

NPDES Compliance Inspection Manual

Appendix AH



EPA Publication Number: 305-K-17-001
Interim Revised Version, January 2017

Appendix AH – Mapping Tool (Region 5)

U.S. EPA REGION 5 FACILITY MAPPING PROTOCOL AND WEATHER DATA SOURCES

When provided with a name and address, look up the coordinates of a facility using Terraserver. Latitude/longitude can also be found with Google Earth.

Create an ArcMap project that has these layers:

- NAIP (National Agriculture Imagery Program)
- NHD Flowlines (National Hydrography Dataset)
- DRG (Digital Raster Graphic)
- Bing Maps Aerial Hybrid Layer
- 303d and 305b (Impaired and Assessed Waters)
- County Street Map or other roads layer
- Existing universe of CAFOs shapefile (It helps to have this layer on to make sure a new facility hasn't already been mapped).

Zoom to the coordinates of the facility.

If a facility does not have a waterway flowing through it, use the distance tool and the DRG to measure the distance to the nearest NHD line following drainage contours on the DRG. If the first NHD line is categorized as "Intermittent", highlight the stretch of waterway path in the NHD layer until it gets to a perennial stream. From those selected stream reach portions, the length (in kilometers) can be summed in the attribute table. Multiply the summed length by 0.62 to get the length in miles to the perennial waterway. Note the direction of the flow off the facility and the distances.

Also make note of the county, impairments and reasons for impairments (if impaired), whether the waterway has been assessed, the road or intersection, and location of nearest town.

Make two maps for each facility, one is zoomed out and one is zoomed in.

The zoomed out map shows enough detail to identify the facility in relation to the closest perennial waterway. Aerial imagery is the background and NHD, 303d and/or 305b are displayed. The facility is identified with a callout box. In the callout box, the flow direction off the facility and distances (to intermittent and perennial) are listed. The title of the map has the facility name and address (if known), the county, the latitude/longitude, and any other location information to help one find the facility when out on the road.

The zoomed in map is zoomed in enough to only display the facility. The callout box is left on this map, but moved to where it is not covering any facility structures. This map is the one that can be used during the inspection to identify the name of each structure, etc.

Rainfall Frequency Tables, Average Annual Rainfall, and Historic Climate Data

Updated 06/18/13

**** Some of these links work better with a browser other than Internet Explorer ****

Rainfall Frequency

For a given "Rainfall Event", like a 5 year / 2-hour storm, there is a certain amount of rain that would need to fall in that timeframe to be considered a storm of that magnitude.

These rainfall amounts are dependent on where in the country you are located.

There are tables created by NOAA for listing the precipitation frequencies for each state. The document that contains these tables is called NOAA Atlas 14. It was created in 2004 and revised in 2006. There are different volumes of the Atlas for different states. If you want to view the pdf of the atlas for your state, use this link: <http://www.weather.gov/oh/hdsc/currentpf.htm>

You can use the NOAA Atlas 14 document directly, but it is much easier to use the Precipitation Frequency Data Server. NOAA's Precipitation Frequency Data Server gives output based on the NOAA Atlas for Precipitation Frequency. This is the link for the Precipitation Frequency Data Server: <http://hdsc.nws.noaa.gov/hdsc/pfds/index.html>

When you open the webpage, leave the default settings for DATA DESCRIPTION. Click on the map in the desired state, and then move the red crosshair to the observation site (or anywhere on the map), scroll to the bottom of the webpage and the server will give you a table for the different rainfall events.

Average Rainfall and Climate Normals

Climate normals are the averages in weather parameters. They were recently updated. The climate normals are calculated on a 30-year average and are updated every 10 years. The new normals, which use the climate data from 1981-2010, were released on July 1, 2011 by the National Climate Data Center.

The NOAA site to get this data is:

<http://www.ncdc.noaa.gov/land-based-station-data/climate-normals/1981-2010-normals-data>

First choose whether you want Monthly, Daily or Annual/Seasonal Normals. Then choose the state and city of interest.

(You can also access the old 1971-2000 Normals by clicking on the link on the front page. If you want the Daily Normals, click on the Daily Station Normals 1971-2000 (CLIM84) product and search by your location. If you want monthly and annual normals, click on the Monthly Station Normals 1971-2000 (CLIM81) product and find your location.)

Historic Climate Data

Historic climate data beginning the week of April 9, 2012, this data is now free.

For historic climate data, including rainfall, snowfall, and temperature use NOAA's National Centers for Environmental Information. There is a lag of time between the actual date in question and the date that the information is posted on NCEI. This is due to the quality control checks that NCEI performs on the data. NCEI's main website is:

<http://www.ncdc.noaa.gov/oa/ncdc.html>

To access climate data, go to the website link, above. Once at this website, on the blue banner on the top, click on the Data Access link and then on the Quick Links link. The 23 sections have links for different publications/information. Some of the more popular items one would need are listed below.

Weather Data for One Day or One Month for One Location

In Section 1: "U.S. Local Climatological Data" click on the first link "Quality Controlled Local Climatological Data (QCLCD). Once you click on the "Quality Controlled Local Climatological Data" link, choose the state that you want data for and press Continue. Then Select Desired Station from the choices in the menu. These usually relate to airports, public works offices, or larger cities.

Then choose the desired Year and Month. The next page will allow you to choose one day in that month or choose "E" for the entire month. You also have the option to switch from Daily to Hourly Product.

Note the links in Section 1 for data older than 2005.

Weather Data for the Month or Year for One State

In Section 6: "Climatological Data Publication" you can get the Monthly or Annual reports for one state. After deciding if you need the Individual Monthly Issue or the Individual Annual Issue, follow the menu prompts for your state of interest to get the climate summary from all reporting stations in that state. The next page that comes up will contain a link to the pdf of that report. Click on the link and save the pdf to your computer, renaming it if you desire.

If you are interested in only one site in the Annual Report, you need to first find what division number is associated with your site. One of the last pages will have a map of the state broken up into numbered divisions. Find out which division your site is located in. From the beginning of the report, scroll through the pages until you see a heading for that division. Choose one of the reporting stations within that division.

In the Annual Report, there will be sections for monthly information for:

- Total Precipitation and Departures from Normal
- Average Temperatures and Departures from Normal
- Temperature Extremes and Freeze Data
- Monthly and Seasonal Cooling Degree Days
- Soil Temperatures
- Total Pan Evaporation and Wind Movement (not usually complete for all stations)

Storm Data and Unusual Weather Phenomena

In Section 5, you can get reports by month of severe storm events. The reports have all the states listed and the state data is broken up by region (Central, Northwest, etc.) and county. It will list the date of the event, time, damage done to property and crops and the character of the storm.

Hourly Precipitation Data

In Section 7, you can get a statewide listing by month of the hourly precipitation reports.

Weather Data from National Weather Service

For recent weather that has not been archived, like within the past few months, there are numerous web-sites that make this available. Realize that the weather data is not “official” until it has been quality control checked by NCDC, though.

One website that you can use is the National Weather Service. <http://www.weather.gov/>

Click on the map in the location you are interested in and the website will navigate to the page of the Weather Forecast Office for that area. On the left hand side of the page will be a link for the Local Climate. Clicking on that link brings you to a page that gives you a choice of products, a location and the timeframe of the weather data you want.

The first product, the Daily Climate Report, is what you would use to see the temperature, precipitation, and other weather conditions on that one day. There are other products that may be of better use, depending on what you are looking for.

The locations offered on this page are the locations that are certified by the National Weather Service. You may not be able to get all products for all the locations.