



DEPARTMENT OF
ECOLOGY
State of Washington

RESPONSIVENESS SUMMARY

Tacoma Smelter Plume

Asarco Tacoma Smelter Site

March 14th - April 29th, 2013 Public Comment Period

Design and Implementation Plan

Prepared by

Washington State Department of Ecology

Southwest Regional Office

Toxics Cleanup Program

300 Desmond Drive

Olympia, Washington 98504-7775

November, 2013

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More Information

Visit Department of Ecology's Tacoma Smelter Plume website for background on the site, links to documents, and information about the cleanup:
<http://www.ecy.wa.gov/toxics/tacoma-smelter.html>

Site documents are also available at:

Washington Department of Ecology
Southwest Regional Office
300 Desmond Drive SE
Lacey WA 98503
(360) 407-6243

Tacoma Public Library
Northwest Room
1102 Tacoma Ave.
Tacoma, WA 98402
(253) 591-5666

The Washington Department of Ecology (Ecology) has a list of interested residents, organizations, businesses, and agencies. To join the mailing list, please visit
http://www.ecy.wa.gov/programs/tcp/sites_brochure/tacoma_smelter/listserves.html.

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Introduction

This responsiveness summary addresses comments and questions from the March 14th to April 29th, 2013 comment period on the Tacoma Smelter Plume Residential Yard Sampling and Cleanup Program (Yard Program). The Yard Program provides free soil sampling for yards in the most highly-contaminated areas of the plume. Yards with 100 parts per million (ppm) or higher average arsenic or 500 ppm lead qualify for cleanup by Ecology.

The Yard Program is part of the larger Interim Action Plan for the Tacoma Smelter Plume. This plan covers how Ecology will use a \$94 million settlement to clean up some soils, and manage risk throughout the 1,000 square mile plume. The plan also includes outreach programs, technical assistance, and play area cleanups for schools, childcares, parks, and camps.

For more information, visit: <http://www.ecy.wa.gov/toxics/tacoma-smelter.html> and click on the Yard Program link on the left side of the page.

Comments and Ecology Actions

Seven individuals, organizations, and local governments commented. We did not make any changes to the design based directly on public comments. However, we will be taking other actions as a result of some of the comments. Any actions we plan to take are noted in the response.

Ecology's Changes to the Program Design

During the comment period, we decided to add more detail on soil sampling at apartments and condominiums. The new sections cover where to sample within large multi-family complexes, how many samples, and how to gain access.

Next Steps

We have finalized the overall Yard Program design and are beginning to plan the first group of yard cleanups. We expect to start actual soil cleanup in the spring or summer of 2014. This is because cleanup designs, permits, and hiring a contractor can take many months. This summer, we will begin contacting homeowners on southern Vashon-Maury Island to schedule soil sampling visits.

We still need to design letters, cleanup plan templates and outreach materials for homeowners. Some of these materials will need input from homeowners and residents participating in the program.

Summary of Public Involvement

The Model Toxics Control Act—Washington’s state cleanup law—mandates public involvement in the site cleanup process. The cleanup plan comment period ran from March 24th to April 29th, 2013. Public involvement included stakeholder briefings, fact sheets mailers and other outreach, and public meetings.

Stakeholder Briefings

On January 15th, Ecology briefed the **Ruston City Council** on plans for cleaning up homes not already addressed during the Superfund cleanup in Ruston. Cleanup Manager, Amy Hargrove, explained the process for reviewing existing sampling results to see which yards qualified for cleanup. She also provided a cleanup sequence, which began with areas with the most remaining contamination.

On January 16th, Ecology presented at a **West End Neighborhood Council** meeting in Tacoma. The talk covered how the Yard Program would work both inside and outside of the Asarco Superfund cleanup area. Walt Burdsall from Tacoma-Pierce County Health Department provided outreach materials.

On February 19th, Ecology presented an overview of the Yard Program during a **Tacoma City Council** Study Session. The council asked questions about the program’s impact and spending within Tacoma, and about details of how the program would work. Ecology provided some written responses to these questions, give in Appendix B

Fact Sheets and Other Outreach

Ecology advertised the comment period using the following methods:

- **Fact sheet mailer** - Mailed to residents and property owners (1,000 for Vashon County and 10,000 for Ruston and Tacoma).
- **E-mail announcement** – Sent to around 1,000 stakeholders.
- **News release** - <http://www.ecy.wa.gov/news/2013/073.html>
- **Other** - Notices on Ecology’s Public Involvement Calendar and Site Register. Legal ads in the Tacoma News Tribune and Seattle Times.
- **Website** – <http://www.ecy.wa.gov/toxics/tacoma-smelter.html>
- **Blogs** – Posts about the comment period and public meetings, meeting recaps, and follow-ups to questions.

Public Meetings

Ecology hosted three public open houses. Each event had open house sessions, a presentation, and question and answer session. The presentations are available at: http://www.ecy.wa.gov/programs/tcp/sites_brochure/tacoma_smelter/2013/yard-Sampling.html

- March 28th in Ruston @ Point Defiance Elementary School (~43 in attendance)
- April 3rd on Vashon Island @ McMurray Middle School (~15 in attendance)
- April 11th in Tacoma @ Woodrow Wilson High School (~25 in attendance)
- April 11th Technical Workshop @ Woodrow Wilson High School (~12 in attendance)

List of Commenters

| <u>Date</u> | <u>Name</u> | <u>Affiliation</u> |
|-------------|-----------------------|--------------------|
| 3-18-13 | James “Tres” Kirkebo | Tacoma resident |
| 4-8-13 | Irene Hill | Tacoma resident |
| 4-11-13 | Jessica Knickerbocker | Tacoma resident |
| 4-15-13 | Ralph Hitz | Tacoma resident |
| 4-18-13 | Glenn Perry | Tacoma resident |
| 4-25-13 | Jennifer Wynkoop | Tacoma resident |
| 4-26-13 | David W Lund | Vashon resident |

Acronyms and Abbreviations

| | |
|---------|--|
| Ecology | Washington State Department of Ecology |
| EPA | U.S. Environmental Protection Agency |
| ppm | Parts per million, same as milligrams per kilogram |

Responses to Common Concerns and Questions

1. Outreach & Education Materials

During the public meetings, we heard several questions about gardening in contaminated soils. One commenter suggested compiling more specific and technical information for homeowners growing fruits and vegetables.

Action: In 2014 Ecology and local health departments in King and Pierce counties will develop a gardening brochure for the Tacoma Smelter Plume. We plan to involve other local agencies, Master Gardeners, and residents.

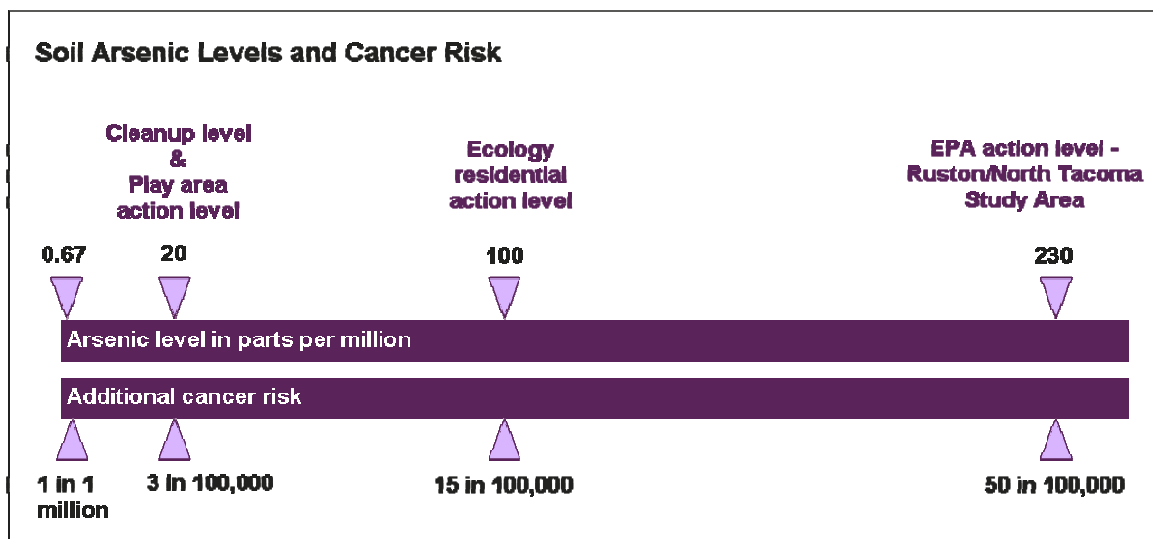
2. Health Questions

How much soil would an adult or child have to ingest to increase cancer risk by a factor of 10?

Let's start with the state cleanup level of 20 parts per million (ppm) arsenic. A child would have to ingest 200 milligrams of soil every day to have an increased cancer risk of 3 in 100,000. Two-hundred milligrams is the amount of soil that might get caught under a fingernail.

What would increase risk by a factor of 10? Being exposed to soils with 200 ppm arsenic, versus 20 ppm. Ingesting 10 times as much soil, which is possible, especially for children who put dirty hands and toys in their mouths.

A person's overall lifetime cancer from all risk factors is about 1 in 3. Therefore, we look at the added lifetime cancer risk from arsenic in soil, instead of the multiplied risk.



Fact sheet with more information about arsenic and lead risk:
<https://fortress.wa.gov/ecy/publications/publications/1109095.pdf>

Do arsenic and lead transfer from chickens to eggs?

We do not have enough information about arsenic and lead uptake by chickens to say whether eggs are impacted. As a precaution, chicken owners may want to keep their chickens in areas of the yard with less exposed soil, or the lowest arsenic levels (if your soil has been tested).

Could Ecology do studies of the uptake of arsenic and lead in fruits and vegetables?

Researchers at the University of Kansas are studying plant uptake of arsenic and lead at cleanup sites around the country. In general, the plants analyzed had arsenic and lead levels within international food safety standards. The researchers also found that adding compost and certain soil nutrients was related to lower arsenic and lead uptake.

Action: We plan to use some of their findings to better advise gardeners on how to protect themselves. Some of this information will go into a new gardening brochure (see Section 1 above).

3. Yard Sampling and Cleanup Program Design

3.1 Cleanup Decision Questions

How will a property owner know if they qualify for sampling or cleanup?

If your property is within the boundaries for the EPA Study Area (red line), we will send you a letter once we start cleanup in your neighborhood. The cleanup decision is based on your existing sampling results and any cleanup already done. We will look at whether:

- The top 12 inches of soil across the whole parcel has an average of 90 ppm arsenic or higher.
- The top 12 inches of soil across the whole parcel has an average of 500 ppm lead or higher.
- Any single “subunit” has over 200 ppm arsenic.
- Any single subunit has over 1,000 ppm lead.

If your yard is in the Tacoma and Vashon service area (orange section on map below), we will send you a letter once we start sampling in your neighborhood. We will look at all areas of the yard with arsenic 90 ppm or higher, or lead 500 ppm or higher. If an area has these levels, it qualifies for cleanup.



Why did you choose to set the action level at 90 parts per million and not 50 ppm?

The state cleanup level for arsenic in soil is 20 ppm and for lead is 250 ppm. The state does not have the resources or enough landfill space to cleanup all properties with arsenic levels above 20 ppm.

In 2012, in the Interim Action Plan, we looked at addressing yards with arsenic above 100 ppm. The Yard Program has lowered the **threshold** for cleanup actions to an average over 90 ppm in order to ensure yards where arsenic is greater than 100 ppm are cleaned up.

The Soil Safety Program does address license childcares, schools, public parks, camps, and public multi-family housing play areas where arsenic has an average over 20 ppm or a maximum greater than 40 ppm.

3.2 Properties with arsenic over state cleanup level

One commenter from Tacoma suggested Ecology offer assistance for homeowners who do not qualify for cleanup but who have arsenic over 20 ppm. They suggested Ecology provide a way for homeowners to pay Ecology for cleanup.

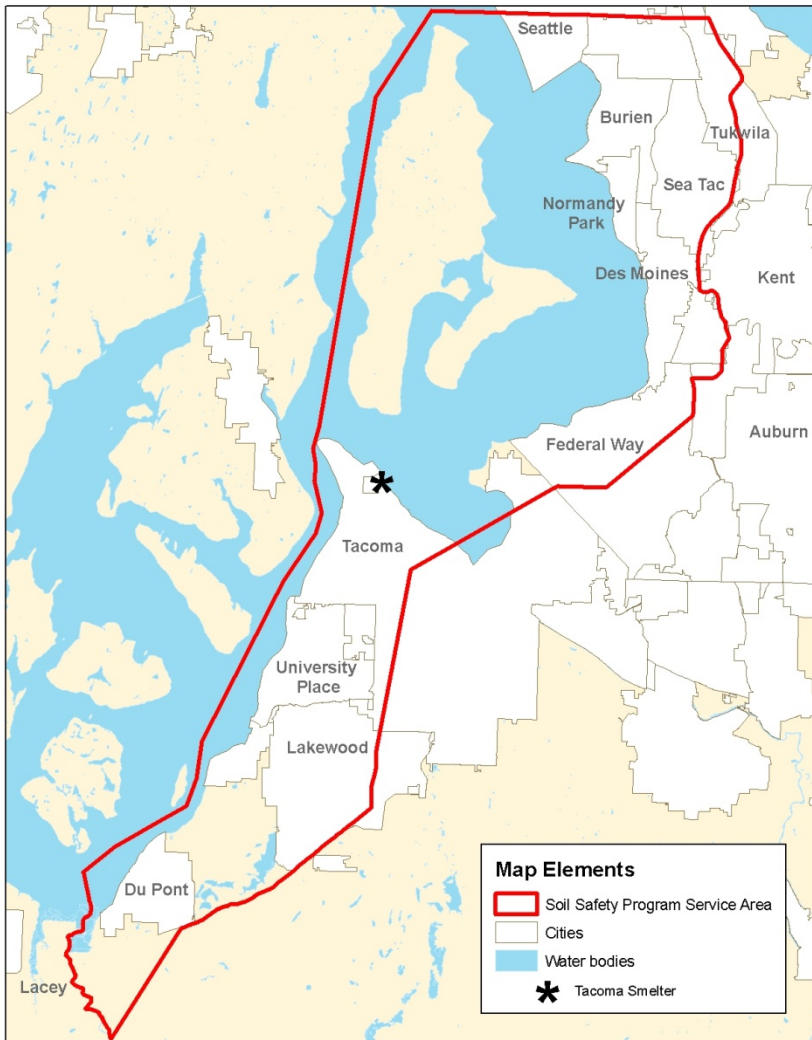
As a public agency, Ecology cannot charge customers for any of the services we provide. We also do not recommend doing your own soil cleanup unless you are planning a major landscaping or building project that involves moving soils. We cannot reimburse you for any costs, but we can provide guidance. For advice on your soil moving project, contact Elizabeth Weldin at Elizabeth.Weldin@ecy.wa.gov or 360-407-7094.

3.3 Properties outside of the service area

One commenter suggested Ecology review sampling results collected by Tacoma Pierce County Health Department in yard outside of the Yard Program service area. They also suggested Ecology offer more sampling for those yards with arsenic and lead over our action levels to see if they qualify for cleanup.

Ecology will look at results collected from yards outside the Yard Program service area, but within the soil safety program area (map on page 12). We will offer yard program sampling if the yard has arsenic over 90 ppm. If the results show only lead over 500 ppm, this may mean that the source is lead paint, gasoline, or lead waste. Ecology does not have a program for cleaning up lead, so we would not offer more yard program sampling.

2010 Soil Safety Program (SSP) Service Area



3.4 Properties with small children or sensitive populations

One commenter from Tacoma suggested that Ecology first cleanup yards where children and other sensitive people are living on the property.

If a homeowner has small children they can request to have sampling done sooner. We are also providing special outreach materials for homeowners with small children. This outreach will include tips on healthy actions the homeowner and their family can take to reduce contact with soil.

4. Action Levels for the Yard Program vs. Private Cleanups

One commenter asked why Ecology has different standards for the Yard Program than for other cleanup projects within the Tacoma Smelter Plume. The comment refers to the “action levels” of 100 parts per million (ppm) for arsenic and 500 ppm for lead.

The goal of the Yard Program is to reduce human health risk by cleaning up the highest levels of contamination. Therefore, Ecology is taking action when arsenic is at or above **100 ppm** and lead is at or above **500 ppm**. The program also focuses on areas where people are currently at risk—existing residential yards.

In some cases, private parties are cleaning up Tacoma Smelter Plume contamination before homes or other structures are built, or in areas that have lower levels of contamination. These parties need a “No Further Action” decision from Ecology that says the site is clean. Ecology requires that all soils meet state cleanup levels in order to get a No Further Action. State cleanup levels are **20 ppm** for arsenic and **250 ppm** for lead.

Action: Ecology will continue to require that soils meet state cleanup levels for arsenic and lead for a No Further Action decision.

5. Cleanup of Forested Areas

A property owner on Vashon commented that not sampling or cleaning up forested areas and trails could result in a loss of property value. The program design actually includes “educational sampling” for areas that cannot be cleaned up. The purpose of the sampling is to let people know if there is contamination, and to help them reduce contact.

In general, we will sample areas that are feasible to clean up, such as lawns, garden beds, and play areas. We cannot do soil removal among trees because it damages vital surface roots. We also cannot work on steep slopes or in wetlands. If you have areas like this, you may request educational sampling in up to two more areas. Ecology and local health departments will then provide outreach materials and advice for reducing contact with contaminated soils.

With trails, the main risk is from contaminated soils tracked into the home on shoes. We recommend taking off shoes or using a doormat. Trails covered in bark or gravel pose less of a risk because the coverings create a barrier between you and the soil below.

Action: Upon request, Ecology will take up to two educational samples in areas that are not feasible to clean up.

Appendix A: Comment Letters

From: David W. Lund
Sent: Friday, April 26, 2013 3:44 PM
To: Hargrove, Amy (ECY)
Subject: 9525 SW 288Th St, Vashon feedback comments

April 26, 2013

Amy,

I have reviewed the Tacoma Smelter Plume clean-up plans and have a comment.

I live at 9525 SW 288th St, Vashon, WA 98979 and am located in the Southern Vashon-Maury Island homes area. We have several tax lots including several over the bank and a small waterfront lot. We have access to these lower lots via a trail from the residential lot. As I understand the plan, these forested areas and trail would not be eligible for sampling and clean-up. I believe this will result in an unacceptable risk for those people who use the trail. Without remediation, this area would have to be posted and made off limits to ensure no one is accidentally exposed. The loss of this trail and access will devalue my whole set of parcels and should be considered in any plan.

I would also like to sign up for your sampling program.

Regards,

David W. Lund

From: Jennifer Wynkoop

Sent: Thursday, April 25, 2013 3:50 PM

To: Hargrove, Amy (ECY)

Subject: Comments on Ecology Yard sampling program

1. In the original information that Ecology presented at public meetings back in 2012, you indicated that properties with arsenic concentrations over 50 ppm and lead concentrations over 500 ppm would be sampled and cleaned up. However, this document only discusses arsenic concentrations over 100 ppm. Ecology should honor their original commitment to sample and clean up yards with arsenic contamination over 50 ppm and lead contamination over 500 ppm.
2. Ecology should review arsenic and lead data already collected by the county health departments to determine if properties that have already been sampled for arsenic and lead should have additional sampling and cleanup, **even if those properties are not in the designated “zone”**. For example, due to the variability with arsenic and lead in soil, a property in north Tacoma in the 20 to 40 ppm arsenic “zone”, which is not proposed for cleanup at this time, may in fact have arsenic concentrations that are much higher than that.
3. Ecology should focus their efforts on residential properties with sensitive populations (such as young children). Families with young children should not have to wait years to have their property sampled or cleaned up.

Jennifer Wynkoop

Tacoma Resident

From: Glenn Perry
Sent: Friday, March 22, 2013 8:11 PM
To: Hargrove, Amy (ECY)
Subject: Tacoma Smelter Plume

Amy,

I was born in 1925 and grew up living at 3722 North Verde Street for my first 18 years, then lived there part time off and on over the next 12 years. I remember well the strong smell at times from the Smelter smoke. Not pleasant!

However, I am now almost 88 years old and in reasonably good health in spite of a lung wound from WW II in 1945. I always credit my good health to the fact I never have smoked tobacco (and never liked beer).

So I cannot say that the smelter smoke did any permanent damage to my lungs, although a chest x-ray might show some effect. Maybe I was just lucky!

Glenn R. Perry
6016 N Highlands Pkwy, #375
Tacoma, WA98406-2181

From: Hitz, Ralph
Sent: Monday, April 15, 2013 2:56 PM
To: Hargrove, Amy (ECY)
Subject: comments on clean up plan

Hi Amy,

I have comments for the clean-up plan that have to do with the outreach component.

I know the outreach materials advise to wash fruits and vegetables and grow vegetables in raised beds. I've heard anecdotally that fruit trees don't uptake the As and Pb much and mostly in the leaves and stems not the fruit. Likewise I've heard that dark leafy veggies uptake the As and Pb more than others. Is there more specific, concrete information that Ecology could compile for homeowners, along with citations for more technical resources, on Pb and As exposure levels in homegrown fruits and vegetables and best practices for fruit and veggie growing? Could Ecology do any small-scale studies in the clean-up area to provide numbers for As and Pb uptake in fruits and veggies? What about chickens and As and Pb transfer to eggs? About four homeowners on my block have backyard coops and the chickens may be living on contaminated soils. Maybe as Ecology collects data about As and Pb levels in the clean-up area, some funds could be spent to sample fruits, veggies, eggs as well?

Also in this vein, the outreach materials provide good advice on how to reduce exposure (shoes at door, cover bare dirt etc) but how much ingestion for children and adults significantly increases risk for cancer and other effects? I remember once I found some numbers on this in an Ecology pamphlet but the amounts were in grams ingested daily over a certain number of years. I tried to convert this to teaspoons ingested per day but I don't know if my math was correct. Could this information be made available in lay terms? How much would an adult have to ingest daily to increase cancer risk by an order of magnitude? What about a child? For residents who live in the area who are concerned about the contamination, some qualification about exposure would be helpful. Of course no exposure is best but exactly how much is significant? This might help residents manage their contamination in a practical way and manage any stress they may have upon learning that their dirt has hazardous materials in it.

Ralph Hitz

On Behalf Of Irene

Sent: Monday, April 08, 2013 3:48 PM

To: Hargrove, Amy (ECY)

Subject: Tacoma Smelter Plume comments

Hi,

I just want to take a moment to submit some feedback on the smelter cleanup design. I think it is very well thought out and I appreciate the effort Ecology and the EPA are making to fix the area.

I would suggest prioritizing the remaining clean-up so that homes that have children living in them are remediated first. We have a 3 year old daughter and follow the "dirt alert" recommendations but I really won't feel good about her being in the yard until it is clean. (I wish our realtor had told us we were buying a house on a superfund site but that's another story.)

Thanks,
Irene Hill

From: Kirkebo, James "Tres"
Sent: Monday, March 18, 2013 8:08 AM
To: Hargrove, Amy (ECY)
Subject: West Tacoma Property

Good Morning Amy,

Is there a way that a property owner can add his property to this list for clean up or has DOE already identified the properties that will be sampled and cleaned?

How many more future cleanings will take place in 2013?

Finally, does the level of cleaning meet DOE's NFA standard or a lesser federal standard established by EPA and Superfund?

Thanks!

Tres Kirkebo
Principal
Apex Engineering PLLC
2601 S. 35th Street Suite 200
Tacoma WA, 98409
Tel/253.473.4494
Fax/253.473.0599

Appendix B: Responses to Tacoma City Council Questions

Tacoma Smelter Plume Yard Program

Follow-up to the February 19, 2013 Tacoma City Council Study Session

- 1) **Council Member Ibsen:** How much of the Asarco settlement money will be spent in Tacoma?

Approximate Portion of the Asarco Settlement Spent on Services in Tacoma Over the Next 8-10 years

| Spending | % of Program budget | Services | Mechanism | Target populations |
|----------|---------------------|--------------------------------|---|--|
| \$60.9m* | 95% | Yard sampling and cleanup | Ecology staff and contractors | Residents and homeowners |
| \$5.0m** | 50% | Outreach and education | Interagency Agreement with Tacoma-Pierce County Health Department | Children, their parents and caretakers, residents, gardeners |
| \$5.0m** | 50% | Play area sampling and cleanup | Ecology contractors; Interagency Agreement with Metro Parks to integrate with existing projects | Children, their parents and caretakers, park goers |
| *** | *** | Technical assistance | Fee-waiver for the Voluntary Cleanup Program; Ecology staff time | Local governments, developers, landowners |

* From Yard Program Cost Breakdown table below

** Includes services to University Place, Fircrest, Lakewood, Steilacoom, and Dupont

*** Spending will depend on how many projects enter the Voluntary Cleanup Program

- 2) **Council Member Mello:** Can we get an idea of how the \$64 (of the \$94) million is being spent?

Yard Program Cost Breakdown (assuming 100% participation)

| Area | Parcels to sample | Sampling cost (\$1,500/parcel) | Parcels to clean up | Cleanup cost (\$50,000/parcel) |
|--|-------------------|--------------------------------|---------------------|--------------------------------|
| Ruston/North Tacoma Study Area (Superfund) | EPA sampled | \$0 | 700 | \$35m |
| Outside of EPA Study Area | 3,922 | \$5.9m | 400 | \$20m |
| Vashon-Maury Island | 720 | \$1.1m | 100 | \$5m |
| Totals | 4,642 | \$7.0m | 1,200 | \$60m |

3) **Council Member Campbell:** Could rain gardens cause problems for neighboring properties?

Flooding: Yes, an improperly engineered rain garden could cause collected water to flow onto a neighboring property instead of infiltrating into the ground. We are working with Pierce County Master Gardeners and Pierce Conservation District to choose the right places for rain gardens and ensure the gardens are engineered correctly. If there are any issues after installation, we will work with the homeowner and neighbors to correct the problem.

Soil contamination: No, we don't believe so. Arsenic tends to bind tightly to the organic matter in surface soils and migrates very slowly downward to groundwater. Only low levels of arsenic will remain on a property after cleanup, so a rain garden should not be a concern for groundwater. If we encounter very high levels of arsenic in a yard, we might advise the homeowner against installing a rain garden.

Note about rain garden funding: In order to maximize cleanup funding and treat homeowners equitably, Ecology is only paying for the parts of rain garden construction that can be integrated into cleanup. This includes removing soil, backfilling with a rain garden mix, and installing a mulch layer and plants equal to the value of the original lawn or landscaping. This represents the majority of the cost of a rain garden.

We are relying on Master Gardeners, the Conservation District, or other local partners to advise on rain garden designs and consult with homeowners on directing storm water to the gardens. Ecology will not reroute downspouts or drains due to liability and because it would take resources away from other yard cleanups.

Yard Program Comment Period Open Houses

- Thursday, March 28, 2013 – 6:30 – 8:30 p.m. @ Point Defiance Elementary School, 4330 N. Visscher St.
- Thursday, April 11, 2013 – 6:30 – 8:30 p.m. @ Wilson High School, 1202 Orchard St.

Agenda

6:30 – 7:00 p.m. – Open house session

7:00 – 8:00 p.m. – Presentation and Q&A

8:00 – 8:30 p.m. – Open house session

Yard Program Workshop

Thursday, April 11, 2013 – 3:30 – 5:00 p.m. @ Wilson High School

We will explain how we developed our service area map and provide more technical background on the cleanup process.