NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

SPDES DISCHARGE PERMIT
Mixing Zone Form - Instructions

Line by Line Instructions

The following information is intended to aid in the completion of the Mixing Zone Form. This is not an all-inclusive list but may be helpful to provide suggestions on methods to complete the form. Please contact the identified SPDES permit writer for your facility for further information or clarification.

General Resources	
DECinfo Locator	An interactive map to access DEC documents and public data about the environmental quality of specific sites, as well as outdoor recreation information. http://www.dec.ny.gov/pubs/109457.html
National Oceanic and Atmospheric Administration	NOAA provides real-time water level information that is updated every 6 minutes. Search for a station by name or click on the map icon to search for a station by region. https://tidesandcurrents.noaa.gov/stations.html?type=Water+Levels
United States Geological Survey	Current water data and streamflow conditions for New York. https://waterdata.usgs.gov/ny/nwis/rt
Hudson River Environmental Conditions Observing System	Monitoring stations geographically distributed along the Hudson and Mohawk Rivers, and are equipped with sensors that continuously record a suite of water quality and weather parameters. https://hrecos.org/

Observation Information

This section includes information about the permittee/observer and the conditions at the time the observations were taken. If previously conducted studies or references are available for this information, please attach to this form.

Name & Title of Observer	The observer is the person who collects the field information and is filling out this form (i.e. chief operator or consultant). They will be the person DEC will contact when clarification is needed.
Phone Number	Phone number for observer completing this form.
Email	Email for observer completing this form.
Date of Observation	Date that conditions were observed at outfall location.
Name of Receiving Waterbody	Name of the receiving waterbody. If effluent discharges to a ditch, please indicate the first named waterbody downstream that can be found on a map.
Weather conditions at time of observations	Indicate any recent weather events that would cause the receiving stream or discharge volume to be outside of the “usual”.
Average Width (ft)	Average width of the receiving waterbody on the day of observation. Typically measured as the distance from bank to bank at observed water height. Methods may include: • Using an online mapping tool to measure the distance; • Physically measuring the distance across the receiving waterbody.
Average Depth (ft)	Average depth of the receiving waterbody on the day of observation. Methods may include: • Physically measuring depth in the receiving waterbody; • Using data from previous analyses in receiving waterbody; • Utilizing online resources of water level data collection such as NOAA - https://tidesandcurrents.noaa.gov/stations.html?type=Water+Levels
Local Depth at Outfall (ft)	Depth of water at discharge location (outfall location). Methods may include: • Physically measuring depth in the receiving waterbody; • Using data from previous analyses in receiving waterbody; • Utilizing design drawings applicable to the current outfall.
Has the receiving waterbody run dry in the last 5 years?	Have you observed the receiving waterbody run dry? Receiving waterbodies are “dry” if there is less flow in the receiving waterbody than the effluent flow. This can be a simple observation; no metering is necessary to complete this question. Check yes or no.
Are tidal conditions present?	Is there an observed tidal influence on the receiving waterbody? Check yes or no.
Measured Stream Velocity (fps)	How fast is the receiving waterbody flowing on the day of observation? Record your source / method. Methods may include: • Physically measuring velocity in the receiving waterbody; • Using a flow meter to measure velocity of the receiving waterbody; • Additional methods described here: https://www.appropedia.org/How_to_measure_stream_flow_rate#Bucket_method

Receiving Water Information

All Receiving Waters	Surface Temperature (°F)	Temperature on the surface of the receiving waterbody upstream of the discharge point. A single in-field temperature reading is sufficient at time of observation. For discharges to lakes, it is preferable to have both summer and winter data points for surface temperature. If this data is available, please include / attach.
	Bottom Temperature (°F)	If the depth of the receiving waterbody is greater than 10 ft, please include the bottom temperature data measured upstream of the discharge point. A single in-field temperature reading is sufficient at time of observation. For discharges to lakes, it is preferable to have both summer and winter data points for bottom temperature. If this data is available, please include / attach.
	Describe seasonal variability of receiving waterbody	Describe how the flow of the receiving waterbody changes throughout the year. Include a description of typical high and low flow conditions. Describe any upstream or downstream controlled flows (dams, canals, flood dikes).
Saline Waterbody	Density information required for dischargers to saline waterbodies (Class SA, SB, SC, SD, I).	
	Surface Density (kg/m^3)	Include surface density of the receiving waterbody and the source. Methods may include: • Direct measurement using a hydrometer; • Calculate density from measured temperature and conductivity; • Published studies/data available on receiving waterbody.
	Bottom Density (kg/m^3)	If the depth of the receiving waterbody is >10 ft, include bottom density and the source. Methods may include: • Direct measurement using a hydrometer; • Calculate density from measured temperature and conductivity; • Published studies/data available on receiving waterbody.
Additional Information: Include any previously conducted studies or references available to describe the receiving waterbody.		

Effluent Discharge Information

Effluent Temperature (°F) **AND / OR** Effluent Density (kg/m^3)	Include the effluent temperature and/or density, whichever is available, and source of data. Describe whether the value is an average of a range of data, or just a single data point.

Outfall Location & Configuration

Latitude and longitude of discharge point (end of pipe):	This is the location of the outfall structure, not the facility. This location may be different than what is described in the permit and can be found using common online tools (Google Maps, coordinate locators such as: https://www.maps.ie/coordinates.html.).
Describe the outfall	Describe the outfall in a narrative. Include known condition or any background on installation. Include any issues since installment.
Additional Information: Include any schematics, drawings, sketches, photos, or other information available to describe the outfall.	

Option #1: Bank Discharge – Outfall Pipe/Channel Does Not Extend Into Waterbody

Outfall Pipe	Select either the outfall pipe or channel/ditch option.
OR	If you have an outfall pipe, please include the pipe diameter and indicate whether the pipe is above (or partially above) the water surface. If the pipe is completely submerged (below water surface) indicate the height above the bottom of the waterbody.
Channel / ditch	If effluent is discharged over land prior to entering the receiving waterbody, this is considered a ditch. If you discharge through a channel/ditch include the dimensions of the channel and include the depth of water in the channel (A), local depth where the channel meets the waterbody (B), and the slope of the receiving waterbody (C) (refer to diagram in form).

Option #2: Extended Pipe Discharge – No Multiport Diffuser

A. Distance from bank to end of pipe (ft)	Distance from the bank to the opening of the outfall pipe.
B. Outfall pipe diameter (in)	Outfall pipe diameter. Commonly found on drawings or schematics of the outfall.
C. Distance from bottom of outfall pipe to immediate bottom of channel (ft)	Measure the space between the immediate bottom of the channel and the bottom of the outfall pipe. This may be difficult to measure and can most easily be found on drawings or schematics of the outfall.
D. Angle Between Bank and Outfall (degrees)	This angle is commonly 90 degrees (pipe is perpendicular to shoreline).

Option #3: Extended Pipe Discharge – With Multiport Diffuser

Additional Information: Attach a detailed drawing or sketch of the diffuser. This is required for facilities that have a multi-port diffuser. If a drawing is not available, please contact the permit writer identified on the first page of the mixing zone form.

Number of Openings	How many ports or nozzles are on the diffuser line?
Orientation of Openings	Do the ports or nozzles face the same direction, or do they alternate?
Nozzle Direction	Do the nozzles fan out or all they all in a straight line?
A. Length of Diffuser Line (ft)	How long is the section of outfall with the diffusers?
B. Height of Discharge (ft)	What is the height from the top of the port / nozzle to the channel bottom?
C. Diameter of Nozzle (in)	Interior nozzle diameter.
D. Distance from bank to middle of diffuser line (ft)	What is the approximate distance from the bank to the center of the section of outfall pipe with diffusers?
E. Distance from bank to first diffuser nozzle (ft)	What is the distance from the bank to the first port / nozzle on the outfall?

Outfall Photos & Schematics

Be sure to include photos of your outfall and any drawings available. If you are using the fillable PDF version of the mixing zone analysis form, you may upload photos directly to the form by clicking the grey box and browsing your computer for the file. **While in the browse window, be sure to choose "JPEG" from the drop-down file-type menu.** You may not see your file if this step is not completed first. This will attach your photo to the PDF in the "attachments" tab of the adobe document. **You will be prompted a second time to attach your photo.** This will display the photo as a preview in the box. You may attach more than two photos by repeating this process. This will include the additional photos as attachments. For help, contact your permit writer or simply include the photos as attachments to the submission.