Environmental Monitoring Database (EMD)

Deb Soule
Melanie Titus
What is in the EMD?

- Primarily raw environmental data
  - observations
  - measurements
  - lab results
  - data logger results
- For various media: water, soil, air
- Data separated by data owner and project
  - Contains data for organizations other than NHDES
- Monitoring location info (where measurements taken)
- Metadata (analytical methods, sample collection methods etc.)
- QC samples (field duplicates, trip blanks etc.)
About the EMD structure

• Originally built in-house in Oracle to store surface water monitoring data for reporting to EPA’s STORET database

• Revised over time to include columns and other media needed by other bureaus within NHDES

• Meets EPA’s national data standards for environmental data
What is the EMD used for?

- Reporting data to the EPA’s Water Quality Exchange (WQX)/STORET through the Exchange Network
- Repository for data used in waterbody assessments
- Repository for NH environmental data generated by any group
- Trend analyses
Examples of data in the EMD

• Beach monitoring
• Shellfish
• Lakes, river, estuary
• Site remediation
• Well siting
• Air monitoring
• Volunteer monitoring
• Complaint investigation
• Superfund
• Biomonitoring
• Regional or waterbody studies
• TMDL (Total Maximum Daily Load) studies
Some EMD data owners besides NHDES

- Upper Merrimack Monitoring Program (UMMP)
- UNH
- 401 Water Certification Permittees
- Great Bay National Estuarine Research Reserve (GBNERR)
- Various NH towns
- NH Fish and Game
- NH Dept of Transportation
- USGS – NH
- NOAA
- EPA

Maybe you would like to be a data provider?
How much data is in the EMD?

- 37 data owners/providers
- 655 projects (groupings of data)
- 26,000+ monitoring locations
- 554,000+ activities
- 4879 QC samples
- 1963 data logger installations
- Millions of results

Some data goes back to the 1950’s!
How can you get to the EMD data?

1) NHDES OneStop EMD Query

2) NHDES GIS OneStop Data Layer
From NHDES home page (des.nh.gov), select OneStop Data and Information.
Select "Environmental Monitoring Data"
Select type of data to query – grab samples or data logger.

Environmental Monitoring Database (EMD)

The Environmental Monitoring Database (EMD) contains both grab (single) samples and results from automated data loggers. These results must be queried for separately. Querying both types of data is recommended to obtain as much monitoring data as possible for the area, time frame etc. of interest.

A "Grab Sample" is one sample from any given sampling station, not collected as part of a continuous record of timed samples. An example would be a single sample collected from a sampling station during a two-week period.

"Time Series Results from Automated Data Loggers" is a set of results from instruments programmed to record measurements at specific time intervals over a given period of time. An example would be measurements taken automatically every 15 minutes during a two-week period.

Please select the type of data to query and then click on Go: Grab Samples
Put in email address and enter query criteria.

Helpful text documents available at top of form.
Some EMD OneStop things to consider

• Only final physical/chemical data is available – no biological data yet
• Don’t enter a value in every query column because “less is more”
• Don’t enter conflicting query criteria such as station type = Lake/Pond and River Name = Merrimack River. Criteria are evaluated as “AND” statements not “OR”.
• May need to refine query by date or location to get # of results below 65,000 row limit
• Read the help texts linked at top of web pages
• Enter a valid email address
What do you get from this query?

- Data returned in an Excel spreadsheet in multiple worksheets
- First worksheet contains data owner, project, monitoring location, and basic activity info
- Second (or more) worksheet(s) contains result info.
- Each result has several metadata columns.
From NHDES OneStop page select “Web Geographic Information System”
Need to request, and be approved, to see sensitive EMD data (wells)

*In the interest of Homeland Security, these data are available only to Registered Users of NHDES OneStop Data Retrieval/Data Provider systems. The OneStop Data Retrieval/Data Provider Registration Form is available online.

**Environmental Monitoring Sites pertaining to water wells are, for Homeland Security reasons, available only to Registered Users of NHDES OneStop Data Retrieval/Data Provider systems.
Scroll down to “Start GIS”

Click here.

Help text is available.
User Registration

Full access to the OneStop Web GIS is available only to Registed Users of the NHDES OneStop Data Retrieval/Data Provider systems. The OneStop Data Retrieval/Data Provider Registration Form is available online.

You may enter as an unregistered guest, but selected, sensitive data will be unavailable to you.

Enter User Information

- Enter as unregistered guest.

User Name

FIN

Password

Login

Forgot your password?

Need help logging in?
Then add more data layers (including the EMD), by clicking on this button.

Zoom in to area of interest (Plymouth in this example).
Check the box for “Environmental Monitoring Sites” and any other data layers of interest.
Select features of interest by box, circle, etc.
Click on station ID of interest to see monitoring details.
Filter monitoring results by analyte or by date.

<table>
<thead>
<tr>
<th>DATE</th>
<th>ACTIVITY ID</th>
<th>PARAMETER</th>
<th>RESULTS</th>
<th>METHOD</th>
<th>STATUS</th>
<th>RESULTS VALID</th>
</tr>
</thead>
<tbody>
<tr>
<td>6/22/2003</td>
<td>VL06220344</td>
<td>ESCHERICHIA COLI</td>
<td>&lt; 5 #/100ML</td>
<td>9213-D</td>
<td>FINAL</td>
<td>YES</td>
</tr>
<tr>
<td>8/20/2006 10:30 AM</td>
<td>2006-4797</td>
<td>ESCHERICHIA COLI</td>
<td>= 110 #/100ML</td>
<td>9213-D</td>
<td>FINAL</td>
<td>YES</td>
</tr>
<tr>
<td>7/1/2007 12:00 AM</td>
<td>P2007-65</td>
<td>ESCHERICHIA COLI</td>
<td>= 114 #/100ML</td>
<td>10029</td>
<td>FINAL</td>
<td>YES</td>
</tr>
<tr>
<td>6/22/2008 10:00 AM</td>
<td>P2008-1</td>
<td>ESCHERICHIA COLI</td>
<td>= 37 #/100ML</td>
<td>10029</td>
<td>FINAL</td>
<td>YES</td>
</tr>
<tr>
<td>7/1/2007 12:00 AM</td>
<td>P2007-65</td>
<td>PH</td>
<td>6.71</td>
<td>4500-H+B</td>
<td>FINAL</td>
<td>YES</td>
</tr>
<tr>
<td>7/1/2007 12:00 AM</td>
<td>P2007-65</td>
<td>PHOSPHORUS AS P</td>
<td>0.02 MG/L</td>
<td>365.3</td>
<td>FINAL</td>
<td>YES</td>
</tr>
<tr>
<td>7/1/2007 12:00 AM</td>
<td>P2007-65</td>
<td>SPECIFIC CONDUCTANCE</td>
<td>36.41 UMHO/CM</td>
<td>2510B</td>
<td>FINAL</td>
<td>YES</td>
</tr>
<tr>
<td>7/1/2007 12:00 AM</td>
<td>P2007-65</td>
<td>TURBIDITY</td>
<td>1.161 NTU</td>
<td>2130-B</td>
<td>FINAL</td>
<td>YES</td>
</tr>
</tbody>
</table>
Some GIS OneStop things to consider

- Old program – can be a little glitchy
- Finalized data only
- No data logger or biological data
Future EMD plans

• Improve and make easier to use the EMD OneStop
• Make more data (biological) available through OneStop
• Bring more parts of NHDES into the database
• Get more data. Need a lot more data across the state to do waterbody assessments. Lots of waterbodies have “insufficient data to assess”.
Want to be a data provider?

• Need data in text, Excel, or Access format
• Provide metadata in documents or as part of dataset
• Be available to answer questions if we have them.
• Become a registered data provider or send Melanie the files.
Benefits of contributing data

- Data security – part of a long lasting repository of data
- Data will be enhanced as much as possible to meet national data standards (becomes a more complete dataset and will have the benefit of being reviewed by a second set of eyes)
- Surface water data will be considered in waterbody assessment process and help fill a void in monitoring data
- Data available on internet through One Stop queries
- Data can be exported to EPA’s STORET/WQX database and be available through national data warehouse.
Questions?

Melanie Titus
603-271-1152
Melanie.Titus@des.nh.gov

Deb Soule
603-271-8863
Deb.Soule@des.nh.gov