

Combined Sewer Overflows

What is a combined sewer system?

When we dispose of household sanitary wastewater, it travels through a system of sewer pipes to a sewage treatment plant. In some cities, storm water run-off from roofs, driveways, parking lots and streets flows into the same set of pipes that carries sanitary wastes. This is referred to as a *combined sewer system*.

Why do we have combined sewer systems and combined sewer overflows?

Many sewer systems built before the mid-20th century disposed of sewage by simply allowing it to be directly discharged untreated into rivers and streams. These sewer lines also carried storm water runoff to the river.

Concern for water quality and public health eventually led cities to build sewage treatment plants where wastewater was to be treated before discharge.

To get sewage to the treatment plants, large sewer lines called interceptors were constructed along the edge of the river. Diversion dams were built inside the old combined sewer lines just upstream from their openings into the river in order to divert sewage into the interceptors. This new system worked to get all sanitary sewage to treatment plants during dry weather.

However, as flow in combined sewers and interceptors increase from runoff during rainstorms, a point is reached when the capacity of the interceptors is exceeded. The flows then rise over the top of the diversion dams and untreated sewage mixed with stormwater overflows into the river through the old river discharge openings. These openings, often referred to as *outfalls*, were left in place to act as "relief valves" to prevent sewage from backing up into basements during storms.

When these overflows occur they are referred to as *combined sewer overflows*, or CSOs.

What are the risks associated with the discharge of raw sewage contained in CSOs?

Raw sewage can carry a variety of bacteria, viruses and other organisms that may cause illness. Those persons most likely to be affected by this sewage include water skiers, swimmers, people who fish and other people involved in water contact sports.

In addition, CSOs contain a variety of pollutants which, depending on the circumstances, may be harmful to aquatic life inhabiting rivers and streams.

What has been done about CSOs?

In Oregon, DEQ has worked for many years with cities to improve water quality and to eliminate CSOs.

This effort has been successful. In 1980, an estimated 31 Oregon communities had combined sewer systems and experienced CSOs.

By 2001, only Portland and Astoria still have combined systems that regularly experience CSOs. Both cities have legal agreements with DEQ requiring substantial correction of their problem: Portland by 2011 and Astoria by 2022.

For more information

For more information on combined sewer overflows or an update on the Portland and Astoria CSO projects please contact:

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