Watershed Approach to Toxics Assessment and Restoration

WATAR

Watershed Assessment Section

Site Investigation and Restoration Section

Partnership for the Delaware Estuary Summit
Balancing Progress and Protection –
10 Years of Science in Action

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Background/Context

- Toxic substances in Delaware surface water are largely a legacy issue.
- Primary contaminants of concern are **P**ersistent, **B**ioaccumulative, and **T**oxic substances (e.g., PCBs, dioxins & furans, mercury, & organochlorine pesticides).
- Primary media affected are fish, sediments & soils; heaviest contamination is in areas of greatest industrial/ urban land use.
- Although situation is improving & programs have been effective overall, problems remain, partly due to a compartmentalized approach.

What is WATAR?

- A watershed-scale, integrated, and systematic approach to the evaluation of contaminant sources, transport pathways, and receptors.
- A mechanism to implement and prioritize remediation and/or restoration actions.
- The primary benefit will be restoration of Delaware watersheds impacted by toxic pollutants to fishable status in the shortest timeframe possible.

Funding & Staffing

- DNREC is directing ~$1M in existing funding streams over 5 years.
- Funds being used largely for advanced testing of toxics in surface water, sediments, and biota at known or suspected sources.
- We will utilize in-house staffing to collect samples; outside labs to analyze the samples; and in-house expertise to manage and interpret the data.

What does this Buy?

- A “clearing house” of toxics data, accessible first to staff and eventually to the public
- Detailed assessments of current levels of toxic substances in priority watersheds
- Linkage between sources and sinks using forensics-grade techniques
- Toxics TMDLs as needed
- Sediment guidance under HSCA
- Identification of high priority remediation projects
- Partnerships among government and industry
- Technology transfer

Demonstrated Success of Approach

- Delaware Estuary PCB TMDL
- Christina River PBT Assessment
- NVF Yorklyn/Red Clay Creek Zinc
- **Little Mill Creek/Meco Ditch**
- Delaware River Mercury Methylation Study
- **PCB Trackdown Study**
- Inland Bays Arsenic Assessment
- **Mirror Lake Remediation/Restoration**
- **Ft. DuPont permeable reactive barrier**
- Various dredging projects

Little Mill Creek/Meco Ditch

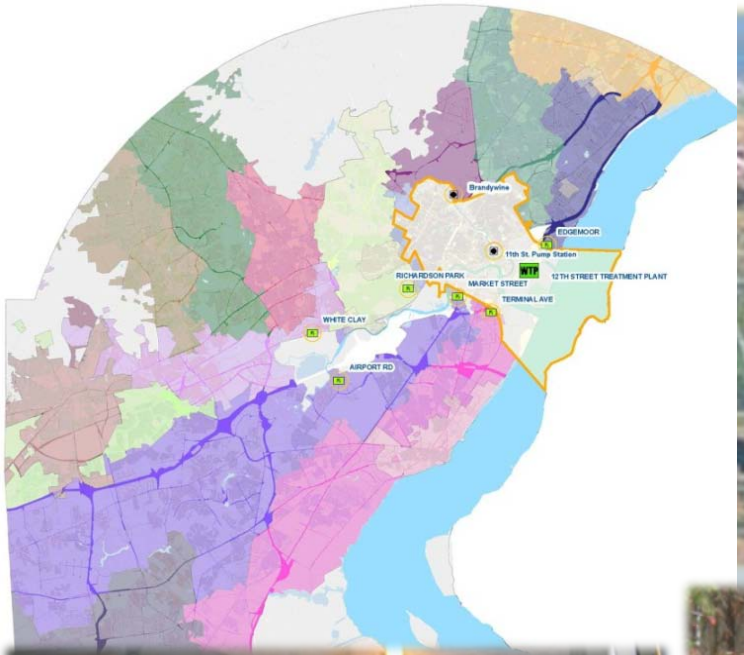
- Partnership between USACE, NCCD, WAS & SIRS
- WAS/SIRS sampling determined that Meco Ditch is an ongoing source of PCBs & PAHs to Little Mill Creek & Christina River, including Peterson Marsh
- Multi-agency effort to address flood risk & environmental impact to receptors concurrently and cooperatively
- Compelling data and analysis used to approach RP at proximal site to initiate new action

Little Mill Creek/Meco Ditch

PCB Trackback

- City of Wilmington, NCC, WAS, SIRS, & DRBC effort to determine where PCBs are entering the sewers
- Loading entering CoW sewage treatment plant not totally removed; residual passes through to Delaware River, exceeding allowable loading
- “Sewer-shed” approach is effective in determining major sources and sinks of PCBs in the CoW, NCC collection system
- Known sites, manifests and infrastructure compiled
- Precise sampling & analysis has quickly determined where major sources are located & provided signatures for other sources
- Compelling evidence for listing of new sites and prioritization of cleanup at existing sites

PCB Trackback



Mirror Lake, Dover

- Contaminated sediments in Mirror Lake impeded an ecological restoration project by DNREC
- Rather than dredge, remedial option used activated carbon (SediMite™) and wetland capping to limit the bioavailability of PCBs, mercury and PAHs
- Combined remediation and restoration (multi-agency)
- Final result includes improved habitat and appearance and reduce ecological, wildlife, & human health risks.
- This is the first State led project of its kind in the U.S., and first full scale application of SediMite™ in the U.S.

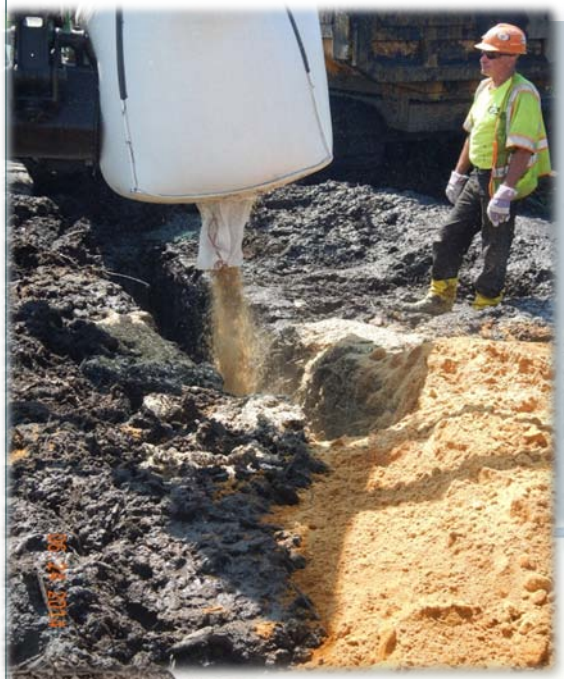
Mirror Lake Remediation/Restoration

Project compelled Governor Markell to start a "Clean Water for Delaware" initiative

Fort DuPont, Delaware City

- Former US military landfill washing into Delaware River
- Exceptionally high lead and other metals in soil and groundwater
- EPA completed Emergency Removal in November 2014
- DNREC supplied EPA with Apatite II™, or fish bone, for up-gradient trench backfill to treat shallow groundwater prior to discharge to Delaware River
- Apatite II™ used for sequestration of metals
- Monitoring points sampled in December 2014 to monitor effectiveness

Fort DuPont Photos



Goals for 2015+

- Christina River watershed sampling – largest in State
- Draft of Sediment Guidance
- Dedicated personnel assigned to database management and data entry of historic data
- Web-based application for data sharing
- Identify additional funding sources based upon proven successes
- Build a self-sustaining WATAR Section within DNREC

WATAR

Questions or Comments?