

Middle River Complex Photo Tour - Groundwater Treatment System Construction

Updated November, 2013

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Project Lead

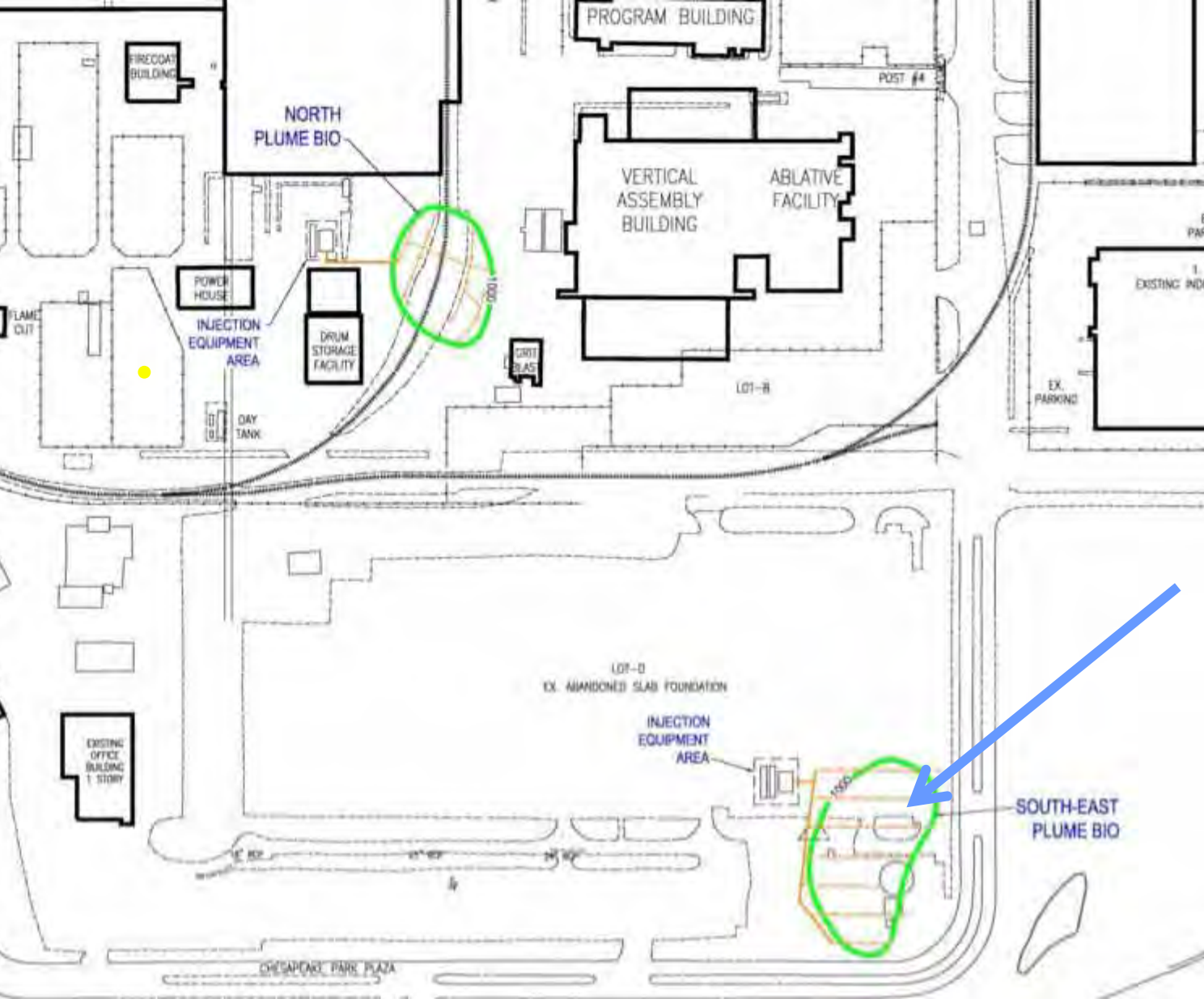
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Trench digging, soil evaluation and removal as needed, and site preparation began in June 2013 in preparation for groundwater treatment system construction. Initial work was performed at Block E, the location of the former Building D, in the area near the water tower.



Block E construction work prepares the Southeast Plume area to build one portion of the groundwater treatment system.



While site work is performed, ongoing safety measures include monitoring for dust in the air and fencing to control erosion. 4



Air monitoring is performed using a portable device, called a Photoionization Detector (PID), to measure levels of volatile organic compounds in the air to ensure site workers, employees and neighbors are always protected.



Challenges faced by the project team included significant amounts of rain in Summer 2013, even causing the water tank to overflow.⁶



**Summer rains
kept trenches
wet.**



Trenching continued as weather improved.



Additional challenges came with the discovery of the first of two unexpected underground tanks.



The first unexpected underground storage tank held waste water and had stored petroleum/diesel. Contents were drained, drummed and tested for proper disposal.



Rain continued to provide challenges.



Erosion control measures are effective as rain continued to provide challenges.



Complications uncovered during construction included discovery of ventilation ducts (left), French drains (below), and other infrastructure located beneath former Building D, which unfortunately served to collect and drain rainwater.





Excessive rain required the use of tanks to store and separate hazardous and nonhazardous water, which was then tested for proper disposal.





**Side walls of
trenches are tested
to determine
remaining levels of
contamination in the
soil.**





A broken storm pipe is discovered and needed repair before being returned to use.



The damaged pipe is repaired.





A second unexpected underground storage tank contained trichloroethene (TCE), water and sediment, requiring additional worker protection measures be taken, and expanded air monitoring to help identify contaminants. The tank contents were drained and properly disposed. TCE, shown on top of mud, was contained and properly disposed.





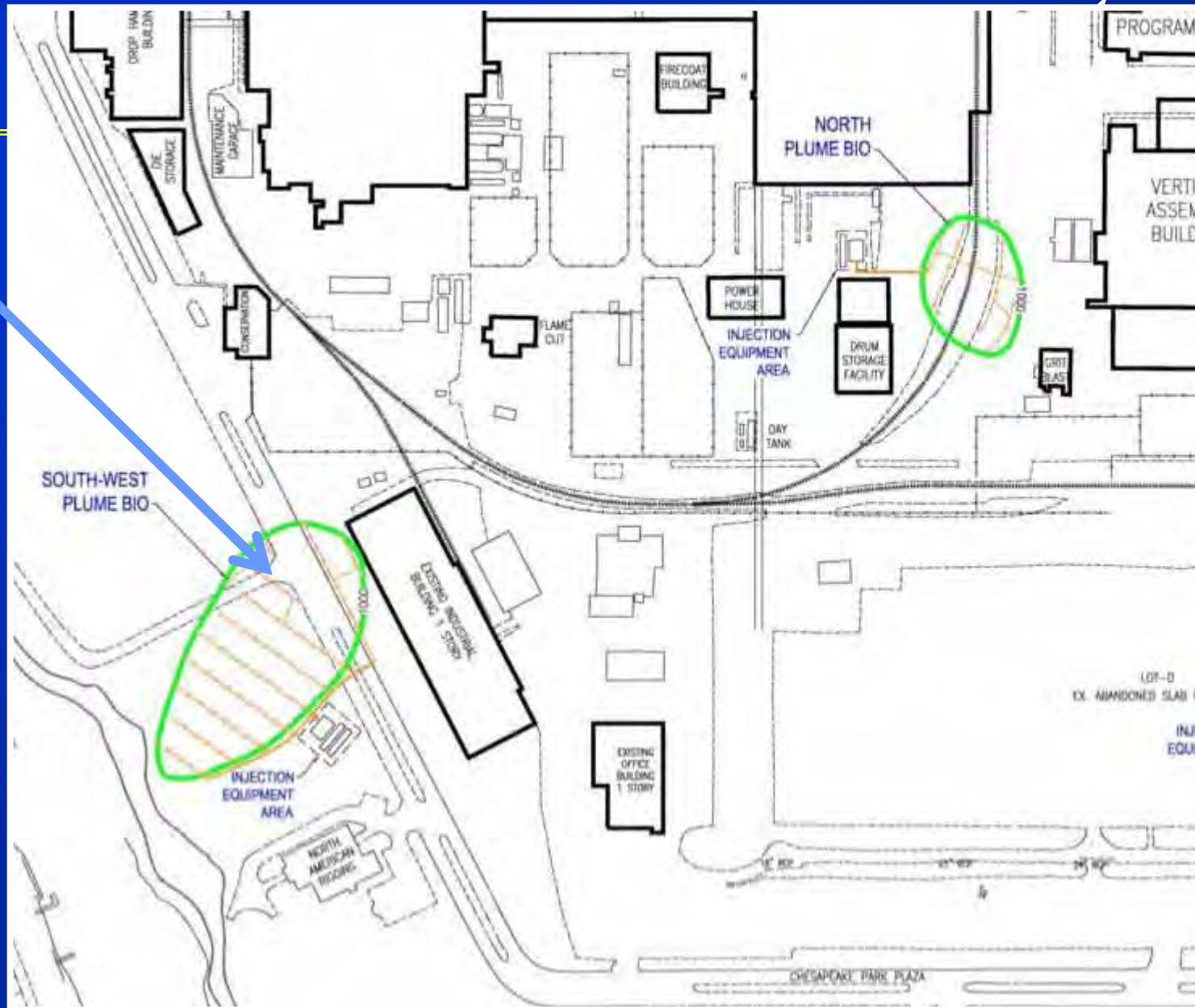
Removal of the first underground storage tank is shown. Both tanks were removed for proper disposal. The project team is considering whether additional cleanup is recommended to address the TCE from the second unexpected underground storage tank in addition to the planned groundwater treatment system being installed. Block E construction completion awaits this determination.



Weather finally allows Block E trenches to be filled, followed by installation of piping, completing Block E work for now.



Block G construction work prepares the Southwest plume area to build a second portion of the groundwater treatment system. Work began in late summer 2013.





Work at Block G included rerouting a swale and installing a collection basin to improve storm water capture and to redirect storm water away from the groundwater treatment area.



The newly installed storm water swale is seeded with grass. The collection basin directs storm water to its outlet in Cow Pen Creek.





Block G trenches are dug, taking care to protect existing groundwater monitoring and injection wells.



As with Block E, Block G site safety measures included monitoring for dust and particulates. Spraying water on construction areas maintained and ensured minimal dust conditions.





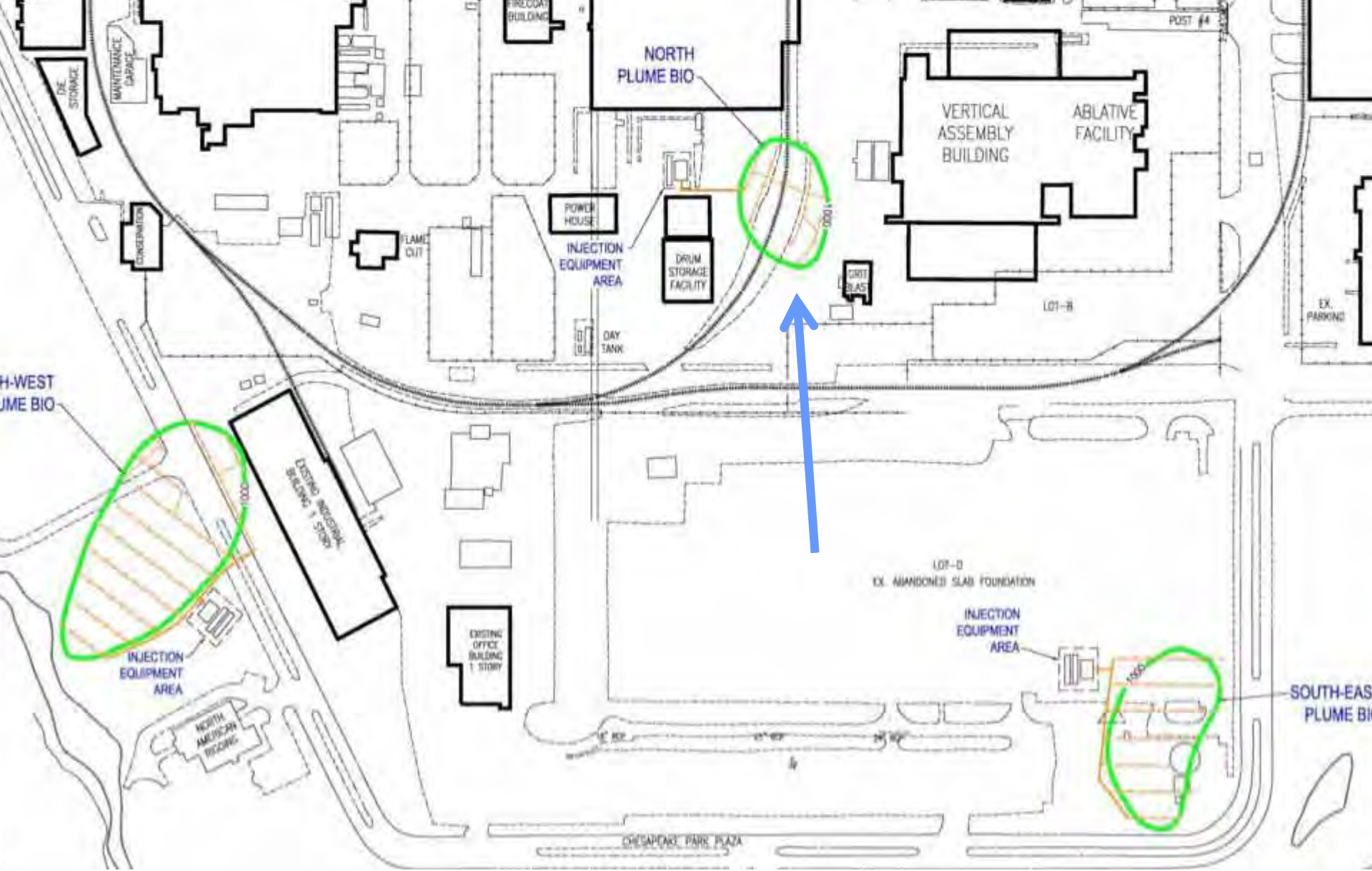
**Piping
components are
installed for
groundwater
injection and
treatment system.**



Contingency electrical conduits were installed in case they are needed for groundwater injection and treatment system.



**Work at Block G is largely completed.
System startup is anticipated in 2014.**



Block I construction work begins in November 2013 to prepare the North plume area to build the third portion of the groundwater treatment system.



Two mobile treatment systems arrived onsite. Injection ports will be attached to piping installed in each of the three treatment areas to feed nutrients into the groundwater, encouraging the growth of naturally occurring bacteria, which breaks contaminants down into safe by-products. Known as bioremediation, this process begins in 2014.



Work at Blocks E and G is largely complete and Block I work begins in November 2013. Additional work to remove TCE source material released from the second unexpected tank in Block E is being evaluated.

Future updates will be provided.

A construction handout and a Citizens Guide on Groundwater treatment are also available on this webpage (www.lockheedmartin/middle river).

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