The Water Supply Authority has received recent inquiries about the odor in the vicinity of the Spruce Run Reservoir and a possible association with the current construction activities at the dam. The odor is not a result of the construction project. Please see below, for an August 20, 2025 reply to a previous inquiry, for more information about the odor.

Thank you for sharing your concern. The odor is likely due to the release of deep water from the reservoir, which at times contains naturally occurring odor producing compounds.

During the summer, the reservoir normally undergoes thermal stratification. A warmer upper layer of water (epilimnion) receives sunlight, mixes with the atmosphere, and hosts algae's photosynthetic activity. All of this keeps the epilimnion oxygenated. Below this, a lower, colder layer (hypolimnion), doesn't receive sunlight and becomes oxygen depleted throughout the summer. At these depths without oxygen, anaerobic bacteria break down organic matter, producing odorous compounds, including a potential for hydrogen sulfide (H2S) gas, which often has a noticeable rotten egg smell particularly at low concentrations.

Spruce Run Reservoir is an important part of water supply for over a million people in central New Jersey. Depending on base flow in the existing rivers and the downstream demand for water, releases are typically executed in the summer months. The water from Spruce Run Reservoir is released into the outlet stream from a structure referred to as the Spruce Run vault, which is located behind the Halstead Street Apartments. This week, releases have been approximately 100 million gallons per day, which are relatively high. This flow rate can change frequently, mostly based on rainfall in the area. The releases draw water from the deeper part of the reservoir due to the release tower's design and the reservoir's level. This deeper water contains the hydrogen sulfide gas, which is released into the surrounding air as the water enters the stream. You can check our website where we update release flow rates daily (Mon-Fri).

https://www.njwsa.org/uploads/1/0/8/0/108064771/data.pdf

The odor is normally at its worst later in the summer. It is not entirely clear as to why the odor is occurring earlier, or worse, this summer. Some theories follow:

- Since the reservoir was drawn down to historic lows last year, much of what is normally under water began growing grass and other plants, and became covered with leaves in the fall, etc. – this may have created more organic matter on the bottom of the reservoir for anaerobic microbes to feed off of this summer, resulting in the production of more odorous compounds than in past years.
- A function of climate change is earlier stratification, which would mean the hypolimnion is devoid of oxygen earlier in the summer and the smell presents earlier.

As the surface water cools, it mixes more with the lower, colder water, bringing oxygen back into the hypolimnion. This should abate the smell. At Spruce Run, oxygen normally begins getting into the deeper water in early September and the entire water column becomes fully oxygenated around the end of October, but this also depends on the weather and reservoir fill level.

The releases must continue in order to provide a raw water source for purveyors who draw water from the river to treat and distribute to finished water customers. We have made operational changes to try and withdraw water from higher levels of the reservoir. Thus far, our efforts to do so have not been successful.

Authority staff tested the area near the release for hydrogen sulfide (H2S) using multi-gas meters normally used for atmospheric monitoring. While no H2S was detected, it is important to note that the odor is noticeable at very low concentrations.

Thank you,

New Jersey Water Supply Authority