eBEACHES Location Data

September 21, 2010

Note: For use beginning with 2009 season data, EPA has revised this SOP to collect, and PRAWN to store beach location data (to include latitude and longitude of beach start and end points), and use the Reach Address Database (RAD) to generate nationally-normalized beach lengths for use in the Beach Program Grant allotment formula (see Appendix A for background).

Process

0. For a new beach, new beach id, new beach-to-ID relationship (e.g., split or merge), or deletion of beach ID, go to 1. For refined location data only (e.g., latitude and longitude) with no beach ID change, go to 2. For a name change only:

    Using the Access Databases, submit changes to the name associated with the EPA Beach ID in the Project Table (Monitoring) and the BEACH table (Notification).

    Using your own database, enter the new beach name in the XML tags: <ProgramInterestName> for notification and <ProjectName> for monitoring. In addition, you should keep a cross-reference table locally so that if someone tries to do a trend analysis of actions and monitoring data, using the old name, they will be able to find out what the new name is. PRAWN and STORET will return only the new beach name when the query is done using the new beach name or BEACH_ID (PROJECT_ID in WQX/STORET), and nothing if done using the prior name.

CGI Federal, Assigns Beach ID

1.

    a. When a state needs a new Beach ID (aka "Project ID" in STORET), (or for a "similar point of access"), the state must submit the name of the beach, the county the beach resides in, and nearest town, to the eBeaches Group at CGI Federal (ebeaches@cgifederal.com) or call 276-889-8659.

    b. If the beach(s) associated with an existing ID are changed, e.g., "merged", "split", or "deleted"; also provide the old-to-new beach relationships. (*Note: When splitting a beach into two or more separate beaches it's possible to either request completely new IDs and mark the original historical or recycle the existing beach ID and request new IDs for the rest. Think about how you want to see historical trend data at a piece of shoreline - you may want to keep historical data with the old (inactive) id, and create new ids, then report the data from the old beach id to both new beach ids for historical background, and then report their data separately going into the future.*)

    c. CGI generates the new Beach ID(s), in PRAWN, (and places a "historical flag" on the no longer used IDs) and informs the state and Research Triangle Institute (RTI).

State Submit Location Data to PRAWN

2.

a. The state uses the Beach ID(s) to submit location data to PRAWN, including latitude and longitude for beach start and end points. (Also see 8 for state submission of post-QA data to PRAWN). Past experience has shown that intermediate beach points will not likely be necessary, as the shape of the beach (and the length) is inherent in the RAD and underlying National Hydrographic Dataset (NHD). In any case, states that use these L/L data to perform their own reach indexing work (see 3) should notify RTI immediately upon upload of location data to PRAWN, to alert RTI to look for separately e-mailed index shapefiles.

The latitude/longitude data should be QA/QC'd before submitting to PRAWN. Google earth can be used to perform this QA/QC. Download Google earth from http://earth.google.com/download-earth.html. Double click on the Google earth icon to open the application. You can check the latitude/longitude data by entering the points in the "fly-to" tab in the Google Earth side bar.

[Note: The latitude and longitude or shape file will continue to be used to index the beach to the RAD to enable length calculation, relating to other data (e.g. permitted outfall locations), and hydrologic networking (e.g., modeling).]

b. CGI will make available a list of new or revised Beach IDs and their associated latitude and longitude points to RTI on at least the last workday of each month during the standard data loading timeframe (October through May). Outside of this timeframe, this will happen as needed.

RTI Assists/Does Indexing Provides to NHD

[expect all to use 3c for 2009-2010]

3.

    a. RTI assists the states to add the Beach ID(s) to NHD Reach Indexing Tool (NHD-RIT) and to index the beaches to the NHD; for assistance contact RTI (owsupport@rti.org) at 800-844-0638); Information on NHD-RIT can be found.

    b. Or, the state uses NHD-RIT to index (or re-index) the beach to the NHD. The state notifies RTI when they are done, and sends a shapefile. The state should send the NHD event shapefile to RTI as soon as possible when they upload the same latitude and longitude data that they used for indexing to PRAWN.

    c. Or, with EPA approval from Bill Kramer (kramer.bill@epa.gov), the state could request that the latitude and longitude be reach indexed by RTI.

4. RTI creates Beach event tables or performs QA/QC on the state's NHD event shapefiles.
    a. If 3b, then RTI works with the state to Q/A the session or file and sends a file to INDUS to use to update the RAD. [use Beach Review Tool Instructions_Final]
    b. If 3c, then RTI performs reach indexing and performs internal QA/QC. RTI will send the event shapefile to INDUS for update of the RAD.

INDUS Updates RAD and RTI Provides Calculated Lengths to PRAWN

5. INDUS updates the RAD, and notifies RTI and EPA. (The new or revised beach indexed location is shown in EnviroMapper displayed in BEACON upon completion of the NHD update).
6. RTI requests an extract of new and/or revised indexing, assures that the start/end points are for the whole beach and not individual NHD segments, and calculates `Program_Interest_BeachLength` associated with Beach **ID**, and sends to CGI for loading into PRAWN.

CGI Assembles All Locational Data in PRAWN

7. CGI loads the file into PRAWN. PRAWN will assign "beaches and similar points of access" a default minimum nominal length for RAD calculated values. This will replace any shorter RAD length, and will only be used for allotment formula purposes.

EPA Confirms All State Data Q/A for List of Beaches and Allotment Formula

8. EPA confirms with states that all location data updates from Q/A, or other changes to PRAWN, are completed by August. The indexed beach location data generated from the latitude and longitude data stored in PRAWN is sent to all jurisdictions for review.   The instructions for the review process can be downloaded at: http://water.epa.gov/grants_funding/beachgrants/upload/BeachReviewTool.pdf.
9. Annually (September 2), EPA extracts from PRAWN a draft report "List of Beaches" with a table: by state, by beach, flagged if monitored, with latitude and longitude, state reported length, and RAD calculated length, with a separate table showing results of length calculations by state by five length groups and state total, and sends it to the states for Q/A.
10. Based on the Q/A, states and EPA make necessary corrections to PRAWN and/or RAD, as above.

EPA Use of List of Beaches and Length Data

11. This data will be used as needed to publish the National List of Beaches and a length-based allotment formula; and will be posted on the Beach website at http://water.epa.gov/type/oceb/beaches/list_index.cfm.
12. The new and/or revised indexed location data are published on a beach-by-beach basis on BEACON [as displayed in EnviroMapper, see 5; updated in the RAD; and as entered into PRAWN, see 7.]

Appendix A

Acquiring and Storing Beach Length Data

This Locational Data Management SOP (as described above) uses PRAWN to store beach location data (latitude and longitude), and the Reach Address Database (RAD) to generate nationally-normalized beach lengths for use in the Beach Program Grant allotment formula.

Why use RAD in the beaches allotment formula?

The RAD is regularly used by national water programs to provide statistics on program features, (i.e., number of beaches, beach miles by state) that are comparable nation-wide, e.g., they have been normalized in scale, units of measure, precision, and accuracy. This means the length of a beach in the

RAD may be different than the length measured by a state. However, it is equitable for all states because the normalized lengths are included in each state's total beach miles, and presented as their percentage of the national total in the proposed allotment formula.

The RAD stores the reach address of each beach or "similar point of access", which has been linked to the underlying surface water features (ocean, estuary, lakes, etc) in the NHD. These reach addresses record the geographic location and extent of each beach or similar point of access in both tabular and spatial formats. Periodically, EPA retrieves an updated version of the NHD from USGS and migrates all reach addresses then in the RAD to this new version, providing a version of the NHD with the latest set of reach address indexed to the latest hydrologic basemap.

The only information about an individual beach or similar point of access stored in the RAD is its reach address. Additional descriptive information for each feature is stored in PRAWN and/or STORET. A unique Beach ID (Project ID in STORET) is used to relate the reach address for each Water Program feature found in the RAD with the other detailed data for that feature found in the separate databases. This unique Water Program feature ID is also called the Entity ID. Using Geographic Information System (GIS) terminology, the Water Program feature ID is the key for relating the event tables and shapefiles with the corresponding attribute information for that feature.

Metadata for the NHD use data elements from the "Content Standards for Digital Geospatial Metadata" (Federal Geographic Data Committee, 1994). The standard allows the identity, quality, spatial data organization and reference, entity and attribute definitions, distribution sources and forms, and metadata of the data to be documented. The metadata are provided as text files. A general set of metadata accompanies each set of data. This metadata provides general information that applies to all data. PRAWN (and its companion notification Access database) uses the relevant standards in a data structure similar to WQX/STORET to reduce user training effort. (See Appendix B)

On August 13, 2008, EPA published (OW–FRL–8703–9) an ACTION: Notice of Expected Changes to the Grant Allocation Formula for Awarding Grants under the BEACH Act.

That notice described EPA's intent to base allotment of certain unused funds and new funds over $10M on a formula that includes a factor, by jurisdiction, of total monitored beach miles, grouped into categories (pp. 47159):

They [the Workgroup] started their discussions with a common view that actual beach miles would be the most preferable measure because it is a direct measurement, rather than a surrogate and is also available as a data field in EPA's Program tracking, beach Advisories, Water quality standards, and Nutrients (PRAWN) database. PRAWN is used by EPA to store information on State and Territorial beach advisories and closings. However, the workgroup found several issues with the current information in PRAWN on actual total beach miles.

The workgroup noted significant differences in reported beach mileage due to several factors. First, States and Territories have different ways for computing total beach miles in the data that they input into PRAWN. Second, not all States and Territories had input complete information about beach length into PRAWN. Finally, the workgroup noticed what appeared to be inconsistencies between entries in PRAWN and similar data from other sources.

As a result, the workgroup recommended that EPA improve the completeness and accuracy of the total beach mile data in PRAWN before considering using it in the allocation formula. EPA is continuing to compile and review for accuracy beach mileage information for all the BEACH Act States and Territories and expects to have more reliable data on beach mileage by mid-2009. EPA has designed this effort to address all of the data limitations discussed above, as well as any additional limitations or concerns that may arise during this effort. The effort includes using the same latitude/longitude data standards as used in other EPA and State databases and a quality assurance review of all data used to generate the beach lengths. EPA is conducting this effort with the States and Territories to ensure that beach mileage amounts are accurate and thus would be appropriate to use for BEACH Act grant allocation formula purposes in the future.

The workgroup categorized monitored beach miles data into groups that were relatively close in magnitude. The workgroup observed that monitored beach miles tended to fall into five groups: less than 32 miles, 32-63 miles, 64-249 miles, 250-500 miles, and greater than 500 miles. Grouping information in this way has the effect of minimizing differences between the lowest and highest data points. EPA considers grouping data appropriate when there is a wide disparity between the high and low points of data.

Appendix B

Metadata Requirements for Latitude and Longitude Coordinates

PRAWN (and its companion notification Access database) uses the relevant standards listed below in a data structure similar to WQX/STORET to reduce user training effort.

The metadata standards for latitude longitude coordinates were produced by the Environmental Data Standards Council (EDSC). The EDSC seeks to promote the efficient sharing of environmental data through the development and adoption of data standards. If you would like more information on the EDSC you can visit their website, http://www.exchangenetwork.net/standards/

The Latitude/Longitude Data Standard is a set of data elements that can be used for recording horizontal and vertical coordinates and associated metadata that define a point on the earth. The latitude/longitude data standard establishes the requirements for documenting latitude and longitude coordinates and related method, accuracy, and description data for all places used in data exchange transaction. Additional information on the latitude/longitude data standard can be found on the web at, http://www.exchangenetwork.net/standards/Lat_Long_Standard_08_11_2006_Final.pdf