Data retrieval instructions for data presented in Murphy, S.F., and Stallard, R.F., eds., 2012, Water quality and landscape processes of four watersheds in eastern Puerto Rico: U.S. Geological Survey Professional Paper 1789, 292 p.

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1. Go to the U.S. Geological Survey (USGS) National Water Information System (NWIS) web site <http://waterdata.usgs.gov/nwis>.

2. On the left side, click on "Water Quality" to go to <http://waterdata.usgs.gov/nwis/qw>.

3. On the left side, click on "Field/Lab Samples" to go to <http://nwis.waterdata.usgs.gov/usa/nwis/qwdata>.

4. In the (second) "Site-Identifier" column, select "Site Number".

6. Click "Submit".

7. In the first box of the web page that opens enter a site number. The site numbers for the five watersheds discussed in PP 1789 are:

```
SITE NUM   SITE NAME
50051310 - Rio Cayaguas at Cerro Gordo, PR
50061800 - Rio Canovanas near Campo Rico, PR
50065500 - Rio Mameyes near Sabana, PR
50074950 - Quebrada Guaba near Naguabo, PR
50075000 - Rio Icacos near Naguabo, PR
```

8. Scroll down to the section "Retrieve Water-Quality Samples for Selected Sites".

9. Put dates into the boxes of "Retrieve data from: [1991-01-01] to: [2005-12-31] (YYYY-MM-DD -- Blank = all data).

10. Click on the radio button for "Samples that include above selection criteria and all associated parameters".

11. To download all data available for a site during the 1991-2005 time interval, click on the radio button for "Tab-separated data" and select "One sample per row with tab-delimiter for remark codes".

    Another option, for shorter output, is to select the parameters to be retrieved and to put a list of numeric parameter codes into the box labeled “Samples that include above selection criteria plus one or more of these parameters (Limit: 200 codes)” or a file as is indicated (one numeric code per line) in the data-retrieval form. The PP-1789 parameter list is as follows:

```
00010 Temperature, water, degrees Celsius
00061 Discharge, instantaneous, cubic feet per second
00094 Specific conductance, water, unfiltered, field, microsiemens per
      centimeter at 25 degrees Celsius
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00095 Specific conductance, water, unfiltered, microsiemens per
      centimeter at 25 degrees Celsius
00300 Dissolved oxygen, water, unfiltered, milligrams per liter
00400 pH, water, unfiltered, field, standard units
00403 pH, water, unfiltered, laboratory, standard units
00535 Loss on ignition of suspended solids, water, unfiltered,
      milligrams per liter
00608 Ammonia, water, filtered, milligrams per liter as nitrogen
00613 Nitrite, water, filtered, milligrams per liter as nitrogen
00618 Nitrate, water, filtered, milligrams per liter as nitrogen
00660 Orthophosphate, water, filtered, milligrams per liter
00671 Orthophosphate, water, filtered, milligrams per liter as
      phosphorus
00681 Organic carbon, water, filtered, milligrams per liter
00915 Calcium, water, filtered, milligrams per liter
00925 Magnesium, water, filtered, milligrams per liter
00930 Sodium, water, filtered, milligrams per liter
00935 Potassium, water, filtered, milligrams per liter
00940 Chloride, water, filtered, milligrams per liter
00945 Sulfate, water, filtered, milligrams per liter
00955 Silica, water, filtered, milligrams per liter as SiO2
29803 Alkalinity, water, filtered, Gran titration, laboratory,
      milligrams per liter as calcium carbonate
80154 Suspended sediment concentration, milligrams per liter
```

12. Click "Submit".

13. Save and rename the file as is appropriate.

14. In the resulting tab-delimited file, the site description is followed by a list of column identifiers, notes, and then the tab-delimited data.

15. The tab-delimited file can be imported into a spreadsheet for further processing. Please note, this download will contain data that were part of other USGS efforts (separate from the PP 1789 dataset). These data typically lack field specific conductance (parameter 00094), and some values (such as specific conductance less than 1 microsiemens per centimenter) may be erroneous. The number of parameters can vary among sites (unless only specific codes listed above are selected). Some water-quality parameters, such as "hardness", are derived from the input data.

16. Repeat 1-15 for each site desired (one only needs to change the site number).

17. These data are provisional in the sense that errors (such as conversions between working units and NWIS units) can be corrected in the PP 1789 dataset. Please report any suspected errors to <stallard@usgs.gov>.