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Oversight News

Newsletter of the Commonwealth's Environmental Oversight of the Paducah Gaseous Diffusion Plant (PGDP)

*Kentucky Department for Environmental Protection
Division of Waste Management
Hazardous Waste Branch
Paducah Gaseous Diffusion Plant Section*

Site Wide Evaluation and Soils Remedial Investigation 2 Field Work in Progress

Field work for the Site-Wide Evaluation and the Soils Remedial Investigation 2 projects got underway in October. The Site Wide Evaluation consisted of a "walkover" of 25 "anomalies" located on Department Of Energy (DOE) property surrounding the fenced portion of the plant using handheld or vehicle mounted radiation detection equipment and Global Positioning System (GPS). Anomalies are any area that exhibit two times instrument radiological background and/or a pile, dip, debris or any other potential man-made disturbance.

The 25 anomalies surveyed represent about 5 per cent of a the 534 anomalies surveyed in a previous study. After the 25 anomalies are surveyed an X-ray fluorescence (XRF) reading for total uranium will be obtained from the location of the highest surveyed reading.



DOE subcontractor employees are shown augering shallow soil samples.

Sixteen Soils Operable Unit (OU) Solid Waste Management units (SWMUs) are being further investigated for inclusion in the Soils OU Remedial Investigation (RI) 2 Report. Shallow and deeper soil samples and rad walk-over surveys are among the activities being performed to "close" data gaps identified for these SWMUs during the first Soils OU RI.



Area of Concern (AOC) 204 showing flagged locations for sampling.



DOE subcontractor employees processing direct push cores of deeper soil samples.

C-400 Update

In early October 2014 the Environmental Protection Agency (EPA) and Kentucky agreed with DOE that the project goals for Phase IIA of the C400 source area treatment project had been achieved. Phase IIA utilized electrical resistance heating (ERH) of subsurface soils to a depth of 60 feet below the ground surface in an effort to remove trichloroethylene (TCE) contamination. Following attainment of treatment goals, the subsurface heating system was powered down; however, the vapor extraction system remained operational until vapor emissions were no longer a concern. Above-ground portions of the treatment system had to be dismantled in order to allow access for specialized equipment needed to collect post-operational samples. This activity is currently planned for January 2015. All indications point to Phase IIA as having been successful. However post-operational samples must still be collected, analyzed, and compared to pre-operational samples collected months prior to determine the degree to which TCE was removed from the environment. Kentucky staff will be independently collecting and analyzing a small percentage of the Department of Energy's planned post-operational samples for quality control purposes.

A separate treatability study involving steam injection (Phase IIB) is currently underway in another portion of the C400 area. This treatability study will determine if steam injection at depths ranging from 60 to 100 feet below ground surface will be effective in heating and treating TCE contamination. An earlier study at C-400 (Phase I) determined that electrical re-

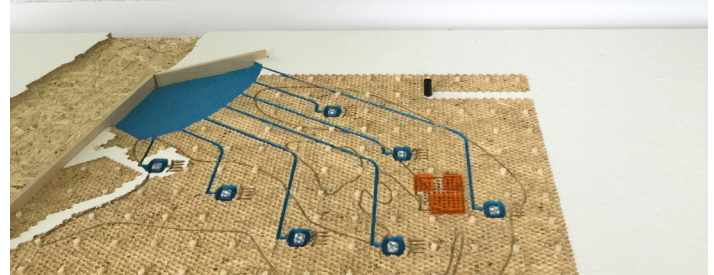


sistance heating was not suitable for uniformly heating the subsurface in the 60 to 100 foot range. The current Phase IIB steam injection study includes the design, installation and operation of one steam injection well with a host of temperature monitoring arrays to monitor the steam front progression. The steam injection well will be installed to the base of the Regional Gravel Aquifer, approximately 100 feet deep. If steam (heat) can be successfully transmitted and temperatures sustained far enough away from the injection well, then computer models will be utilized to design a full-scale version with multiple steam injection points. The Phase IIB treatability study began in mid-December 2014 and is expected to run through March 2015.

UK College of Design Studios

Over the past several years, The University of Kentucky (UK) College of Design in the School of Architecture has been conducting upper level design studios focused on the complexities and problems surrounding the Paducah Gaseous Diffusion Plant. Under the auspices of UK's Center for Applied Energy Research the college was asked to address the challenge of what to do with PGDP in a post USEC environment. Studios focused on holistic planning for the site and region intended to move both towards an optimistic future.

Most recently, in the fall of 2014, the studio considered the use of drones and robotics for remediation. At the beginning of the semester, students were asked to propose 'remediation-scapes' that would be formed entirely by automated heavy-civil equipment. Given regulations that restrict human exposure to - or disturbance of - contaminants at the site, the idea was that drones and robots could be designed that would eliminate human exposure, and minimize disturbance - all in a 'workforce' that could be on-the-job 24 hours a day, 7 days a week, 365 days a year.



UK's "Cut and Fill" Robotic Remediation Presentation, Fall 2014

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UK College of Design (continued)

The group developed desk-top robotics that would simulate the hunting, sensing, capture and sequester techniques required of real 'bots that would do the job. The drawing team coalesced and organized gigabytes of information into a workable drawing set. The set shows the region in layers so that relationships between surface features and the aquifer and structures below can better understood. The final group, ironically naming the 'propaganda' group, considered what has consistently been the

most complex task of all the studios, communication.

These interdisciplinary studios, rather than representing or simulating real-world problems and scenarios as in most architectural education, have provided actual conditions within which students feel they can make a difference. They've also given students the opportunity to communicate and share the incredible power of architectural and design thinking outside of the confines of building-design or the

strict boundaries of the discipline of architecture.

In the spring of 2015, the studio will take on the task of creating a Paducah Gaseous Diffusion Plant Virtual Museum, which is seen as a culmination of all of the knowledge, collaboration, and energy generated in all of the studios over the past several years.

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