Chem-Nuclear Site
ANNUAL UPDATE
2015

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The Chem-Nuclear Site in Barnwell County has a routine groundwater and surface water monitoring program. Four times each year, groundwater samples are collected from monitoring wells and from locations in Mary's Branch Creek. The information gathered is used to help understand changes in contaminant concentrations within the groundwater plume. The results for tritium are from samples collected during the second quarter of 2015 (April to June). The highest concentration of tritium continues to be found on site at monitoring well WM-0110 (see map on back) where it was 11,900,000 pCi/L (April). The concentration where the groundwater plume enters Mary's Branch Creek (WC- 0002) was 273,000 pCi/L (April).

Surface Water

The surface water "point of compliance" is the point where regulatory limits apply. For the Chem-Nuclear Site this is location WC-0008, measured at Mary's Branch Creek. In April, the level of tritium measured at WC-0008 was 85,100 pCi/L. This is less than the regulatory limit of 500,000 pCi/L and lower than the level measured in April 2014 (121,000 pCi/L). A map showing WC-0008 is provided on the back page. Additional maps are available at **www.scdhec.gov/radwaste**.

The most recent quarterly sampling results (July 2015) indicates the presence of five volatile organic compounds (VOC) in the creek. Chloroform (6.75 µg/L), 1,1-dichloroethane (2.48 µg/L), trichloroethylene (1.76 µg/L), 1,1,2,2-tetrachloroethane (3.96 µg/L) and 1,4-dioxane (391 µg/L) were detected at the concentrations indicated. The concentrations of 1,4-dioxane at WC-0002 and WC-0008 are slightly lower than concentrations in 2014 and are similar to those measured in previous years. The regulatory limit for chloroform is 80 µg/L. The regulatory limit for 1,2-dichloroethane and trichloroethylene is 5 µg/L. Regulatory limits have not been established for 1,1-dichloroethane, 1,1,2,2-tetrachloroethene or 1,4-dioxane.

Trends in Ground Water and Surface Water Data

Chem-Nuclear Site submits an annual trending report each year in September discussing changes in tritium concentrations in groundwater and surface water and changes to the size and shape of the groundwater plume. DHEC reviews the report for accuracy and completeness. In the 2015 annual trending report, 27 monitoring locations (both groundwater and surface water) were evaluated for changes in tritium concentrations. The tritium data indicate that four monitoring locations show no evidence of a trend either up or down, five locations show an upward trend and 18 locations show a downward trend during the most recent 5-year period (third quarter 2010 to second quarter 2015).

Data collected from monitoring well MW-0110 – the most contaminated well – shows that tritium concentrations have not changed significantly over the past 5 years. Previous annual reports confirm that concentrations in MW-0110 have remained stable for the last 10 years. Although concentrations in individual monitoring wells change, the overall size and shape (footprint) of the groundwater plume remains stable. Tritium concentrations at WC-0008 (the surface water point of compliance on Mary's Branch Creek) decreased from the same time last year. Data shows the overall trend in tritium concentrations at WC-0008 has decreased over the 5-year period. The 2015 annual trending data is available at **www.scdhec.gov/radwaste**.

Waste Volumes

Since July 2008, the Chem-Nuclear Site only accepts waste from the three member states of the Atlantic Compact – Connecticut, New Jersey and South Carolina. The monthly waste volume received between July 2008 and October 2014 ranged from 0 cubic feet for July 2011 to 27,631.70 cubic feet for March 2010. The table below shows the total waste volume for each fiscal year (July 1 to June 30) disposed of by the member states since the Atlantic Compact Act established the current limits on waste volume and allowed for the receipt of the out-of-compact waste until July 2008.

FISCAL YEAR	VOLUME (FT^3)
2008-2009	12,865.57
2009-2010	34,458.36
2010-2011	11,333.01
2011-2012	10,277.64
2012-2013	8,737.25
2013-2014	8,319.89
2014-2015	11,127.06

DEFINITIONS

Groundwater – The water found beneath the Earth's surface, usually in aquifers, which supply wells and springs.

Picocuries Per Liter (pCi/L) – A unit of measure of radioactivity.

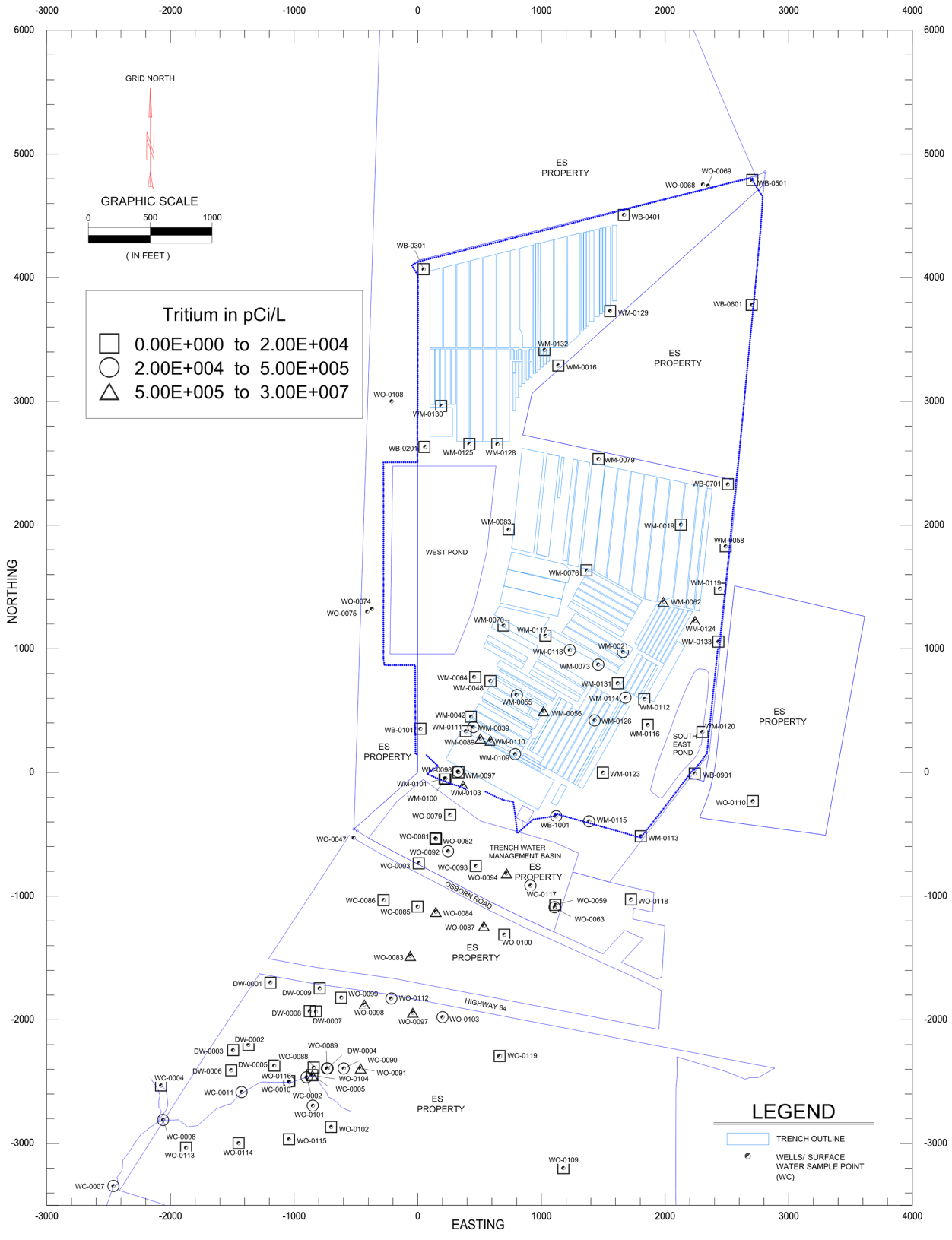
Plume – An area where contamination is detected (or is measurable).

µg/L – A unit of measure for one millionth of a gram per liter or one part per billion (ppb).

Volatile Organic Compounds (or Chemicals) (VOCs) – Chemicals that evaporate readily when exposed to air and are widely used to clean things.

TRITIUM CONCENTRATION MEASURED IN ZONE 2 AND MARY'S BRANCH CREEK

Second Quarter 2015



DHEC CONTACTS

- **Infectious and Radioactive Waste Management Section**
  Bureau of Land and Waste Management
  - **Susan Jenkins**, (803) 898-2631
    jenkinse@dhec.sc.gov

- **Midlands Environmental Quality Control Office – Aiken**
  - **Jennifer Hughes,** (803) 642-1637
    hughesjr@dhec.sc.gov
  - **Kim Brinkley,** (803) 642-1637
    brinklkr@dhec.sc.gov

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