Lake Michigan S. of Zion site	7/21/2015	79.4	±	81.7
Lake Michigan S. of Zion site	10/13/2015	43.5	±	78.1
Lake Michigan N. of Zion site	1/27/2015	7.0	±	89.7
Lake Michigan N. of Zion site	4/20/2015	-4.7	±	79.5
Lake Michigan N. of Zion site	7/21/2015	32.7	±	80.4
Lake Michigan N. of Zion site	10/13/2015	71.0	±	78.9
Lake Michigan Sector J @ State Park	4/20/2015	35.1	±	80.7
Lake Michigan Sector J @ State Park	7/21/2015	14.0	±	79.9
Lake Michigan Sector J @ State Park	10/13/2015	77.9	±	79.1

*U is Uncertainty at a 95% confidence level.

Tables G-2. Trending Graphs for Water from the Braidwood Area
(Highest results on graphs indicate percentage of US EPA Drinking Water Standard)




Lake Michigan North of Site
2.17% H-3 Drinking Water Standard
H3 Concentration (pCi/L)
600
500
400
300
200
100
0
-100
-200
1/1/2012
7/19/2012
2/4/2013
8/23/2013
3/11/2014
9/27/2014
4/15/2015
11/1/2015
5/19/2016
Date

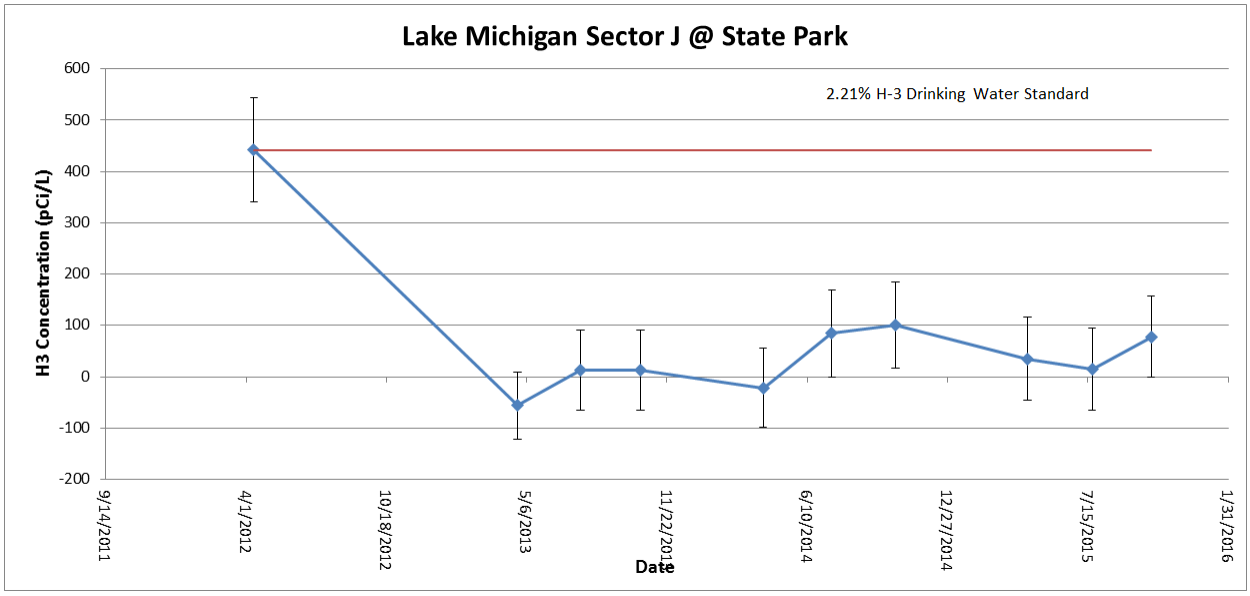

Lake Michigan Sector J @ State Park
2.21% H-3 Drinking Water Standard
H3 Concentration (pCi/L)
600
500
400
300
200
100
0
-100
-200
9/14/2011
4/1/2012
10/18/2012
5/6/2013
11/22/2013
6/10/2014
12/27/2014
7/15/2015
1/31/2016
Date

Table G-3. Sample Results for Alpha/Beta Screening of Water from the Zion Area
Results are in picocuries per liter (pCi/L)

Location	Alpha			Beta		
Date	Result		*U	Result		*U
Lake Michigan N. of Zion site						
1/27/2015	-0.1	±	1.3	3.0	±	2.6
4/20/2015	-0.9	±	1.3	0.4	±	2.0
7/21/2015	0.7	±	1.4	3.2	±	2.3
10/13/2015	0.1	±	1.5	2.6	±	2.2
Lake Michigan S. of Zion site						
1/27/2015	-0.5	±	1.3	1.2	±	2.6
4/20/2015	1.5	±	1.5	3.1	±	2.1
7/21/2015	0.9	±	1.4	3.2	±	2.3
10/13/2015	1.3	±	1.5	0.6	±	2.1
Lake Michigan Sector J @ State Park						
4/20/2015	-2.5	±	1.3	1.5	±	2.1
7/21/2015	-2.7	±	1.5	2.2	±	2.1
10/13/2015	-1.1	±	1.4	2.2	±	2.2

*U is Uncertainty at a 95% confidence level.

Table G-4. Gamma Spectroscopy Sample Results for Other Radionuclides in Water from the Zion Area
Results are in picocuries per liter (pCi/L)

Location	Ba-140		Be-7		Co-58		Co-60		Cs-134		Cs-137		Fe-59		I-131		K-40		Mn-54		Nb-95		Zn-65		Zr-95	
Date	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U
Lake Michigan N. of Zion site																										
1/27/2015	2.1 ±	10.8	-14.3 ±	17.8	-1.1 ±	2.5	-0.3 ±	3.1	0.7 ±	2.7	1.5 ±	2.0	0.5 ±	5.9	1.6 ±	3.1	26.0 ±	31.4	0.1 ±	2.5	0.6 ±	2.7	2.9 ±	6.1	-1.6 ±	4.5
4/20/2015	19.7 ±	19.4	0.4 ±	15.1	-0.5 ±	2.2	1.3 ±	2.0	-0.1 ±	1.9	0.6 ±	1.8	0.9 ±	4.7	2.8 ±	9.0	18.0 ±	31.4	0.1 ±	1.8	-0.9 ±	2.5	-2.9 ±	4.3	0.2 ±	3.7
7/21/2015	5.7 ±	8.7	8.3 ±	8.5	0.5 ±	1.1	-0.1 ±	0.9	0.7 ±	0.9	0.8 ±	0.8	-3.3 ±	2.3	6.2 ±	4.6	25.0 ±	16.0	-0.6 ±	1.0	0.8 ±	1.2	3.4 ±	2.1	-1.3 ±	1.8
10/13/2015	13.0 ±	8.9	-7.6 ±	8.5	-1.0 ±	1.1	-0.6 ±	0.8	-1.3 ±	1.0	-1.5 ±	0.8	3.3 ±	2.1	6.0 ±	5.3	-15.1 ±	9.4	0.5 ±	1.0	0.5 ±	1.2	0.2 ±	2.0	2.3 ±	1.9
Lake Michigan S. of Zion site																										
1/27/2015	0.5 ±	9.8	0.0 ±	16.7	0.2 ±	1.9	-0.4 ±	2.2	1.2 ±	2.4	1.2 ±	2.0	-1.1 ±	4.9	1.4 ±	3.7	5.0 ±	31.4	-1.2 ±	2.4	-0.1 ±	2.4	-3.5 ±	4.9	0.4 ±	3.7
4/20/2015	13.0 ±	19.6	5.0 ±	21.6	0.3 ±	2.5	-2.2 ±	3.1	1.1 ±	2.7	-1.2 ±	2.2	1.8 ±	7.1	5.5 ±	9.4	33.0 ±	31.4	0.0 ±	2.7	1.9 ±	3.3	-2.8 ±	6.5	-3.8 ±	5.3
7/21/2015	36.0 ±	13.0	-0.6 ±	8.1	2.5 ±	1.0	-0.7 ±	1.1	0.1 ±	0.9	-0.2 ±	0.9	-4.6 ±	2.9	5.9 ±	7.4	-28.0 ±	18.0	0.7 ±	0.9	3.4 ±	1.4	1.8 ±	2.2	0.4 ±	2.0
10/13/2015	-8.0 ±	11.0	10.0 ±	10.0	2.0 ±	1.2	2.0 ±	1.2	0.1 ±	1.1	-0.2 ±	1.0	-1.7 ±	3.2	9.8 ±	5.6	24.0 ±	15.0	0.4 ±	1.2	0.9 ±	1.5	-6.2 ±	2.9	-1.4 ±	2.1
Lake Michigan Sector J @ State Park																										
4/20/2015	-13.2 ±	18.2	6.0 ±	16.7	-0.5 ±	2.2	-0.1 ±	1.7	-1.5 ±	1.8	1.2 ±	1.6	3.8 ±	3.9	-5.3 ±	10.2	20.0 ±	31.4	-0.7 ±	1.9	-0.9 ±	2.4	1.1 ±	3.7	1.7 ±	3.1
7/21/2015	0.0 ±	8.3	-13.3 ±	8.9	-0.1 ±	1.1	-0.8 ±	0.9	0.2 ±	1.0	0.9 ±	0.8	-4.7 ±	2.3	0.1 ±	4.8	17.0 ±	10.0	-0.2 ±	0.9	-0.7 ±	1.3	2.3 ±	1.9	-2.3 ±	1.9
10/13/2015	15.4 ±	9.7	-10.9 ±	10.0	-0.5 ±	1.2	-0.6 ±	1.1	0.8 ±	1.1	-0.2 ±	0.9	4.9 ±	2.7	0.2 ±	5.7	18.0 ±	16.0	-1.7 ±	1.1	-1.1 ±	1.6	-2.9 ±	2.2	-1.8 ±	2.3

*U is Uncertainty at a 95% confidence level.

Table G-5. Soil Sample Results for Zion Area
Results are in picocuries per gram (pCi/g)

Location	Ac-228		Ba-140		Bi-212		Bi-214		Co-58		Co-60		Cs-134		Cs-137		Fe-59		K-40		Mn-54	
Date	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U
Zion N of Site, Near ZN-67																						
4/20/2015	0.2 ±	0.0	0.0 ±	0.1	0.2 ±	0.1	0.3 ±	0.0	0.0 ±	0.0	0.0 ±	0.0	0.0 ±	0.0	0.0 ±	0.0	0.1 ±	0.0	0.0 ±	0.0	6.4 ±	0.5	0.0 ±	0.0
7/21/2015	0.4 ±	0.0	-0.1 ±	0.1	0.4 ±	0.1	0.4 ±	0.0	0.0 ±	0.0	0.0 ±	0.0	0.0 ±	0.0	0.0 ±	0.0	0.0 ±	0.0	0.0 ±	0.0	7.3 ±	0.3	0.0 ±	0.0
Zion near RS-J (S of plant)																						
10/13/2015	0.3 ±	0.0	-0.1 ±	0.1	0.3 ±	0.1	0.3 ±	0.0	0.0 ±	0.0	0.0 ±	0.0	0.0 ±	0.0	0.0 ±	0.0	0.1 ±	0.0	0.0 ±	0.0	7.5 ±	0.3	0.0 ±	0.0

Location	Nb-95		Pa-234m		Pb-210		Pb-212		Pb-214		Ra-226		Th-234		Tl-208		U-235		Zn-65		Zr-95	
Date	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U
Zion N of Site, Near ZN-67																						
4/20/2015	0.0 ±	0.0	-0.5 ±	1.2	1.1 ±	0.4	0.2 ±	0.0	0.3 ±	0.0	0.4 ±	0.2	0.4 ±	0.3	0.2 ±	0.0	0.0 ±	0.0	0.0 ±	0.0	0.0 ±	0.0
7/21/2015	0.0 ±	0.0	1.3 ±	0.8	-8.5 ±	7.8	0.4 ±	0.0	0.5 ±	0.0	0.8 ±	0.2	0.5 ±	0.7	0.4 ±	0.0	0.0 ±	0.0	0.0 ±	0.0	-0.1 ±	0.0
Zion near RS-J (S of plant)																						
10/13/2015	0.0 ±	0.0	0.8 ±	0.6	0.9 ±	1.1	0.3 ±	0.0	0.3 ±	0.0	0.5 ±	0.6	0.6 ±	0.3	0.3 ±	0.0	0.0 ±	0.0	0.0 ±	0.0	-0.1 ±	0.0

*U is Uncertainty at a 95% confidence level.

Table G-6. Sediment Sample Results for Zion Area
Results are in picocuries per gram (pCi/g)

Location / Date	Ac-228 Result	Ac-228 *U	Ba-140 Result	Ba-140 *U	Bi-212 Result	Bi-212 *U	Bi-214 Result	Bi-214 *U	Co-58 Result	Co-58 *U	Co-60 Result	Co-60 *U	Cs-134 Result	Cs-134 *U	Cs-137 Result	Cs-137 *U	Fe-59 Result	Fe-59 *U	K-40 Result	K-40 *U	Mn-54 Result	Mn-54 *U
Lake Michigan N. of Zion Site																						
5/5/2015	0.2	0.1	0.0	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0	1.0	0.0	0.0
8/4/2015	0.2	0.0	0.0	0.1	0.3	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.9	0.3	0.0	0.0
10/13/2015	0.2	0.0	0.1	0.1	0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.1	0.2	0.0	0.0
Lake Michigan S. of Zion site																						
5/5/2015	0.2	0.0	-0.1	0.3	0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.9	0.5	0.0	0.0
8/4/2015	0.2	0.0	-0.1	0.0	0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.1	0.2	0.0	0.0
10/13/2015	0.2	0.0	0.0	0.1	0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.6	0.3	0.0	0.0
Lake Michigan Sector J @ State Park																						
5/5/2015	0.2	0.0	0.1	0.3	0.3	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.4	0.4	0.0	0.0
8/4/2015	0.3	0.0	0.0	0.1	0.4	0.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.8	0.3	0.0	0.0

Location / Date	Nb-95 Result	Nb-95 *U	Pa-234m Result	Pa-234m *U	Pb-210 Result	Pb-210 *U	Pb-212 Result	Pb-212 *U	Pb-214 Result	Pb-214 *U	Ra-226 Result	Ra-226 *U	Th-234 Result	Th-234 *U	Tl-208 Result	Tl-208 *U	U-235 Result	U-235 *U	Zn-65 Result	Zn-65 *U	Zr-95 Result	Zr-95 *U
Lake Michigan N. of Zion Site																						
5/5/2015	0.0	0.0	0.4	2.4	0.5	0.3	0.1	0.0	0.2	0.0	0.4	0.3	0.3	0.4	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.1
8/4/2015	0.0	0.0	0.3	0.7	-2.6	5.6	0.2	0.0	0.3	0.0	0.4	0.1	0.1	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10/13/2015	0.0	0.0	0.3	0.5	0.1	0.2	0.2	0.0	0.2	0.0	0.5	0.1	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lake Michigan S. of Zion site																						
5/5/2015	0.0	0.0	0.4	1.1	0.0	0.3	0.1	0.0	0.2	0.0	0.4	0.2	0.0	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8/4/2015	0.0	0.0	-0.6	0.5	0.4	0.2	0.2	0.0	0.2	0.0	0.4	0.1	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10/13/2015	0.0	0.0	0.8	0.7	-4.9	5.6	0.2	0.0	0.2	0.0	0.3	0.1	1.5	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lake Michigan Sector J @ State Park																						
5/5/2015	0.0	0.0	0.9	1.0	0.5	0.2	0.2	0.0	0.3	0.0	0.3	0.2	0.4	0.2	0.2	0.0	0.0	0.0	0.0	0.0	-0.1	0.0
8/4/2015	0.0	0.0	1.8	0.6	0.3	0.1	0.3	0.0	0.4	0.0	0.6	0.1	0.3	0.1	0.3	0.0	0.0	0.0	-0.1	0.0	-0.1	0.0

*U is Uncertainty at a 95% confidence level.

Table G-7. Vegetation Sample Results for Zion Area
Results are in picocuries per kilogram (pCi/kg)

Location / Date	Ba-140 Result	Ba-140 *U	Be-7 Result	Be-7 *U	Co-58 Result	Co-58 *U	Co-60 Result	Co-60 *U	Cs-134 Result	Cs-134 *U	Cs-137 Result	Cs-137 *U	Fe-59 Result	Fe-59 *U	I-131 Result	I-131 *U	K-40 Result	K-40 *U	Mn-54 Result	Mn-54 *U	Nb-95 Result	Nb-95 *U	Zn-65 Result	Zn-65 *U	Zr-95 Result	Zr-95 *U
Zion N of Site, Near ZN-67																										
4/20/2015	0.0	0.4	14.6	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.3	0.4	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
7/21/2015	-0.1	0.2	2.6	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	9.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Zion near RS-J (S of plant)																										
10/13/2015	-0.6	1.0	2.9	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.4	1.5	5.8	0.4	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1

*U is Uncertainty at a 95% confidence level.

Table G-8. Alpha / Beta Screening Results for Air Samples in the Zion Area
Results are in picocuries per liter (pCi/L)

Location	Alpha			Beta		
Date	Result		*U	Result		*U
Air Pump N of Plant Entrance by RR						
1/6/2015	2.8	±	0.9	32.8	±	2.6
1/13/2015	1.0	±	0.7	27.4	±	2.4
1/20/2015	1.3	±	0.7	32.7	±	2.7
1/27/2015	0.9	±	0.7	17.3	±	2.3
2/3/2015	0.6	±	0.6	16.1	±	2.1
2/10/2015	1.5	±	0.7	33.2	±	2.6
2/17/2015	2.0	±	0.8	25.2	±	2.4
2/24/2015	2.6	±	0.8	51.9	±	3.0
3/3/2015	1.0	±	0.7	25.2	±	2.5
3/10/2015	0.3	±	0.6	22.6	±	2.3
3/17/2015	1.7	±	0.7	21.0	±	2.3
3/24/2015	0.9	±	0.6	17.9	±	2.2
4/7/2015	0.8	±	0.4	15.7	±	1.3
4/14/2015	0.7	±	0.7	23.0	±	2.4
4/20/2015	-0.6	±	1.6	14.7	±	5.9
4/28/2015	1.4	±	0.6	14.0	±	1.7
5/5/2015	1.0	±	0.7	19.0	±	2.2
5/11/2015	0.3	±	0.7	11.0	±	2.3
5/19/2015	0.6	±	0.5	13.0	±	1.7
5/26/2015	1.8	±	0.8	22.9	±	2.4
6/2/2015	1.2	±	0.6	12.2	±	1.9
6/8/2015	0.7	±	0.7	24.6	±	2.6
6/16/2015	1.6	±	0.7	17.2	±	1.9
6/23/2015	1.9	±	0.8	16.7	±	2.2
7/7/2015	2.3	±	0.5	19.5	±	1.4
7/14/2015	2.1	±	0.8	16.8	±	2.2
7/21/2015	1.5	±	0.7	20.8	±	2.2
7/27/2015	2.2	±	1.0	29.9	±	2.9
8/4/2015	1.2	±	0.6	28.8	±	2.2
8/11/2015	1.9	±	0.9	28.0	±	2.7
8/18/2015	1.4	±	0.7	35.8	±	2.6
8/25/2015	1.9	±	0.7	23.5	±	2.3
8/31/2015	1.3	±	0.9	32.1	±	2.9
9/8/2015	3.2	±	0.9	54.6	±	2.9
9/15/2015	1.5	±	0.7	28.1	±	2.4
9/22/2015	1.1	±	0.7	24.4	±	2.3
9/29/2015	1.8	±	0.8	39.0	±	2.8
10/5/2015	-0.2	±	0.6	12.9	±	2.3
10/13/2015	1.8	±	0.7	28.0	±	2.2
10/20/2015	3.0	±	0.9	23.3	±	2.4
10/27/2015	2.6	±	0.8	34.3	±	2.7
11/2/2015	1.1	±	0.7	18.5	±	2.6
11/10/2015	3.1	±	0.8	32.0	±	2.2
11/17/2015	2.3	±	0.8	38.9	±	2.7
11/23/2015	0.8	±	0.7	21.9	±	2.6
11/30/2015	0.6	±	0.6	30.8	±	2.7
12/8/2015	3.9	±	0.9	45.1	±	2.8
12/15/2015	2.9	±	0.9	40.4	±	2.8
12/22/2015	0.9	±	0.6	26.7	±	2.4

Location	Alpha			Beta		
Date	Result		*U	Result		*U
S of Site (RS-J)						
1/6/2015	2.2	±	0.8	36.8	±	2.7
1/13/2015	1.3	±	0.7	31.9	±	2.5
1/20/2015	1.4	±	0.7	31.8	±	2.6
1/27/2015	0.7	±	0.7	21.3	±	2.4
2/3/2015	0.9	±	0.6	18.9	±	2.2
2/10/2015	1.2	±	0.7	32.2	±	2.5
2/17/2015	1.4	±	0.7	26.3	±	2.4
2/24/2015	2.8	±	0.9	55.1	±	3.1
3/3/2015	1.4	±	0.7	25.8	±	2.5
3/10/2015	0.3	±	0.6	22.0	±	2.3
3/17/2015	1.4	±	0.7	24.0	±	2.3
3/24/2015	1.2	±	0.7	22.5	±	2.3
4/7/2015	1.0	±	0.4	17.0	±	1.3
4/14/2015	1.7	±	0.8	18.3	±	2.3
4/20/2015	0.9	±	0.7	16.5	±	2.4
4/28/2015	1.1	±	0.6	13.1	±	1.8
5/5/2015	1.2	±	0.7	14.8	±	2.1
5/11/2015	0.6	±	0.7	11.9	±	2.3
5/19/2015	1.1	±	0.6	13.7	±	1.8
5/26/2015	2.2	±	0.8	20.1	±	2.3
6/2/2015	1.0	±	0.6	13.9	±	2.1
6/8/2015	1.1	±	0.7	17.1	±	2.4
6/16/2015	1.3	±	0.6	17.7	±	1.9
6/23/2015	1.5	±	0.8	16.5	±	2.2
7/7/2015	2.2	±	0.5	17.7	±	1.3
7/14/2015	1.8	±	0.7	18.1	±	2.3
7/21/2015	2.2	±	0.8	20.0	±	2.3
7/27/2015	3.1	±	1.0	27.5	±	2.8
8/4/2015	1.9	±	0.7	26.5	±	2.1
8/11/2015	2.1	±	0.8	25.9	±	2.5
8/18/2015	1.6	±	0.7	33.8	±	2.6
8/25/2015	1.2	±	0.7	23.5	±	2.3
8/31/2015	0.6	±	0.8	34.9	±	3.0
9/8/2015	2.8	±	0.8	53.7	±	2.8
9/15/2015	0.7	±	0.6	23.5	±	2.3
9/22/2015	0.8	±	0.6	24.4	±	2.3
9/29/2015	1.4	±	0.8	35.8	±	2.7
10/5/2015	0.0	±	0.7	14.0	±	2.4
10/13/2015	1.8	±	0.7	28.2	±	2.2
10/20/2015	3.4	±	0.9	24.0	±	2.4
10/27/2015	2.2	±	0.8	31.3	±	2.7
11/2/2015	1.1	±	0.7	16.7	±	2.5
11/10/2015	3.0	±	0.8	35.0	±	2.4
11/17/2015	0.8	±	0.6	34.6	±	2.5
11/23/2015	1.2	±	0.8	22.9	±	2.6
11/30/2015	1.1	±	0.7	28.5	±	2.6
12/8/2015	4.2	±	0.9	44.4	±	2.7
12/15/2015	3.2	±	0.9	38.9	±	2.8
12/22/2015	0.9	±	0.6	24.6	±	2.4

*U is Uncertainty at a 95% confidence level.

Table G-8 (Continued). Alpha / Beta Screening Results for Air Samples in the Zion Area
Results are in picocuries per liter (pCi/L)

Location Date	Alpha Result		*U	Beta Result		*U
N of Site (RS-E)						
1/6/2015	2.0	±	0.8	32.6	±	2.6
1/13/2015	0.6	±	0.7	30.4	±	2.5
1/20/2015	1.4	±	0.7	33.3	±	2.6
1/27/2015	0.5	±	0.6	23.7	±	2.4
2/3/2015	1.1	±	0.7	18.8	±	2.2
2/10/2015	1.5	±	0.7	34.3	±	2.6
2/17/2015	1.3	±	0.7	30.4	±	2.5
2/24/2015	3.4	±	0.9	53.0	±	3.1
3/3/2015	0.6	±	0.6	27.6	±	2.5
3/10/2015	0.4	±	0.6	21.1	±	2.3
3/17/2015	1.9	±	0.7	22.0	±	2.2
3/24/2015	1.1	±	0.7	21.1	±	2.3
4/7/2015	1.1	±	0.4	17.0	±	1.3
4/14/2015	1.8	±	0.8	19.6	±	2.4
4/20/2015	1.3	±	0.8	16.8	±	2.5
4/28/2015	0.6	±	0.5	12.8	±	1.7
Air Sampler removed at the end of April 2015						

*U is Uncertainty at a 95% confidence level.

Location Date	Alpha Result		*U	Beta Result		*U
W of Site (RS-F)						
1/6/2015	1.9	±	0.8	34.4	±	2.6
1/13/2015	1.8	±	0.8	32.7	±	2.5
1/20/2015	1.0	±	0.7	32.2	±	2.6
1/27/2015	0.9	±	0.7	20.8	±	2.4
2/3/2015	1.0	±	0.6	19.2	±	2.1
2/10/2015	1.2	±	0.7	35.9	±	2.6
2/17/2015	1.6	±	0.7	27.3	±	2.4
2/24/2015	3.4	±	0.9	56.8	±	3.1
3/3/2015	0.5	±	0.6	26.3	±	2.5
3/10/2015	0.9	±	0.7	21.7	±	2.3
3/17/2015	1.1	±	0.6	19.8	±	2.2
3/24/2015	1.3	±	0.7	20.1	±	2.2
4/7/2015	1.3	±	0.4	17.9	±	1.3
4/14/2015	1.8	±	0.8	20.9	±	2.3
4/20/2015	1.6	±	0.8	17.7	±	2.4
4/28/2015	0.8	±	0.5	11.2	±	1.7
5/5/2015	1.0	±	0.7	16.8	±	2.1
5/11/2015	0.9	±	0.8	11.4	±	2.3
5/19/2015	0.9	±	0.6	13.2	±	1.8
5/26/2015	1.7	±	0.7	20.0	±	2.3
6/2/2015	0.8	±	0.6	13.6	±	2.0
6/8/2015	1.3	±	0.7	17.1	±	2.4
6/16/2015	1.7	±	0.7	16.2	±	1.9
6/23/2015	1.9	±	0.8	20.5	±	2.3
7/7/2015	2.0	±	0.5	16.8	±	1.4
7/14/2015	1.8	±	0.7	15.4	±	2.2
7/21/2015	1.7	±	0.7	18.7	±	2.2
7/27/2015	1.7	±	0.9	27.4	±	2.8
8/4/2015	1.9	±	0.7	27.9	±	2.2
8/11/2015	2.0	±	0.8	29.6	±	2.6
8/18/2015	2.4	±	0.8	36.8	±	2.7
8/25/2015	1.5	±	0.7	21.8	±	2.3
8/31/2015	1.0	±	0.8	28.8	±	2.8
9/8/2015	3.0	±	0.9	55.3	±	2.9
9/15/2015	0.5	±	0.6	22.4	±	2.3
9/22/2015	1.1	±	0.7	21.3	±	2.2
9/29/2015	1.5	±	0.8	34.4	±	2.6
10/5/2015	0.0	±	0.7	13.7	±	2.4
10/13/2015	1.7	±	0.7	24.3	±	2.1
10/20/2015	3.4	±	0.9	22.4	±	2.3
10/27/2015	2.3	±	0.8	30.7	±	2.6
11/2/2015	1.7	±	0.8	20.9	±	2.7
11/10/2015	3.3	±	0.8	31.3	±	2.2
11/17/2015	1.4	±	0.7	39.5	±	2.7
11/23/2015	0.8	±	0.7	21.2	±	2.6
11/30/2015	1.1	±	0.7	28.4	±	2.6
12/8/2015	4.6	±	0.9	42.5	±	2.7
12/15/2015	3.1	±	0.9	43.1	±	2.8
12/22/2015	1.0	±	0.6	21.9	±	2.2

Table G-9. Gamma Spectroscopy Sample Results for Other Radionuclides in Air from the Zion Area
Results are in picocuries per liter (pCi/L)

Location	Be-7			Cs-137			I-131			K-40			Te-132			Xe-131m		
Date	Result		*U	Result		*U	Result		*U	Result		*U	Result		*U	Result		*U
Air Pump N of Plant Entrance by RR																		
1/6/2015	12.0	±	100.0	3.7	±	13.9	8.2	±	16.1	430.0	±	294.0	0.0	±	23.5	-20.0	±	470.4
1/13/2015	-53.0	±	86.2	-4.6	±	13.9	-5.2	±	17.4	830.0	±	313.6	-8.0	±	31.4	90.0	±	470.4
1/20/2015	-64.0	±	101.9	-3.4	±	14.3	-9.5	±	15.3		±		16.0	±	25.5	0.0	±	470.4
1/27/2015	42.0	±	78.4	11.1	±	12.0	-16.2	±	15.1	1110.0	±	254.8	2.0	±	23.5	170.0	±	431.2
2/3/2015	-32.0	±	94.1	9.6	±	14.1	-1.3	±	14.7	780.0	±	333.2	-8.0	±	23.5	-330.0	±	450.8
2/10/2015	72.0	±	88.2	3.0	±	13.1	-8.3	±	16.1	540.0	±	294.0	-12.0	±	31.4	120.0	±	431.2
2/17/2015	-22.0	±	72.5	5.5	±	14.1	8.9	±	14.9	660.0	±	313.6	15.0	±	23.5	120.0	±	411.6
2/24/2015	-46.0	±	96.0	5.1	±	13.7	-9.4	±	14.9	600.0	±	274.4	19.2	±	18.8	-140.0	±	450.8
3/3/2015	13.0	±	86.2	4.6	±	14.7	3.1	±	15.9	640.0	±	294.0	-11.0	±	23.5	120.0	±	450.8
3/10/2015	40.0	±	94.1	14.0	±	12.2	6.1	±	15.7	570.0	±	294.0	-5.0	±	31.4	140.0	±	470.4
3/17/2015	5.0	±	86.2	7.0	±	12.9	14.0	±	16.7	760.0	±	294.0	5.0	±	27.4	380.0	±	450.8
3/24/2015	-75.0	±	103.9	20.8	±	12.9	8.6	±	17.1	860.0	±	313.6	4.0	±	31.4	-160.0	±	509.6
4/7/2015	-50.0	±	47.0	1.1	±	7.4	1.0	±	11.4	275.0	±	172.5	9.0	±	25.5	-30.0	±	294.0
4/14/2015	-1.0	±	96.0	-8.2	±	15.3	0.1	±	16.3	780.0	±	313.6	17.0	±	25.5	110.0	±	470.4
4/20/2015	120.0	±	313.6	15.0	±	43.1	14.0	±	52.9	1910.0	±	1078.0	3.0	±	80.4	470.0	±	1470.0
4/28/2015	11.0	±	72.5	-5.2	±	11.4	-4.5	±	13.1	500.0	±	215.6	-3.0	±	21.6	80.0	±	372.4
5/5/2015	27.0	±	92.1	-5.4	±	15.3	7.0	±	23.5	250.0	±	274.4	-21.0	±	58.8	170.0	±	588.0
5/11/2015	-75.0	±	103.9	11.5	±	14.9	1.1	±	15.7	550.0	±	352.8	3.0	±	25.5	60.0	±	509.6
5/19/2015	46.0	±	60.8	7.8	±	12.5	2.1	±	14.7	460.0	±	254.8	43.0	±	27.4	0.0	±	431.2
5/26/2015	-19.0	±	94.1	-2.3	±	12.3	11.6	±	16.1	660.0	±	313.6	11.0	±	29.4	-200.0	±	470.4
6/2/2015	103.0	±	86.2	18.4	±	13.3	8.2	±	16.3	770.0	±	294.0	17.0	±	31.4	250.0	±	450.8
6/8/2015	35.0	±	127.4	-0.7	±	17.1	-15.0	±	29.4	740.0	±	352.8	-49.0	±	100.0	50.0	±	744.8
6/16/2015	-12.0	±	74.5	4.0	±	12.2	2.0	±	19.6	460.0	±	215.6	-12.0	±	56.8	380.0	±	490.0
6/23/2015	38.0	±	84.3	0.9	±	11.4	-4.0	±	21.6	680.0	±	294.0	-31.0	±	62.7	-200.0	±	548.8
7/7/2015	-12.0	±	23.0	-3.2	±	3.6	1.8	±	5.7	285.0	±	73.0	-3.0	±	13.0	-70.0	±	150.0
7/14/2015	88.0	±	40.0	-0.4	±	6.8	-1.5	±	5.9	810.0	±	160.0	-10.2	±	7.2	470.0	±	190.0
7/21/2015	-21.0	±	47.0	-6.7	±	7.2	-9.5	±	8.4	660.0	±	150.0	-11.0	±	13.0	340.0	±	240.0
7/27/2015	-40.0	±	58.0	3.6	±	8.3	-8.0	±	10.0	750.0	±	180.0	2.0	±	23.0	-20.0	±	310.0
8/4/2015	-53.0	±	45.0	1.7	±	6.4	-3.7	±	8.6	320.0	±	130.0	2.0	±	15.0	150.0	±	220.0
8/11/2015	59.0	±	50.0	-10.0	±	8.7	5.3	±	8.1	560.0	±	160.0	-27.0	±	14.0	50.0	±	240.0
8/18/2015	-7.0	±	49.0	8.7	±	7.5	-7.3	±	9.0	500.0	±	150.0	16.0	±	16.0	30.0	±	240.0
8/25/2015	18.0	±	41.0	-11.5	±	7.4	0.1	±	9.4	810.0	±	140.0	34.0	±	16.0	30.0	±	240.0
8/31/2015	75.0	±	50.0	-5.2	±	7.2	21.7	±	9.3	570.0	±	170.0	-3.0	±	17.0	-190.0	±	290.0
9/8/2015	-41.0	±	40.0	0.4	±	6.4	-0.9	±	7.9	570.0	±	140.0	14.0	±	15.0	160.0	±	220.0
9/15/2015	19.0	±	50.0	0.7	±	7.2	0.3	±	9.0	500.0	±	140.0	-15.0	±	16.0	130.0	±	250.0
9/22/2015	-38.0	±	47.0	6.0	±	6.4	7.7	±	8.5	610.0	±	160.0	28.0	±	16.0	-140.0	±	240.0
9/29/2015	-30.0	±	46.0	-2.5	±	6.9	1.2	±	7.9	520.0	±	150.0	-1.0	±	16.0	-20.0	±	250.0
10/5/2015	-45.0	±	53.0	15.8	±	7.5	11.0	±	16.0	570.0	±	170.0	-58.0	±	51.0	-450.0	±	370.0
10/13/2015	-11.0	±	39.0	5.1	±	5.8	2.6	±	7.6	470.0	±	130.0	-1.0	±	16.0	-10.0	±	230.0
10/20/2015	-39.0	±	51.0	-11.9	±	7.5	2.9	±	8.4	730.0	±	150.0	-8.0	±	13.0	540.0	±	230.0
10/27/2015	33.0	±	47.0	1.5	±	7.0	-1.0	±	8.7	430.0	±	150.0	8.0	±	16.0	150.0	±	240.0
11/2/2015	32.0	±	54.0	2.5	±	8.1	11.0	±	11.0	730.0	±	180.0	-26.0	±	24.0	-150.0	±	300.0
11/10/2015	10.0	±	42.0	4.4	±	5.8	-9.3	±	7.9	340.0	±	120.0	44.0	±	15.0	-280.0	±	220.0
11/17/2015	-88.0	±	46.0	3.3	±	6.6	14.6	±	7.6	560.0	±	160.0	13.0	±	12.0	10.0	±	230.0
11/23/2015	-48.0	±	55.0	9.9	±	7.7	24.1	±	8.9	720.0	±	160.0	16.0	±	14.0	-370.0	±	260.0
11/30/2015	-26.0	±	46.0	5.1	±	6.8	7.9	±	9.1	560.0	±	140.0	28.0	±	19.0	20.0	±	260.0
12/8/2015	52.0	±	39.0	2.8	±	5.9	-9.8	±	8.4	740.0	±	130.0	-12.0	±	17.0	470.0	±	230.0
12/15/2015	128.0	±	51.0	-1.5	±	6.5	-3.3	±	9.2	440.0	±	150.0	-5.0	±	17.0	-130.0	±	250.0
12/22/2015	72.0	±	49.0	2.7	±	7.3	1.0	±	10.0	490.0	±	130.0	10.0	±	21.0	150.0	±	270.0

*U is Uncertainty at a 95% confidence level.

Table G-10. Summary of Ambient Gamma Results for Zion Area

Location	Quarter 1 mrem/day	Quarter 2 mrem/day	Quarter 3 mrem/day	Quarter 4 mrem/day	Annual Dose mrem/year
ZN039	0.056	0.082	0.074	0.069	25.64
ZN040	0.064	0.089	0.086	0.083	29.38
ZN045	0.055	0.06	0.058	0.069	22.08
ZN065	0.066	0.074	0.067	0.083	26.46
ZN066	0.091	0.085	0.1	0.091	33.49
ZN067	0.052	0.066	0.054	0.058	20.99
ZN068	0.077	0.087	0.085	0.069	29.02
ZN069	0.065	0.082	0.067	0.076	26.46
ZN070	0.057	0.071	0.062		23.12
ZN071	0.072	0.11	0.113	0.084	34.58
ZN072	0.059	0.073	0.069	0.064	24.18
ZN073	0.054	0.074	0.084	0.063	25.09
ZN074	0.054	0.073	0.067	0.048	22.08
ZN075	0.087	0.11	0.11	0.1	37.14
ZN076	0.069	0.107	0.082	0.103	32.94
ZN077	0.082	0.113	0.102	0.088	35.13
ZN078	0.083	0.083	0.096	0.089	32.03
ZN079	0.07	0.1	0.105	0.085	32.85
ZN080	0.081	0.108	0.088	0.085	33.03
ZN081	0.081	0.107	0.104	0.079	33.85
ZN082	0.062	0.073	0.064	0.055	23.18
ZN083	0.666	0.76	0.714	0.631	252.85
ZN084	0.055	0.081	0.064	0.057	23.45
ZN-RSJC	0.118	0.239	0.195	0.198	68.44
ZN-RSNC	0.065	0.052	0.061	0.06	21.72
ZN-RSRC	0.044				16.06

The elevated dose rates for locations ZN083 and ZN-RSJC are due to their proximity to the Independent Spent Fuel Storage Installation (ISFSI). Location ZN083 is on the fence of the ISFSI and location ZN-RSJC is slightly further away from the storage pad than ZN083. Though annual dose rates for these two locations are elevated, they are below regulated limits stipulated in Zion Solutions license and have limited public access.

Blanks in the table indicate that dosimeters were missing at the end of the quarter.
Annual Dose column based on averages of all available data.

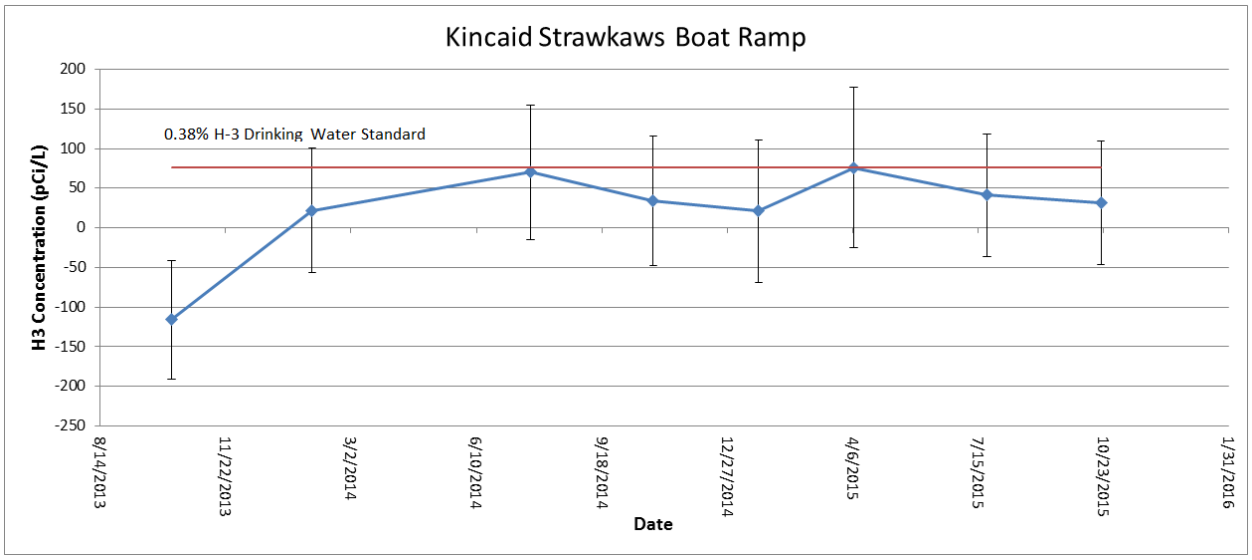
Appendix H
Background Reference Site Results

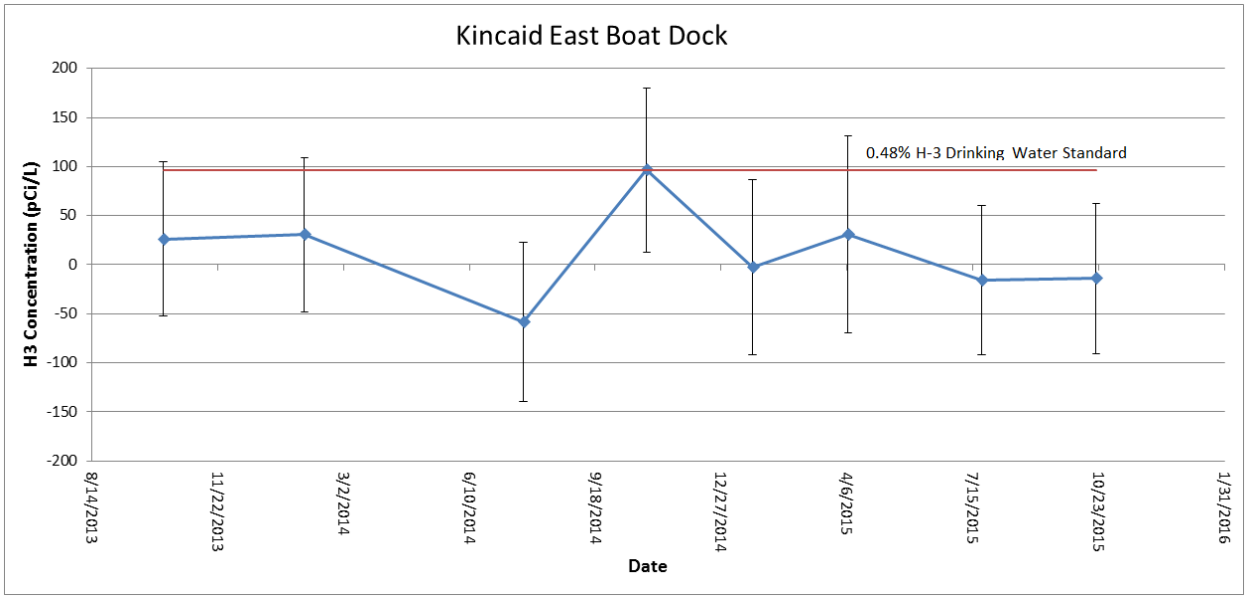
Table H-1. Tritium in Water Sample Results for Background Reference Area
Results are in picocuries per liter (pCi/L)

Location	Date	Result		*U
Kincaid Strawkaws Boat Ramp	1/21/2015	21.0	±	90.1
Kincaid Strawkaws Boat Ramp	4/7/2015	75.9	±	101.0
Kincaid Strawkaws Boat Ramp	7/22/2015	41.1	±	77.8
Kincaid Strawkaws Boat Ramp	10/21/2015	32.1	±	77.9
Kincaid East Boat Dock	1/21/2015	-2.3	±	89.5
Kincaid East Boat Dock	4/7/2015	30.8	±	100.0
Kincaid East Boat Dock	7/22/2015	-16.0	±	76.1
Kincaid East Boat Dock	10/21/2015	-13.8	±	76.6
Kincaid West Boat Ramp	1/21/2015	37.4	±	90.5
Kincaid West Boat Ramp	4/7/2015	45.1	±	100.0
Kincaid West Boat Ramp	7/22/2015	63.9	±	78.4
Kincaid West Boat Ramp	10/21/2015	18.4	±	77.5

*U is Uncertainty at a 95% confidence level.

Tables H-2. Trending Graphs for Water from the Background Reference Area
(Highest results on graphs indicate percentage of US EPA Drinking Water Standard)





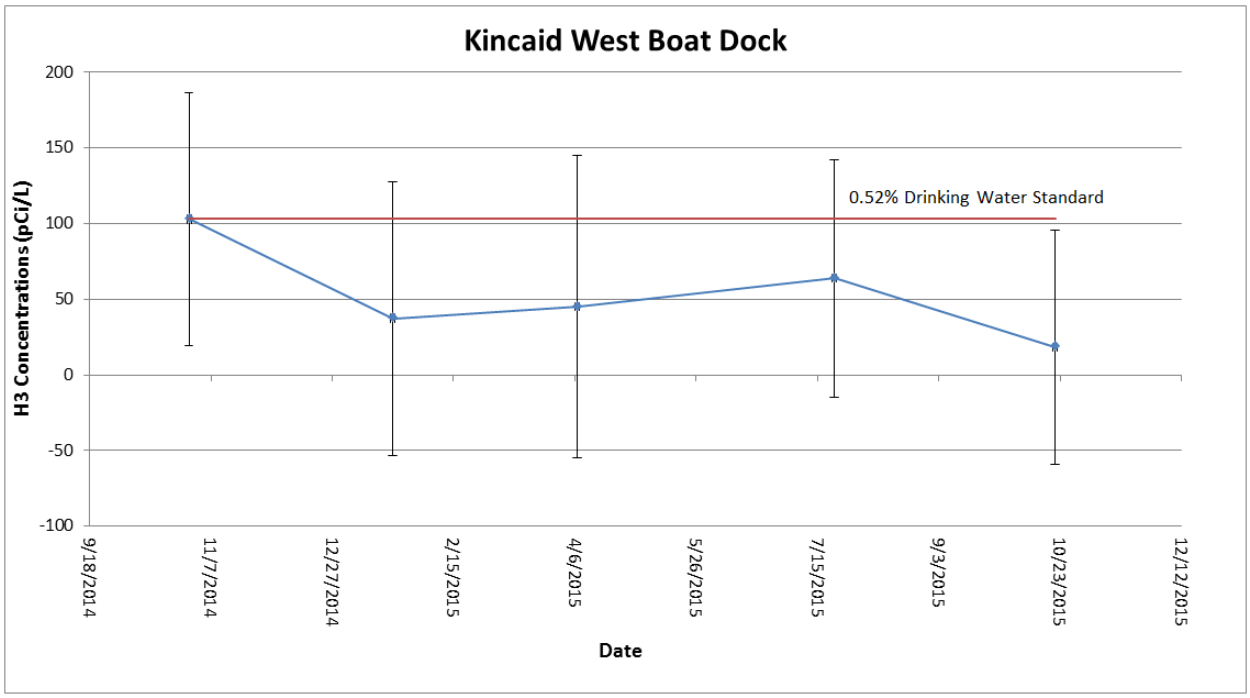


Table H-2. Sample Results for Alpha/Beta Screening of Water from the Background Reference Area
Results are in picocuries per liter (pCi/L)

Location / Date	Alpha Result		Alpha *U	Beta Result		Beta *U
Kincaid East Boat Dock						
1/21/2015	0.4	±	1.3	3.9	±	2.7
4/7/2015	1.0	±	1.4	1.0	±	2.1
7/22/2015	-0.2	±	1.3	2.9	±	2.3
10/21/2015	-0.6	±	1.4	4.4	±	2.2
Kincaid Strawkaws Boat Ramp						
1/21/2015	0.6	±	1.4	5.8	±	2.7
4/7/2015	0.6	±	1.4	0.9	±	2.1
7/22/2015	0.1	±	1.4	2.5	±	2.3
10/21/2015	0.4	±	1.4	3.9	±	2.2
Kincaid West Boat Ramp						
1/21/2015	0.9	±	1.4	1.8	±	2.6
4/7/2015	2.2	±	1.5	1.8	±	2.1
7/22/2015	0.6	±	1.4	1.1	±	2.2
10/21/2015	0.0	±	1.4	4.2	±	2.2

*U is Uncertainty at a 95% confidence level.

Table H-3. Gamma Spectroscopy Sample Results for Other Radionuclides in Water from the Background Reference Area
Results are in picocuries per liter (pCi/L)

Location	Ba-140			Be-7			Co-58			Co-60			Cs-134			Cs-137			Fe-59		
Date	Result		*U	Result		*U	Result		*U	Result		*U	Result		*U	Result		*U	Result		*U
Kincaid East Boat Dock																					
1/21/2015	2.6	±	11.8	-3.3	±	12.9	-1.6	±	1.9	1.3	±	2.0	1.7	±	1.8	-0.1	±	1.8	1.0	±	4.3
4/7/2015	-4.6	±	14.5	7.0	±	19.6	0.1	±	2.5	-1.9	±	2.7	-0.6	±	2.5	1.6	±	2.5	1.9	±	4.7
7/22/2015	16.8	±	9.0	7.3	±	9.9	1.1	±	1.1	1.7	±	1.1	3.1	±	1.1	0.0	±	1.0	1.7	±	2.8
10/21/2015	-13.0	±	12.0	-28.0	±	11.0	3.0	±	1.4	0.0	±	1.4	0.8	±	1.4	-1.1	±	1.1	-0.9	±	3.6
Kincaid Strawkaws Boat Ramp																					
1/21/2015	-9.0	±	12.2	14.1	±	16.5	-0.7	±	2.0	-0.6	±	2.2	-2.1	±	2.2	0.2	±	1.9	1.0	±	3.9
4/7/2015	6.8	±	13.1	-2.8	±	17.6	0.0	±	2.2	-0.3	±	2.2	0.7	±	2.2	0.1	±	1.7	-0.7	±	4.7
7/22/2015	4.0	±	11.0	-9.0	±	11.0	-1.5	±	1.4	-2.2	±	1.5	3.2	±	1.3	0.5	±	1.1	1.3	±	3.9
10/21/2015	2.0	±	10.0	-10.4	±	9.0	0.1	±	1.0	0.0	±	0.9	0.2	±	1.0	0.5	±	0.8	3.8	±	2.2
Kincaid West Boat Ramp																					
1/21/2015	-1.4	±	11.6	-1.2	±	15.9	0.1	±	1.9	0.2	±	1.7	1.6	±	1.9	0.0	±	1.6	-2.2	±	3.7
4/7/2015	-7.1	±	12.7	3.0	±	15.7	-0.5	±	2.2	1.0	±	1.9	-0.3	±	1.8	0.2	±	1.6	-0.3	±	3.9
7/22/2015	-1.8	±	9.0	-4.1	±	8.7	0.8	±	1.2	0.7	±	1.0	-0.7	±	0.9	-1.0	±	0.9	0.8	±	2.2
10/21/2015	18.0	±	12.0	-6.0	±	10.0	-1.0	±	1.2	0.6	±	1.3	-0.5	±	1.1	1.6	±	1.0	2.3	±	3.1

Location	I-131			K-40			Mn-54			Nb-95			Zn-65			Zr-95		
Date	Result		*U	Result		*U	Result		*U	Result		*U	Result		*U	Result		*U
Kincaid East Boat Dock																		
1/21/2015	0.1	±	3.9	-26.0	±	33.3	0.0	±	1.7	-1.3	±	2.2	-0.5	±	4.5	-1.8	±	3.1
4/7/2015	2.2	±	6.5	15.0	±	31.4	-1.6	±	2.5	3.3	±	2.7	2.2	±	4.5	-1.2	±	4.7
7/22/2015	-5.5	±	5.1	60.0	±	13.0	-0.1	±	1.2	0.9	±	1.5	3.2	±	2.6	-0.6	±	2.1
10/21/2015	-4.5	±	5.6	26.0	±	17.0	-1.6	±	1.3	0.1	±	1.9	0.8	±	3.3	-2.9	±	2.9
Kincaid Strawkaws Boat Ramp																		
1/21/2015	5.4	±	4.7	-11.0	±	23.5	-0.8	±	1.9	0.4	±	2.2	0.0	±	3.9	0.2	±	3.5
4/7/2015	-2.3	±	6.3	43.0	±	27.4	-0.2	±	2.2	-0.2	±	2.5	1.1	±	3.7	-4.5	±	3.9
7/22/2015	-1.0	±	5.0	76.0	±	14.0	0.4	±	1.2	0.8	±	1.7	3.3	±	3.1	-0.8	±	2.7
10/21/2015	3.4	±	6.1	30.1	±	9.3	-1.0	±	0.9	-0.8	±	1.3	-1.8	±	2.1	-0.5	±	1.9
Kincaid West Boat Ramp																		
1/21/2015	-0.7	±	5.1	-11.5	±	19.4	-1.0	±	1.8	0.9	±	2.2	0.5	±	3.7	-2.1	±	3.5
4/7/2015	-3.6	±	5.7	24.0	±	31.4	-0.8	±	2.0	0.8	±	2.0	-2.9	±	3.9	-1.9	±	3.1
7/22/2015	-1.0	±	4.7	-25.0	±	15.0	0.0	±	0.9	1.4	±	1.2	-1.7	±	2.2	-0.2	±	1.5
10/21/2015	-5.1	±	7.0	46.0	±	14.0	-3.1	±	1.3	2.9	±	1.3	0.0	±	2.6	2.2	±	2.0

*U is Uncertainty at a 95% confidence level.

Table H-4. Soil Sample Results for Background Reference Area
Results are in picocuries per gram (pCi/g)

Location / Date	Ac-228 Result	Ac-228 *U	Ba-140 Result	Ba-140 *U	Bi-212 Result	Bi-212 *U	Bi-214 Result	Bi-214 *U	Co-58 Result	Co-58 *U	Co-60 Result	Co-60 *U	Cs-134 Result	Cs-134 *U	Cs-137 Result	Cs-137 *U	Fe-59 Result	Fe-59 *U	K-40 Result	K-40 *U	Mn-54 Result	Mn-54 *U
Kincaid East Boat Dock																						
4/7/2015	1.0	0.1	0.2	0.6	1.4	0.3	1.2	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.1	15.3	1.0	0.0	0.0
7/22/2015	1.1	0.0	0.0	0.0	0.9	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	15.9	0.2	0.0	0.0
Kincaid Strawkaws Boat Ramp																						
7/22/2015	1.1	0.0	0.0	0.0	1.1	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	16.3	0.3	0.0	0.0
Kincaid West Boat Ramp																						
4/7/2015	1.1	0.0	0.0	0.0	0.9	0.1	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	15.1	0.5	0.0	0.0
7/22/2015	1.1	0.0	0.0	0.0	1.0	0.1	1.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	16.3	0.3	0.0	0.0

Location / Date	Nb-95 Result	Nb-95 *U	Pa-234m Result	Pa-234m *U	Pb-210 Result	Pb-210 *U	Pb-212 Result	Pb-212 *U	Pb-214 Result	Pb-214 *U	RA-226 Result	RA-226 *U	Th-234 Result	Th-234 *U	Tl-208 Result	Tl-208 *U	U-235 Result	U-235 *U	Zn-65 Result	Zn-65 *U	Zr-95 Result	Zr-95 *U
Kincaid East Boat Dock																						
4/7/2015	0.0	0.0	1.6	2.4	1.7	0.4	1.0	0.1	1.2	0.1	1.6	1.6	0.9	0.2	0.9	0.1	0.0	0.1	0.0	0.0	-0.1	0.0
7/22/2015	0.0	0.0	1.2	0.4	1.7	4.3	1.1	0.0	1.2	0.0	1.7	0.4	0.9	0.1	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kincaid Strawkaws Boat Ramp																						
7/22/2015	0.0	0.0	0.6	0.3	4.1	0.2	1.1	0.0	1.1	0.0	2.1	0.1	1.1	0.2	1.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Kincaid West Boat Ramp																						
4/7/2015	0.0	0.0	0.9	0.8	1.5	0.1	1.0	0.0	1.0	0.0	1.9	0.5	0.8	0.1	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7/22/2015	0.0	0.0	1.2	0.4	1.8	0.2	1.1	0.0	1.1	0.0	2.0	0.1	0.9	0.2	1.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0

*U is Uncertainty at a 95% confidence level.

Table H-5. Sediment Sample Results for Background Reference Area
Results are in picocuries per gram (pCi/g)

Location / Date	Ac-228 Result	Ac-228 *U	Ba-140 Result	Ba-140 *U	Bi-212 Result	Bi-212 *U	Bi-214 Result	Bi-214 *U	Co-58 Result	Co-58 *U	Co-60 Result	Co-60 *U	Cs-134 Result	Cs-134 *U	Cs-137 Result	Cs-137 *U	Fe-59 Result	Fe-59 *U	K-40 Result	K-40 *U	Mn-54 Result	Mn-54 *U
Kincaid East Boat Dock																						
4/7/2015	0.8	0.1	0.0	0.5	1.0	0.2	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	15.1	0.9	0.0	0.0
7/24/2015	0.8	0.0	0.0	0.0	0.7	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.5	0.2	0.0	0.0
Kincaid West Boat Ramp																						
4/7/2015	0.7	0.1	-0.5	0.5	0.8	0.3	0.8	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	13.9	0.9	0.0	0.0
7/24/2015	0.8	0.0	0.0	0.0	0.6	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.8	0.2	0.0	0.0

Location / Date	Nb-95 Result	Nb-95 *U	Pa-234m Result	Pa-234m *U	Pb-210 Result	Pb-210 *U	Pb-212 Result	Pb-212 *U	Pb-214 Result	Pb-214 *U	Ra-226 Result	Ra-226 *U	Th-234 Result	Th-234 *U	Tl-208 Result	Tl-208 *U	U-235 Result	U-235 *U	Zn-65 Result	Zn-65 *U	Zr-95 Result	Zr-95 *U
Kincaid East Boat Dock																						
4/7/2015	0.0	0.0	0.9	1.6	0.9	0.8	0.8	0.0	0.7	0.0	1.0	0.4	0.5	0.2	0.7	0.1	0.1	0.0	0.0	0.0	0.0	0.0
7/24/2015	0.0	0.0	0.6	0.3	1.4	0.2	0.7	0.0	0.6	0.0	1.0	0.3	0.6	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kincaid West Boat Ramp																						
4/7/2015	0.0	0.0	2.0	2.0	0.8	0.6	0.5	0.1	0.8	0.0	1.3	0.3	0.9	0.5	0.7	0.1	0.1	0.0	0.0	0.0	0.0	0.0
7/24/2015	0.0	0.0	0.3	0.3	6.6	3.2	0.8	0.0	0.7	0.0	1.3	0.1	0.4	0.0	0.7	0.0	0.1	0.0	0.0	0.0	0.0	0.0

*U is Uncertainty at a 95% confidence level.

Table H-6. Fish Sample Results for Background Reference Area
Results are in picocuries per kilogram (pCi/kg)

Location	Ba-140		Be-7		Co-58		Co-60		Cs-134		Cs-137		Fe-59		I-131		K-40		Mn-54		Nb-95		Zn-65		Zr-95	
Date	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U
Kincaid Sangchris Lake Bottom Feeder																										
10/6/2015	-28.0	25.0	-38.0	41.0	-5.7	6.2	13.7	6.9	7.0	6.4	7.2	6.1	7.0	12.0	-16.4	9.1	3480.0	160.0	-10.1	6.3	-0.3	6.5	21.0	11.0	-24.0	11.0
Kincaid Sangchris Lake Top Feeder																										
10/6/2015	26.0	43.0	65.0	69.0	1.0	11.0	-11.0	14.0	1.0	11.0	9.7	8.2	28.0	23.0	1.0	12.0	3300.0	210.0	-5.0	11.0	-7.0	12.0	-42.0	28.0	2.0	17.0

*U is Uncertainty at a 95% confidence level.

Table H-7. Vegetation Sample Results for Background Reference Area
Results are in picocuries per kilogram (pCi/kg)

Location	Ba-140		Be-7		Co-58		Co-60		Cs-134		Cs-137		Fe-59		I-131		K-40		Mn-54		Nb-95		Zn-65		Zr-95	
Date	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U
Kincaid East Boat Dock																										
4/7/2015	0.0	0.2	11.2	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	4.0	0.8	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1
7/24/2015	0.1	0.1	4.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	7.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kincaid Strawkaws Boat Ramp																										
7/24/2015	0.1	0.5	5.7	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.5	0.3	26.5	0.9	0.0	0.0	0.1	0.1	0.0	0.1	0.0	0.1
Kincaid West Boat Ramp																										
4/7/2015	0.0	0.2	9.8	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	1.1	0.9	0.0	0.0	0.0	0.0	-0.1	0.1	0.0	0.1
7/24/2015	-0.4	0.3	10.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	-0.1	0.2	17.4	0.6	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0

*U is Uncertainty at a 95% confidence level.

Table H-8. Alpha / Beta Screening Results for Air Samples in the Springfield Area
Results are in picocuries per liter (pCi/L)

Location	Alpha			Beta		
Date	Result		*U	Result		*U
Knotts Street, Springfield						
1/5/2015	0.5	±	0.7	29.3	±	2.6
1/12/2015	1.7	±	0.8	26.6	±	2.6
1/20/2015	0.0	±	0.5	32.7	±	2.4
1/26/2015	0.6	±	0.8	17.3	±	2.6
2/2/2015	0.8	±	0.6	16.6	±	2.2
2/9/2015	0.9	±	0.7	29.0	±	2.6
2/17/2015	-0.4	±	0.4	0.1	±	1.4
2/23/2015	2.4	±	1.0	55.8	±	3.5
3/2/2015	1.3	±	0.7	25.2	±	2.5
3/9/2015	0.8	±	0.7	24.2	±	2.5
3/16/2015	1.0	±	0.8	24.1	±	2.6
3/23/2015	1.5	±	0.7	18.0	±	2.2
3/30/2015	0.7	±	0.6	22.4	±	2.3
4/6/2015	1.1	±	0.7	16.7	±	2.2
4/13/2015	1.9	±	0.8	24.4	±	2.4
4/20/2015	1.4	±	0.7	22.6	±	2.3
4/27/2015	1.4	±	0.7	19.1	±	2.2
5/4/2015	2.2	±	0.8	23.3	±	2.4
5/11/2015	1.5	±	0.8	23.9	±	2.5
5/18/2015	0.9	±	0.6	16.3	±	2.1
5/26/2015	1.1	±	0.6	19.0	±	2.0
6/1/2015	1.1	±	0.7	14.5	±	2.3
6/8/2015	1.4	±	0.7	24.3	±	2.3
6/15/2015	2.5	±	0.9	25.2	±	2.5
6/22/2015	2.4	±	0.8	19.4	±	2.2
6/29/2015	1.9	±	0.8	16.9	±	2.2

Location	Alpha			Beta		
Date	Result		*U	Result		*U
Knotts Street, Springfield						
7/6/2015	3.3	±	0.9	26.3	±	2.5
7/13/2015	2.0	±	0.8	15.8	±	2.2
7/20/2015	2.1	±	0.8	27.3	±	2.5
7/27/2015	2.2	±	0.9	21.7	±	2.4
8/3/2015	2.7	±	0.9	32.3	±	2.6
8/10/2015	1.5	±	0.7	34.2	±	2.7
8/17/2015	1.9	±	0.8	35.6	±	2.8
8/24/2015	1.1	±	0.7	28.5	±	2.5
8/31/2015	0.7	±	0.7	29.9	±	2.6
9/8/2015	3.8	±	1.0	62.4	±	3.1
9/14/2015	0.8	±	0.8	20.7	±	2.5
9/21/2015	1.1	±	0.7	28.2	±	2.4
9/28/2015	0.8	±	0.7	30.3	±	2.6
10/5/2015	0.5	±	0.6	20.0	±	2.3
10/13/2015	2.7	±	0.8	30.8	±	2.3
10/19/2015	1.0	±	0.7	19.7	±	2.5
10/26/2015	2.3	±	0.9	44.1	±	2.9
11/2/2015	1.0	±	0.6	26.7	±	2.5
11/9/2015	3.3	±	0.9	25.4	±	2.4
11/16/2015	1.9	±	0.8	35.6	±	2.7
11/23/2015	0.6	±	0.6	18.5	±	2.1
11/30/2015	1.4	±	0.7	25.9	±	2.5
12/7/2015	3.3	±	0.9	37.0	±	2.8
12/14/2015	3.3	±	0.9	46.7	±	3.1
12/21/2015	1.4	±	0.7	25.5	±	2.4
12/29/2015	1.9	±	0.7	28.6	±	2.2

*U is Uncertainty at a 95% confidence level.

Table H-9. Gamma Spectroscopy Sample Results for Other Radionuclides in Air from the Background Reference Area
Results are in picocuries per liter (pCi/L)

Location	Be-7		Cs-137		I-131		K-40		Te-132		Xe-131m	
Date	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U	Result	*U
Knotts Street, Springfield												
1/5/2015	190.0 ±	725.2	-36.0 ±	74.5	-9.0 ±	113.7	740.0 ±	1156.4	±		-500.0 ±	2744.0
1/12/2015	19.0 ±	84.3	4.6 ±	12.7	17.5 ±	14.7	1110.0 ±	294.0	10.7 ±	17.4	-90.0 ±	450.8
1/20/2015	-45.0 ±	88.2	-3.5 ±	12.7	6.2 ±	14.7	920.0 ±	274.4	9.0 ±	25.5	240.0 ±	411.6
1/26/2015	-120.0 ±	115.6	-5.0 ±	18.2	5.3 ±	16.3	1050.0 ±	313.6	-15.4 ±	19.4	-30.0 ±	490.0
2/2/2015	5.0 ±	96.0	-15.6 ±	14.5	-7.8 ±	18.6	680.0 ±	313.6	3.0 ±	33.3	260.0 ±	490.0
2/9/2015	65.0 ±	86.2	8.5 ±	13.5	-2.9 ±	13.7	390.0 ±	313.6	0.4 ±	17.4	270.0 ±	411.6
2/17/2015	-18.0 ±	72.5	-0.3 ±	14.1	4.0 ±	12.9	570.0 ±	313.6	5.2 ±	15.7	40.0 ±	372.4
2/23/2015	-19.0 ±	115.6	3.3 ±	18.0	-1.2 ±	17.6	920.0 ±	372.4	14.0 ±	25.5	120.0 ±	509.6
3/2/2015	150.0 ±	84.3	-0.7 ±	16.9	-10.6 ±	17.6	840.0 ±	333.2	-9.0 ±	31.4	210.0 ±	490.0
3/9/2015	-69.0 ±	88.2	8.1 ±	14.7	1.4 ±	19.2	570.0 ±	313.6	1.0 ±	39.2	270.0 ±	548.8
3/16/2015	3.0 ±	98.0	-2.7 ±	16.1	-22.6 ±	18.8	770.0 ±	313.6	-23.0 ±	33.3	-350.0 ±	490.0
3/23/2015	-26.0 ±	90.2	-3.9 ±	12.5	-9.4 ±	19.2	630.0 ±	294.0	-23.0 ±	39.2	80.0 ±	529.2
4/6/2015	100.0 ±	92.1	1.9 ±	14.1	1.2 ±	18.0	390.0 ±	313.6	6.0 ±	31.4	70.0 ±	490.0
4/13/2015	-65.0 ±	98.0	1.6 ±	14.7	2.7 ±	16.3	580.0 ±	294.0	-29.0 ±	31.4	-70.0 ±	470.4
4/20/2015	-25.0 ±	84.3	-9.9 ±	15.1	3.2 ±	14.7	540.0 ±	294.0	15.0 ±	25.5	370.0 ±	470.4
4/27/2015	-32.0 ±	90.2	-2.7 ±	13.7	2.9 ±	16.1	670.0 ±	294.0	0.0 ±	31.4	30.0 ±	470.4
5/4/2015	0.0 ±	94.1	-11.2 ±	13.9	24.0 ±	23.5	740.0 ±	313.6	-21.0 ±	76.4	-210.0 ±	607.6
5/11/2015	76.0 ±	84.3	-13.0 ±	14.7	2.5 ±	16.3	510.0 ±	294.0	16.0 ±	25.5	220.0 ±	431.2
5/18/2015	-23.0 ±	86.2	4.4 ±	14.9	1.0 ±	19.6	700.0 ±	294.0	30.0 ±	39.2	-310.0 ±	509.6
5/27/2015	-43.0 ±	82.3	-4.9 ±	11.4	10.2 ±	14.7	520.0 ±	254.8	-17.0 ±	29.4	-130.0 ±	470.4
6/1/2015	74.0 ±	90.2	11.8 ±	14.9	-18.0 ±	21.6	710.0 ±	372.4	57.0 ±	39.2	300.0 ±	509.6
6/8/2015	-25.0 ±	98.0	13.5 ±	12.5	8.0 ±	25.5	750.0 ±	274.4	-1.0 ±	78.4	100.0 ±	627.2
6/15/2015	-9.0 ±	100.0	-2.4 ±	12.5	-1.0 ±	23.5	790.0 ±	313.6	28.0 ±	72.5	70.0 ±	627.2
6/22/2015	-90.0 ±	92.1	-5.9 ±	12.5	21.0 ±	23.5	690.0 ±	313.6	97.0 ±	72.5	80.0 ±	588.0
7/6/2015	13.0 ±	48.0	-0.4 ±	7.0	2.7 ±	9.3	530.0 ±	160.0	8.0 ±	21.0	120.0 ±	270.0
7/13/2015	-66.0 ±	50.0	3.4 ±	7.1	4.4 ±	9.0	510.0 ±	150.0	-10.0 ±	17.0	210.0 ±	250.0
7/20/2015	14.0 ±	49.0	-1.1 ±	7.0	-4.3 ±	9.4	630.0 ±	160.0	-39.0 ±	18.0	-170.0 ±	260.0
7/27/2015	-34.0 ±	47.0	-6.6 ±	8.3	3.3 ±	9.8	570.0 ±	150.0	-26.0 ±	21.0	230.0 ±	270.0
8/3/2015	9.0 ±	50.0	4.1 ±	6.6	4.9 ±	10.0	680.0 ±	150.0	-4.0 ±	21.0	80.0 ±	270.0
8/10/2015	29.0 ±	53.0	-6.0 ±	6.9	-4.1 ±	8.0	610.0 ±	150.0	-5.0 ±	17.0	-300.0 ±	260.0
8/17/2015	-49.0 ±	47.0	-8.0 ±	7.5	25.0 ±	10.0	570.0 ±	150.0	-3.0 ±	21.0	-80.0 ±	270.0
8/24/2015	45.0 ±	47.0	-4.7 ±	8.2	-1.0 ±	10.0	300.0 ±	140.0	-9.0 ±	21.0	530.0 ±	260.0
8/31/2015	-81.0 ±	50.0	1.7 ±	8.2	0.9 ±	8.6	620.0 ±	160.0	-21.0 ±	17.0	250.0 ±	250.0
9/8/2015	1.0 ±	44.0	0.4 ±	6.8	-12.3 ±	8.1	350.0 ±	130.0	9.0 ±	15.0	130.0 ±	230.0
9/14/2015	38.0 ±	57.0	5.8 ±	8.0	-6.0 ±	11.0	900.0 ±	190.0	4.0 ±	21.0	540.0 ±	280.0
9/21/2015	-51.0 ±	51.0	-2.4 ±	6.3	-5.0 ±	10.0	670.0 ±	150.0	24.0 ±	20.0	30.0 ±	260.0
9/28/2015	86.0 ±	45.0	-4.5 ±	7.5	8.0 ±	8.6	600.0 ±	160.0	25.0 ±	21.0	310.0 ±	270.0
10/5/2015	-40.0 ±	49.0	3.5 ±	6.8	17.0 ±	13.0	670.0 ±	140.0	-83.0 ±	45.0	290.0 ±	340.0
10/13/2015	63.0 ±	38.0	-11.4 ±	7.4	-6.3 ±	8.2	420.0 ±	130.0	13.0 ±	15.0	290.0 ±	220.0
10/19/2015	-29.0 ±	55.0	0.2 ±	8.1	-2.5 ±	9.1	1160.0 ±	180.0	2.0 ±	17.0	-20.0 ±	290.0
10/26/2015	40.0 ±	47.0	6.3 ±	6.6	-5.7 ±	9.7	610.0 ±	150.0	0.0 ±	21.0	130.0 ±	280.0
11/2/2015	-74.0 ±	51.0	6.5 ±	6.1	-20.0 ±	18.0	830.0 ±	160.0	40.0 ±	52.0	260.0 ±	400.0
11/9/2015	149.0 ±	46.0	15.7 ±	6.7	-3.7 ±	9.2	680.0 ±	150.0	5.0 ±	20.0	240.0 ±	250.0
11/16/2015	36.0 ±	49.0	-13.9 ±	7.0	8.3 ±	8.8	720.0 ±	160.0	22.0 ±	16.0	210.0 ±	260.0
11/23/2015	20.0 ±	46.0	-6.7 ±	7.1	2.6 ±	7.9	830.0 ±	160.0	13.0 ±	13.0	-110.0 ±	230.0
11/30/2015	-69.0 ±	44.0	-7.3 ±	7.0	0.5 ±	8.8	580.0 ±	150.0	-14.0 ±	18.0	-10.0 ±	270.0
12/7/2015	-60.0 ±	51.0	-6.3 ±	7.3	-15.0 ±	10.0	680.0 ±	140.0	-56.0 ±	20.0	-200.0 ±	250.0
12/14/2015	76.0 ±	41.0	6.3 ±	7.2	-10.0 ±	10.0	580.0 ±	150.0	-18.0 ±	22.0	270.0 ±	280.0
12/21/2015	28.0 ±	45.0	2.6 ±	6.9	10.6 ±	8.1	770.0 ±	160.0	-2.0 ±	15.0	20.0 ±	250.0
12/29/2015	87.0 ±	42.0	-3.7 ±	6.2	9.9 ±	7.4	800.0 ±	130.0	15.0 ±	12.0	-40.0 ±	210.0

*U is Uncertainty at a 95% confidence level.

Table H-10. Summary of Ambient Gamma Results for Background Reference Area

Location	Quarter 1 mrem/day	Quarter 2 mrem/day	Quarter 3 mrem/day	Quarter 4 mrem/day	Annual Dose mrem/year
KC-01	0.102	0.112	0.119	0.095	39.06
KC-02	0.102	0.118	0.137	0.117	43.25
KC-03	0.095		0.11	0.112	38.57
KC-04	0.12	0.11	0.123	0.104	41.70
KC-05	0.131	0.12	0.118	0.092	42.07
KC-06	0.085	0.088	0.106	0.076	32.39
KC-07	0.11	0.087	0.112	0.113	38.51
KC-08	0.105	0.101	0.129	0.094	39.15
KC-09	0.105	0.125	0.121	0.099	41.06
KC-10	0.095	0.119	0.108	0.117	40.06
KC-11	0.112	0.12	0.144	0.108	44.17
KC-12	0.114	0.1	0.127	0.118	41.88
KC-13	0.111		0.122	0.108	41.49
KC-14	0.115		0.135	0.11	43.80
KC-15	0.1	0.108	0.135		41.73

Blanks in the table indicate that dosimeters were missing at the end of the quarter.
Annual Dose column based on averages of all available data.

Appendix I
Radionuclide Abbreviations in this Report

Radionuclide Abbreviations

Ac-228	Actinium-228
Ba-140	Barium-140
Be-7	Beryllium-7
Bi-212	Bismuth-212
Bi-214	Bismuth-214
Co-58	Cobalt-58
Co-60	Cobalt-60
Cs-134	Cesium-134
Cs-137	Cesium-137
Fe-59	Iron-59
I-131	Iodine-131
K-40	Potassium-40
Mn-54	Manganese-54
Nb-95	Niobium-95
Pa-234m	Protactinium-234m
Pb-210	Lead-210
Pb-212	Lead-212
Pb-214	Lead-214
Ra-226	Radium-226
Te-132	Tellurium-132
Th-234	Thorium-234
Tl-208	Thallium-208
U-235	Uranium-235
Xe-131m	Xenon-131m
Zn-65	Zinc-65
Zr-95	Zirconium-95