Environmental Management
Committee Meeting Minutes
Tuesday, April 30, 2013, 5:30 p.m.
DOE Information Center
Office of Science and Technical Information

Committee Members Present

Susan Gawarecki
Bob Hatcher, Chair
Dick Ketelle
David Martin
Donald Mei
Norman Mulvenon
Bob Olson

Absent

Alfreda Cook, Vice-chair
Jimmy Bell
Dave Hemelright
Bruce Hicks
Jennifer Kasten
Steve Kenworthy
Charles Jensen
Gloria Mei
Lance Mezga
Tim Myrick
Curt Walker
Kevin Westervelt

Others Present

Dave Adler, Department of Energy (DOE)
Mike Bradley, U.S. Geological Survey (USGS)
Holly Clancy, UCOR/RSI
Dan Goode, USGS
Spencer Gross, ORSSAB support staff
John Kubarewicz, RSI
Elizabeth Phillips, DOE
Lynn Sims, UCOR
Ellen Smith
Corkie Staley, ORSSAB
Steve Stow
Tom Valunas

Update on Groundwater Workshops – Dan Goode, U.S.G.S.

Mr. Goode, USGS, provided an update on a series of workshops that are being conducted with DOE, Environmental Protection Agency (EPA), and Tennessee Department of Environment and Conservation (TDEC) to discuss issues and possible solutions related to contaminated groundwater on or adjacent to the Oak Ridge Reservation (ORR). Mr. Goode is acting as a liaison between the workshop participants and the EM Committee and ORSSAB. Mr. Goode said as he gives reports on the workshops he would like to receive feedback from the committee on groundwater issues.

His presentation covered several topics:

- Deep flow offsite (preliminary impressions)
- Objectives and Overview of Strategic Planning Project
- Examples of the Watershed Ranking Process – Melton Valley
- Summary and Highlights of Watershed Rankings
- Next steps and discussion

Mr. Goode said all of the information thus far is preliminary and nothing is final.

Deep flow offsite

Mr. Goode's presentation noted that there is scientific evidence of deep flow of contaminated groundwater offsite of the ORR, especially with the area geology of carbonate rocks and faults. Whether it is or will be a risk to human health and the environment is unknown. To answer that will require additional characterization and monitoring, which could lead to remediation and/or

land use restrictions.

Mr. Goode cited a study done in 1997 (Nativ, et, al) that said the deep hydrogeologic systems of the ORR contain contaminants such as radionuclides, heavy metals, nitrates, and organic compounds. The study said observations suggest saline water contained at depth is old but not isolated. The influx of recent water does occur, according to the study, and the confined water and dissolved solution move along open fractures at a relatively high velocity. The study said groundwater volumes involved in the flow are likely to be small.

Mr. Olson asked about transport in saline water. Mr. Goode said the report had information about continuous mixing of saline water with freshwater as flow goes deeper.

Objectives and Overview of the Strategic Planning Project

The objective of the workshops is to develop an interagency strategic approach to identify, manage, and pursue any potential onsite and offsite groundwater public health threats and to protect and restore DOE-ORR groundwater resources to beneficial use.

The objectives of the groundwater strategy include:

- Set priorities to help guide sequencing and funding decisions for short and long term actions, with focus on pathways potentially migrating off site, including an action scheduled for construction start on September 30, 2014.
- Identify groundwater related activities, including early actions, which could be implemented with the proposed three-year funding.
- Develop a comprehensive long term strategy for groundwater on and around the ORR independent of the short term funding levels for FY14 through FY16.

The FY 2013 strategy approach includes:

- Hold a series of workshops with all Stakeholders from January – May 2013.
- Develop an ORR Groundwater "Strategy Document" to meet 9/30/13 (FY 2013) Federal Facility Agreement (FFA) milestone.
- Develop Work Plan for first project to meet "Construction Start" for 9/30/14 (FY 2014) FFA milestone. Mr. Goode explained that as the group builds a strategy, DOE will provide resources to address issues in the FY 2015-16 budget years.

Another workshop is scheduled for May 2. Mr. Goode said a final document on the workshops will be prepared by September 30, 2013.

The primary project participants are:

- DOE – Elizabeth Phillips
- EPA – Carl Froede Jr. and Bill O'Steen
- TDEC – Randy Young, Gareth Davies, and Wesley White
- UCOR – Lynn Sims, Dick Ketelle, Craig Rightmire, Holly Clancy
- SAIC – Samantha Pack, Bob Gelinas, Kevin Jago
- USGS – Dan Goode (liaison for ORSSAB EM Committee, via DOE-USGS interagency agreement)

Mr. Goode said all administrative watersheds on the ORR will be considered. Two additional workshops will be held for Upper East Fork Poplar Creek (UEFPC)/Chestnut Ridge/East Tennessee Technology Park (ETTP) and Bethel Valley/Melton Valley.

He said after the first workshop on January 29 on Bear Creek Valley, the government spending sequester went into effect and subsequent workshops were conducted by telephone. He said he received permission to travel to the May 2 workshop and present this briefing to the committee.

The schedule for the workshops are as follows:

- 1/29 Workshop #1 and 2/27 - Bear Creek Valley (complete)
- 3/18 - Workshop #2 UEFPC/Chestnut Ridge/ETTP
- 4/9 – Workshop #3 Bethel Valley/Melton Valley
- 4/16 – Workshop #3b finish Bethel Valley/Melton Valley
- TBD – Workshop #4 Groundwater Use Restrictions/Policies
- 5/2 – Workshop #5 Combine workshop results for all watersheds
- 5/21 – Workshop #6 Rank combined projects/select groundwater action

Mr. Goode noted that an additional second workshop on Bethel Valley/Melton Valley had been added on April 16.

The general objectives of each workshop are to evaluate groundwater flow basin and contaminant boundaries; identify data gaps/uncertainties; and identify potential projects.

The outputs for each workshop is to describe groundwater issues; rank the issues; rank the potential projects to address those issues.

Workshop Approach

- Discussion and areas of consensus will be documented in a final report
- The report will include recommendations on near-term steps that can be taken with funds that are currently budgeted for FY 2013-16.
- Summary presentation for DOE Supervisory Management to support annual prioritization of ORR EM projects.

Mr. Hatcher asked if there has been discussion of relationships between surface watersheds and subsurface watersheds. Mr. Goode said there are examples where groundwater flow does not match surface water drainage.

Mr. Olson asked how ‘consensus’ is defined related to the first workshop approach bullet point. Mr. Goode said the May 2 workshop will work on seeking consensus. Mr. Adler said there will be areas of consensus and non-consensus.

Watershed Ranking Process

Mr. Goode discussed how issues are ranked for each watershed using Melton Valley as an example.

- What are the groundwater issues in each watershed?
  - Discuss watershed-scale geology, land use, surface water, groundwater interaction, etc.
  - Present individual groundwater issues, including sources, long-term fate and transport, data gaps and uncertainties
- Discuss issue ranking
- Identify projects and discuss project ranking

In ranking the issues and projects for each watershed the workshop participants make use of a number of tools that include:

- Site history
- Map of administrative watersheds
- Contaminant sources
- Map of current land uses
- Rainfall and contaminant flux graphs over several years
- Diagrams of geologic formations
- Piezometric surface maps
- Geographic information system maps

- Sampling locations
- Waste management areas
- Summary of identified issues
- Map of issue areas
- 3-D model of issue areas
- More detailed descriptions of issue areas
- Charts of contaminated areas

Summary of Watershed Rankings
Mr. Goode discussed how watershed priorities are ranked according hazards, pathways, and receptors. Each priority is broken down into different parts. The priorities are scored on a ranking of 1-10.

For hazards, toxicity is based on human health and ecological considerations and on consideration of contaminants of concern concentrations relative to valid criteria. Volume of the hazard is based on relative plume sizes, and longevity is based on half-lives and biodegradation rates in years.

Pathways and receptors are divided between groundwater pathways and groundwater to surface water pathways. Groundwater pathways in karst get a higher score than an aquitard. Distance to a receptor well or spring from a current plume is considered. The score increases if there is an actual exposure.

In the groundwater to surface water pathway the score increases if there is a groundwater release to surface water with a sensitive ecological receptor or fishery (with a maximum score of 5).

Mr. Goode said the summary on the ranking approach ensures that scores within a watershed fit within the overall ORR score, i.e., the same numeric ranking rules for each watershed. The hazard and pathway/receptor criteria are equally weighted in the final score.

After the hazards/pathway/receptor issues are scored the information is included in tables for comparisons with other areas being studied. Charts of potential actions are also developed for each area.

Pathway scores ranked by low-medium-high priority are charted on a map and also in a table for each watershed.

May 2 Groundwater Workshop #5
Mr. Goode talked about the next groundwater workshop to be held on May 5. This is an important workshop as it begins the process of working toward reaching consensus by the May 21 Workshop #6 on what type of near-term groundwater actions will be conducted.

The objectives of the May 2 workshop are to review and discuss ‘parking lot’ issues and combine and rank information from all watersheds with focus on potential off-site migration.

The expected end products are:
- Determine a path forward for addressing parking lot issues.
- Indentify any additional products.
- Determine any preferences for top-ranked projects.

In ranking groundwater issues, Ms. Sims said the workshop participants needed a modified hazard ranking system to rank ORR groundwater issues. She said the group needed a tool that would help score and categorize the groundwater plumes and associated issues. Mr. Goode said the system would make the process simple for use in a group decision-making setting with limited data. The tool would help ensure that decision-makers can easily communicate it.

The tool that has been developed is a system of charts that include all of the groundwater issues for all of the administrative watersheds for the ORR. They include hazards and pathways for each issue and they have a combined project score. The projects are ranked according to their scores.

Mr. Stow asked if this kind of methodology had been used elsewhere. Ms Sims said it is based on a national model (Hazard Ranking System) that has been modified to fit this workshop.

Mr. Olson said there hasn't been any discussion of groundwater flow modeling. Mr. Goode said that had not been proposed by DOE or its contractors. Mr. Goode said modeling provides useful information and enhances data already available, but he didn't think a separate "modeling" project was absolutely needed in this process.

Ms. Smith said there is emphasis that contamination will reach surface water and affect life. She said historically concentrations are diluted to not be a problem. But she said in private wells the concentrations are higher and more hazardous to property owners and there is a perceived loss of property value. She asked if these issues are considered in the ranking. Mr. Goode said the highest ranking is for offsite migration, due to ranking first by pathway score. Mr. Ketelle said considerations are made on where contamination and biasing is made for areas with karst. Mr. Adler said it's been established that there has been some offsite migration. But he said the levels of offsite detections tend to be low, most below drinking water standards. The question is, what is the hazard of the onsite contamination causing problems offsite? He said that is not completely understood and that could be helped through modeling.

Mr. Adler said if the workshop group determines a high priority project, the difficult part will be for DOE to work that into all of the other cleanup projects that need attention on the ORR. He said DOE will be looking for items in the groundwater projects that have potential for near-term hazards. He said some of the issues on the list may be controversial, but not expensive, that may provide environmental protection. He said initial outcomes looked at thus far are not unreasonable.

Mr. Goode said he would provide a briefing on the May 2 workshop to anyone interested on the afternoon of May 2 at 5:30 at the DOE Information Center.

The meeting adjourned at 6:52 p.m.

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