AGENDA

1. Welcome/Introductions

2. Announcements

3. Update on Local Groundwater Management Efforts
   Scott Belcher, Rick Fueston, Tim McLelland, Terry Morris

4. OKI Staff Update

5. The Benefits of Contingency Planning:
   Greater Cincinnati Water Works' Responses to Recent Spills
   Rich Stuck, Greater Cincinnati Water Works

6. How the Regulatory Framework Helps to Protect Source Water
   Craig Smith, Ohio EPA

7. Other Business

ADJOURNMENT
The Benefits of Contingency Planning: GCWW’s Responses to Recent Spills

OKI Ground Water Committee Meeting
December 3, 2014

Rich Stuck, P.G.
Greater Cincinnati Water Works
Greater Cincinnati Water Works

- **GCWW:**
  - Provides Water to 1.1 Million People in SW Ohio and Northern Kentucky.
  - Can supply up to 260 million gallons of water per day from two treatment plants.
  - Draws water from two very different sources
    - The Ohio River
    - The Great Miami River Buried Valley Aquifer
Two Treatment Plant—Two Water Sources

Charles M Bolton Treatment Plant. 40 MGD Ground Water Plant. Source Water = Great Miami Buried Valley Aquifer.

Richard Miller Treatment Plant. 220 MGD Surface Water Plant. Source Water = Ohio River
Richard Miller Treatment Plant

The Intake Structure

Northern Kentucky Water District

GCWW Intake Pier (circa 1904)
RMTP Treatment Today

Plant Capacity: 240 MGD
Average Pumping: 110 MGD
GCWW’s Approach for Source Water Protection on the Ohio River (Cincinnati Area)
Delineation: Knowing Where our Water Comes From

Entire portion of the Ohio River Basin upstream from the surface water intakes:

• For Cincinnati - Includes about 71,000 square miles
• Portions of 8 States and 173 Counties
• 332 registered dischargers from Pittsburgh to GCWW on the Ohio River
• 16 Public drinking water intakes upstream of the Cincinnati Area on the Ohio River
Zone 1 – Zone of Critical Concern (Yellow)

- Based upon a 5-hour travel time using maximum Ohio River velocities. 25 miles upstream, \( \frac{1}{4} \) mile on the banks

Zone 2 – Zone of High Concern (Gray)

- Lateral Extent includes small watersheds adjacent to river and major tributaries.
Potential Contaminant Source Inventory

- Non-point source
- Chemical and Oil Storage
- Electrical Generation
- Barge and Other Transportation
- Constructed Discharges
Monitoring

- Water Quality Analyses
  - Advanced In-house analytical capabilities
  - Member of the ORSANCO Organics Detection System
  - Raw Water Monitoring Program
  - Trend Analysis
- Land Use Changes and Trends
- Discharge Permit Applications and Renewals
- Regulatory Changes
ORSANCO’s Organics Monitoring Stations

- Maysville
Spill Response Planning

- Two Scenarios:
  - Distance to Spill = seven miles or less
  - Distance to Spill > seven miles
- Predicting Arrival Times
- Determining Analytical and Treatability information
- Understanding Toxicity Information
- Monitoring Arrival
- Determining the “All Clear”
Contingency Planning

- ORSANCO facilitates fast and effective communication and rapid exchange of critical information.
- Participation in Several Ohio River User’s Groups; key to building partnerships prior to a crisis.
- Two separate Water Sources
- Significant water storage in reservoirs allows us stop drawing water from the river and maintaining service while released material flows past.
Voluntary Notification Program

- Part of GCWW/NKWD Source Water Protection Strategy
- Does not relieve the responsible party of the requirement for official notifications (NRC, Ohio EPA, KDEP, 911 and local authorities)
- Facilitates rapid notification and direct line of communication to receive contaminant-specific information.
Spill Frequency on Ohio River Upstream of GCWW

![Bar chart showing the number of spills per year from 2000 to 2013. The chart indicates a fluctuating number of spills with peaks in 2001 and 2008.]
Key Historical Upstream Spills

- Carbon Tetrachloride: 70 tons of Carbon Tetrachloride from FMC Inc. Spill occurred in 1977. ORSANCO installed the ODS system as a result. GCWW installed GAC as a result.

- Ashland Oil Spill. Approximately 1,000,000 gallons of diesel fuel released into the Monongahela River in January 1988.
2014 Spills

- **January 2014**: Freedom Industries spilled 10,000 gal of MCHM, resulting in a “Do Not Use” warning for over 300,000 people in and around Charleston WV.

- **June 2014**: Statoil Eisenbarth Well Pad Fire released an unknown, but “significant” quantity of fracking-related chemicals, fire fighting water and blowback fluid to Opossum Creek in Clarington, Ohio.

- **August 2014**: Duke Energy’s Beckjord Station released 9,000-gallons of diesel fuel directly into the Ohio River near New Richmond, Ohio.
Spill Summary: Elk River

- Thursday January 9, 2014: At least 10,000 gallons of an industrial chemical, 4-Methylcyclohexanemethanol (MCHM) are spilled into the Elk River, a secondary tributary of the Ohio River.

- The MCHM was taken into the Kanawha Valley Drinking Water Plant (1.5 miles downstream) where it was subsequently distributed to drinking water customers.

- "Do Not Use" orders are issued for roughly 300,000 people.

- Because of the Do Not Use order, media coverage was intense.

- Spill continued over 200 miles downstream to Cincinnati passing 8 other drinking water intakes along the way before reaching Cincinnati.
Elk River, Charleston, WV
Kentucky
Ohio
Beckjord
Meldahl
Power Station
Dam
West Virginia
Huntington, WV
Cincinnati to
Beckjord – 10 miles
Meldahl – 25 miles
Huntington – 157 miles
Elk River – 250 miles
Incident Report Excerpt

*Report taken by: CIV KEVIN WILLIAMS at 19:16 on 09-JAN-14
Incident Type: STORAGE TANK
Incident Cause: UNKNOWN
Affected Area: ELK RIVER
Incident occurred on 09-JAN-14 at 10:47 local incident time.
Affected Medium: WATER ELK RIVER

REPORTING PARTY
Name: WILLIAMS
Organization: NATIONAL RESPONSE CENTER
WASHINGTON, DC

PRIMARY Phone: (800)4248802
Type of Organization: FEDERAL GOVERNMENT

SUSPECTED RESPONSIBLE PARTY
Name: UNKNOWN
Organization: WEST VIRGINIA AMERICAN WATER

INCIDENT LOCATION
ELK RIVER County: KANAWHA
1015 BARLOW DRIVE
State: WV

RELEASED MATERIAL(S)
CHRIS Code: MCY Official Material Name: METHYL CYCLOHEXANE
Also Known As:
Qty Released: 0 UNKNOWN AMOUNT Qty in Water: 0 UNKNOWN AMOUNT

Wrong Compound
Response Summary

- GCWW Received initial notification on Thursday (Jan 9th). Conducted initial evaluation in accordance with spill response SOP.
- Organized Response Task Team. Developed initial strategy and commenced research and preparation.
- Refined analytical methods to 4 ppb detection limit, conducted treatability analysis.
- Refined arrival time estimates; continued to refine as new information became available.
- Started upstream monitoring. Detected MCHM at a point 25 miles upriver from intake on Tuesday. Started PAC feed prior to first detections as precaution.
- Stopped raw water pumping for 38 hours; continued monitoring.
- Fed PAC for 5 days after last detection as a precaution.
Spill Summary: 
**Eisenbarth Well Pad Fire**

- 8:12 am, Saturday, June 28th, 2014 (keep the date and time in mind!)
- Well pad located in Monroe County, Ohio, approximately 5 miles from Ohio River
- Broken hydraulic line sprayed hydraulic fluid onto hot equipment. Oil ignited and quickly spread across the well pad.
- Well was in the process of being hydraulically fractured, significant chemical storage on the pad at the time of the fire.
- Combination of unburned chemicals, fire fighting water, and flowback water exited the well pad to an unnamed tributary of Opossum Creek resulting in a large fish kill.
Eisenbarth Notification

- Statoil, the owner of the well, Notified the National Response Center (NRC), Ohio EPA and other agencies starting at 2:00 pm on July 28th, almost 6 hours after the event started.
- GCWW was notified of the event on the morning of July 1st.
- Delay notifying water utilities was due to the wording of the NRC report. Well fire was mentioned but apparently the release to the creek was not.
GCWW Response

- Projected earliest arrival time based on the ICWater model
- Started collecting raw samples for chloride, conductivity and VOCs at eight hour intervals starting July 3\textsuperscript{rd}.
- Increased the frequency to every two hours starting at noon, July 6ths (12 hours prior to best projected arrival)
- Started feeding PAC 12 hrs prior to projected first arrival time.
Obstacles to Effective Response

- GCWW was notified of the Spill on the morning of July 1, 2014.
- It was difficult to obtain a list of chemicals potentially released to the creek.
- No readily available analytical methodology for many of the chemicals including the biocide BE-9 (tributyl tetradecyl phosphonium chloride).
- Could not identify an indicator compound.
- Could not locate the leading edge of the plume, if any.
Spill Summary:

**Duke Energy Diesel Fuel Spill**

- August 19th, 2014
- Beckjord Power Plant
- 9,000 gallons of Diesel fuel
- Operator error during fuel transfer
- ~9 miles from GCWW and NKWD intakes
Anatomy of the Spill

Day Tanks Overflowed

Containment Drain Valve was Left Open

750,000-Gal ASTs
Close-up View of the Spill Area

- Spill location
- 30,000 Gal ASTs
- Oil Water Separator and Outfall
Overfill Location
Oil/Water Separator

- Oil/water separator outfall
- Containment drain valve housing
- Oil/Water Separator
Containment Drain

CAUTION
Containment Drain Valve

Valve shall be chained and locked in the closed position at all times except for when draining raw water. The Operations Production Supervisor must grant permission before Plant Operators can unlock and open the drain valve.

The Plant Operators shall insulate the water in the island area for the presence of oil and remove any visible oil before opening the lake drain valve. The Plant Operators shall attend the valve and observe the discharge during the entire draining process.
Actual Spill Site

Flow pathway

Oil/water separator outfall
Resulting Plume/Sheen
Recovery Efforts
GCWW Response

- Duke Energy has been an active partner in GCWW’s Source Water Protection Program.
- They had previously been provided direct contact information and instructions.
- Duke called GCWW’s Control Room within 90 minutes of the spill.
- GCWW immediately shut down raw water intakes per our SOP and began internal notification.
- Began water monitoring to identify the *trailing edge*.
- Identified additional upstream emergency sampling point: Beckjord was our upstream monitoring point!
Lessons from the Three Events:

- Contingency Plan must be flexible, understood by all, and easy to enact.
- More often than not, the initial spill information is not correct.
- Communication among a variety of parties is crucial, especially early in the event.
- Response time is the single biggest variable, must be prepared for little to no extra time.
- Be prepared for media interest and provide accurate and timely information.
- Do not over-value secondary containment during PCSI without verifying its integrity.
How the Regulatory Framework Helps to Protect Source Water

Ohio-Kentucky-Indiana Regional Council of Governments
Ground Water Forum
December 3, 2014

Craig Smith
Environmental Specialist
Division of Drinking and Ground Waters
Outline

• Background Information

• Regulatory Framework

• Case Study
Abbreviations

- PWS - Public Water System
- CWS - Community Water System
- NTNC - Non-Transient, Non-Community Water System
- TNC - Transient, Non-Community Water System
- EMZ - Emergency Management Zone
- IMZ - Inner Management Zone
- OMZ - Outer Management Zone
Abbreviations

- C&DD - Construction & Demolition Debris
- CAFO - Concentrated Animal Feeding Operation
- CWA - Clean Water Act
- FERC - Federal Energy Regulatory Commission
- FRP - Facility response plan
- LUST - Leaking Underground Storage Tank
- NEPA - National Environmental Policy Act
- ODOT - Ohio Department of Transportation
- SDWA - Safe Drinking Water Act
- SPCC - Spill Prevention Control & Countermeasures
- SFOSTS - Small Flow On-site Sewage Treatment System
Drinking Water Source Protection Area

• Transition from Wellhead Protection to Source Water Protection

• “Drinking water source protection area for a public water system using ground water”
Drinking Water Source Protection Area

Surface Water Sources

Ground Water Sources

Ohio EPA
Drinking Water Source Protection Area

- Protection Area
- Inner Management Zone (IMZ)
- Outer Management Zone (OMZ)
Regulatory Framework

• There are few federal and state regulations that directly protect a ground water source outside the sanitary isolation radius.

• It is necessary to work with individual programs to create a sense of shared purpose.
Types of Source Water Protection

• Direct Protection:
  – Prohibitions / Setbacks & Source / Engineering Controls
  – Applicable or Relevant and Appropriate Requirements

• Indirect Protection:
  – Guidance / Recommendations
  – Permitting
Landfills

- Industrial solid waste landfills
- Sanitary landfills
- Residual solid waste landfills
- Scrap tire monofills

Photo Credit: Solid Waste Authority of Central Ohio (2014)
Landfills

• Setbacks for:
  – limits of solid waste placement
  – temporary or permanent leachate ponds
  – temporary or permanent leachate lagoons

• Not within a:
  – wellhead protection area
  – drinking water source protection area for a public water system using ground water
CAFOs

• Concentrated Animal Feeding Operations

• Concentrated Animal Feeding Facilities

• Operations or facilities regulated by the Livestock Environmental Permitting Program
CAFOs

• Setbacks for:
  – fabricated structures
  – manure storage ponds
  – manure treatment lagoons

Photo Credit: Coshocton Soil and Water Conservation District (2014)
CAFOs

• Not within:
  – 300 feet of a PWS well owned or operated by the facility
  – the IMZ determined for a NTNC
  – a CWS’s IMZ or 1,000 feet whichever is greater
  – a CWS’s protection area:
    • if highly susceptible to contamination
    • unless additional ground water monitoring, or additional engineered controls or both are added, installed, and implemented
CAFOs

• Setbacks for land application

• Wells
  – not within 300 feet for surface or winter application
  – not within 100 feet for injection or surface application with incorporation within 24 hours
Class B Biosolids

• Setbacks for:
  – regional storage facilities
  – field staging, stockpiling or storage
  – beneficial use (land application)

Photo Credit: City of Fairfield, Ohio (2014)
Class B Biosolids

- Regional storage facilities
- Not within a CWS’s protection area

Photo Credit: City of Wilson, North Carolina (2014)
Class B Biosolids

• Field storage

• Not within:
  – 300 feet of a TNC well
  – CWS or NTNC:
    • the IMZ
    • the protection area if highly susceptible to contamination and underlain by karst or fractured bedrock

Photo Credit: City of Appleton Wisconsin (2014)
Class B Biosolids

• Beneficial use

Photo Credit: Virginia Polytechnic Institute and State University (2014)
Class B Biosolids

• Not within:
  – 300 feet of a TNC well
  – the IMZ determined for a CWS or NTNC
  – the protection area for a CWS or NTNC
    • if by karst or fractured bedrock
    • and has been determined to be highly susceptible to contamination
Treated Waste Water Land Application

• Setbacks for:
  – storage facilities
  – land application areas

Photo Credit: Virginia Department of Health (2014)
Land Application Systems

• Storage facilities

• Not within:
  – the IMZ determined for a CWS or NTNC
  – the OMZ determined for a CWS or NTNC unless specific conditions met

Photo Credit: PennWell Corporation (2014)
Land Application Systems

- Land application
- Not within:
  - 300 feet of any PWS well
  - IMZ for a CWS or NTNC
  - The protection area for a CWS or NTNC
    - if determined to be highly susceptible to contamination
    - unless engineering and management controls are put in place and ground water monitoring is performed
SFOSTS

• Small flow on-site sewage treatment system
• Additional design and/or management controls when sited:
  – within the IMZ determined for a CWS or NTNC if determined to be highly susceptible to contamination

• Effective until 1/1/2015
Domestic Septage

- Land application is prohibited within the IMZ determined for a CWS or NTNC if highly susceptible to contamination

- **Effective 1/1/2015**

Photo Credit: Minnesota Pollution Control Agency (2014)
C&DD Landfills

• Ground water monitoring well system required if the limits of water placement are within:
  
  – a wellhead protection area or source water protection area for ground water
  – 1,000 feet of a PWS well (well field capacity < 75,000 gpd)
  – 1,500 feet of a PWS well (well field capacity > 75,000 gpd)
Surface Water Sources

• Focus on either:
  – the EMZ of a public water system using surface water
  – the area within 1,500 feet of a drinking water intake

• EMZ - the immediate vicinity of a public water system intake within which the public water supply owner/operator has little or no time to respond to potential contamination from a spill, release, or weather related event
FRP Facilities

• Subset of SPCC facilities

• Trigger: Proximity to a drinking water intake

Photo Credit: National Institute of Environmental Health Sciences (2014)
Voluntary Action Program

• Protection areas are considered “Critical resource ground waters”
  – Remediation - ground water source will meet SDWA standards.

• Urban Setting Designations are not allowed within a CWS protection area.
  – Exception for CWS with an endorsed protection plan.
Underground Storage Tanks

- Cleanup standards are more stringent if the LUST is within 1,500 feet of a protection area for a PWS

Photo Credit: Montana Department of Environmental Quality (2014)
Animal Feeding Operations

- Concepts in the CAFO regulations have been applied to NRCS Conservation and Soil and Water Conservation Practices

Photo Credit: The Ohio State University (2014)
Geothermal Heating and Cooling Systems

- Loopfield Siting: select a non-toxic antifreeze within an IMZ

Photo Credit: Colorado Mountain College (2010)
Salt Storage Facilities

• Outdoor operations - avoid IMZs

• Outdoor storage - avoid protection areas

Photo Credit: The Dispatch Printing Company (2014)
Permit Applications

- NEPA documentation
- FERC permitting
- CWA permits
- Mining permits

Photo Credit: Guardian News and Media Limited (2014)
NEPA Documentation

- Identify potential for water quality impacts
- ODOT – Requests information on protection areas (surface and ground water sources)

Photo Credit: The Akron Beacon Journal (2014)
Federal Energy Regulatory Commission

- FERC-regulated pipeline construction projects

- Many pipelines in Ohio are not FERC-regulated

Photo Credit: The Dispatch Printing Company (2014)
Federal Energy Regulatory Commission

• In permit application must identify:
  – all drinking water supply wells (private and public) within 150 feet
  – important groundwater withdrawal areas within 150 feet of the project area and their major uses
  – wellhead protection areas and surface water protection areas
Clean Water Act Permits

• Section 401 Permits
  – Impacts to wetlands, streams & lakes

• Minimize impacts to waters with drinking water use designation

Photo Credit: WetlandsandWatershed.com (2014)
Mining Permits

- Industrial minerals and coal mines
- Cumulative impacts analysis

Photo Credit: Kipton Quarry (2012)
Oil & Gas Permits

• New oil and gas wells

• Special permit conditions if drilling in a CWS protection area

Photo Credit: Educational Broadcasting Corporation (2004)
Case Study

- Recommendations for Human and Animal Waste Management Near Potable Water Sources

- Ohio Water Resources Council
Case Study

- Ohio Environmental Protection Agency: Division of Drinking and Ground Waters, Division of Surface Water & Division of Solid and Infectious Waste Management

- Ohio Department of Agriculture: Livestock Environmental Permitting Program

- Ohio Department of Health: Residential Water and Wastewater Program

- Ohio Department of Natural Resources: Division of Soil and Water Conservation

- United States Department of Agriculture: Natural Resources Conservation Service
Case Study

• Starting “assumptions”:
  - Best available information will be used.
  - Best management practices will be employed.
  - Land application @ agronomic rate.
  - Proper maintenance will be conducted.
  - Timely repairs will be made.
Case Study

• Source water setbacks don’t exist in a vacuum
• Work in conjunction with setbacks for:
  – Aquifers / Shallow ground water
  – Sole source aquifers
  – Karst areas
  – Shallow bedrock
  – Property lines
  – Neighboring residences / businesses
## Case Study

<table>
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<tr>
<th>Receptor</th>
<th>Setback</th>
<th>Storage Lagoons/Structures &amp; Treatment Facilities</th>
<th>Land Application Sites</th>
<th>Onsite Treatment Systems</th>
<th>Absorption Area (g.p.d.)</th>
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<td>Pre-treatment through secondary treatment</td>
<td>Post-treatment</td>
<td>Temporary Stockpiles</td>
<td>Untreated Waste/Wastewater</td>
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<td>(one-year time-of-travel area)</td>
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In Summary

• It is necessary to work with individual programs to create a sense of shared purpose.

• We must use both direct and indirect means of source water protection.

• Source water setbacks don’t exist in a vacuum.
Contact Information

- Craig Smith
- (614) 644-2752
- Craig.Smith@epa.ohio.gov
Questions
OKI GROUNDWATER COMMITTEE MEETING SUMMARY

Wednesday, December 3, 2014

OKI Board Room – 10:00 a.m.

Attendees:
Bruce Whitteberry, Chairman, Greater Cincinnati Water Works
Al Aspacher, FTCH
Scott Belcher, City of Middletown
John Bui, City of Hamilton
Mark Clemons, City of Middletown
Barry Conway, City of Franklin
Frank Divo, Southwestern Ohio Water Company
Elmer Dudas, City of Springboro
Andreas Eddy, City of Fairfield
Rick Fueston, Clermont County Water Resources Department
Carl Gatton, Warren County Water and Sewer Department
Tammy Jett, Duke Energy, Environmental Department
Tim McLelland, Hamilton to New Baltimore Groundwater Consortium
Krystal McNutt, Miami conservancy District
Dave Morrison, Southwest Regional Water District
Tim Neyer, Clermont County
Norma Pennock, Southwest Regional Water District
Greg Petredis, City of Hamilton-Water Production Superintendent
Richard Renneker, Committee Member
Clifford A. Shrive, Stantec
Craig Smith, Ohio EPA
Richard Stuck, Greater Cincinnati Water Works
Tom Yeager, Southwest Regional Water District

OKI Staff:
Regina Brock, Amanda Colley, Bruce Koehler, Jane Wittke

Welcome/Introductions/Announcements:
Bruce Whitteberry opened the meeting at 10:05 a.m. and announced that the next meeting will be February 25th, 2015 and will involve a feature presentation on climate change in the Ohio River Basin and long term hydrologic changes by Jim Noel of the National Oceanic and Atmospheric Administration. He also announced that certificates for contact hour credit from earlier meetings were available on the table in the back of the room and asked attendees to pick them up if they hadn’t already.
**Update on Local Groundwater Management Efforts**

*Scott Belcher, City of Middletown* reported on several water treatment plant infrastructure upgrades including incoming power lines, dehumidifiers and addition of a VFD (variable frequency drive) pump to save energy. He also said that the City had consulted with Ohio EPA about the Aeronca property, and determined that additional remediation will be needed for contamination by volatile organic compounds. New monitoring wells are being installed help in determining remediation methods, which may involve vapor extraction from the soil.

The Middletown Water Department is simplifying and updating its contingency plan to share with the fire department and emergency responders, and is taking advantage of web-based leadership training available in live sessions on Fridays through the American Public Works Association. Scott recommended that other committee members check out www.BuildingthePublicSector.org for more information about the training.

**Rick Fueston, Clermont County,** reported on several recent improvements to the County’s system, including the installation of a VFD on a booster station pump to reduce energy costs and improve control of system pressures and flow rates. At the Pierce-Union-Batavia water treatment plant, two bladder surge tanks are being installed to absorb pressure surges in the event of an electrical outage affecting high service pumps. They are also replacing check valves and installing a magnetic flow meter for plant production at a cost of about $1.1 million.

Rick then asked Tim Neyer, the Surface Water Manager for Clermont County, to summarize recent work at the Bob McEwen water treatment plant which draws water from East Fork Lake. Tim explained that Clermont County Water has teamed up with the U.S. EPA to perform research on Harmful Algae Blooms or HABs. The goals of the research are to establish predictive models that will better identify the environmental conditions that occur just prior to and during an HAB, as well as to better understand what conditions cause the expression of the toxins from the HABs, so that treatment plant operators could have an early warning system. Continuous data is being collected from three locations: the surface of the lake at the treatment plant intake structure, the water treatment plant’s raw stream which typically draws water from approximately 20 feet below the surface of the lake, and a buoy that is anchored approximately 300 yards off shore near the intake structure, collecting data from the surface of the lake.

**Tim McLelland, the Hamilton to New Baltimore Groundwater Consortium,** reported on a release of heating oil to a couple of golf course ponds in Fairfield Township, Butler County called Walden Ponds. The release happened over the Thanksgiving weekend and was estimated to be about 3,000 gallons. The Fire Department at Fairfield Township and the Ohio EPA Emergency Response team traced
the release back to a field tile, which then led them to a 20,000 gallon heating oil tank that was buried in a vault; it was probably there even before the golf course was built. Although the release was outside the Consortium’s drinking water protection area, the release shows that old unused tanks are still in the ground and a risk to aquifers in the area. It was also a good reminder of the need to thoroughly evaluate the historical use of properties when doing inventories for source water protection programs.

The Fairfield Fire Department also dealt very well with a spill of sulfuric acid, ammonia and chicken guts that created a fish kill. The release originated from and flowed along a ditch line from the KOCH Foods Company into a storm water detention pond. A significant rainfall washed the sulfuric acid into the pond, home of over 2,500 fish that perished. The Fairfield Fire Department traced the spill back to KOCH Foods, who took responsibility for the incident and worked to correct the problem. The Consortium determined it was far enough away from their drinking water protection area that it would not be a threat, and called the Mill Creek Watershed Council of Communities just to let them know about the spill.

Tim announced that the Great Miami River Clean-up on October 25 was a great success, involving several hundred volunteers and multiple counties; in Butler County it was coordinated by the Consortium, Butler Soil and Water Conservation District, and the Butler County Storm Water District. The clean-up resulted in more than 800 tires and more than six tons of trash being picked up in four hours. There were ten collection sites involving the following jurisdictions: Colerain Township, Dearborn County, City of Fairfield, Greater Cincinnati Water Works, City of Hamilton, Lemon Township, Madison Township, Miami Township, Middletown and City of Trenton. Each of the sites collected trash, tires and recyclables.

Tim also noted that the 17th annual Butler County Water Festival involved more than 1,000 fourth graders and dozens of volunteers. The next festival will be held October 9, 2015. In addition, he announced that for the 17th consecutive year, the members of the Consortium have received the Ground Water Guardian Award.

Elmer Dudas, City of Springboro, reported that the City’s water operations include six production wells, a water treatment plant with a capacity of 7 million gallons per day, two booster stations, three pressure-reducing valve stations, two stations interconnected with Franklin and Warren County, and four water towers. One booster station had to be relocated and is currently offline until early 2015. A new Springboro/Franklin replacement booster station is on order, and scheduled for reinstallation in early 2015 at the Route 73/I-75 north bound ramp location. The replacement station will provide boosted water pressure to the City of Springboro if needed.
Elmer also reported that in July of 2014 the City upgraded the water system communication system with new radios, antennas and communication equipment at all water facility locations. The City also just completed its tri-annual water system (sanitary) survey with the Ohio EPA. At the present, the City is under contract with AMEC Environmental to perform potential pollution source inventory updates and a new round of monitoring well sampling for (VOCs) Volatile organic compounds, (PAHs) polynuclear aromatic hydrocarbons and nitrate-nitrite.

**OKI Staff Update**  
**Jane Wittke** reported that the Ohio Senate was considering a bill for potential action that had already passed the House as HB490, intended to address agricultural pollution abatement, manure application and phosphorus levels in wastewater. (Ultimately no action was taken by the Senate on HB490 before the holiday recess.)

She also reported that OKI’s updated Strategic Regional Policy Plan (SRPP) had been adopted by the OKI Executive Committee on September 11. She noted that it is a completely digital plan available at **www.howdowegrow.org** and that having a plan available only on-line is not only a first for OKI, but also will allow staff to update background and trend information readily in the future. She thanked Bruce Whitteberry and Tom Yeager who serve as members of the Steering Committee for SRPP development and implementation.

She explained that the SRPP includes a section that identifies actions that will implement the plan, to be pursued with funding available. She noted that implementation actions include, for example, source water protection assistance and the work of the Groundwater Committee; updating water service area mapping; water quality management planning, including updates to the stream database; watershed planning assistance; and investigating analytical tools to assist in estimating run-off.

In addition, Jane reported on OKI’s Solar Ready II project with the U.S. Department of Energy, the National Association of Regional Councils, the Council of State Governments and eight other metropolitan areas in the U.S. The goal of the project is to implement best management practices that help to make photovoltaic (PV) solar energy more cost-competitive with other forms of energy. OKI is working with utilities, solar industry representatives, lenders, code officials and community planners, institutional property owners, the Greater Cincinnati Energy Alliance and the Green Umbrella to get a better understanding of obstacles and incentives for PV solar use in this region. A free Solar Ready workshop for local government staff and officials will be held on March 6 at the Cincinnati Zoo.
The Benefits of Contingency Planning: Greater Cincinnati Water Works’ Responses to Recent Spills

Rich Stuck, Greater Cincinnati Water Works (GCWW) reported that GCWW draws water from both the Ohio River and from the Great Miami River buried valley aquifer, and that these separate sources, as well as the two highly separated treatment plants, allow for greater protection from chemical spills. He noted that the GCWW intake in the Ohio River is along the Kentucky shore next to the intake for the Northern Kentucky Water District, and was built in 1904 when this was the deepest part of the river. He summarized the advanced treatment process of the Richard Miller surface water treatment plant with a capacity of 240MGD and average pumping of 110MGD, noting that the plant uses conventional treatment along with granular activated carbon and has added advanced ultraviolet (UV) disinfection.

To give perspective on source water protection for the Miller plant, Rich explained that an area of about 71,000 square miles drains to the Ohio River upstream from Cincinnati’s surface water intake, including portions of eight states and 173 counties and 332 registered dischargers. The zone of critical concern for the plant, however, is based upon a five-hour travel time using maximum Ohio River velocities, or about 25 miles upstream and about a quarter-mile on the banks. For this zone of critical concern, GCWW, the Northern Kentucky Water District and ORSANCO (the Ohio River Basin Sanitation Commission) are the primary partners in a collaborative plan to handle spills.

The potential contaminant source inventory for the GCWW’s source water protection plan includes non-point sources such as agricultural run-off, barges and other transportation modes, chemical and oil storage, electrical generation, and constructed discharges from communities or industries. The plant is able to obtain data from the Ohio River in almost real time and has extensive monitoring and analytical capability in addition to being a member of the ORSANCO Organics Detection System. GCWW’s source water protection plan also involves tracking land use changes and trends, discharge permit applications and renewals, and regulatory changes.

Rich noted that for spill response planning, GCWW considers the distance to a spill, and does contingency planning based on whether the spill is seven miles or less to the plant or more than seven miles to the plant. (Seven miles upstream from the plant would be in the vicinity of the Hamilton County line.) On-going relationships with upstream Ohio River groups expedite response time and data exchange when a spill occurs. A voluntary notification program asks for parties to contact the GCWW directly to report a spill event after the EPA and regulatory agencies are contacted, to allow more time to respond and implement containment procedures. In addition, significant water storage in reservoirs allows for flexibility in closing the river intakes.

Although there are typically over 100 spills per year on the Ohio River, most are small and require no action from GCCW, although the National Response Center is always
alerted. In 2014, however, three spills were significant enough to trigger the implementation of GCWW’s contingency planning and draw some media attention: the January industrial spill of an estimated 10,000 gallons of 4-methylcyclohexanemethanol (MCHM) by Freedom Industries in Huntington, West Virginia on the Elk River, an Ohio River tributary; the June Statoil Eisenbarth well pad fire which released a significant quantity of fracking-related chemicals, fire-fighting water and blowback fluid to Oppossum Creek, an Ohio River tributary in Clarington, Ohio; and the August spill of 9,000 gallons of diesel fuel from Duke Energy’s Beckjord Power Plant because of an operator error.

All these spills were duly reported: flow models were designed and measures were in place when the spills reached Cincinnati. GCWW was able to respond the most efficiently, however, to the diesel spill because Duke Energy notified them directly within 90 minutes of the spill. GCWW immediately shut down raw water intakes and began additional water monitoring to identify the trailing edge of the spill.

After describing each of these 2014 spill events, Rich summarized lessons learned for contingency planning:

--The Contingency Plan must be flexible, understood by all, and easy to enact.
--More often than not, the initial spill information is not correct.
--Communication among a variety of parties is crucial, especially early in the event.
--Response time is the single biggest variable, so a water supplier must be prepared for little to no extra time.
--Be prepared for media interest and provide accurate and timely information.
--Do not over-value secondary containment indicated by a potential pollution source inventory without verifying its integrity.

How the Regulatory Framework Helps to Protect Source Water
Craig Smith, Ohio EPA summarized the evolution of source water protection and noted that there are few federal and state regulations that directly protect a groundwater source outside the sanitary isolation radius. For that reason, Ohio EPA’s Division of Drinking and Ground Waters works with individual state programs in the Ohio Water Resources Council to create a sense of shared purpose.

Craig distinguished between types of source water protection as direct (such as prohibition, setbacks and source engineering controls) and indirect (such as guidance, recommendations, and permitting). He gave several examples where setbacks and prohibitions exist for potential pollution sources, including landfills, Confined Animal Feeding Operations or CAFOs, Class B biosolids, treated wastewater land application and land application systems. He also gave several examples of potential pollution sources where design, engineering and management controls are involved, such as
small flow on-site sewage treatment systems, construction and demolition debris landfills, facility response plans and underground storage tanks.

Examples of addressing potential pollution sources through guidance included recommendations for geothermal heating and cooling systems and road salt storage areas. Craig also cited several types of permit applications and documentation that help to address potential pollution sources. These include documentation of potential water quality impacts required under the National Environmental Policy Act, pipeline permitting regulated by the Federal Energy Regulatory Commission (although many pipelines in Ohio are not FERC-regulated), permits under Section 401 of the Clean Water Act for potential impacts to wetlands, streams and lakes, and permits for industrial minerals and coal mines and oil and gas wells.

As an example of interagency cooperation and the complexity of source water protection Craig also described a case study on recommendations for human and animal waste management near potable water sources. The study was undertaken by the Ohio Water Resources Council and involved Ohio EPA’s Division of Drinking and Ground Waters, the Ohio Department of Agriculture’s Livestock Environmental Permitting Program, the Ohio Department of Health’s Residential Water and Wastewater Program, the Ohio Department of Natural Resources’ Division of Soil and Water Conservation, and the U.S. Department of Agriculture’s Natural Resources Conservation Service. In conclusion, Craig encouraged questions and said that he would be available both after the meeting and on his return to the office at Craig.Smith@epa.ohio.gov or 614-644-2752. (A copy of his December 3rd presentation can also be requested from OKI.)

**Other Business and Adjournment**

Bruce Whitteberry gave a reminder that the next meeting will be February 25th, 2015, will involve a long term climate change presentation specific to the Ohio River Valley, and adjourned the committee at 12:20 p.m.

He also announced the 2015 Groundwater Meeting schedule:

- **February 25** 10:00 AM
- **May 20** 10:00 AM
- **September 2** 10:00 AM
- **December 9** 10:00 AM