

# Tacoma Smelter Plume

## 2017 Annual Report



DEPARTMENT OF  
**ECOLOGY**  
State of Washington

Ecology Publication No. 17-09-182

December 2017



# Table of Contents



Purpose of the Report .....	ii
Asarco Settlement .....	1
Tacoma Smelter Plume Map .....	2
Tacoma Smelter Plume History .....	3
Tacoma Smelter Plume Project Plan .....	4
Cleanup Risk Management Priorities .....	5
 2016 – 2017 Accomplishments	
Residential Yard Sampling and Cleanup Program .....	6
Education & Outreach Programs .....	8
Soil Safety Program .....	10
Technical Assistance Program .....	11
Ruston/North Tacoma Superfund Area .....	12
Other Work Supported by the Project .....	13
Conclusion .....	14
Tacoma Smelter Plume Team Members .....	15

# Purpose of the Report

This report describes how the Department of Ecology (Ecology) is using the Asarco settlement to manage the risk from the Tacoma Smelter Plume. It provides an update on cleanup progress and efforts to manage human health risks. The report covers:

- The plan for managing the Asarco settlement.
- Cleanup strategies and priorities.
- Accomplishments and 2017 performance measures.

Most of the report data are from October 1, 2016 through September 30, 2017.

# Asarco Settlement

## Asarco's legacy in Washington

### Contamination from smelters and mines

The American Smelting and Refining Company (Asarco) was founded in 1899. Asarco operated two smelters and four mines in Washington, leaving a legacy of contamination.

The **Tacoma smelter** operated from 1890 to 1986. The Town of Ruston grew up around it. Air emissions from the smelter contaminated over 1,000 square miles of soil in the Puget Sound region, called the Tacoma Smelter Plume (plume).



## The 2009 Asarco bankruptcy settlement

### Washington becomes part of the nation's largest environmental settlement

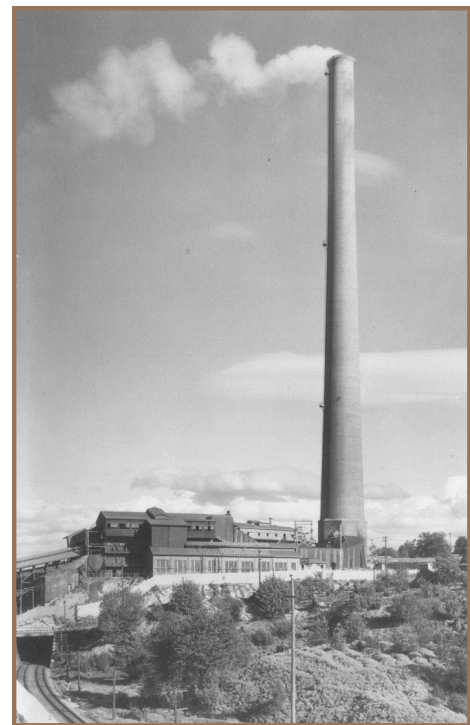
In 2005, Asarco declared bankruptcy, largely due to environmental liabilities from its nearly 100 cleanup sites across the country. The State of Washington joined the federal government and other states in a suit against Asarco that spanned four years.

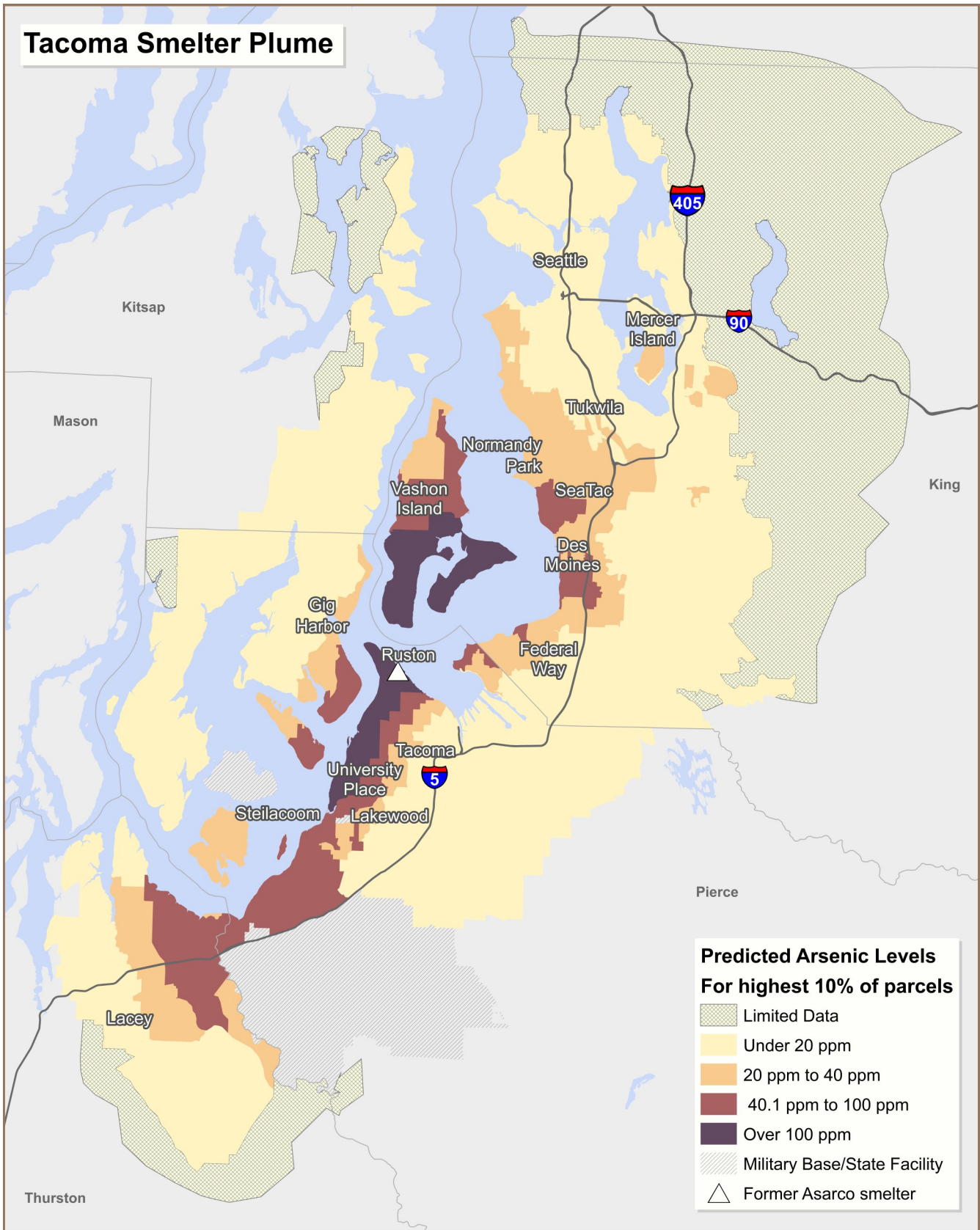
In November 2009, Asarco emerged from bankruptcy, having paid out the largest environmental settlement in U.S. history. The total settlement was \$1.79 billion for past and future cleanup costs, and interest earned over the four years. Washington's share was \$188.5 million—nearly 90 cents for every dollar claimed.

### Tacoma Smelter Plume communities benefit from \$94.6 million for replacing soil and reducing risk

Asarco settled for \$94.6 million for the future costs of managing the risks of the Tacoma Smelter Plume. It covers soil replacement for play areas and residential yards, ongoing education and outreach, and technical assistance for those voluntarily cleaning up their own properties.

Most funds will go to replacing soil in yards in Ruston, north and west Tacoma, and southern Vashon-Maury Island neighborhoods, which have the highest contamination. See pages 4-5 for more about planned settlement spending.





With 90 percent certainty, at least 1 in 10 parcels will have arsenic in soil at or above levels shown. Predictions are based on distance and direction from the former Asarco smelter, and on sampling data from forested and other soils undisturbed by development. Actual arsenic levels may vary greatly from parcel to parcel. Arsenic levels are shown in parts per million (ppm). The State Cleanup level for arsenic is 20 ppm. The Action Level for soil replacement is 100 ppm.

# Tacoma Smelter Plume

## Tacoma Smelter Plume at a glance

**Total Settlement: \$94.6 million**

**Counties: Thurston, Pierce, King**

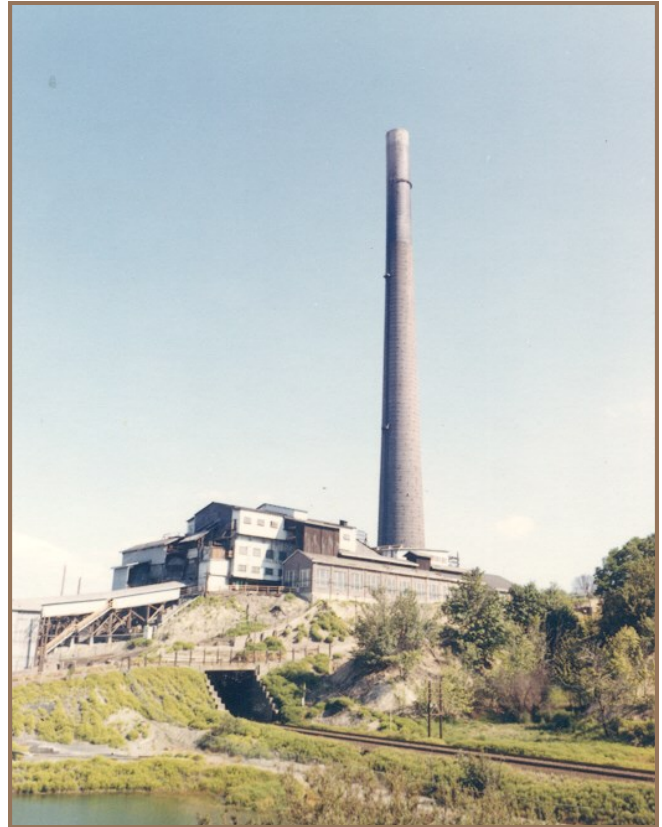
**Total size: More than 1,000 square miles**

**Cleanup focus: Surface soils**

## Tacoma Smelter Plume history

In 1890, a lead smelter began operating on the border of north Tacoma and Ruston. In 1905, Asarco purchased it and converted it to a copper smelter in 1912. Its smokestack emissions dispersed arsenic, lead, and other heavy metals across a 1,000 square mile area—the Tacoma Smelter Plume (plume).

Arsenic and lead pose a potential, long-term health risk. Within the plume, hundreds of thousands of people may be exposed by accidentally ingesting or inhaling contaminated soil. Children are at highest risk because they put dirty hands and toys in their mouths, and because their bodies are still growing and developing.



Former Asarco smelter and its 571-foot smokestack

## Understanding patterns of contamination helps to prioritize the work

The Tacoma smelter used high-arsenic ores. Its 571-foot smokestack was believed to be the tallest in the world when it was built. These factors, along with wind patterns and topography, created the broad pattern of contamination shown in the map on page 2.

Arsenic levels are higher closer to the former smelter and decrease with distance from it. Areas of higher contamination pose a larger risk to residents. The majority of the \$94.6 million settlement is going to sampling and replacing soil in neighborhoods with higher concentrations.

## Early health risk management focused on community outreach and safety actions

Starting in 2000, Ecology funded the health departments in King and Pierce counties for work related to the Tacoma Smelter Plume. The funding covered education and outreach programs, as well as soil sampling to better understand the plume extent.

The main goals of outreach were to raise awareness and promote “healthy actions”— behaviors that reduce soil exposure, such as hand-washing. The health departments used surveys, focus groups, and other feedback to develop a suite of outreach materials and strategies for reaching children, parents, and caretakers, in particular.

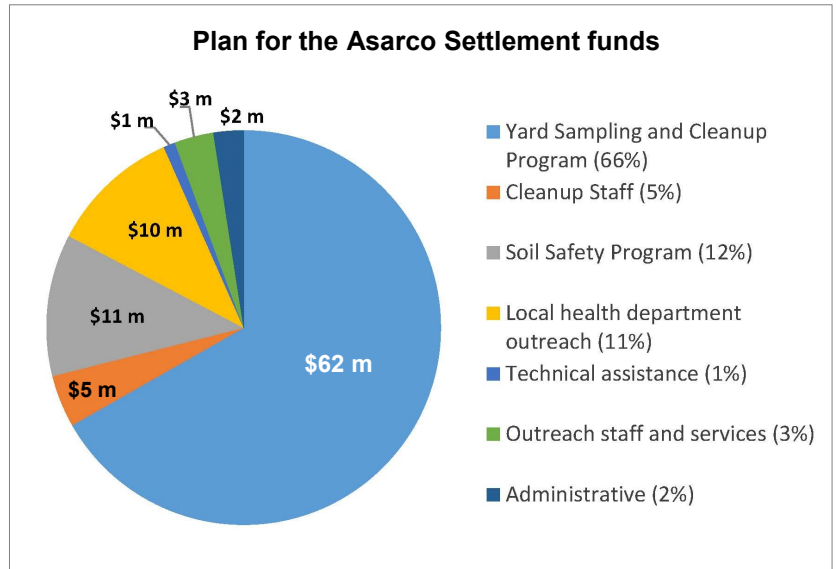
In 2005, the Area-Wide Soil Contamination law (Chapter 70.140 RCW) led Ecology to develop the Soil Safety Program. At first, the program provided free soil sampling and replacement for play areas at schools and childcares. In 2010, using funding from the Asarco settlement, we expanded it to include parks, camps, and multi-family housing play areas.

## Plan for managing the Tacoma Smelter Plume

Using lessons learned from earlier outreach and play area safety actions, Ecology developed a plan in 2012 that focuses work in four main areas:

- **Yard Program**– Sample and replace soil from existing residential yards in areas of highest contamination.
- **Soil Safety Program**– Continue sampling and replacing soil in child play areas at schools, childcares, parks, and camps.
- **Outreach and education**– Continue programs at health departments in King, Pierce, and Thurston counties.
- **Technical assistance**– Work with local governments and developers to encourage voluntary cleanup.

The Yard Program will use the majority of the Tacoma Smelter Plume settlement funds (see pie chart and table).



Breakdown of the \$94.6 million (m) Asarco settlement for the projected cost of managing the risk from the Tacoma Smelter Plume.

### Tacoma Smelter Plume planned budget and activities

	Budget	Category	Activities and staffing
66%	\$62m *	Yard Program	Contracts to sample yards and replace soil more than 100 ppm arsenic
12%	\$11m	Soil Safety Program	Contracts to sample play areas and replace soil more than 20 ppm arsenic
5%	\$5m	Cleanup staff	Six Ecology staff to manage contracts, field work, and data
11%	\$10m	Local health department outreach	Interagency agreements fund outreach programs in King, Pierce, and Thurston counties
3%	\$3m	Outreach staff and services	Mass media advertising, surveys, home soil testing program, and one staff person
1%	\$1m	Technical assistance	One Ecology staff technical assistance coordinator
2%	\$2m	Administrative	Equipment, staff training, and one staff person

\* This amount reflects the original estimate for the Yard Program.



## Risk management priorities: Settlement funds help protect human health

### Ecology continues to sample and replace soil on residential yards

The Yard Sampling and Cleanup Program (Yard Program) is under way, with 1,181 yards already slated for soil replacement. By the end of 2017, more than 245 of those yards will be complete. We completed sampling offers to all residential yards and sampled 3,759 yards outside of the EPA Study Area (see page 6) to determine if they qualify for free soil replacement.

### Soil Safety Program continues to sample schools, parks, childcares, and camps

Since 2006, we have sampled more than 1,000 child play areas including schools, parks, childcares, camps, and multi-family housing. We replaced soil or posted signage at 86 childcares, 25 schools, and 25 parks.

Over the past year, we continued these efforts and replaced soil at Parkside Park in Des Moines and planned work on four childcares, one of which will be completed by the end of 2017.

### Dirt Alert outreach efforts promote healthy actions

Dirt Alert programs in Pierce, King, and Thurston County health departments raise awareness about arsenic and lead. Program goals include educating the public about reducing soil exposure and encouraging healthy actions to manage risk. During 2017, across the three programs, outreach staff tested soil at 177 homes through the Home Soil Testing program (see page 8), talked to more than 7,800 people at events, and reached more than 6,700 families through mailings.

### Technical Assistance

Ecology provides free technical advice on planned and completed cleanup of contamination within the Tacoma Smelter Plume (see page 11). We partner with local permitting offices in King, Pierce, and Thurston counties to encourage landowners and developers to replace soil during property development.

In 2017, eleven landowners and developers joined Ecology's Voluntary Cleanup Program. Collectively they cleaned up 218 acres of contaminated soil within the plume, and each received a No Further Action determination from Ecology.



A contractor excavates contaminated soil from a yard in Tacoma.



Through the Soil Safety Program, Ecology has replaced soil or posted signage at 86 childcares, 25 schools, and 25 parks.



Ecology provides free technical advice and partners with local permitting offices to address contaminated areas being developed.

## Yard Sampling & Cleanup Program

### Work is underway to sample and replace soil in yards in Tacoma and Vashon-Maury Island

The Residential Yard Sampling and Cleanup Program (Yard Program) provides free soil sampling for residential yards in the service areas shown in green and yellow (see map to right).

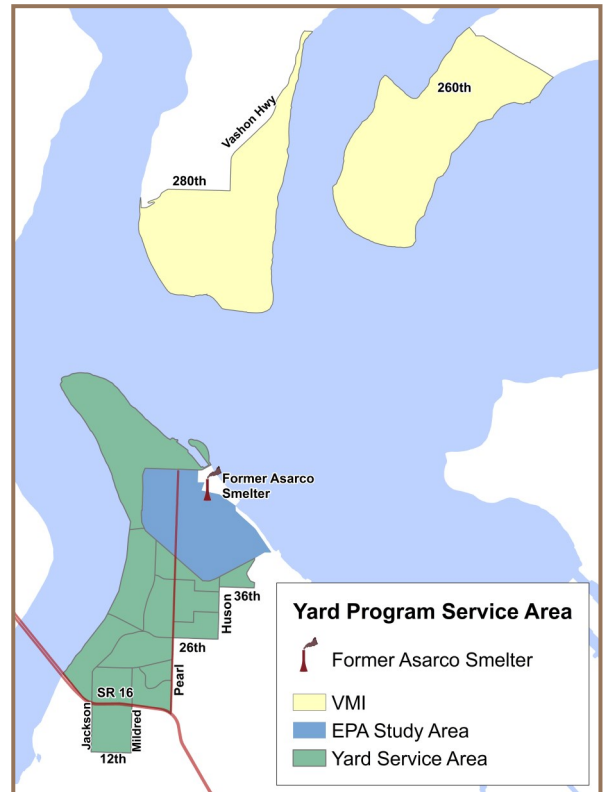
Ecology is offering free cleanup, also known as soil replacement, for portions of yards with levels over:

- 100 parts per million (ppm) for arsenic; or
- 500 ppm for lead.

### Ecology identified 713 residential yards for soil replacement in the Study Area

In the 1990's and 2000's, Asarco under the direction of the Environmental Protection Agency (EPA) sampled soil in over 2,800 residential yards and replaced the soil of more than 1,600 yards in the Study Area (see map right). The EPA's action level for arsenic is 230 ppm (see page 12).

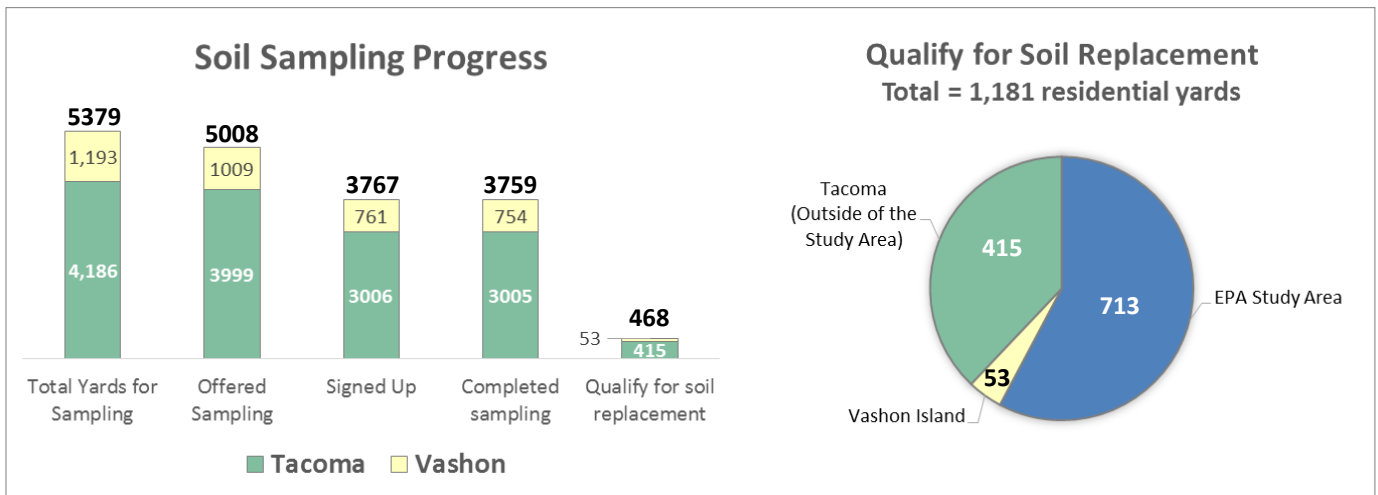
With the help of the Tacoma-Pierce County Health Department (TPCHD), we reviewed their sampling results and cleanup records to identify yards with areas still above Ecology's action level of 100 ppm for arsenic. We found soil in **713 yards** that qualify for soil replacement within the EPA Study Area.



**Yard Sampling and Cleanup Program Service Area.** Soil replacement is in its fourth year in the EPA Study Area.

### Soil sampling identified 468 more residential yards that qualify for soil replacement

Since 2013, TPCHD and contractors sampled soil in 3,759 yards throughout the service area (outside the EPA Study Area). Of those, we identified 468 yards for soil replacement. Overall, we have data for more than 6,500 yards, and there are 1,181 yards slated for soil replacement in the program (see pie chart below).

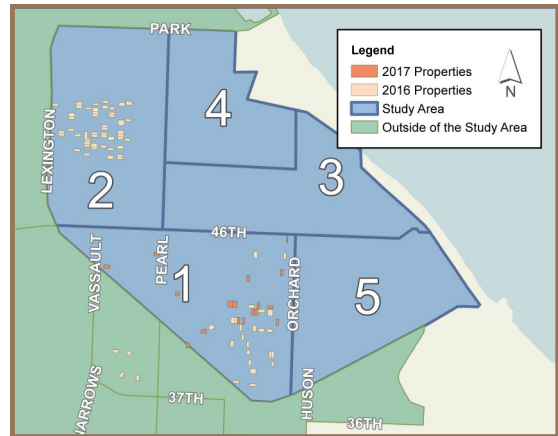


**Yard Program progress measures as of Sept., 2017.** The chart on the left shows our soil sampling progress broken out by each area, Vashon-Maury Island and Tacoma (outside the Study Area). The pie chart on the right shows where the 1,181 yards that qualify for soil replacement are located within our service area.

### Construction underway on 16 residential yards

In early 2017, we completed work on the 81 yards started in 2016. In September 2017, we started replacing soil on 16 yards. This work will continue through early winter (see map to right).

By the end of 2017, we will have replaced soil on a total of 245 yards. In 2017, we will continue to work primarily in the EPA Study Area (see blue area in map to right). In 2018, we will work on two small groups. These properties are funded by the EPA, as arsenic levels are over the EPA action level of 230 ppm (see page 12).



### Planning continues for soil replacement

From September 2016 to September 2017, we met with 99 property owners to plan for soil replacement. We will continue this planning in 2018, for soil replacement that will take place in 2020.

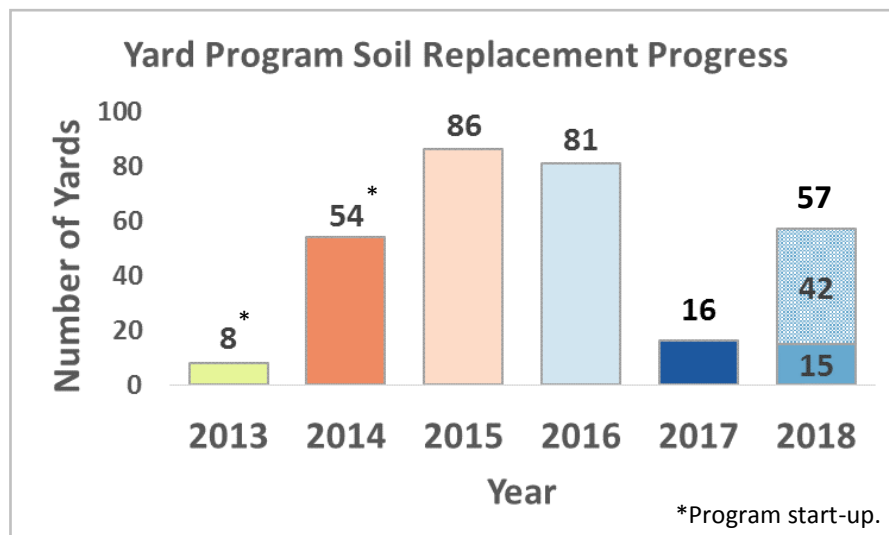
**Yards receiving soil replacement in 2017.** In September 2017, Ecology began work on 16 yards in North Tacoma.

### Lack of funding causes delay

The funding for the Yard Program is from a bankruptcy settlement with the Asarco company. The State holds this funding in the Cleanup Settlement Account, which is a capital budget item. Every two years, the legislature must approve Ecology’s request to spend the funds. In 2017, the State did not pass a capital budget, and we did not receive our budget request of nearly \$24m for the 2017-2019 biennium.

We did receive a re-appropriation of approximately \$4m in remaining funds from last biennium. We also received approximately \$1.2m from the EPA to replace yards with arsenic levels over 230 ppm. These funds allow us to move forward on removing and replacing soil in 15 yards.

In 2018, we will request a supplemental budget to fund our work through the end of the 2017-2019 biennium cycle. For more information on the Cleanup Settlement Account, see the 2017 Cleanup Settlement Account Legislative Report: <https://fortress.wa.gov/DocViewer.ashx?did=68718>



Our goal is to complete soil replacement in 80-100 yards each year.

Lack of capital funding means we are not able to reach our goal in 2017 and 2018.

The patterned blue area on the chart refers to yards that we will be able to complete in 2018 if new capital funding is available.

## Education and Outreach Programs

### Dirt Alert programs raise awareness and promote behavior change

Dirt Alert programs in the Health Departments of King, Pierce, and Thurston County work to:

- Raise awareness about the risks from arsenic and lead soil contamination.
- Educate the public about reducing soil contact.
- Encourage taking healthy actions to manage risk.

Healthy actions include:

- Washing hands after playing or working outside.
- Taking off shoes at the door or using a doormat.
- Vacuuming and damp-dusting regularly.
- Covering bare patches of dirt in the yard.

### Children and the adults that care for them are priorities for outreach

Arsenic and lead exposure pose a larger risk for young children than for adults. Local health departments developed a wide range of outreach tools to target children, parents, teachers, and childcare providers. These include:

- Training childcare providers, who then receive continuing education credits towards relicensing.
- Classroom and library presentations.
- Home visits to do soil testing and education about reducing exposure.
- One-on-one conversations to help people work with their families to take healthy actions.
- Encouraging healthy actions through brochures, nail brushes, damp dust clothes, and door hangers.



Healthy actions, such as wearing gloves while working outside, can reduce exposure to contaminants in soil.

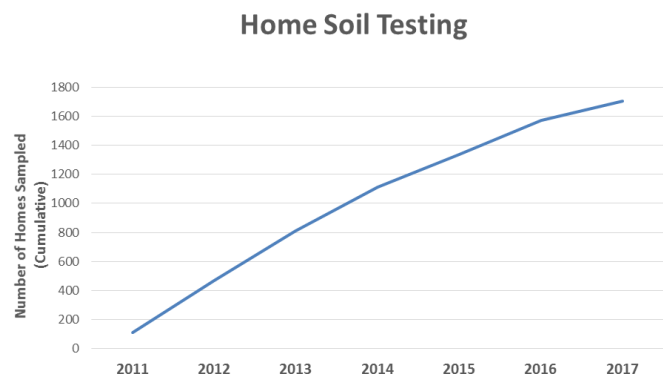


Families are the priority for healthy-action outreach.

### Home soil testing programs have educated thousands of families

Pierce and King county residents can sign up for free home soil testing in the areas of their yards that they use the most. This service is for properties outside of the Yard Program service area (see map on page 6).

Health departments use this as a chance to teach residents about healthy actions. So far, we have successfully reached a total of 1,718 residents through home soil testing.



### Local health department partners

Ecology provides outreach and education funding to:

- Tacoma-Pierce County Health Department (TPCHD)
- Public Health—Seattle & King County (PHSKC)
- Thurston County Department of Health and Social Services

Health departments do home soil testing, one-on-one outreach, presentations, and outreach at events. They work with community groups, help develop materials, and outreach to gardeners, landscapers, and non-English speakers.

In 2017, PHSKC continued to partner with grantees to develop outreach strategies for non-English speaking communities. Grantees include the Latino Community Fund, Korean Women’s Association, and Child Care Resources.

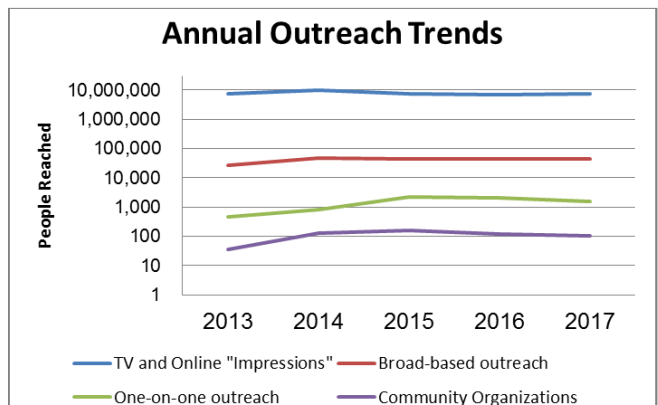


PHSKC and Tilth Alliance had a GroCo soil giveaway to promote gardening in clean soil. We gave away about 32 cubic yards of soil.

### Dirt Alert outreach continues to increase awareness throughout the Plume

We track how many people we reach with Dirt Alert messages. We use many contacts, and different outreach methods to increase awareness and lead to behavior change. In the chart (see chart to right):

- “Impressions” are the number of times an ad runs, multiplied by viewership.
- “Broad-based outreach” includes mailers and events.
- “One-on-one outreach” includes home visits, soil testing, and phone calls.
- “Community Organizations” includes work with community groups, trainings, and community grants.



Dirt Alert outreach statistics from October 1, 2013 to September 30, 2017.

In 2017, we saw an increase in broad-based outreach in the Spanish and Korean communities from the health departments’ work with grantees.

### New videos to promote healthy actions

In 2016, we created three new Dirt Alert videos to show simple actions one can take to reduce exposure to contaminated soil. These videos are being used to provide tips to reduce the dirt and dust in the home, lessening the effects of dust-caused illnesses like asthma and allergies. Not only are these tips for people who live in the Tacoma Smelter Plume area, but they are helpful for anyone living in areas with possible soil contamination.



New videos help promote healthy actions for gardening, mulching, and people who own pets.

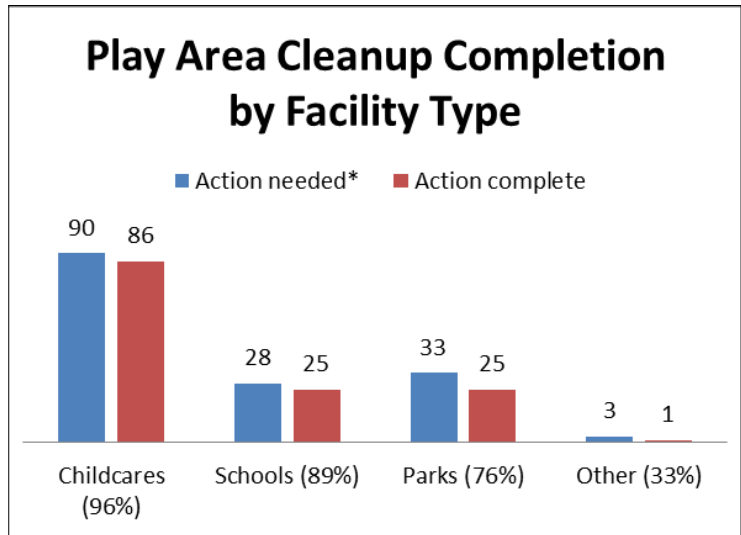
## Soil Safety Program

### Over 10 years of protecting children where they play

The Soil Safety Program provides free soil sampling and replacement for child play areas. Created through 2005 legislation, the program has sampled more than 1,000 child play areas, including schools, parks, childcares, camps, and multi-family housing.

### New legislation affects the program

In 2016, Initiative 1501 was passed. The new law affected the business practices of the Soil Safety Program in 2017. RCW 42.56.640 and 43.17.410 prevent state agencies from releasing family home childcare providers' sensitive information, such as addresses. The Department of Early Learning and Ecology are in the process of working out a data sharing agreement. Until we have a working agreement, we are no longer receiving lists of new family home childcare providers.



**Soil Safety actions since 2006.** Ecology samples soil in play areas. If arsenic or lead are over the action levels, we remove or cover the soil. We took actions at 86 childcares, 25 schools, 25 parks, and one camp. \*Includes some facilities that have since closed.

### Ecology's Soil Safety Program work in 2017 and 2018

Over the past year, Ecology worked with the City of Des Moines to design and start soil replacement at Parkside Park during a park improvement project (see below). In 2017, we also worked on one childcare facility. We put two projects on hold on Vashon Island due to the lack of new capital funds. In 2018 we plan to complete work at three childcares using re-appropriated funds from the 2015-2017 biennium.

#### Parkside Park in the City of Des Moines

In the fall of 2017, Ecology worked with the City of Des Moines to remove and replace contaminated soil at Parkside Park. Parkside is a neighborhood park that was in need of revitalization. While the City had a grant to improve the park with accessible trails and exercise equipment, Ecology was able to fund the replacement of contaminated soil from the play area.

Overall, we removed 1,040 tons of soil. The project was completed in October 2017.

*Upper: Contractors work to keep dust down during soil removal.*

*Lower: Contractors work around trees and remove soil at Parkside Park.*



## Technical Assistance Program

### Encouraging soil replacement during grading projects

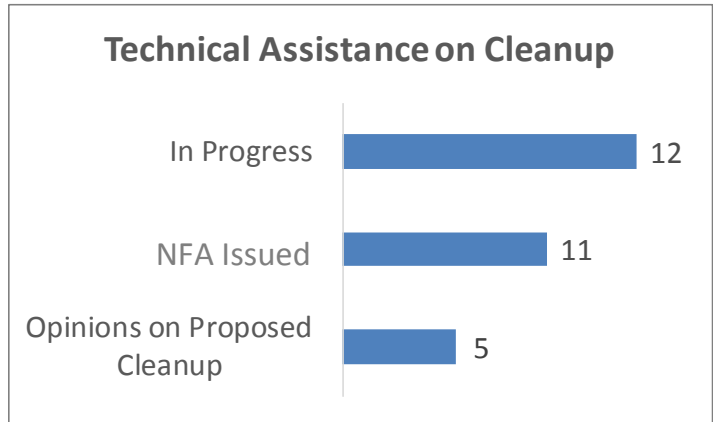
Land development is a good time to test soil for contamination and complete soil replacement. During most grading activities, soil is moved before development. It is easier and cost-effective to replace soil before constructing houses, buildings, and roads.

We partner with 18 local permitting offices in King, Pierce, and Thurston counties to encourage landowners and developers to address soil contamination during development.

### Free technical advice for planned and completed cleanup projects

Through the Voluntary Cleanup Program (VCP), Ecology provides free technical advice on planned and completed cleanup of contamination within the Tacoma Smelter Plume. We issue Opinion Letters on Proposed Cleanup and No Further Action determinations (NFA) when the cleanups meet standard requirements. The opinion letters and NFAs may help developers obtain necessary permits or loans, or sell the property in the future.

Since 2006, landowners and developers cleaned up 667 acres of contaminated soil within the plume. In the past year, they cleaned up more than 218 acres of contaminated soil.



**Technical Assistance on Cleanup in 2016-2017.** Ecology issued 11 No Further Action determinations (NFA) and 5 opinions on proposed cleanup. Overall, Ecology has issued 47 NFA determinations.

### Meridian Campus – Integrating cleanup into development

Meridian Campus is a 1,540-acre single and multi-family development complex in Lacey, Thurston County.

The contamination level across the Meridian Campus development was low. This meant the developer could mix the upper contaminated soil layer with the cleaner soil below, diluting arsenic levels to below the state cleanup level.

To date, the contractor has cleaned up contaminated soil on 265 acres of the Meridian Campus development. Plans are being made to clean up the remaining contaminated soil as development continues.



Puget Meadows West Apartments within the Meridian Campus received an NFA determination in the spring of 2017.

## Ruston/North Tacoma Superfund area

### After Superfund cleanup, remaining contamination still poses a risk

The one mile radius around the former Asarco smelter is a federal Superfund site (map to right), managed by the US Environmental Protection Agency (EPA).

**Work completed by EPA:** From 1993 to 2012, EPA oversaw Asarco's work to sample 2,800 residential yards and cleanup over 1,600.

**EPA action level:** Asarco only did cleanup where arsenic levels were over 230 parts per million (ppm).

**Remaining contamination:** Around 713 yards still have arsenic over Ecology's action level of 100 ppm. Many more are above the state cleanup level of 20 ppm. Ecology is using Asarco settlement funds to clean up the 713 next most contaminated yards.

### Ecology continues to find soil in yards above the EPA action level

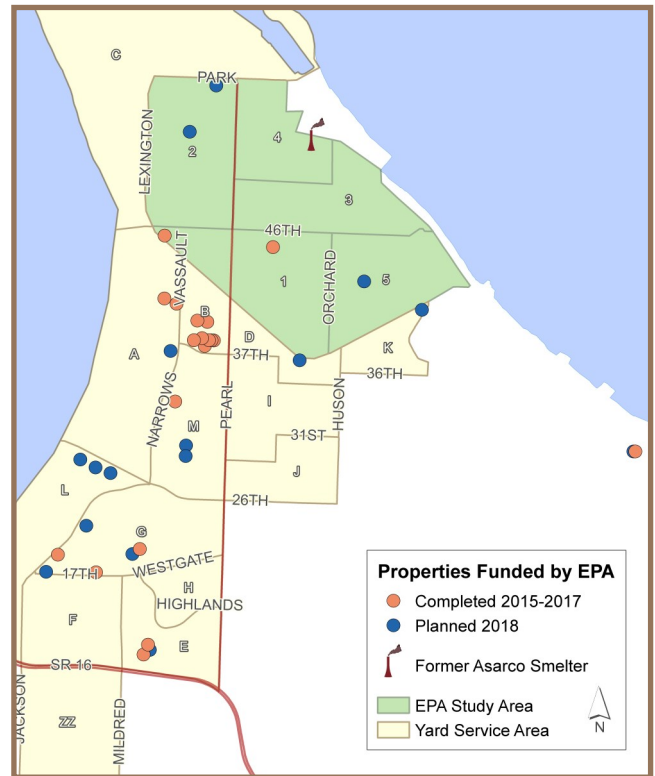
Ecology identified 43 properties outside the EPA Study Area with arsenic over 230 ppm, the action level of the EPA. We have an agreement with the EPA that they will fund the soil replacement for these yards. Since 2015 we completed soil replacement on 19 yards. In 2017, we completed planning visits with 15 property owners for work in 2018 (see map to the right).

### Outreach efforts for new residents in the EPA Study Area

In 2016, the Tacoma-Pierce County Health Department (TPCHD) started a program to deliver outreach packets to new residents in the EPA Study Area. The packets include information on the Tacoma Smelter Plume, past sampling and soil replacement records, and healthy actions. In total, TPCHD has reached 254 new residents through the effort.

### Program to offer assistance for soil disposal in the EPA Study Area

In late 2016, the TPCHD piloted a soil disposal voucher program for residents in the EPA Study Area. The program helps homeowners safely dispose of small quantities of soil. The voucher covers the cost of soil disposal. To qualify for the voucher residents must meet with TPCHD, be in the EPA Study Area, and be able to transport the soil on their own to the Tacoma Recovery & Transfer Center at 3510 S Mullen St.



The EPA funds properties with arsenic above 230 ppm, the EPA action level. We have identified 43 yards above 230 ppm. Eight of these yards have either declined or not responded to our outreach.



Ecology and TPCHD work to provide information to new residents.



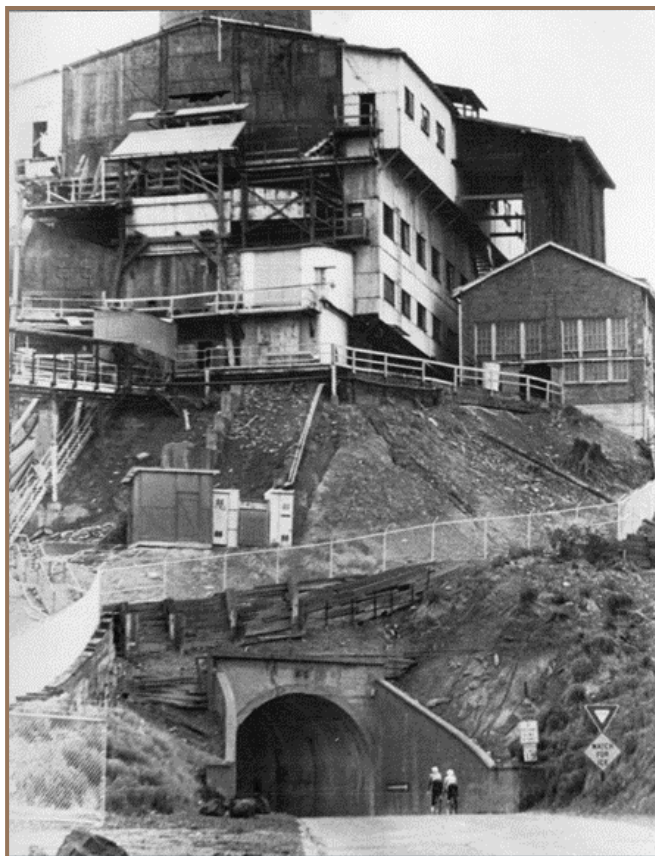
## Other work supported by the Tacoma Smelter Plume project

Ecology's staff provides oversight and technical assistance for other projects funded by appropriations from the Asarco settlement. These projects deal with soils impacted by the former Tacoma smelter. Our role is to ensure contaminated soils are properly managed.

### Ruston Tunnel

In the 2013-2015 biennium, the Legislature set aside \$400,000 of the Asarco settlement for the closure of the Ruston Tunnel. In April 2017, Ecology and the City of Ruston entered into an interagency agreement to complete this project.

The tunnel connected Ruston Way to Tacoma, under the former Asarco plant (photo to the right). Today, a new road goes around the tunnel. The old tunnel is now mostly filled with soil. The next step is to fill the remaining space to make it stable. The final step is to seal the tunnel.



Ruston Tunnel under the former Asarco plant. Photo courtesy of Sherri Forch.

### Point Defiance Trail

In 2013-2015, the Legislature also set aside \$5 million of the Asarco settlement for the Point Defiance Trails Project. The Trails Project completes a seven mile waterfront trail connecting Ruston Way to Point Defiance Park.

Construction is well underway, and Tacoma Metro Parks expects to be completed by December 2017 (see lower photo to right).

To date, all of the \$5 million set aside for the project has been spent. Part of the funding was used for soil management during trail building, including soil excavation, testing, erosion, and sediment control.



Point Defiance Trails Project during construction. Photo courtesy of Atkinson Construction.

## Conclusion

### 2017 Accomplishments and highlights

Our work funded by the Asarco settlement provides important services to residents that live within the plume. With these funds, we are able to increase awareness and change behavior, provide free soil sampling and soil replacement through the Yard Program, sample and replace contaminated soil in areas where children play, and assist landowners to clean up contamination during development.

Yard Program and Soil Safety Program highlights from 2017 include replacing soil in 16 residential yards, one childcare, and one park, and meeting with 99 homeowners to plan for future soil replacement. Our work with the local health departments include reaching 254 residents through new homeowner outreach, talking to more than 7,800 people at events, and creating three new videos with tips to reduce dirt and dust in the home. Ecology's Voluntary Cleanup Program assisted landowners and developers to clean up 218 acres of contaminated soil during development.

As we look towards 2018, we gear up for soil replacement on 15 properties funded by the EPA, and three childcares funded by re-appropriated money from last biennium. If a supplemental capital budget is passed in 2018, we will be able to work on an additional 42 residential yards.



A contractor excavates contaminated soil from a yard in Tacoma.



Stacked sod is staged and ready for placement in a front yard in Tacoma.

## Tacoma Smelter Plume team members

### Toxics Cleanup Program management

Jim Pendowski, Program Manager  
Rebecca Lawson, Southwest Region Section Manager

### Tacoma Smelter Plume information

**Websites:** <http://www.ecology.wa.gov/tacoma-smelter> or [www.dirtalert.info](http://www.dirtalert.info)

#### Contact:

Marian Abbett, P.E.  
Southwest Region, Toxics Cleanup Program  
P.O. Box 47775  
Olympia, WA 98504-7775  
[Marian.Abbett@ecy.wa.gov](mailto:Marian.Abbett@ecy.wa.gov)  
360-407-6257

### Ecology project staff

Marian Abbett, Project Manager  
Jill Reitz, Project Planner  
Stacy Galleher, Outreach Coordinator  
Eva Barber, Technical Assistance Coordinator  
Amy Hargrove, Cleanup Manager

Chris Huff, Construction Manager  
Charissa Young, Construction Manager  
Jackson Barnes, Field Oversight Coordinator  
Matthew Kogle, Field Oversight Coordinator  
Crescent Calimpong, Cleanup Outreach Coordinator

### Local Health Department partners

Tacoma-Pierce County Health Department  
Public Health—Seattle & King County  
Thurston County Department of Health and Social Services

**Thanks to the Tacoma Public Library Northwest Room Digital Collections for historical photos.**

**Lead author and editor:** Crescent Calimpong

### Arsenic in Soils Database and Smelter Search Interactive Map

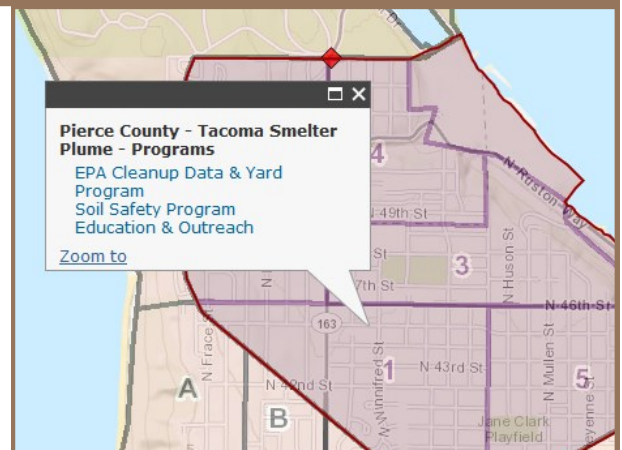
**Arsenic in Soils Database:** The public can find soil sampling and cleanup data through an online database.

Data include sampling results and soil replacement records from Ecology's Yard Program (pages 6-7) and the past Superfund cleanups.

<https://fortress.wa.gov/ecy/areispublic/>

**Smelter Search:** This interactive map links users to programs they qualify for, including soil sampling and outreach.

<https://fortress.wa.gov/ecy/smeltersearch/>



Smelter Search results for a north Tacoma address.

**Washington State Department of Ecology**

Toxics Cleanup Program  
Southwest Regional Office  
P.O. Box 47775  
Olympia, WA 98504-7775

**To request ADA accommodation**, including materials in a format for the visually impaired, call Ecology at 360-407-6790 or visit <https://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.

**Tacoma Smelter Plume, Facility Site ID #89267963, Cleanup Site ID #3657**