

# Focus on: Boeing Auburn Site Monitored Natural Attenuation



Example of a wetland helping break down contaminants over time.

## More information

Please visit the project website for more information and to comment:  
[bit.ly/ECYBoeingAuburn](http://bit.ly/ECYBoeingAuburn).

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## Special accommodations

To request ADA accommodation including materials in a format for the visually impaired, call Ecology at 360-407-6700 or visit [Ecology.wa.gov/accessibility](http://Ecology.wa.gov/accessibility). People with impaired hearing may call Washington Relay Service at 711. People with speech disability may call TTY at 877-833-6341.

## En español

Si le gustaría recibir documentos en español, por favor llame a Amelia Min-Venditti al 360-819-0304 o envíe un correo electrónico a [preguntas@ecy.wa.gov](mailto:preguntas@ecy.wa.gov).

## What is monitored natural attenuation?

Monitored natural attenuation (MNA) involves closely monitoring the natural breakdown of chemicals on a contaminated site until reaching cleanup standards.

These processes occur in the soil and groundwater (the water that flows beneath the surface of the earth) at the same time:

- **Dispersion and dilution.** The chemicals are spread out (dispersed) and watered down (diluted) as they travel with the flow of groundwater, away from the contamination source over time.
- **Chemical reactions.** The chemicals on the Boeing Auburn site, trichloroethylene (TCE) and vinyl chloride (VC), break down through chemical reactions in the soil and groundwater.
- **Biodegradation.** Living bacteria naturally found in soil and water consume contaminants over time.
- **Sorption.** As groundwater flows through soil, chemicals stick to carbon in the soil. This removes them from the groundwater.
- **Evaporation.** TCE becomes vapor and moves into the small air pockets around soil particles. These soil gases eventually reach the surface, reducing the amount of TCE in the groundwater.

## Why use this cleanup method?

Ecology and Boeing measured chemicals in the groundwater and used computer models to understand how TCE travels in the groundwater at the Boeing Auburn site. The model and groundwater sampling indicated that MNA, paired with a treatment called enhanced bioremediation (see details in [Focus on: Boeing Auburn Site Enhanced Bioremediation](#)<sup>1</sup>), would effectively reduce contaminants in soil and groundwater because the TCE has reached **low levels** that are naturally decreasing, and **Ecology is directing Boeing to carefully monitor the contamination.**



Figure 1. A monitoring well on the Boeing Auburn Site. Boeing will take samples from monitoring well access points to track the concentration of TCE on the Boeing Auburn site over time.

### Next steps

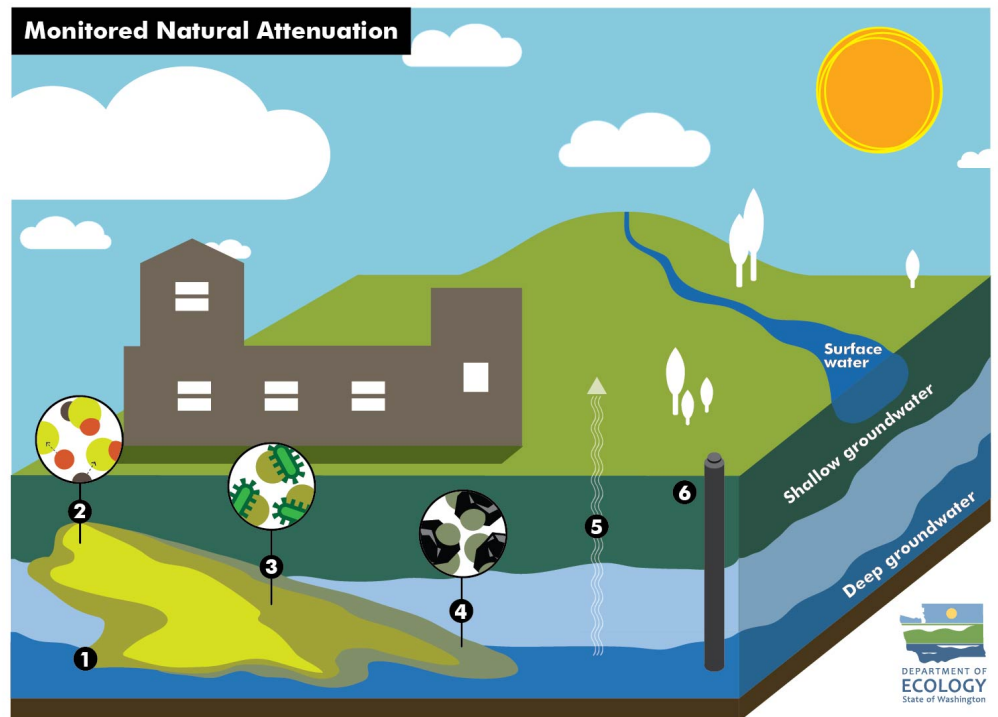
We invite you to review and comment on a draft feasibility study, draft supplemental feasibility study, and draft public participation plan.

You can view and comment on these documents at [bit.ly/BoeingAuburnComments](http://bit.ly/BoeingAuburnComments).

### Public meeting

A public online meeting for this comment period is scheduled for Monday, April 26th, 2021, from 6:30 p.m. to 7:30 p.m. The meeting will be recorded. To access the recording after April 26th, visit [bit.ly/ECYBoeingAuburn](http://bit.ly/ECYBoeingAuburn).

When the public comment period ends, we'll consider all public comments and may change the documents based on them. After considering all public comments, the documents will become final.



- 1 Dispersion and dilution**  
The contaminants are spread out (dispersed) and watered down (diluted) in groundwater as the pollutants travel further away from the source over time.
- 2 Chemical reactions**  
The contaminants on the Boeing Auburn site, trichloroethylene (TCE) and vinyl chloride (VC), break down through chemical reactions in the soil and groundwater.
- 3 Biodegradation**  
Living bacteria naturally found in soil and water consume contaminants over time. Microorganisms such as bacteria are most effective at breaking down pollutants when pollutant concentrations are low.
- 4 Sorption**  
As water flows through the site, pollutants stick to carbon in the soil, which removes it from the groundwater.
- 5 Evaporation**  
TCE evaporates into the small air pockets around soil particles, and these soil gases eventually reach the surface, reducing the concentration of TCE in the soil and groundwater.
- 6 Monitoring well**  
Natural attenuation processes are observed in groundwater using monitoring wells with screens in each zone for "monitoring" of contaminants.

### How long will the process take?

There are two clean water standards: one is for groundwater and one is for surface water. Surface water cleanup standards for TCE and VC are about ten times stricter than groundwater standards for TCE. The impacted groundwater isn't a source for drinking water in this area. See the cleanup standards infographic for TCE at [bit.ly/ECYBoeingAuburn](http://bit.ly/ECYBoeingAuburn).

The model predicts that using **only** MNA on the Boeing Auburn Site would take about **30 years to clean the site to groundwater standards** and **about 100 years to clean the site to surface water standards**. However, we will also use enhanced bioremediation (injecting bacteria into groundwater that eats the TCE contaminants) with MNA to reach cleanup levels faster. Read more about bioremediation in our [Focus on: Boeing Auburn Site Enhanced Bioremediation](#)<sup>1</sup> publication.

<sup>1</sup> <https://apps.ecology.wa.gov/publications/SummaryPages/2104019.html>