DEPARTMENT OF ECOLOGY
State of Washington

The Boeing Company

Boeing Fabrication Division

Auburn Facility

Responsiveness Summary

To Public Comment on the:

Draft Remedial Investigation Report, Boeing Auburn Facility, Auburn WA; Prepared by Landau Associates for: The Boeing Company

February 9, 2017

Public Comment Period: March 8 – May 8, 2017

Boeing Auburn Site

SE Auburn and NE Algona, WA

August 2017

Publication No. 17-04-032

Investigation of
Groundwater, Soil, Surface Water and Air


Submit your comments here
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COMMENTS

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Introduction

Status Update – Remedial Investigation

In May 2017, the Washington State Department of Ecology (Ecology) achieved a major project goal with completion of the Remedial Investigation (RI) for the Boeing Fabrication Division, Auburn Facility (Boeing Auburn Facility). Because of the RI, we have the data needed to show the location and concentration of the chemicals [Trichloroethene (TCE) and its breakdown chemicals like Vinyl Chloride (VC)].

These chemicals are present in the groundwater moving through the aquifer from below the Boeing Auburn site to the northwest under north Algona and southeast Auburn. (Figure 1.) Site cleanup began in 2004 - 2005 with implementation of the interim action which cleaned up the source of solvent in groundwater released from the former Building 17-05 degreaser. (Figure 2.) Since that time, air studies and surface water studies have clarified whether the TCE and VC are entering the surface water and air and in what concentrations. All of the data from the Remedial Investigation is presented in the Draft RI Report. These data are needed to complete the Feasibility Study (FS), the next step in the cleanup process, which will propose cleanup alternatives (remediation methods), one of which Ecology will select for cleanup of the site.

Results of the Remedial Investigation

Ecology has determined that the RI contains sufficient data to define the area and concentrations of contamination and meets the requirements of the Washington Administrative Code: WAC 173-340-350. Therefore, Ecology has directed the Boeing Company to draft cleanup alternatives in a Feasibility Study (FS) for the Boeing Fabrication Division, Auburn Facility. (Ecology will hold a public comment period for the FS.)

Ecology did not receive any comments during the RI Comment Period held from March 8 through May 8th that require substantial changes to the report. Ecology will approve the RI Report upon receipt of the final version incorporating Ecology's comments.
Below is a brief summary of the results:

- Soil: Ecology will require Boeing to further evaluate four areas on the Boing property for soil contamination in the Feasibility Study.

Drinking Water
No contaminants are presently detected in the public drinking water. Drinking water is provided by the City of Auburn public drinking water systems, which are monitored for contaminants. Private wells are not monitored like public drinking water. If you have a private well, please contact Ecology.

- Surface water: Ecology is requiring surface water be protected to the same rigorous standards that are used for drinking water.
- Groundwater: Ecology is requiring Boeing continue to evaluate site-wide groundwater and that it be further addressed in the Feasibility Study.
- Air quality: (vapor intrusion) Ecology is not recommending further indoor air evaluation, and indoor air will not be part of the Feasibility Study because there are no indications of health risks.

The results of the Remedial Investigation Report are detailed in a folio that accompanied the RI Report comment period and are included in the Appendices.

Boeing Auburn Site Background

The Boeing Company began manufacturing operations for commercial airlines at the Boeing Auburn Facility in the 1960's. At that time, the use of chlorinated solvents (like TCE) was common, but the risks of solvent spills was not fully understood. At some locations at the facility, such as the degreasers in former Building 17-05 (now the Prologis Building), and Building 17-07, TCE was released into the groundwater. Once there, the chemicals migrated with groundwater in a northwesterly direction.

Over time, the chemicals spread in groundwater under commercial Algona, the northeast corner of residential Algona, and the commercial areas of southeast Auburn. The chemicals (at concentrations below levels that represent substantial risk to human health and the environment) do discharge to the Chicago Avenue ditch, and the South and North Auburn Ponds. As of completion of the RI, discharge of contaminated groundwater was not detected in Mill Creek. More recently, one detection (at the detection limit for vinyl chloride) was reported from a sample in Mill Creek south of where Mill Creek flows under W. Main Street. This location is now being carefully monitored.

Ecology required Boeing, as part of the remedial investigation, to also include indoor air sampling of homes located above (or within a buffer zone of 100 feet) of the contamination in the water table below the northeast corner of residential Algona. Twenty-four homes were invited for sampling and 14 agreed to testing. Volatile chemicals, such as TCE, can leave the groundwater at the water table, enter the air between soil particles, migrate upward, and concentrate under surfaces (such as slabs underneath homes, and floors above crawl spaces). From there, the chemicals can migrate into homes through cracks in the slab or the first floor. This process is known as vapor intrusion. Because of the shallow water table, less than 5 feet below the ground surface in places, this sampling took place on two separate occasions, once during the dry season (Phase I), and once during the wet season (Phase II). Based on results, Ecology concluded that vapor intrusion could not be identified as the source of the limited detections of TCE at the homes tested. Monitoring of groundwater for changes in chemical concentrations that could result in vapor intrusion is on-going.

Viewing the Remedial Investigation Report

Even though the comment period for the RI has ended, the RI Report may still be viewed and downloaded from our website's document's page located here: https://fortress.wa.gov/ecy/gsp/CleanupSiteDocuments.aspx?csid=5049

The RI folio (Spanish and English) and fact sheets (Spanish and English) can be found in Appendix C. The folio provides general information on the investigation and the fact sheets summarize results for groundwater, surface water, air and soil testing.

- **Interim Action:** Section 7.0, summarizes the initial cleanup completed at the degreaser area in the former Building 17-06.
- **Groundwater Studies:** Section 8.0, summarizes the results of the groundwater investigation.
- **Surface Water Studies:** Section 9.0, summarizes the results of surface water investigation.
- **Air Studies:** Section 10.0, summarizes the results of the air investigation.
- **Soil Studies:** Section 6.0, summarizes the results of soil investigation on the Boeing Facility.

Involving the Community in Cleanup

Ecology issued the draft Remedial Investigation Report for public comment on March 8, 2017 and the public comment period ran through May 8, 2017. During the public comment period, Ecology provided the following public involvement materials and opportunities:

1. Distributed a Remedial Investigation Summary Folio (attached) describing the site, results and the documents through a mailing to addresses in the area and other interested parties.
2. Mailed a reminder postcard for the public hearing
3. Mailed Spanish language poster and Spanish language materials to targeted locations.
4. Delivered Spanish poster at targeted locations.
5. Hosted an Online Open House to submit comments during the comment period.
6. Ran PSAs on Spanish language radio, March 21- 23, 2017
7. Published a paid display ad in Auburn Reporter and the Tu Decides (Spanish language paper).
8. Published a notice in the Ecology Site Register.
9. Published a notice in the Ecology Public Involvement Calendar.
10. Posted draft documents on the Ecology website.
11. Provided copies of the documents through information repositories at Ecology's Headquarters Office and the Algona/Pacific and Auburn Public Libraries.
12. Issued a press release on March 8, 2017 to English and Spanish media.
13. Hosted a public meeting open house on March 23, 2017 and a public hearing on April 25, 2017 at the Alpac Elementary School, Pacific, WA. Childcare was available.
14. Distributed message on Ecology and City of Algona listservs, March 8 and March 23, 2017
15. City of Algona reader board.

Comments and Responses

Ecology compiled this Responsiveness Summary to respond to the public about their comments made during the comment period. Ecology has reviewed and carefully considered all comments, and determined that there are no significant changes to the Draft Remedial Investigation Report needed.

Next Steps

The next steps for the RI Report include:

- Boeing incorporates Ecology's comments on the Draft RI
- Boeing submits the revised RI to Ecology
- Ecology finalizes the report
- Ecology sends approval letter to Boeing

Ecology's Comment Review

Ecology's cleanup site managers reviewed all comments. We received comments in written letters, emails, phone conversations and during conversations at the open house and public hearing.

In Table 1, you can review each comment, when and how Ecology received it, who responded and when. Each comment is numbered with a corresponding page number. To review Ecology's response to each comment, please refer to the page number for each comment.

If the comment was an email, we include the full transcript of the email comment and response. If the comment was part of a conversation at the open house or public hearing, we followed up with an email or phone call and documented the response. We did not receive any comments during the formal public hearing or on the official online open house. The Algona Public Awareness Coalition (APAC) submitted comments on behalf of 35 Algona residents.

We have removed names and personal contact information such as email addresses and last names unless the comment was submitted in writing or by email. These comments are all part of the public record and subject to public disclosure laws.

Ecology's In-Person Conversations

Ecology also had several conversations with people at the open house portions of the public meeting and public hearing. Information on these topics can be found on the Ecology website and in the summary of the investigation and fact sheets. Topics included:

- Updates on general progress and schedule for the cleanup.
- Safety of gardening. (See attached Figure 3.)
- Questions about water in ditches, ponds and yards.
- Questions about air quality and testing.
- Questions about history of the contamination. (See Ecology website)
- Concerns about home prices (home values are outside of Ecology's regulatory authority. Ecology referred the inquires to Algona Public Awareness Coalition)
- Concerns that Boeing should have informed its employees about the safety of the products.

Comment Table

The following table summarizes all comments or questions received during the comment period and how Ecology responded to them. Each of Ecology's responses to the comments are included below the Comment Table.

Comment Number	Page Number	Comment or question	Date	Submitted by	Response by Ecology Staff	Form of communication
1	13	Inquiry about testing yard and groundwater and overall results closest to home of an individual who lives a few blocks from Celery Ave. N. and 8th.	3/23/2017	N/A	Neal Hines	Conversation at open house and follow-up via email. Neal mentioned that he could provide them with reports on the wells and other environmental testing (surface water, air) closest to their home.
2	18	Concerns regarding contamination being pulled into the wells of Lakehaven Water and Sewer district.	3/23/2017	N/A	Robin Harrover	Conversation at open house and follow-up via email).
3	19	Why is there no disclosure of this when you purchase property, especially in the area of the spill?	4/25/2017	Cheryll C.	Neal Hines	Written Comment submitted In-person (at public hearing), follow up by Phone.
4	19	Has TCE been detected below the Osceola mud?	4/25/2017	CHeryll C.	Neal Hines	Written Comment submitted In-person (at public hearing), follow up by Phone and email.
5	20	Inquiry about the Pilot testing work going on for Milwaukee Ave. N. Individuals were concerned about home values and the lack of notice provided in the time between when the data was collected and when they bought their home.	4/25/2017	N/A	Neal Hines	Conversation at public hearing and follow up email.
6	21	**Please speed up the process.** Conduct the Feasibility Study and release the Cleanup Action Plan earlier than estimated in the current timeline. Our community has dealt with the contamination for long enough and we would like to have cleanup start sooner. The investigation has taken years and we do not want the rest of the cleanup process leading up to implementation to drag on.	5/8/2017	APAC	Robin Harrover and Neal Hines	Submitted in writing by email. Ecology response is in this document.

7	22	**The cleanup needs to be done thoroughly.** We want the potential to future harm or exposure to be eliminated. Currently, contamination levels where the community could be exposed are too low to cause health effects but we do not know that this has always been the case. We feel that exposure to contamination from Boeing Auburn could have impacted our health in the past. Many members of our communities, particularly those living closest to the plume, have become ill with various cancers, autoimmune diseases, etc., some dying due to these illnesses and it cannot be proven that the contamination from Boeing Auburn had no role in it. We want to make sure there will be no harm to our health moving forward as nothing can be done about the past.	5/8/2017	APAC	Robin Harrover and Neal Hines	
8	22	**Make sure our drinking water is safe.** We want to make sure deeper groundwater is not being impacted, especially with local water source wells pulling from the deeper aquifer. We have been told that drinking water is not currently impacted by the contamination and we want to be certain it will not be in the future. Our community should have access to healthy public water sources even if our need grows in the future and new wells go in.	5/8/2017	APAC	Robin Harrover and Neal Hines	
9	23	**Did the pilot test work?** We would like to know more about the enhanced natural attenuation pilot test. We also want to be sure that this cleanup option does not lead to further contamination by releasing other chemicals. If it has been successful in reducing contamination levels, we would like it to be part of the Feasibility Study and perhaps implemented Site-wide.	5/8/2017	APAC	Robin Harrover and Neal Hines	
10	24	**Keep testing our local groundwater.** We want to make sure that the pollution is not spreading to being under more homes and that it is not coming into the ditches. We want the testing in our neighborhood to continue. What is of most concern to us is potential exposure through standing water in our yards, most of us experience this in the winter and want to be sure our families are safe.	5/8/2017	APAC	Robin Harrover and Neal Hines	

11	24	**Keep the community up to date as the cleanup process moves forward.** Many of us feel that we were not notified of the contamination in a timely or appropriate manner. Moving forward we want to be informed and kept current on new information. Not knowing what is going on with the cleanup makes us worry and feel like things are being hidden from us.	5/8/2017	APAC	Robin Harrover and Neal Hines	
12	25	**Do the plumes affect our property values?** We would like more clarity on how the extent of the contamination affects our property values. New people are moving into our neighborhoods and we do not know if they are being informed of the contamination. Are those selling homes or building new homes in the area required to disclose information on the plumes?	5/8/2017	APAC	Robin Harrover and Neal Hines	
13	25	Individual called about the status of the investigation after having missed the Public Hearing.	4/27/2017	N/A	Neal Hines	Phone message. Return phone call.
14	26	Inquiry regarding a Boeing van driving in the area near Government Canal.	3/22/2017	N/A	Neal Hines	Phone message to Ecology. Ecology contacted Boeing (Jim Bet, Jim Swortz) for follow-up
15	28	Caller said they received a call from the “project team” on Wednesday, April 5.	4/5/2017	N/A	Neal Hines	Phone

Comment 1

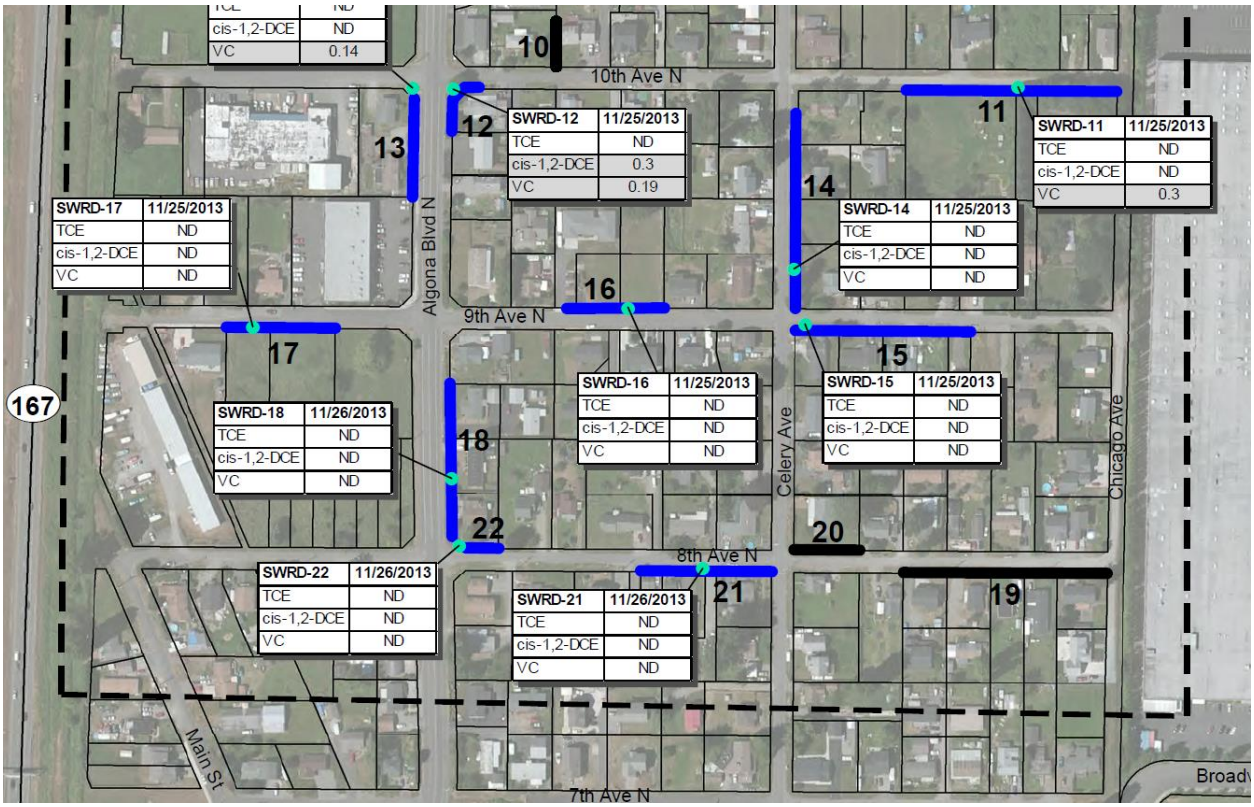
From: Hines, Neal (ECY)
Sent: Tuesday, May 02, 2017 2:19 PM
To: [redacted]
Cc: Harrover, Robin (ECY) <RHAR461@ECY.WA.GOV>; Levkovitz, Thea (ECY) <tlev461@ECY.WA.GOV>
Subject: From WA Dept. of Ecology. Surface Water results for [redacted]

Thanks for your interest in the data collected as part of the remedial investigation for the Boeing Auburn site. Thea Levkovitz shared with me your location at [redacted] and I've cc'd her on this message, along with Robin Harrover who co-manages this work for Ecology.

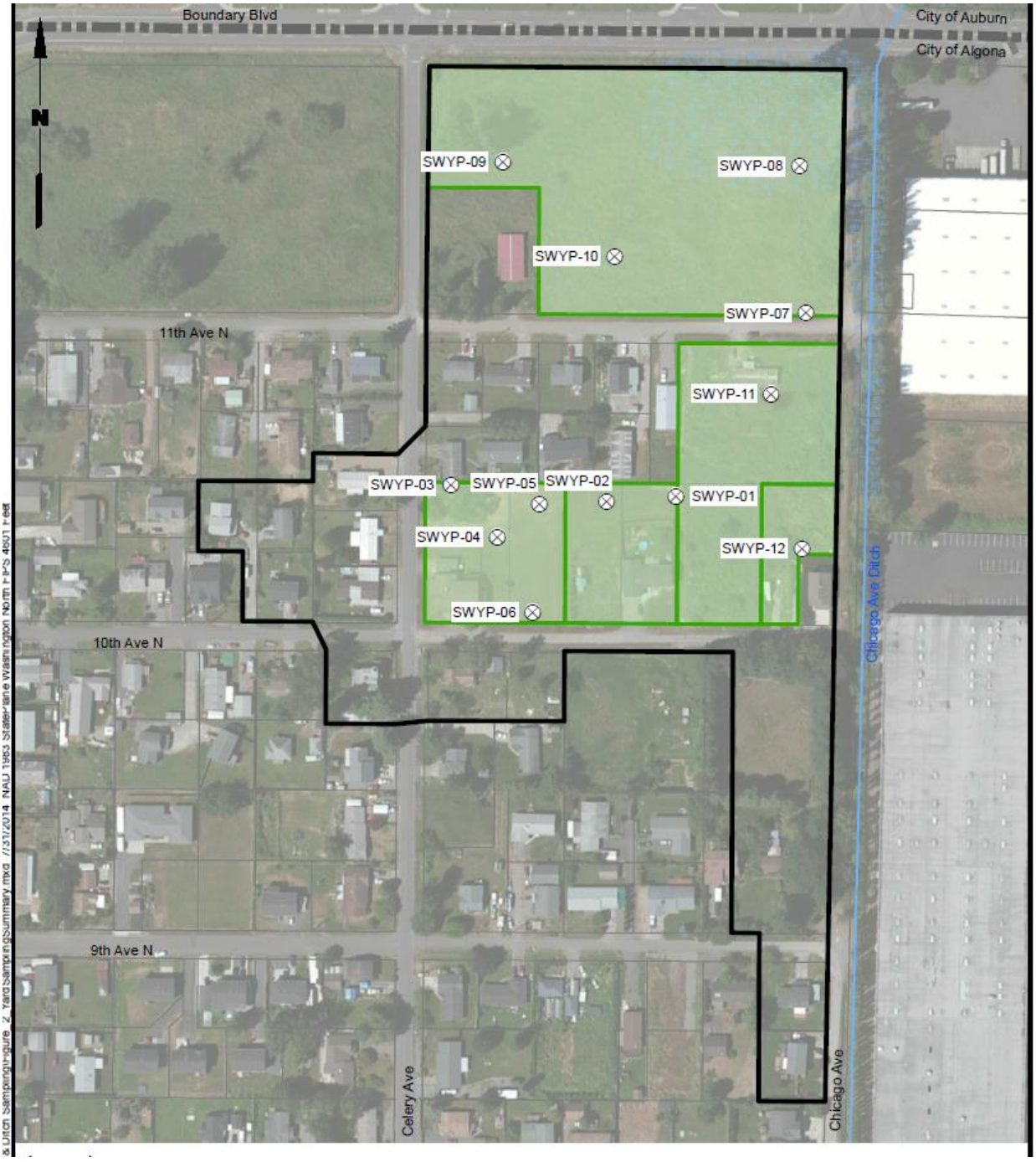
I'll send separate emails for the groundwater data and air data later this week. I can go over results on the phone, too: I'm at 425 649 7181.

Findings, surface water:

1.The shallow ditches around Algona were sampled to test whether any of the chemicals from Boeing Auburn (TCE and its breakdown product, vinyl chloride (VC)) were found. I clipped the part of the map centered around your address, and then attached (first attachment) the whole map. ND means not detected. If a number is there, the units are parts per billion (as a reference point, the drinking water standard for TCE = 5 ppb, and for VC = 2 ppb. State of WA clean-up levels are lower than this). Thick black lines means a ditch was dry. Again, the whole map and legend is attached.

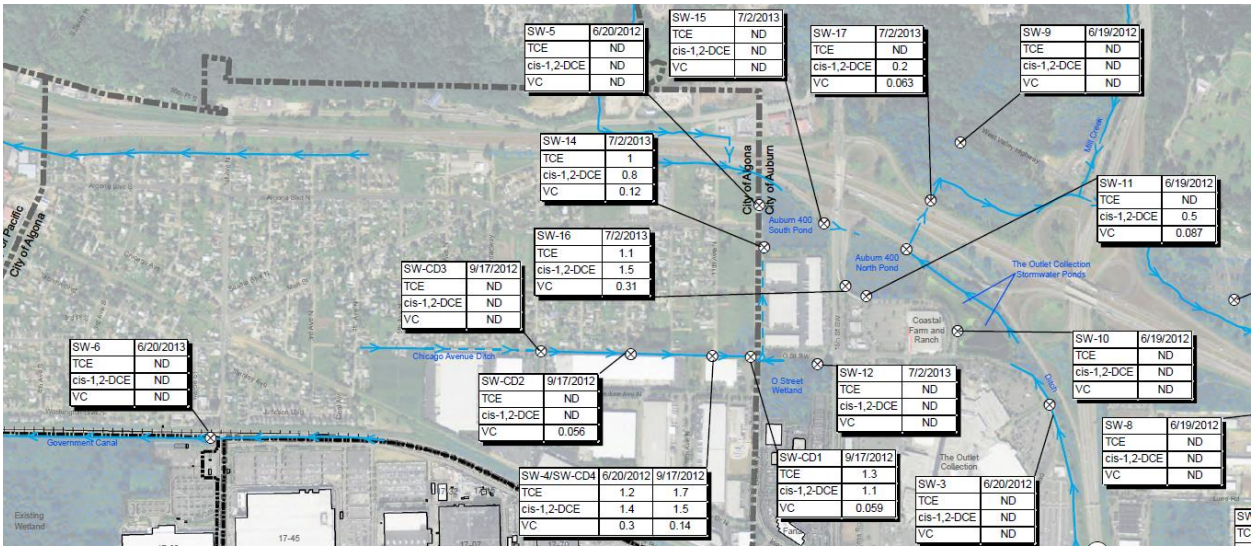


2. There was also sampling of standing water in yards, to test whether any of the chemicals were seeping up from the ground. That data is clipped below, and the whole map is the second attachment. You can see that 8th Ave. N. did not have any homes on the map because the impacted groundwater is to the north of your address. Of the 12 yards tested, one had detections (SWYP-12), and both TCE and VC were very close the lab's detection limit.



3. Finally, the Chicago Ave. ditch has been tested for TCE and VC. That map is clipped below, with the whole map as the 3rd attachment. Detections of TCE and VC are found starting at SW4 or SW-CD4

(which is at 11th Ave. N.). ND means not detected. The highest TCE found in surface water has been 1.7 ppb and the highest VC found has been 0.4 ppb.



I realize this is a lot of information and I am glad to have a call to answer any questions. My number is in yellow below.

Thanks for your interest. -Neal

Hines, Neal (ECY)
Sent: Thursday, May 04, 2017 3:15 PM
To: [redacted]
Cc: Harrover, Robin (ECY) <RHAR461@ECY.WA.GOV>; Levkovitz, Thea (ECY) <tlev461@ECY.WA.GOV>
Subject: From WA Dept. of Ecology: groundwater

Hello [redacted]. Thanks for your interest in the data collected as part of the remedial investigation for the Boeing Auburn site. Thea Levkovitz shared with me your location at [redacted] and I've cc'd her on this message, along with Robin Harrover who co-manages this work for Ecology. The data is available from Ecology's Environmental Information Management (EIM) website. I went ahead and identified the closest sampling points to your location using this tool: https://fortress.wa.gov/ecy/eimreporting/Map/Map.aspx?MapType=EIM

This email covers groundwater sampling from soil borings and the nearest groundwater well. I'll send separate emails for the surface water sampling and air sampling. I can go over this on the phone, too, anytime: I'm at 425 649 7181.

A. There are two soil borings that were close to you. Soil Borings were a one-time sampling effort that covered much of northern Algona. The purpose of the sampling was to see if the spread of the TCE and breakdown products (TCE breaks down to vinyl chloride (VC)) were widespread in groundwater below

Algona. That turned out to not be the case, and many of those borings yielded non-detect data. That was the case for these two borings nearest to you:

1. ASB196 was collected just west of your location in April 2013. Both TCE and VC in the water table groundwater (the groundwater that you would first encounter if you dug into the ground) were not detected.
2. The next closest soil boring, ASB195 was collected at the intersection of 8th Ave. N. and Celery. TCE and VC were also not detected in the groundwater at this boring location.

I have printed off the data and that is attached as an Adobe pdf file. If you cannot open this, let me know. Also, if you have access to the program Excel (spreadsheet), I can send you an excel file. During these tests, many other chemicals besides TCE and VC were analyzed. I can send these data as a pdf, an excel spreadsheet file, or just embedded text in an email. If you would like one of these, let me know. They are also available at the EIM page cited above, but it can be sluggish to search.

B. There are long-term groundwater wells throughout the area that form the basis for the plume shapes that were on those maps at the public hearing. The nearest well to you is AGW241 and it is located at the east end of 8th Ave. N. (intersection with Chicago Ave.). Keep in mind that groundwater moves towards the northwest, so well 241 represents upgradient (or upstream) concentrations. You can see this well if you walk to this intersection and look on the ground for a flush mounted metal cap about 8 inches in diameter. You may see a metal tag identifying the well. The attached file has the results for this well and explanations about the 3 depths that the well reaches.

Thanks for your interest.

There is also a web page that includes results at the site: http://www.ecy.wa.gov/programs/hwtr/CleanupSites/boeing-fabn/MapsAndResults.html

And documents and reports: https://fortress.wa.gov/ecy/gsp/CleanupSiteDocuments.aspx?csid=5049

The next email will be a summary of the air monitoring results. -Neal

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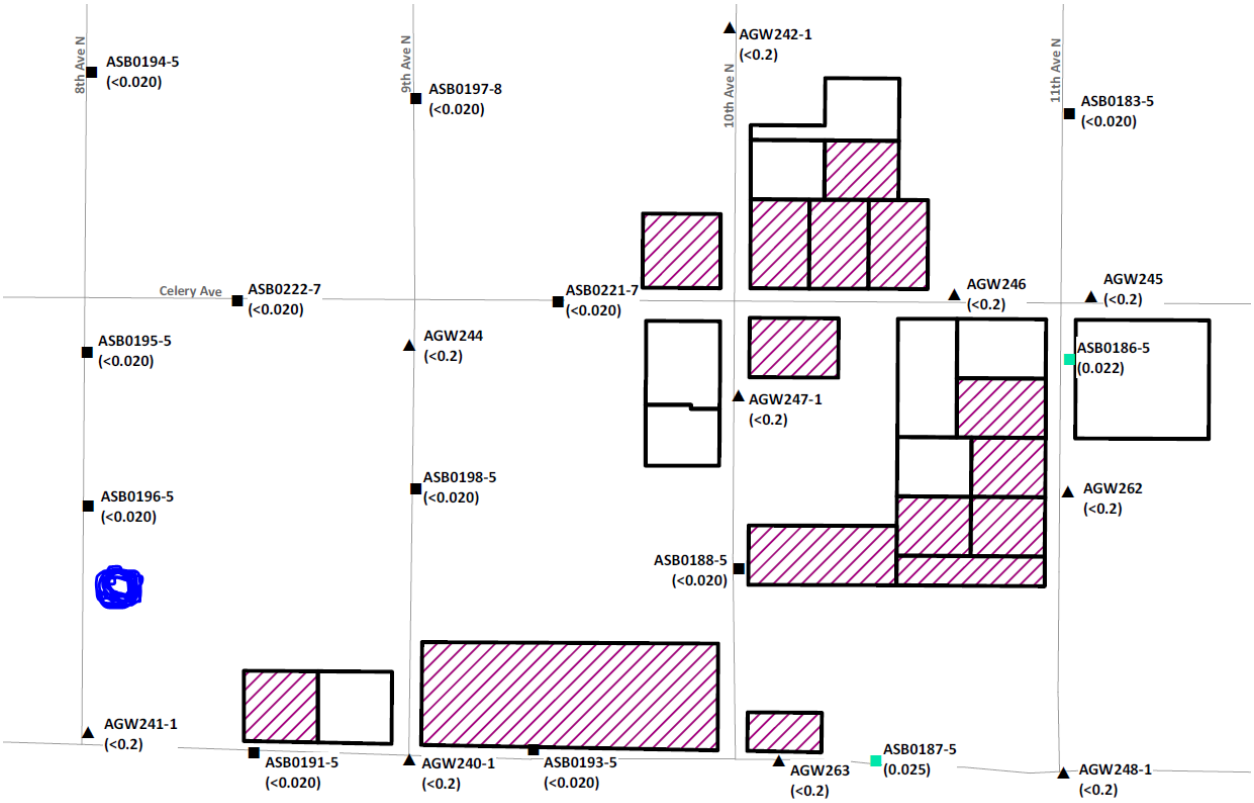
Hines, Neal (ECY)
Sent: Monday, May 08, 2017 11:29 AM
To: [redacted]
Cc: Harrover, Robin (ECY) <RHAR461@ECY.WA.GOV>; Levkovitz, Thea (ECY) <tlev461@ECY.WA.GOV>
Subject: From WA Dept. of Ecology, air sampling data for [redacted]

This is the final email includes the air sampling work for residential Algona. Can you let me know if you've received these emails?

All of this information is also at Algona City Hall in print form (ask for Phase I and Phase II vapor intrusion reports). I clipped the map of the air study, below. On this map, North points to the right. It is very

near the soil boring ASB0196-5 (April 2013) and those data are in the previous email (groundwater). Attached are the maps of the homes that were invited for indoor air testing.



Overall Findings, Air impacts (do the chemicals move from the ground into the air that people breath?) Home air (residential Algona) has been tested as well as commercial areas in Algona and Auburn. There were some detections of TCE (15 of 189 total air samples – residential Algona) but the pattern of the detections could not be directly linked to the groundwater concentrations of TCE. A two phased study (summer and winter) in Algona was conducted from 2013-2014 and did not identify vapor intrusion as occurring, whereby the chlorinated solvents from the groundwater would pass into home air. There were no detections of vinyl chloride. In addition, the air space overlying the Chicago Ave. ditch was tested on hot, calm days when the dense, chlorinated solvent vapors could evaporate from the ditch water and accumulate in the air space and potentially be breathed. No detections of TCE or VC were found in the air space over Chicago Ave. ditch (August, 2014) although some detections were found in the ditch water (the maximum TCE found in surface water for the whole study is in Algona and that has been 1.7 ppb; as a reference point the drinking water standard set by EPA is 5 ppb for TCE).

There is also a web page that includes results at the site: http://www.ecy.wa.gov/programs/hwtr/CleanupSites/boeing-fabn/MapsAndResults.html

And documents and reports: https://fortress.wa.gov/ecy/gsp/CleanupSiteDocuments.aspx?csid=5049

-Neal

Neal A. Hines P.E. Ph.D. | WA State Department of Ecology | Hazardous Waste Toxics Reduction Program | 3190 – 160th AV SE , Bellevue, WA 98008-5452 | 425-649-7181 phone | 425-649-7218 fax | neal.hines@ecy.wa.gov email

Comment 2

From: Harrover, Robin (ECY)
Sent: Monday, April 03, 2017 11:10 AM
To: [redacted]
Cc: Hines, Neal (ECY) <nhin461@ECY.WA.GOV>; Levkovitz, Thea (ECY) <tlev461@ECY.WA.GOV>
Subject: Public Open House - Follow-up

Hello [redacted],

On March 23rd, I was pleased to meet you at Ecology's Open House for the Boeing Auburn site. We provided handouts at the open house, but you may also find additional information on our 'Maps & Results' page for the Boeing Auburn site: http://www.ecy.wa.gov/programs/hwtr/CleanupSites/boeing-fabn/MapsAndResults.html .

In particular, you may find more technical data on our 'site documents' page: https://fortress.wa.gov/ecy/gsp/CleanupSiteDocuments.aspx?csid=5049 .

Boeing and their consultant, Landau Associates Inc., completed groundwater modeling to identify wellhead protection zones for the municipal wells in the City of Auburn. The attached drawing illustrates the results of that modeling. The location of the intermediate zone plume is included on this Figure. During the Feasibility Study, groundwater transport modeling will assist our evaluation of the effectiveness of various cleanup alternatives for the plume.

It may be helpful in the future to include Lakehaven municipal supply wells in contaminant transport modeling. Is there someone I may contact to obtain information such as primary supply wells, screen depths and pumping rates? This may help us to understand whether there is a possibility that contamination from the Boeing Auburn site could reach Lakehaven's wells.

Thank you for your interest in this site. Let me know if I may be of any help to you in the future.

Best Wishes,

- Robin

Robin Harrover, LHG

_____

Hazardous Waste Specialist
Department of Ecology - NWRO
3190 160th Ave SE

Bellevue, WA 98008-5452
phone: 425-649-7232
mailto: Robin.Harrover@ecy.wa.gov

Comment 3

Comment: "Why is there no disclosure of this when you purchase property especially in the area of the spill."

Neal Hines phoned to discuss this topic on May 3, 2017, 3:22 pm. Ecology does not have any regulatory authority to discuss home values.

Comment 4

Comment: "Has TCE been detected below the Oceola mud flow?

From: Hines, Neal (ECY).
Sent: Thursday, May 18, 2017 3:53 PM
To: [redacted]
Subject: FW: From WA Dept. of Ecology, Neal Hines to [redacted]

Resend here, [redacted]. The first msg. was sent back to me saying: **Delivery has failed to these recipients or groups:** [redacted]
A problem occurred during the delivery of this message to this e-mail address. Try sending this message again. If the problem continues, please contact your helpdesk. The following organization rejected your message: [98.136.216.25].

Original message:

Hi [redacted]. I wanted to respond to your question to Ecology about the City of Auburn's drinking water wells which supply Algona. I spoke to Susan Fenhaus who is City of Auburn's water utility engineer. Her response is below regarding the well I spoke of to you on the phone (Well 7) regarding the issues being manganese related. Susan is cc'd on this message. I am also cc'ing Robin Harrover who oversees this work for Ecology and Thea Levkovitz who is Ecology's public outreach specialist.

If you have further questions, I am available by email or phone. I appreciate your interest in this work.

-Neal Hines

Neal A. Hines P.E. Ph.D. | WA State Department of Ecology | Hazardous Waste Toxics Reduction Program | 3190 – 160th AV SE , Bellevue, WA 98008-5452 | 425-649-7181 phone | 425-649-7218 fax | neal.hines@ecy.wa.gov email

From: Susan Fenhaus [mailto:sfenhaus@auburnwa.gov]
Sent: Monday, May 15, 2017 11:04 AM
To: Hines, Neal (ECY) <nhin461@ECY.WA.GOV>
Cc: Lisa Tobin <ltobin@auburnwa.gov>
Subject: RE: For confirmation from ECY to City of Auburn

Neal
This is accurate. Well 7 is shut down because of high manganese.
If we did find any TCE in the well, the aeration towers would remove it before the water enters the distribution system.
Thank you,
Susan Fenhaus, PE
Water Utility Engineer
City of Auburn
253.804.5061

From: Hines, Neal (ECY)
Sent: Friday, May 05, 2017 8:23 AM
To: 'ltobin@auburnwa.gov' <ltobin@auburnwa.gov>
Cc: 'Susan Fenhaus' <sfenhaus@auburnwa.gov>
Subject: Follow-up from Ecology, Neal Hines

Thanks Lisa, for the call back. I've worked with Susan Fenhaus but she's out, so I appreciate you covering. Your voicemail on 5/5/2017 answered my question about the basis for Well 7 being shutdown: being manganese related and not TCE related (this is as I had recalled, but I wanted to confirm). Well 7 is the closest one of Auburn's wells to Boeing Auburn TCE impacts.

Neal A. Hines P.E. Ph.D.

Comment 5

From: Hines, Neal (ECY) [mailto:nhin461@ECY.WA.GOV]
Sent: Wednesday, April 26, 2017 2:25 PM
To: [redacted]
Cc: Levkovitz, Thea (ECY); Harrover, Robin (ECY)
Subject: RE: Boeing Fabrication Auburn/Algona Site

Thanks for coming to the public hearing last night, [redacted]. The report I mentioned covers the preliminary results from the Pilot Test work on Milwaukee Ave. N. This was done to see if injections of "food" for the microbes in the ground can be effective at reducing concentrations at the range of those found at Boeing Auburn (low parts per billion).

See attached. If you can't open it, let me know. This is an agency review draft, and not a final report.

-Neal

Neal A. Hines P.E. Ph.D. | WA State Department of Ecology | Hazardous Waste Toxics Reduction Program | 3190 – 160th AV SE , Bellevue, WA 98008-5452 | 425-649-7181 phone | 425-649-7218 fax | neal.hines@ecy.wa.gov email

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From: [redacted]
Sent: Wednesday, April 26, 2017 12:06 PM
To: Hines, Neal (ECY) <nhin461@ECY.WA.GOV>
Subject: Boeing Fabrication Auburn/Algona Site

Hey there, its [redacted]. We spoke last night about the RI and the future action plan in regards to clean-up and that you had some information you could send me. So, this is your reminder. A little light reading! When you have a second to send that to me that would awesome.

Thanks again,
[Name redacted]

Comments 6 - 12

Comments 6 – 12 were received in the Algona Public Awareness Coalition (APAC) Comment Letter, which is included in Appendix A.

6. Please speed up the process. Conduct the Feasibility Study and release the Cleanup Action Plan earlier than estimated in the current timeline. Our community has dealt with the contamination for long enough and we would like to have cleanup start sooner. The investigation has taken years and we do not want the rest of the cleanup process leading up to implementation to drag on.

Now that the Remedial Investigation Report is complete, Ecology has directed Boeing to proceed with the Feasibility Study (FS), which is the next phase of the cleanup process. During the FS, Boeing and Ecology evaluate a range of cleanup methods (called cleanup, or remediation, alternatives). Based on Boeing's proposed cleanup alternatives and their predicted effectiveness over time (as supported by the data), Ecology will select a 'preferred alternative,' which will be implemented as part of the cleanup action plan (CAP).

Currently, Boeing is assessing the data collected during the remedial investigation to prepare the Feasibility Study. This summer, Boeing is also conducting targeted field work to support preparation of the Feasibility Study Report. Next fall, Boeing will compile the results of the current work, and incorporate each proposed cleanup alternative into the FS Report. The FS Report will be submitted during the first Quarter of 2018. Ecology believes this is an ambitious goal considering the amount of

work that needs to take place to reach it. Ecology wants to take the time needed to do a good job. There will also be an opportunity for the communities of Algona, Auburn and Pacific, as well as other government agencies and the Muckleshoot and other Tribes, to comment on the proposed alternatives before Ecology selects the preferred cleanup alternative.

But before receipt of the Feasibility Report in early 2018, Ecology will be keeping the community informed of our progress and will be providing the opportunity to learn more about what is being done and why.

7. The cleanup needs to be done thoroughly. We want the potential to future harm or exposure to be eliminated. Currently, contamination levels where the community could be exposed are too low to cause health effects but we do not know that this has always been the case. We feel that exposure to contamination from Boeing Auburn could have impacted our health in the past. Many members of our communities, particularly those living closest to the plume, have become ill with various cancers, autoimmune diseases, etc., some dying due to these illnesses and it cannot be proven that the contamination from Boeing Auburn had no role in it. We want to make sure there will be no harm to our health moving forward as nothing can be done about the past.

It is Ecology's mission statement to "protect, preserve, and enhance Washington's land, air and water for current and future generations. We share the same interest as the Algona community in protecting the environment to the benefit of public health as we clean up the contamination from the Boeing Auburn Site.

Our immediate goal is to continue to monitor the groundwater, surface water and air for the potential of human exposure to the chemicals from the Boeing Auburn Site, and to mitigate any exposure that exceeds health risk-based standards set to be protective of human health.

In the future, our goal is to return the groundwater throughout the aquifer under the cities of Algona and Auburn to such low levels of contamination that the groundwater meets all state environmental standards for discharge to surface water, for protection of indoor air, and for use as a drinking water source. Realistically, we may not be able to reach zero concentrations (elimination) of chemicals from the Boeing Auburn Site in the contaminated groundwater; but it is a requirement of our state law (the Model Toxics Control Act, or MTCA) that the cleanup meet state standards. By meeting these standards, the groundwater, surface water and air will be protective of human health and the environment into the future.

Ecology will continue to keep you informed of our progress. Ecology recognizes that it is important to the health of the valley communities, and it is important to future generations to have access to this water resource as our population increases.

8. Make sure our drinking water is safe. We want to make sure deeper groundwater is not being impacted, especially with local water source wells pulling from the deeper aquifer. We have been told that drinking water is not currently impacted by the contamination and we want to be certain it will not be in the future. Our community should have access to healthy public water sources even if our need grows in the future and new wells go in.

The drinking water for Algona and Auburn is not taken from where the chemicals released at the Boeing Auburn Site are located in the groundwater aquifer.

The chemicals released from the Boeing Auburn Site are located in a part of the shallow groundwater aquifer that is above the Osceola Mudflow which is a layer of mud and ash from a previous eruption of Mount Rainier that covered the area about 5000 years ago. The mudflow provides a barrier to the downward movement of the chemicals.

In addition, the Auburn municipal water supply wells (which currently supply water to the city of Algona) are located both east of the contaminated portion of the aquifer, and below the Osceola Mudflow. While the area of the aquifer that is contaminated by the Boeing Auburn Site is not a current source of drinking water for the cities of Algona and Auburn, it could be needed as a future drinking water source as the cities' population grows and as potential future drought conditions add limits to the amount of groundwater available for water supply.

As part of the Feasibility Study, Ecology has asked Boeing to conduct groundwater modeling studies to evaluate the effectiveness of the cleanup alternatives in achieving the cleanup standards throughout the site within a reasonable timeframe. Achieving the goal of cleanup of this groundwater will both protect groundwater and surface water quality; and provide for an additional groundwater resource for municipal water supply, as needed in the future.

9. Did the pilot test work? We would like to know more about the enhanced natural attenuation pilot test. We also want to be sure that this cleanup option does not lead to further contamination by releasing other chemicals. If it has been successful in reducing contamination levels, we would like it to be part of the Feasibility Study and perhaps implemented Site-wide.

Ecology has reviewed the results of the Pilot Test. The Pilot Test was successful in lowering concentrations of the chemicals Trichloroethene (TCE) and its degradation chemicals: vinyl chloride (VC) and cis-1,2-Dichloroethene (DCE). The 'food' source that was placed in a line of wells and released into the groundwater did cause bacteria to multiply and did result in chemical degradation. However, the food source traveled more quickly with groundwater flow and spread out less than expected. This may make it more difficult to effectively treat a larger area of contaminated groundwater. However, Boeing and Ecology will continue to evaluate the results of the Pilot Test as part of the Feasibility Study (FS). Bioremediation (the cleanup method used for the Pilot Test), is still being considered as one of the options for cleanup.

As TCE degrades during bioremediation, also referred to as enhanced natural attenuation, spikes in concentrations of other chemicals can occur. Ecology is tracking the concentrations of these chemicals in groundwater. Vinyl chloride, one of these degradation products, is also toxic, like TCE; but unlike TCE, it dissipates rapidly when it is released to the air. The previous air study and indoor air testing in Algona did not result in any detections of vinyl chloride. However, Ecology continues to track the concentration of vinyl chloride in groundwater, and will offer indoor air testing to potentially affected homeowners if levels of VC in groundwater are found at concentrations above what is protective of indoor air.

10. Keep testing our local groundwater. We want to make sure that the pollution is not spreading to being under more homes and that it is not coming into the ditches. We want the testing in our neighborhood to continue. What is of most concern to us is potential exposure through standing water in our yards, most of us experience this in the winter and want to be sure our families are safe.

Ecology has directed Boeing to continue to sample the groundwater wells in the Algona neighborhood every quarter. Ecology reviews these data for any increases in concentrations of TCE, DCE and VC that could result in an unhealthy exposure risk to the neighborhood. Concentrations of TCE, DCE and VC in the groundwater have remained the same or have decreased since 2012 when monitoring began in residential Algona. If conditions increase to pose a risk to the community, Ecology will take appropriate steps to notify the community and address the problem.

The chemicals in groundwater do reach surface water in Chicago Avenue ditch. Ecology has directed Boeing to continue to test surface water near the intersection of Chicago Avenue and 11th Avenue N. where the highest concentrations of TCE have been detected in the past. The concentrations of TCE, VC and DCE remain below the health-risk based standards that the Washington State Department of Health established in its Letter Health Consultation, dated March 28, 2013, and titled: *Boeing Commercial Airplane Fabrication Division, Auburn Plant - Exposures to Surface Water in Chicago Avenue Ditch and Government Canal, Algona, king County, Washington.* Ecology will continue to evaluate the results of the surface water sampling which occurs annually during the dry season in September when the water levels in the ditch are at their lowest. This is the optimal time of year for sampling since there is less water in the ditch to dilute the amount of the chemicals in the surface water.

Ecology directed Boeing to also test the standing water in yards and in ditches within residential Algona. Boeing tested surface water in 12 yard samples. Only one sample detected TCE or VC, and that was at levels well below the health-risk based screening level. Based on these data, contamination in the shallow groundwater is not reaching ponded water in homeowner's yards. The ponded water in yards is collected rainfall and does not represent a health risk to residents.

The ditches in residential Algona do contain chemicals in their surface water, but not all of the chemicals that are detected are from the Boeing Auburn Site. Again the detected chemicals in the ditches are at levels that do not represent a health risk to residents. To review these results, please refer to Section 9.0 of the Remedial Investigation Report, Figure 9-3, and Tables 9-1 and 9-2.

11. Keep the community up to date as the cleanup process moves forward. Many of us feel that we were not notified of the contamination in a timely or appropriate manner. Moving forward we want to be informed and kept current on new information. Not knowing what is going on with the cleanup makes us worry and feel like things are being hidden from us.

Ecology has heard your concern about the need for communication of information about the project's progress. Since 2013 we have increased our outreach to Algona and Auburn and are committed to continuing to keep the community informed through multiple avenues such as our listserv, our website, and opportunities to meet in person at city gatherings and through our public meetings. Ecology will

continue to reach out to the community and to answer your direct questions by phone or through our hotline. Ecology promotes an atmosphere of transparency. Please contact us with any questions or concerns you may have. Our project hotline number is: 253-219-7645.

12. Do the plumes affect our property values? We would like more clarity on how the extent of the contamination affects our property values. New people are moving into our neighborhoods and we do not know if they are being informed of the contamination. Are those selling homes or building new homes in the area required to disclose information on the plumes?

Property values are based on many factors. While the presence of contamination in groundwater beneath the community is a concern, only a realtor can give an accurate assessment of property values in the Algona area and evaluate whether the contamination from the Boeing Auburn Site has affected property values. There is a requirement in real estate law for property sellers to disclose potentially harmful conditions at a property to a potential buyer. Again a realtor can help with determining what must be disclosed, and what is not required to be disclosed.

Comment 13

From: Hines, Neal (ECY)
Sent: Wednesday, May 03, 2017 9:49 AM
To: Levkovitz, Thea (ECY) <tlev461@ECY.WA.GOV>
Cc: Harrover, Robin (ECY) <RHAR461@ECY.WA.GOV>
Subject: Conversation with [redacted] on 5/2/2017

I spoke with [redacted] on 5/2/2017 from 2:20 – 2:30, at [redacted]. [redacted] lives at [redacted] and Algona Blvd. [redacted] missed the public hearing but was interested in what went on. [redacted] works at [redacted] and talked a bit about how they had worries at one time about exposure from using the drinking water for cooking. I assured [redacted] the drinking water was OK (the locations of the wells vs. the plume), and the general findings about the extensive reaches of the plumes, but that exposure concentrations (explaining what this means) indicate that people are not coming into contact with the chemicals. I did state that historical exposure concentrations are an unknown. [redacted] asked about home values (and the need to disclose any information), law suit, and, as Thea discovered from her conversation with [redacted], was not interested in going after anybody, just wants to know what's going on and what [redacted] needs to do.

[redacted] seemed comfortable with my explanations and did not want to have e-mails sent to [redacted] or further phone conversations. [redacted] has a neighbor who thinks the people are being placated and not told the truth. I asked [redacted] to pass on my contact info to [redacted] neighbor, but [redacted] shrugged it off, saying [redacted] neighbor was done with inquiring.

-Neal

Neal A. Hines P.E. Ph.D. | WA State Department of Ecology | Hazardous Waste Toxics Reduction Program | 3190 – 160th AV SE , Bellevue, WA 98008-5452 | 425-649-7181 phone | 425-649-7218 fax | neal.hines@ecy.wa.gov email

Comment 14

From: [redacted]
Sent: Wednesday, March 22, 2017 6:03 AM
To: Levkovitz, Thea (ECY) <tlev461@ECY.WA.GOV>
Subject: Re: Talk to Ecology! Submit Comments. Open House, March 23, 5 - 7 PM

Just yesterday a Boeing van was on Butte Ave in Pacific testing or doing something in the canal water that flows into white river. I have been to several of your meetings. You keep saying the "plume" didn't go towards Pacific. Yet Boeing is often seen testing water in canal. I have lived on Butte for 43 years and canal is in by "back forty", where we had vegetable gardens for years. So I have a right to be concerned.

Sincerely,
[redacted]

From: Hines, Neal (ECY)
Sent: Monday, March 27, 2017 8:43 AM
To: Bet, James N <james.n.bet@boeing.com>; Jim Swortz (james.p.swortz@boeing.com) <james.p.swortz@boeing.com>
Cc: Jennifer Wynkoop <JWynkoop@landauinc.com>; Levkovitz, Thea (ECY) <tlev461@ECY.WA.GOV>; Harrover, Robin (ECY) <RHAR461@ECY.WA.GOV>
Subject: RE: Boeing Sampling Government Canal from Butte Ave in Pacific?

Thanks Jim B. for this follow-up. This is what I'd like to do:

1) This ? came to ECY online from [redacted] near Butte Ave. I spoke with [redacted] last year.
2) To help with rumor management, I'd like for me to call [redacted] and ask if I can have Jim Swortz give [redacted] a call to describe the maintenance work.

Jim – let me know if you are OK with this and I'll call [redacted] to arrange.

-Neal

Neal A. Hines P.E. Ph.D. | WA State Department of Ecology | Hazardous Waste Toxics Reduction Program | 3190 – 160th AV SE, Bellevue, WA 98008-5452 | 425-649-7181 phone | 425-649-7218 fax | neal.hines@ecy.wa.gov email

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From: Bet, James N [mailto:james.n.bet@boeing.com]
Sent: Thursday, March 23, 2017 2:01 PM
To: Harrover, Robin (ECY) <RHAR461@ECY.WA.GOV>

Cc: Jennifer Wynkoop <JWynkoop@landauinc.com>; Hines, Neal (ECY) <nhin461@ECY.WA.GOV>; Levkovitz, Thea (ECY) <tlev461@ECY.WA.GOV>
Subject: RE: Boeing Sampling Government Canal from Butte Ave in Pacific?

Hi Robin,

I'm not sure what this activity is for, but I don't think this is a remediation activity that I (or Landau) is involved with. I've forwarded your email to Jim Swortz as I think he might know, or will know who to talk with in order to find out. My best guess is that this sampling (if that is what they are doing) is probably related to the site's industrial stormwater discharge permit, but I don't know what the sample requirements are under the site permit? I'll forward any information from Jim as soon as I hear something. Jim

---

From: Harrover, Robin (ECY) [mailto:RHAR461@ecy.wa.gov]
Sent: Thursday, March 23, 2017 11:52 AM
To: Bet, James N <james.n.bet@boeing.com>
Cc: Jennifer Wynkoop <JWynkoop@landauinc.com>; Hines, Neal (ECY) <nhin461@ecy.wa.gov>; Levkovitz, Thea (ECY) <tlev461@ecy.wa.gov>
Subject: Boeing Sampling Government Canal from Butte Ave in Pacific?

Hi Jim,

A comment we have received has to do with a Boeing Van being on Butte Ave in Pacific on Tuesday with Boeing staff possibly sampling canal water that flows into the White River. Can you explain to me what this sampling is in response to, and whether it is a regular occurrence (because the van is seen on a regular basis)? Are there water quality issues with the canal water such as from spills at Boeing entering the canal that would be of concern to a resident living along the canal? Or is this some type of routine sampling?

Once I hear back from you, I'll be able to respond to this commenter and address their concerns. It may come up tonight, in which case I'll direct this question to Steve.

Thank you,

- Robin

Robin Harrover, LHG

_____
Hazardous Waste Specialist
Department of Ecology - NWRO
3190 160th Ave SE
Bellevue, WA 98008-5452
phone: 425-649-7232
mailto: Robin.Harrover@ecy.wa.gov

Comment 15

From: Hines, Neal (ECY)
Sent: Tuesday, April 25, 2017 10:33 AM
To: Levkovitz, Thea (ECY) <tlev461@ECY.WA.GOV>; Ashley Bagley <abagley@enviroissues.com>
Subject: RE: Hotline call from [redacted].

I spoke to [redacted]. this morning, 4/25, on the phone at the number below. [redacted] did not know who called [redacted] April 5th. I explained the status of the remedial investigation. [redacted] was unaware of the Boeing Auburn TCE impacts. [redacted] lives in [redacted], but [redacted] worked at Boeing Auburn for [redacted] at the following buildings: 17-07, 17-06, and most recently 17-45. I explained to [redacted] that these buildings have been included in the on-property investigations, and some impacts have been found in the grounds and groundwater beneath the buildings. I told [redacted] my contact info and if questions arise, I'm available.

-Neal

Neal A. Hines P.E. Ph.D. | WA State Department of Ecology | Hazardous Waste Toxics Reduction Program | 3190 – 160th AV SE , Bellevue, WA 98008-5452 | 425-649-7181 phone | 425-649-7218 fax | neal.hines@ecy.wa.gov email

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From: Ashley Bagley [mailto:abagley@enviroissues.com]
Sent: Monday, April 24, 2017 9:39 AM
To: Levkovitz, Thea (ECY) <tlev461@ECY.WA.GOV>; Hines, Neal (ECY) <nhin461@ECY.WA.GOV>
Subject: RE: Hotline call from Daryl G.

Hi Thea,

Angie said the caller seemed confused as to why we would reach out to [redacted]. [redacted] happened to be a Boeing employee who works in [redacted]. I think if you or Neal want to give [redacted] a call to follow-up and close the loop stating we were not trying to contact [redacted], that would be fine.

Let me know if you have any questions.

Best,
Ashley

From: Ashley Bagley [mailto:abagley@enviroissues.com]
Sent: Monday, April 10, 2017 9:36 AM
To: Hines, Neal (ECY) <nhin461@ECY.WA.GOV>; Harrover, Robin (ECY) <RHAR461@ECY.WA.GOV>
Subject: Hotline call from [redacted].

Hi Neal and Robin,

We received a hotline call from a man named [redacted] (ph. [redacted]) who said that he received a call from the project team on Wednesday, April 5 and has no idea why. [redacted]'s a Boeing Employee, but works in [redacted]. EnviroIssues did not reach out to him, did one of you happen to?

Thank you,
Ashley

Ecology Contact Information

Contacts

For more information on the Boeing Auburn Site, contact:

Robin Harrover – Co-Site Manager
Department of Ecology, NWRO
Hazardous Waste and Toxics Reduction Program
3190 160th AVE SE
Bellevue, WA 98008-5452
Phone: 425-649-7232
E-mail: rhar461@ecy.wa.gov

Neal Hines – Site Manager
Department of Ecology, NWRO
Hazardous Waste and Toxics Reduction Program
3190 160th AVE SE
Bellevue, WA 98008-5452
Phone: 425-649-7181
E-mail: nhin461@ecy.wa.gov

Documents

To access documents:

Department of Ecology, NWRO
3190 160th AVE SE
Bellevue, WA 98008-5452
By appointment only:
Contact Sally Perkins, sper461@ecy.wa.gov
or 425-649-7190

Ecology's Website: https://fortress.wa.gov/ecy/gsp/CleanupSiteDocuments.aspx?csid=5049

Figures and Appendices

Figure 1

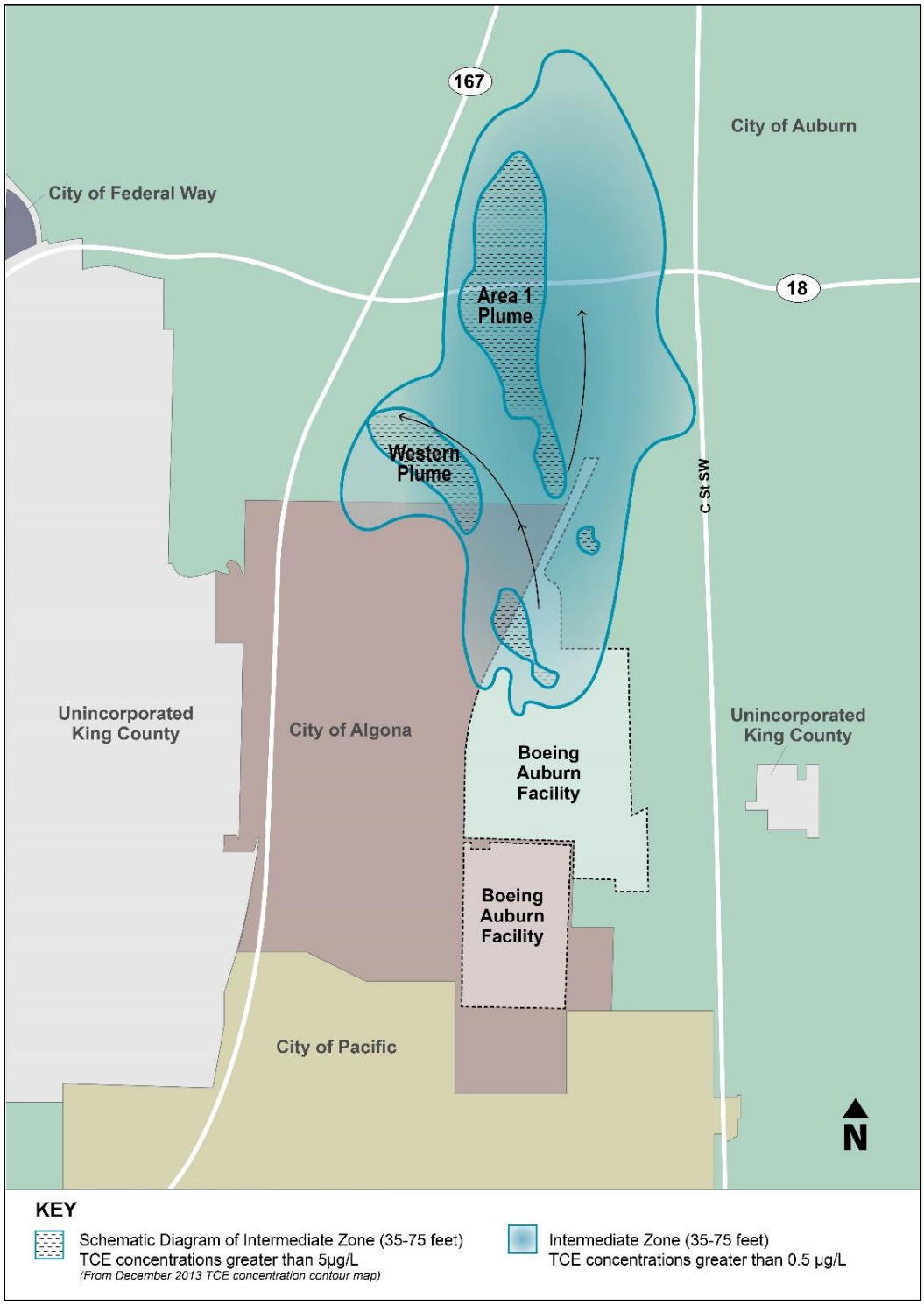
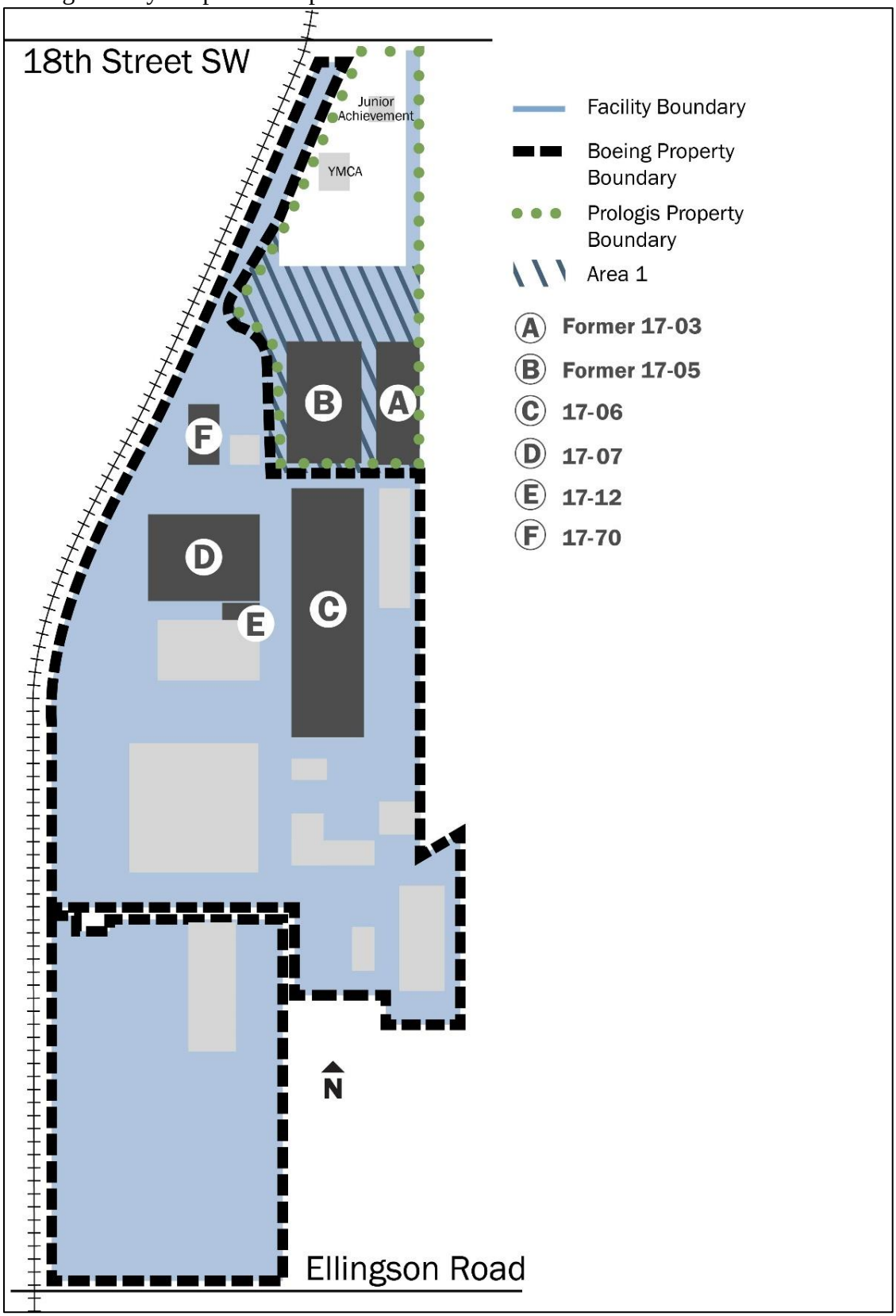


Figure 2

Boeing Facility Graphic from presentation Board.



Appendix A

Algona Public Awareness Coalition (APAC) Comment Letter

May 8, 2017

Neal Hines, Site Manager
Robin Harrover, Site Manager
WA State Department of Ecology
Northwest Regional Office
3190 160th Avenue SE
Bellevue WA 98008-5452

RE: Draft Remedial Investigation Report for Boeing Auburn Facility - Comments from the Community

To Mr. Hines and Ms. Harrover,

APAC talked to community members one-on-one in their homes to learn about their opinions about the Draft *Remedial Investigation Report for Boeing Auburn Facility* (RI). The residents of Algona that we spoke with preferred that their names not be submitted to Ecology but instead that they could help contribute their comments to this letter (please see below).

Background
The degreasing chemical trichloroethene (TCE) and its breakdown product vinyl chloride (VC) is in the groundwater below homes and businesses in parts of Algona. The Remedial Investigation, which began in 2002, has evaluated the location, size and impacts of underground contamination that extends more than a mile north and northwest of Boeing's property.

Here are the comments that we heard from over 35 community members:

- **Please speed up the process.** Conduct the Feasibility Study and release the Cleanup Action Plan earlier than estimated in the current timeline. Our community has dealt with the contamination for long enough and we would like to have cleanup start sooner. The investigation has taken years and we do not want the rest of the cleanup process leading up to implementation to drag on.

- **The cleanup needs to be done thoroughly.** We want the potential to future harm or exposure to be eliminated. Currently, contamination levels where the community could be exposed are too low to cause health effects but we do not know that this has always been the case. We feel that exposure to contamination from Boeing Auburn could have impacted our health in the past. Many members of our communities, particularly those living closest to the plume, have become ill with various cancers, autoimmune diseases, etc., some dying due to these illnesses and it cannot be proven that the contamination from Boeing Auburn had no role in it. We want to make sure there will be no harm to our health moving forward as nothing can be done about the past.

- **Make sure our drinking water is safe.** We want to make sure deeper groundwater is not being impacted, especially with local water source wells pulling from the deeper aquifer. We have been told that drinking water is not currently impacted by the contamination and we want to be certain it will not be in the future. Our community should have access to healthy public water sources even if our need grows in the future and new wells go in.

- **Did the pilot test work?** We would like to know more about the enhanced natural attenuation pilot test. We also want to be sure that this cleanup option does not lead to further contamination by releasing other chemicals. If it has been successful in reducing contamination levels, we would like it to be part of the Feasibility Study and perhaps implemented Site-wide.

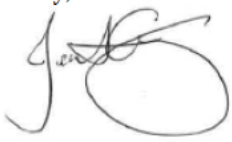
- **Keep testing our local groundwater.** We want to make sure that the pollution is not spreading to being under more homes and that it is not coming into the ditches. We want the testing in our neighborhood to continue. What is of most concern to us is potential exposure through standing water in our yards, most of us experience this in the winter and want to be sure our families are safe.

- **Keep the community up to date as the cleanup process moves forward.** Many of us feel that we were not notified of the contamination in a timely or appropriate manner. Moving forward we want to be informed and kept current on new information. Not knowing what is going on with the cleanup makes us worry and feel like things are being hidden from us.

- **Do the plumes affect our property values?** We would like more clarity on how the extent of the contamination affects our property values. New people are moving into our neighborhoods and we do not know if they are being informed of the contamination. Are those selling homes or building new homes in the area required to disclose information on the plumes?

Thank you for listening to the comments from the community. If you have any questions, please contact me at (310) 923-3998 or jeanette@futurewise.org.

Sincerely,



Jeanette Ordoñez, APAC
On behalf of Algona community members

Appendix B

Comment forms received at the Public Hearing.

RECEIVED
MAY 08 2017
DEPT OF ECOLOGY

QUESTIONS OR COMMENTS

DEPARTMENT OF ECOLOGY
State of Washington

Ecology is available to answer your questions or hear your comments about the project. Please fill out the form below, and we will follow up with more information.

NOTE: Your submission will be reviewed and recorded as official feedback for the Remedial Investigation Comment Period.

Name Cheryll Clark.

Email

Phone 253-326-0925.

Question or Comment:

has TCE been detected below the oscola mud?

HOW DID WE DO? 1 IS LOWEST, 5 IS HIGHEST.						DO YOU HAVE FEEDBACK ABOUT THE OPEN HOUSE?
Materials and displays	1	2	3	4	5	
Staff	1	2	3	4	5	
Overall	1	2	3	4	5	

QUESTIONS OR COMMENTS

RECEIVED
MAY 11 2017
DEPT OF ECOLOGY
TCP-HQ

DEPARTMENT OF ECOLOGY
State of Washington

Ecology is available to answer your questions or hear your comments about the project. Please fill out the form below, and we will follow up with more information.

NOTE: Your submission will be reviewed and recorded as official feedback for the Remedial Investigation Comment Period.

Name Cheryll Clark

Email

Phone 253-326-0925.

Question or Comment:

Why is there no disclosure of this when you purchase property especially in the area of the Spill?

HOW DID WE DO? 1 IS LOWEST, 5 IS HIGHEST.						DO YOU HAVE FEEDBACK ABOUT THE OPEN HOUSE?
Materials and displays	1	2	3	4	5	
Staff	1	2	3	4	5	
Overall	1	2	3	4	5	

Appendix C

Remedial Investigation folio (English and Spanish) and fact sheets (English and Spanish)

DEPARTMENT OF ECOLOGY
State of Washington

Boeing Auburn Fabrication Site

Remedial Investigation Public Comment Period: March 8 - May 8, 2017

Remedial Investigation identifies the location and concentration of contamination

The Remedial Investigation (RI) identified the boundaries of the plume and the potential impacts of the contamination by evaluating data from soil, groundwater, surface water and air samples. The investigation also sampled Areas of Concern (AOCs) and Solid Waste Management Units (SWMUs) at the Facility for other contaminants, such as metals and petroleum. Under Ecology's oversite, Boeing completed sampling and compiled a draft RI Report that summarizes the investigation's findings and recommendations. Ecology reviewed and revised the draft RI Report, which is available for public review and comment March 8 - May 8, 2017.

We Want Your Comments

In-Person Open House

An in-person opportunity to review materials, provide comments and ask questions

March 23, 2017 | 5:00 - 7:00 PM
Alpac Elementary School
310 Milwaukee Blvd N, Pacific, WA
**Spanish interpreters and childcare will be provided*

Online Open House

An online opportunity to review materials, provide comments and ask questions March 8 - May 8, 2016.

BoeingAuburn.participate.online

Public Hearing

A formal in-person opportunity to share your comments with Ecology and Boeing

April 25, 2017 | 5:00 - 7:00 PM
Alpac Elementary School
310 Milwaukee Blvd N, Pacific, WA
**Spanish interpreters and childcare will be provided*

What public feedback is useful for the draft Remedial Investigation?

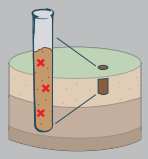
Ecology wants your feedback about the completeness of the site investigation.

Model Toxics Control Act

Washington State's Model Toxics Control Act (MTCA) sets cleanup standards and a process to ensure that the quality of cleanup, protection of human health and environment are not compromised. Boeing must follow MTCA's cleanup regulations and process under Ecology's oversight as shown below.

We Are Here

Remedial Investigation (RI) + Draft Report



A Remedial Investigation defines the nature, extent and magnitude of pollution at a site in order to identify the best method for cleanup.

Interim Action

If the contaminants are found to pose a risk to human health or the environment, Ecology will direct Boeing to take immediate action to reduce this risk. **This happened on the Boeing property in 2004, when an Interim Action was taken to contain a known source for the plume.** Since that time, chemicals found have been at low levels and not expected to pose a risk to human health or the environment.

Feasibility Study (FS)

The Feasibility Study uses the information from the Remedial Investigation to identify and evaluate cleanup alternatives. Then an optimal alternative will be selected and incorporated into the Cleanup Action Plan.

Cleanup Action Plan (CAP)

The Cleanup Action Plan specifies cleanup standards, methods, schedule, describes the steps to be taken, and includes any additional environmental monitoring required during and after the cleanup.

Cleanup & Monitoring

Implementation of the Cleanup Action Plan includes design, construction, operations and monitoring.

Opportunities for public comment

Key Terms

Areas of Concern (AOCs): Places with actual or potential contamination that require investigation or remediation.

Cleanup Action Plan (CAP): The third major step in the MTCA cleanup process; a description of the standards, methods, schedule, steps and monitoring to be undertaken during or after cleanup.

Cleanup and Monitoring: The fourth major step in the MTCA cleanup process; the implementation and oversight of the CAP.

Facility: The Boeing Auburn Fabrication Facility, also known as Boeing property.

Feasibility Study (FS): The second major step in the MTCA cleanup process; an evaluation of methods of cleanup.

Model Toxics Control Act (MTCA): Washington's pollution cleanup law for contaminated sites.

Plume: The area covered by the spread of contaminated groundwater.

Remedial Investigation (RI): The first of four major steps in the MTCA cleanup process; a detailed study of a site's contamination.

Site: The Boeing property, plume and all affected areas.

Solid Waste Management Units (SWMUs): Any piece of equipment at the Facility from which contaminants might have migrated.

Trichloroethene (TCE): A liquid degreaser used to clean grease and oil from metal objects; a volatile organic compound.

Vapor Intrusion: Occurs when vapor forming chemicals (VOCs) migrate from a subsurface source (groundwater) into an overlying building through cracks or other openings in building foundations.

Vinyl Chloride (VC): A breakdown product of TCE; a volatile organic compound.

Volatile Organic Compound (VOCs): Compounds that easily evaporate from water into air at normal air temperatures. Examples of household products that contain these compounds include gasoline, dry cleaning fluid, solvents and paint thinners.

Remedial Investigation Results

Ecology proposes to approve the RI as complete. Data collected during the RI sufficiently defines the area, concentrations and sources of contamination. Results from data collected during the RI do not indicate adverse health effects from occasionally touching or accidentally swallowing the contaminated water or breathing the air in areas above the contaminated groundwater. Investigation at the site focused on the four main topics listed below.

For additional information on each topic, please review the corresponding fact sheets (also available in Spanish) or the draft RI Report. These materials can be found on the project's website.

Soil

Of the 31 SWMUs and AOCs at the Facility, Ecology will require Boeing to further evaluate four in the FS.

Chemicals released may include low levels of petroleum hydrocarbons, cyanide and metals, such as cadmium and copper.

Surface water

Ecology is requiring surface water be protected to the same rigorous standards that are used for drinking water.

Boeing investigated ponds, streams, wetlands and stormwater ditches in Algona and Auburn. Hundreds of samples were collected and analyzed and do not indicate adverse health effects if people touch the surface water. Bodies of water include Government Canal, the stormwater collection ditch on Chicago Avenue, the O Street wetland, the Outlet Collection stormwater ponds and stormwater collection ditch, the Auburn 400 ponds, Mill Creek, and various wetlands associated with Mill Creek, including the Auburn Environmental Park.

No contaminants are presently detected in the public drinking water. Drinking water is provided by the City of Auburn public drinking water systems, which are monitored for contaminants. Private wells are not monitored like public drinking water. If you have a private well, please contact Ecology.

Groundwater

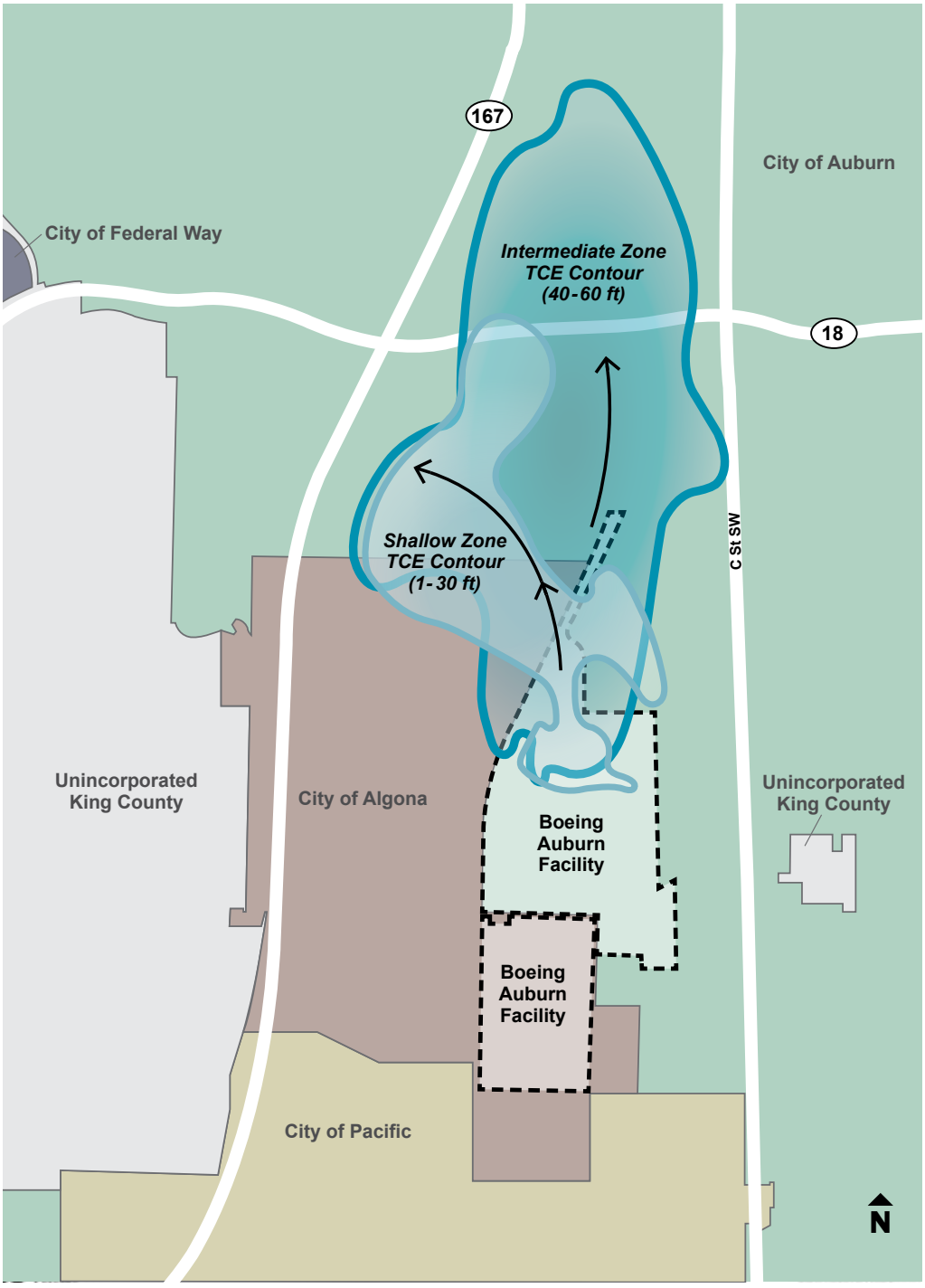
Ecology is recommending Boeing continue to evaluate site-wide groundwater and that it be further addressed in the FS.

Groundwater is water found underground that moves slowly through soil, sand and rocks. Ecology is considering a strategy to clean up groundwater to state standards at locations across the site (referred to as a "site-wide strategy" in the draft RI Report), not just at specific locations where contamination was originally released. The original source areas for the contaminated groundwater plumes at the Facility do not indicate the need for additional source cleanup at this time. If contamination levels are above cleanup levels, Ecology will propose remediation or cleanup at those locations.

Air quality (vapor intrusion)

Ecology is not recommending further indoor air evaluation, and indoor air will not be part of the FS because there are no indications of health risks.

Ecology has reviewed air quality data from samples taken in residential and commercial areas over contaminated groundwater, and the Department of Health has reviewed results from air sampling data. None of the data indicate human health risks from breathing air in these locations.



*The **site** includes areas where the groundwater investigation has occurred.*

Next Steps After the RI

The next step in the MTCA cleanup process is the FS, which will develop and evaluate cleanup action alternatives. Ecology is requiring Boeing to further evaluate:

- Four Facility SWMUs and AOCs for remediation of petroleum hydrocarbons and metals.
- Site-wide groundwater and surface water for remediation of TCE and VC.

View the Draft RI Report

To view a hardcopy, please visit one of these locations:

- **Department of Ecology**
  3190 160th Ave SE
  Bellevue, WA 98008
- **Auburn Library**
  1102 Auburn Way S
  Auburn, WA 98002
- **Algona-Pacific Library**
  255 Ellingson Rd
  Pacific, WA 98047

The draft report can also be viewed online by visiting the project's website.

For more information

Call our hotline (English/Spanish): (253) 219-7645
Email the project: BoeingAuburnSite@ecy.wa.gov
Visit the website: Bit.ly/EcyBoeingAuburn
Visit the Spanish website: Bit.ly/FabricaciónBoeingAuburn
Join the listserv: Bit.ly/2f6dyqz

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FSID #:2018 CSID #:5049

Historic photo of Boeing Auburn Facility

Boeing Auburn Facility is Source of Contamination

The Department of Ecology (Ecology) is asking for public comments on the draft report of the Remedial Investigation (RI), which evaluated the extent and concentration of the contamination from the Boeing Auburn Facility. This folio provides an overview of the purpose and findings of the Remedial Investigation, the agencies involved and opportunities for the public to provide feedback.

In parts of Auburn and Algona, groundwater, water that flows under the ground through soil, is contaminated with a degreasing chemical called trichloroethene (TCE) and its breakdown products. The chemicals originated from the Boeing Auburn Fabrication Facility (Facility) and are believed to be a result of historic operations, likely from the mid-1960s until the mid-1980s. The area with contaminated groundwater, called a plume, reaches approximately one mile northwest from the Facility (see map, page 3).

Ecology is overseeing Boeing's investigation of the contamination and will review and select a plan for cleanup. Ecology's approval is required in each step of the investigation to ensure that state cleanup standards are met. The public will have opportunities to comment throughout the cleanup process.

Draft Remedial Investigation Public Comment Period:
March 8 - May 8, 2017

Para más información acerca de la contaminación del agua subterránea en Algona y Auburn en español, favor de contactar a Luis Buen Abad al (425) 649-4485.

Якщо ви хочете отримати інформацію про забруднення ґрунтових вод у Алгоні та Оберні українською мовою, будь ласка, зателефонуйте (425) 649-7181, щоб поговорити зі співробітником Департаменту Екології та перекладачем.

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DEPARTMENT OF ECOLOGY
State of Washington

Boeing Auburn Fabrication Site

SOIL
Remedial Investigation Results

Soil Contamination on the Boeing Auburn Property (Facility) Requires Additional Evaluation

Remedial Investigation Found Some Soil Contamination at the Boeing Facility

The Department of Ecology (Ecology) oversaw a comprehensive investigation of contamination, called a Remedial Investigation (RI), at the Boeing Facility (Facility). The investigation evaluated Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) during the Remedial Investigation. Of the 62 SWMUs and AOCs identified at the Facility as part of the RCRA Facility Assessment, Ecology required the Boeing Company (Boeing) to further investigate 31 SWMUs and AOCs.

Ecology determined that four of the 31 SWMUs and AOCs investigated will require further soil evaluation by Boeing in the Feasibility Study (FS), the next phase in the cleanup process. Of the 31 SWMUs and AOCs investigated, most had some traces of metals, petroleum hydrocarbons and volatile organic compounds (VOCs). Most detections were below conservative screening levels; however, Ecology will require additional soil evaluation in the FS.

Ecology Recommends Remediation for Two Solid Waste Management Units

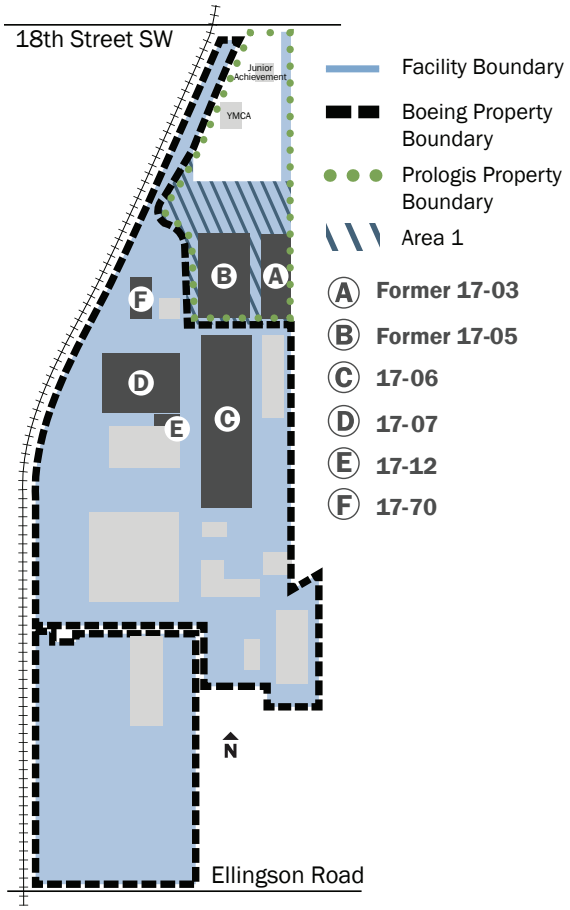
Two SWMUs under Building 17-06 (SWMUs S-15a and S-16) at the Facility have evidence of one or more releases and are recommended for additional study. Each SWMU investigation included discussion of any investigation or activities that were carried out before the RI, soil and/or groundwater evaluations during the RI and recommendations for whether the SWMU needed additional evaluation in the FS.

Petroleum hydrocarbon, a contaminant from gasoline or oil, was found in soil along the east side of Building 17-06 at the Facility. The source of the petroleum hydrocarbon release may have been structures associated with milling aluminum parts. The two areas of soil contamination will be carried forward as a new AOC for evaluation in the FS to address petroleum hydrocarbon groundwater impacts.

Provide Your Comments on the Draft RI Report: MARCH 8 - MAY 8, 2017

You can provide comments on the draft RI Report online by visiting:
BoeingAuburn.participate.online

Ecology wants your feedback about the completeness of the site investigation.



Ecology Recommends Remediation for Two Areas of Concern

The investigation into each AOC included any investigation or activities that were carried out before the RI, soil and/or groundwater evaluations during the RI and recommendations for whether the AOC needed additional evaluation in the FS. Two AOCs at the Facility (one below the ground between Buildings 17-06 and 17-07, and one under Building 17-07) have evidence of one or more releases and are recommended for additional work.

- At AOC A-01, releases from an underground storage tank of gasoline between Building 17-06 and 17-07 contaminated the ground with petroleum hydrocarbon. This area of contaminated soil will be evaluated to address petroleum hydrocarbon groundwater impacts in the FS.
- At AOC A-09, releases of metals were associated with a leak from an acid scrubber on the south side of Building 17-07 at the Facility. A partial remediation of the area was conducted before the RI; however, soil samples collected after the remediation indicated that cadmium, copper, lead and cyanide were left in place above screening levels. The soil in this area will be evaluated to address metals and cyanide contamination in groundwater.

Next Steps: Feasibility Study Will Propose Cleanup Alternatives

Cleanup of the two SWMUs and two AOCs will be included in the FS to address soil and related groundwater contamination. Ecology and Boeing will have more information on cleanup alternatives when the FS is released in late 2017.

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Key Terms

Areas of Concern (AOCs)
Places with actual or potential contamination that require investigation of remediation.

Cleanup Level
The concentration of a hazardous substance in soil, water, air or sediment that is determined to be protective of human health and the environment under specified exposure conditions.

Facility
The Boeing Auburn Fabrication Facility, also known as the Boeing property.

Feasibility Study (FS)
A detailed study identifying and evaluating cleanup alternatives.

Model Toxics Control Act (MTCA)
Washington's pollution cleanup law for contaminated sites.

Plume
The area covered by the spread of contaminated groundwater.

RCRA Facility Assessment
The initial phase of corrective action under the Resource Conservation and Recovery Act (RCRA).

Remedial Investigation (RI)
An investigation of a site's contamination.

Screening Level
Concentration levels of contaminants used early on in an investigation when knowledge about the contaminants and impacts is low (e.g. routes of exposure are unknown, number of contaminants are unknown). If screening levels are exceeded, then a more detailed and focused investigation is made.

Site
The Boeing property, plume and all affected areas.

Solid Waste Management Units (SWMUs)
Any piece of equipment at the Facility from which contaminants might have migrated.

Trichloroethene (TCE)
A liquid degreaser used to clean grease and oil from metal objects; a volatile organic compound.

Vinyl Chloride (VC)
A breakdown product of TCE; a volatile organic compound.

Volatile Organic Compound (VOCs)
Compounds that easily evaporate from water into air at normal air temperatures. Examples of household products that contain these compounds include gasoline, dry cleaning fluid, solvents and paint thinners.

DEPARTMENT OF ECOLOGY
State of Washington

Boeing Auburn Fabrication Site

Groundwater Contamination Under Parts of Algona and Auburn

Remedial Investigation Determines Cleanup or Remediation Is Needed

The Department of Ecology (Ecology) oversaw a comprehensive investigation of contamination, called a Remedial Investigation (RI), at the Boeing Facility (Facility). Groundwater contamination was found under parts of Algona and Auburn. Groundwater is water found underground that moves slowly through soil, sand and rocks. Based on the RI, Ecology will require the contaminated groundwater beyond the Boeing property boundary and three locations that are sources of contamination at the Facility to be cleaned up or remediated.

The three locations on the Facility requiring cleanup include:

- Building 17-06 (SWMU 15a/ SWMU 16)
- Between Buildings 17-06 and 17-07 (AOC A-01); and
- Building 17-07 (AOC A-09).

How the cleanup or remediation will be done will be evaluated further in the Feasibility Study (FS), the next phase in the cleanup process.

Ecology Oversaw the Remedial Investigation of Groundwater

Historical releases of a chemical called trichloroethene (TCE) at the Facility contaminated the groundwater under parts of Algona and Auburn. Groundwater is water found underground that moves slowly through soil, sand and rocks.

Ecology oversaw the RI to learn the location and concentration of contamination in groundwater, and to determine if concentrations were changing over time. The groundwater evaluation primarily measured the contaminants TCE and its breakdown product, vinyl chloride (VC).

Ecology evaluated results of groundwater sampling at three levels below the surface of the ground: shallow (up to 35 feet below the surface), intermediate (35-75 feet below the surface) and deep (75-100 feet below the surface).

Remedial Investigation Found Two Sources of TCE Contamination

The site-wide TCE and VC groundwater plumes are referred to as the Area 1 plume and the western plume. Both contaminated plumes extend northwest

Provide Your Comments on the Draft RI Report: MARCH 8 - MAY 8, 2017

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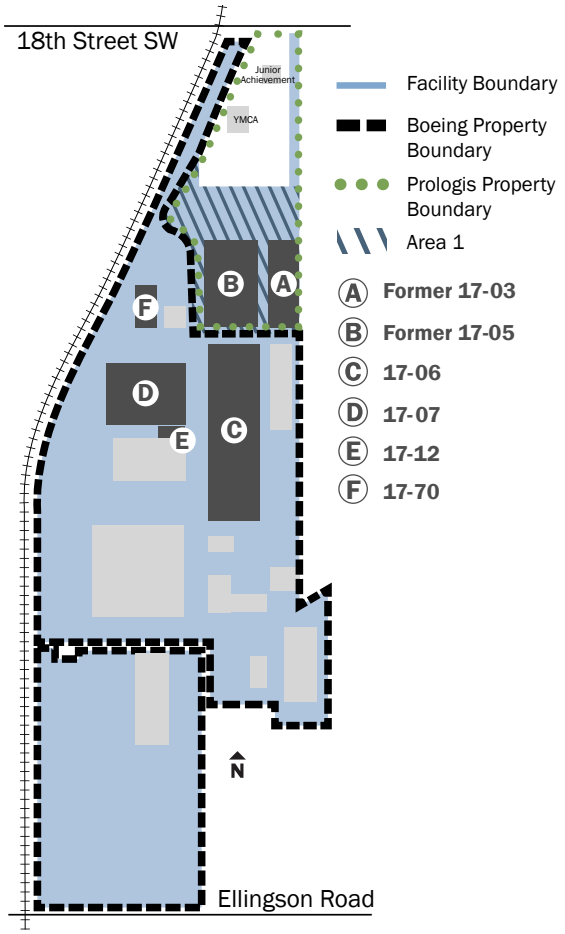
Ecology wants your feedback about the completeness of the site investigation.



from the Boeing property under parts of Algona and Auburn, carrying contaminants in flowing groundwater. Concentrations of TCE and VC in the plumes are relatively dilute and are expected to decrease over time.

Contamination at the Boeing Facility

The Boeing Company (Boeing) interviewed long-time employees and conducted an extensive review of historical documents and engineering drawings to investigate TCE use at the Facility.

Most TCE was used historically in three buildings (Building 17-07 and former Buildings 17-03 and 17-05) with stationary TCE vapor degreasers used to clean metal parts.

Area 1 Plume

The TCE degreaser and tank line in former Building 17-05 leaked and is the source of the Area 1 groundwater plume (see map in publication #17-04-007). From 2004 to 2006, Boeing worked with Ecology to conduct an Interim Remedial Action to clean up residual TCE from this area.

Western Plume

The former TCE vapor degreaser in Building 17-07 (S-13a) is the likely source of the western groundwater plume, based on operational history and groundwater and soil gas data. The former chrome waste holding tank and the former north lagoon on the Boeing property may also have contributed to the groundwater plume. This degreaser structure, holding tank and piping have been removed and the north lagoon has been closed. Future groundwater cleanup will be incorporated into the site-wide groundwater cleanup proposals for the FS.

Contaminated Groundwater Plumes Are Stable

TCE and VC contaminant concentration trends at most wells at the site are not detectable, stable or decreasing over time, based on current statistical analysis. When the concentrations of contamination in groundwater remain the same or decrease over time, the plume is considered stable. Ecology will continue to evaluate the stability of the plume during the FS.

Ecology May Determine That More Evaluation Is Needed

The area where groundwater needs to be evaluated may change if sampling shows that the plumes have expanded beyond their current boundaries. Once groundwater cleanup levels are established in the FS, the plumes will be evaluated for cleanup, based on the areas where TCE and VC concentrations levels are above cleanup levels.

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A breakdown product of TCE; a volatile organic compound.

Volatile Organic Compound (VOCs)
Compounds that easily evaporate from water into air at normal air temperatures. Examples of household products that contain these compounds include gasoline, dry cleaning fluid, solvents and paint thinners.

Next Steps: Feasibility Study Will Propose Cleanup Alternatives

Ecology and Boeing will have more information on how the site will be cleaned up in the FS. The FS will include alternatives for cleaning up the remaining groundwater contamination that has moved away from the source of the Area 1 and western plumes.

For additional information on results, please visit: **www.ecy.wa.gov/programs/hwtr/CleanupSites/boeing-fabn/GroundwaterResults.html**

DEPARTMENT OF ECOLOGY
State of Washington

Boeing Auburn Fabrication Site

SURFACE WATER
Remedial Investigation Results

Surface Water in Auburn and Algona is Not a Hazard to Human Health

Ecology Oversaw the Remedial Investigation of Surface Water

The Department of Ecology (Ecology) oversaw a comprehensive investigation of contamination, called a Remedial Investigation (RI), at the Boeing Facility (Facility). The investigation focused on volatile organic compounds (VOCs), trichloroethene (TCE) and its breakdown product, vinyl chloride (VC).

The results from the RI do not indicate negative health effects if people touch the surface water in Auburn and Algona. During the investigation, the Boeing Company (Boeing) sampled surface water, wetland and stormwater features (ditches) and yard water. Contaminants from the Facility were generally not detected in Mill Creek or the Auburn Environmental Park wetlands.

Algona's Surface Water Samples Report Some Contamination

Surface water samples were taken from Government Canal, the Chicago Avenue ditch and yards and ditches in Algona. Concentrations for all samples were below the drinking water requirements. Ecology will require cleanup levels to be lower (more stringent) than the drinking water standards.

Government Canal and Chicago Avenue Ditch Results

Surface water samples taken from Government Canal, which flows south, did not detect any of the contaminants. However, surface water samples taken at Chicago Avenue ditch, which flows north, did detect contamination, most likely from shallow groundwater emerging into the ditches. Washington State Department of Health and Ecology reviewed several years of monitoring data from the ditch and surrounding stormwater features and concluded that there are no adverse health effects from occasionally touching or accidentally swallowing this water. The water in these ditches is not a source for drinking water, but is protected downstream as a potential future drinking water source.

Yard Surface Water Results

Surface water samples were collected from residential yards in Algona during winter flooding to test whether groundwater might emerge into yards. All

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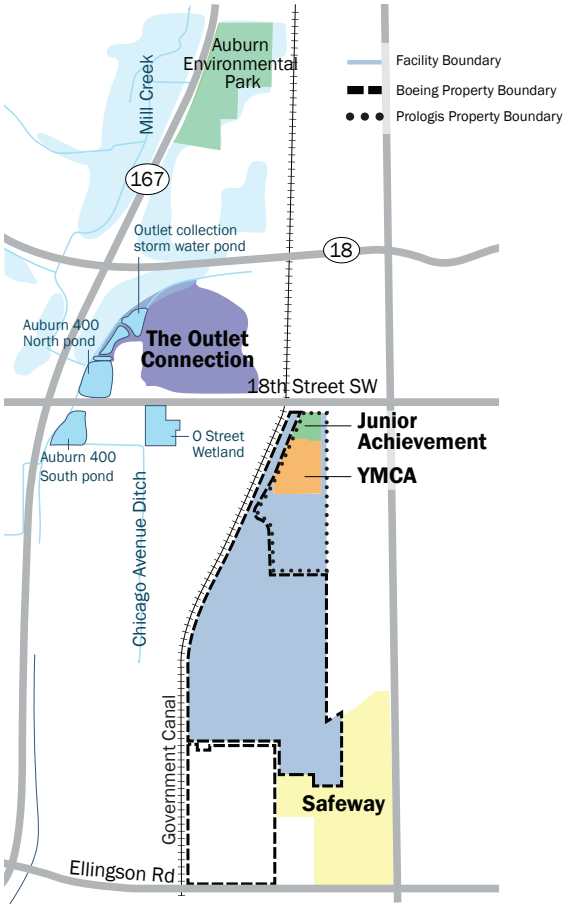

results were far below the health-based screening levels and did not indicate a need for further evaluation.

Ecology invited residents from 27 homes to have their yard water tested. These homes were selected because they were located above contaminated groundwater that could potentially discharge to yard water. Five agreed to participate. Of the homes that agreed to sampling, there were no detections of TCE or VC in yard water samples except at one location. At that location, the sample result was just at the detection limit and well below the screening levels.

Water Quality in Commercial Auburn is Not at Risk

Investigations also evaluated areas in Auburn, including the O Street wetland, the Auburn Environmental Park wetlands, the Outlet Collection ponds, the Auburn 400 storm water ponds, the channelized portion of the wetlands west of State Route 167 and Mill Creek. The only detections in Auburn have been in the Auburn 400 storm water ponds and just downstream.

Most VOC concentrations measured in surface water were below levels that would require cleanup. However, a few detections of TCE and VC in the Auburn 400 storm water ponds are above detection limits and above the most stringent surface water quality criteria that are intended to protect surface water for beneficial uses, such as drinking water and eating fish.

Next Steps: Feasibility Study Will Propose Cleanup Alternatives

Ecology is recommending that Boeing continue to monitor surface water and will determine cleanup actions during and after the FS to ensure surface water will be protected in the future.

Although TCE and VC were detected in some storm water collection ponds and channels in Algona and southwest Auburn, their extent is limited. Concentrations do not indicate that negative health impacts would result from occasionally touching or swallowing the water or breathing the air.

More About Drinking Water

None of the contaminants are presently detected in drinking water. Drinking water is provided by the public drinking water system of Auburn whose wells draw from much deeper in the ground and are located to the east, away from the direction of groundwater flow. The drinking water supply is monitored for contaminants that include TCE and VC. Private wells are not monitored like public drinking water. If you have a private well, please contact Ecology.

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Cleanup Level
The concentration of a hazardous substance in soil, water, air or sediment that is determined to be protective of human health and the environment under specified exposure conditions.

Detection Limit
The minimum concentration of a compound that can be measured and reported with 99 percent confidence.

Facility
The Boeing Auburn Fabrication Facility, also known as the Boeing property.

Feasibility Study (FS)
A detailed study identifying and evaluating cleanup alternatives.

Plume
The area covered by the spread of contaminated groundwater.

Remedial Investigation (RI)
An investigation of a site's contamination.

Screening Level
Concentration levels of contaminants used early on in an investigation when knowledge about the contaminants and impacts is low (e.g. routes of exposure are unknown, number of contaminants are unknown). If screening levels are exceeded, then a more detailed and focused investigation is made.

Site
The Boeing property, plume and all affected areas.

Trichloroethene (TCE)
An industrial degreaser and volatile organic compound.

Vinyl Chloride (VC)
A breakdown product of TCE; a volatile organic compound.

Volatile Organic Compound (VOCs)
Compounds that easily evaporate from water into air at normal air temperatures. Examples of household products that contain these compounds include gasoline, dry cleaning fluid, solvents and paint thinners.

DEPARTMENT OF ECOLOGY
State of Washington

Boeing Auburn Fabrication Site

AIR QUALITY
Remedial Investigation Results

Algona and Auburn's Air Quality is Safe from Contaminated Groundwater Vapor

Remedial Investigation Determined Algona and Auburn's Air Quality Is Not at Risk from Boeing Auburn Site

The Department of Ecology (Ecology) oversaw a comprehensive investigation of contamination, called a Remedial Investigation (RI), at the Boeing Facility (Facility). Since 2003, industrial, commercial and residential air quality has been evaluated as part of that investigation. Based on those findings, exposure to volatile organic compounds (VOCs) is not a health concern at the site. Ecology is not requiring further indoor air evaluation, and air quality will not be investigated further in the Feasibility Study (FS).

Ecology Oversaw the Remedial Investigation of Air Quality

Air was tested to determine if VOCs that were used at the Facility were affecting the air quality. The most frequently found VOCs at the site include trichloroethene (TCE) and its breakdown product, vinyl chloride (VC). While some detections of TCE were found in indoor air, it was concluded that the concentrations do not pose a health risk. No VC was detected in indoor air samples.

Residences Are Not at Risk for Vapor Intrusion

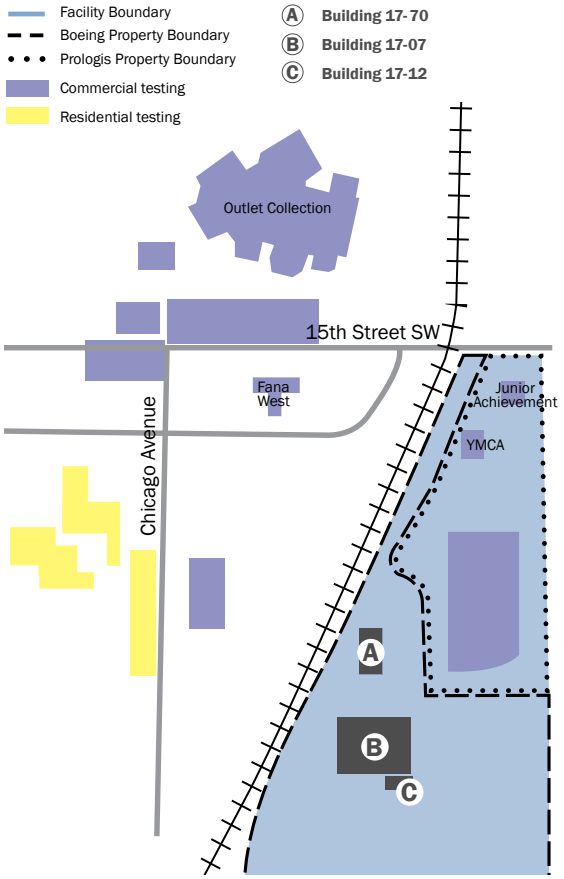
Vapor intrusion from groundwater contamination is not the source of limited detections of TCE in homes tested. In northeast Algona, two phases of indoor air testing was done in homes in areas where contamination was found in shallow groundwater. The initial groundwater testing was done in 2012 and 2013. Ecology required the Boeing Company (Boeing) to offer testing for vapor intrusion at 24 homes in two phases: Phase I during summer 2013 and phase 2 during the following winter.

Results from the Phase I and Phase II vapor intrusion sampling events concluded that vapor intrusion could not be identified as the source of the limited detections of TCE at the homes tested. In addition, exposure to VOCs was determined to not be a health concern in residential Algona. Therefore, no further action was needed to assess conditions or reduce exposure in any of the residences.

Provide Your Comments on the Draft RI Report: MARCH 8 - MAY 8, 2017

You can provide comments on the draft RI Report online by visiting: **BoeingAuburn.participate.online**

Ecology wants your feedback about the completeness of the site investigation.



Boeing Donated Property to YMCA and Junior Achievements

In 2003, Boeing donated a portion of their property on the north end of the Facility to the YMCA and Junior Achievement. As a part of the property transfer, a separate soil gas study was performed to determine if there was potential for impacts to indoor air from contaminated groundwater. Ecology determined that VOC concentrations in the groundwater would not lead to concentrations in air above health-based action levels. From 2004 to 2006, Boeing worked with Ecology to conduct an Interim Remedial Action to clean up residual TCE from the source location of the TCE south of the YMCA and Junior Achievement property.

Testing On and Off Boeing Property Indicate Air Quality Is Not Affected

The overall results from the air quality investigations of groundwater, soil gas and indoor air concluded the air is safe to breathe, even in areas where TCE was detected. The table below provides more detail into these investigations.

		Groundwater Testing Tier 1	Soil Gas Testing Tier 1	Indoor Air Testing Tier 2	Details
On Boeing Property	Building 17-07	●	▲	■	Soil gas samples exceeded screening levels in several areas at this building. Follow-up indoor air sampling did not detect TCE or VC.
	Building 17-12	●	●	◆	Soil gas samples did not show TCE or VC in concentrations above health-based screening levels.
	Building 17-70	●	■	■	TCE and VC were not detected in indoor air or in soil gas.
Off Boeing Property	Outlet Collection	●	●	●	Traces of TCE and VC were detected in groundwater and soil samples. Follow-up indoor air sampling concluded that the concentrations found do not pose a health risk.
	Prologis	●	●	■	TCE and VC were not detected in indoor air.
	Fana West	●	●	■	TCE and VC were not detected in indoor air.
	YMCA	●	●	●	TCE and VC were detected in indoor air, but they were below health-based screening levels.
	Junior Achievement	●	●	■	TCE and VC were not detected in indoor air.

● Detections of TCE and/or VC were determined, but are below health-based screening levels.

▲ Detections of TCE and/or VC were determined and are above health-based screening levels.

■ No detections of TCE and/or VC were determined.

◆ No data was collected - groundwater and soil gas concentrations were below heath-based screening levels.

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ਅਲਗੋਨਾ (Algona) ਅਤੇ ਔਬਰਨ (Auburn) ਵਿੱਚ ਭੂਮੀਗਤ ਪਾਣੀ ਦੇ ਦੂਸ਼ਣ ਬਾਰੇ ਪੰਜਾਬੀ ਵਿੱਚ ਹੋਰ ਜਾਣਕਾਰੀ ਲਈ, ਕਰਿਪਾ ਕਰਕੇ ਚੌਗਰਿਦਾ ਵਗਿਆਨ (Ecology) ਦੇ ਸਟਾਫ ਮੈਂਬਰ ਅਤੇ ਇੱਕ ਦੁਭਾਸ਼ੀਏ ਨਾਲ ਗੱਲ ਕਰਨ ਲਈ (425) 649-7181 ਤੇ ਫੋਨ ਕਰੋ।

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To request ADA accommodation for disabilities, or printed materials in a format for the visually impaired, call Ecology at (425) 649-7000 or visit www.ecy.wa.gov/accessibility.html. Persons with impaired hearing may call Washington Relay Service at 711. Persons with speech disability may call TTY at (877) 833-6341.

This fact sheet should be accompanied by the Remedial Investigation Folio and is one of four fact sheets relaying information about the investigation's findings.

Key Terms

Facility
The Boeing Auburn Fabrication Facility, also known as the Boeing property.

Feasibility Study (FS)
A detailed study identifying and evaluating cleanup alternatives.

Model Toxics Control Act (MTCA)
Washington's pollution cleanup law for contaminated sites.

Plume
The area covered by the spread of contaminated groundwater.

Remedial Investigation (RI)
An investigation of a site's contamination.

Screening Level
Concentration levels of contaminants used early on in an investigation when knowledge about the contaminants and impacts is low (e.g. routes of exposure are unknown, number of contaminants are unknown). If screening levels are exceeded, then a more detailed and focused investigation is made.

Site
The Boeing property, plume and all affected areas.

Soil Gas
The air between soil particles.

Tier I Investigation
An investigation that evaluates whether chemicals in groundwater or soil gas occur at concentrations that could pose a vapor intrusion threat to indoor air quality. If they do pose a threat, a Tier II assessment is done.

Tier II Investigation
An investigation that evaluates specific buildings to determine if chemicals are present in indoor air above state of Washington cleanup levels.

Trichloroethene (TCE)
An industrial degreaser and volatile organic compound.

Vapor Intrusion
Occurs when vapor forming chemicals (VOCs) migrate from a subsurface source (groundwater) into an overlying building through cracks or other openings in building foundations.

Vinyl Chloride (VC)
A breakdown product of TCE.

Volatile Organic Compound (VOCs)
Compounds that easily evaporate from water into air at normal air temperatures. Examples of household products that contain these compounds include gasoline, dry cleaning fluid, solvents and paint thinners.

DEPARTMENT OF ECOLOGY
State of Washington

Sitio de Fabricación de Boeing Auburn

Período de comentario público de la Investigación Correctiva: DEL 8 DE MARZO AL 8 DE MAYO DE 2017

La Investigación Correctiva identifica la ubicación y concentración de la contaminación

La Investigación Correctiva (RI, por sus siglas en inglés) identificó los límites del penacho y los posibles impactos de la contaminación mediante la evaluación de muestras del suelo, del agua subterránea y superficial y del aire. La investigación también tomó muestras de otros contaminantes, tales como metales y petróleo en las Áreas de Preocupación (Areas of Concern, AOCs) y las Unidades de Manejo de Desechos Sólidos (Solid Waste Management Units, SWMUs) en la Instalación. Bajo la supervisión de Ecología, Boeing completó el muestreo y compiló un borrador del RI que resume los resultados y recomendaciones de la investigación. Ecología revisó y corrigió el borrador del Informe del RI, el que está disponible para la revisión y comentario público desde del 8 de marzo al 8 de mayo de 2017.

Queremos sus comentarios

Jornadas de puertas abiertas en persona

Provee una oportunidad para revisar personalmente los materiales, hacer comentarios y preguntas

23 de marzo de 2017 | 5:00 - 7:00 PM
Alpac Elementary School
310 Milwaukee Blvd N, Pacific, WA

Jornada de puertas abiertas en línea

Una oportunidad de revisar los materiales, hacer comentarios y preguntas en línea del 8 de marzo al 8 de mayo de 2017

FabricacionBoeingAuburn.participate.online

Audiencia pública

Provee una oportunidad formal de compartir sus comentarios personalmente con Ecología y Boeing

25 de abril de 2017 | 5:00 - 7:00 PM
Alpac Elementary School
310 Milwaukee Blvd N, Pacific, WA

¿Qué tipo de comentario público es útil para el borrador de la Investigación Correctiva?

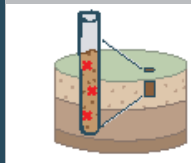
Ecología espera recibir sus comentarios sobre la exhaustividad de la investigación del sitio.

La Ley Modelo para el Control de Sustancias Tóxicas

La Ley Modelo para el Control de Sustancias Tóxicas del estado de Washington (Model Toxics Control Act, MTCA) establece los estándares de limpieza y un proceso para garantizar que la calidad de la limpieza y la protección de la salud humana y el medio ambiente no se vean comprometidas. Boeing debe seguir el proceso de limpieza y la reglamentación en MTCA como se muestra a continuación.

Estamos aquí

Investigación Correctiva (RI) + Borrador del Informe



La Investigación Correctiva define la naturaleza, el alcance y la magnitud de la contaminación en un sitio con el fin de identificar el mejor método para su limpieza.

Acción Provisional

Si se encuentran contaminantes que representan un riesgo para la salud humana o el medio ambiente, Ecología dará instrucciones a Boeing para que tome medidas inmediatas para reducir éste riesgo. **Esto ocurrió en la propiedad de Boeing en 2004, cuando se adoptó una Acción Provisional para contener una fuente conocida al penacho.** Desde entonces, las sustancias químicas se han encontrado en niveles bajos y no se espera que representen un riesgo para la salud humana o el medio ambiente.

Estudio de Viabilidad (Feasibility Study, FS)

El Estudio de Viabilidad utiliza la información de la Investigación Correctiva para identificar y evaluar las alternativas de limpieza. Luego del estudio, se seleccionará una alternativa óptima y se incorporará al Plan de Acción de Limpieza.

Plan de Acción de Limpieza (Cleanup Action Plan, CAP)

El Plan de Acción de Limpieza especifica los estándares y los métodos de limpieza, el calendario; describe las medidas que deben adoptarse, e incluye cualquier monitoreo ambiental adicional necesario durante y después de la limpieza.

Limpieza y Monitoreo

La implementación del Plan de Acción de Limpieza incluye el diseño, la construcción, las operaciones y el monitoreo tras la limpieza.

Oportunidades para comentarios del público

Términos clave

Tricloroetileno (Trichloroethene, TCE): Un desengrasante líquido usado para limpiar la grasa y el aceite de los objetos metálicos; un compuesto volátil.

Cloruro de vinilo (Vinyl Chloride, VC): Un producto de degradación del TCE; un compuesto orgánico volátil.

Compuestos orgánicos volátiles (Volatile Organic Compounds, VOCs): Compuestos que se evaporan fácilmente del agua en el aire a temperaturas normales, tales como un agente desengrasante industrial o un solvente.

Intrusión de vapor: Ocurre cuando los químicos que forman vapor (VOCs) migran de una fuente subterránea (agua subterránea) a un edificio la superficie.

Instalación: La Instalación de Fabricación de Boeing en Auburn, también conocida como propiedad de Boeing.

Sitio: La propiedad de Boeing, el penacho y todas las áreas afectadas.

La Ley Modelo para el Control de Sustancias Tóxicas (Model Toxics Control Act, MTCA): Ley que regula la limpieza de sitios contaminados en Washington.

Penacho: Un área donde el agua subterránea está contaminada.

Investigación Correctiva (Remedial Investigation, RI): Un estudio detallado de la contaminación en un sitio, el primero de cuatro pasos importantes en el proceso de limpieza bajo MTCA.

Estudio de Viabilidad (Feasibility Study, FS): El segundo paso en el proceso de limpieza bajo MTCA; provee una evaluación de los métodos de limpieza.

Plan de Acción de Limpieza (Cleanup Action Plan, CAP): El tercer paso en el proceso de limpieza bajo MTCA; provee una descripción de los estándares y métodos de limpieza, el calendario, y los pasos y el monitoreo que se deben efectuar durante o después de la limpieza.

Limpieza y Monitoreo: El cuarto paso en el proceso de limpieza bajo MTCA; la implemetación y monitoreo del CAP.

Unidades de Manejo de Desechos Sólidos (Solid Waste Management Units, SWMUs): Cualquier unidad en la Instalación, de la cuál los contaminantes pudieron migrar.

Áreas de Preocupación (Areas of Concern, AOCs): Lugares con contaminación real o potencial que requieren investigación o descontaminación.

Resultados de la Investigación Correctiva

Ecología propone aprobar el RI como terminado. Los datos recopilados durante el RI definen suficientemente el área, las concentraciones y las fuentes de contaminación. Los resultados de los datos recopilados durante el RI no indican efectos adversos para la salud al tocar de manera ocasional, o consumir de forma accidental el agua contaminada, o respirar el aire en áreas por encima del agua subterránea contaminada. La investigación en el sitio se centró en los cuatro temas principales que se enumeran a continuación.

Para obtener datos adicionales sobre cada tema, consulte las hojas informativas correspondientes (también disponibles en español) o el borrador del reporte del RI. Estos materiales pueden encontrarse en el sitio web del proyecto.

Suelo

De los 31 SWMUs y AOCs de la Instalación, Ecología requerirá que Boeing evalúe cuatro de estas más a fondo en el FS.

Los productos químicos liberados pueden incluir niveles bajos de hidrocarburos de petróleo, cianuro y metales, tales como cadmio y cobre.

Agua superficial

Ecología requiere que el agua superficial esté protegida con los mismos estándares rigurosos que se aplican para el agua potable.

Boeing investigó estanques, arroyos, humedales y zanjas de aguas pluviales en Algona y Auburn. Cientos de muestras se recolectaron y se analizaron pero sus resultados no indican efectos adversos para la salud si las personas tocan el agua superficial. Los cuerpos de agua estudiados incluyen el Government Canal, la zanja de recogida de aguas pluviales en Chicago Avenue, el humedal de O Street, los estanques de aguas pluviales y la zanja de recogida de aguas pluviales de Outlet Collection, los estanques de Auburn 400, Mill Creek y varios humedales asociados con Mill Creek incluyendo el Auburn Environmental Park.

Al coriente, ninguno de los contaminantes fue detectado en el agua potable pública. El agua potable es provista por los sistemas públicos de agua potable de la Ciudad de Auburn, los cuales son monitoreados para detectar contaminantes. Pozos de agua potable privados no se monitorean como el agua potable pública. Si tiene un pozo privado en el área, por favor comuníquese con Ecología.

Agua subterránea

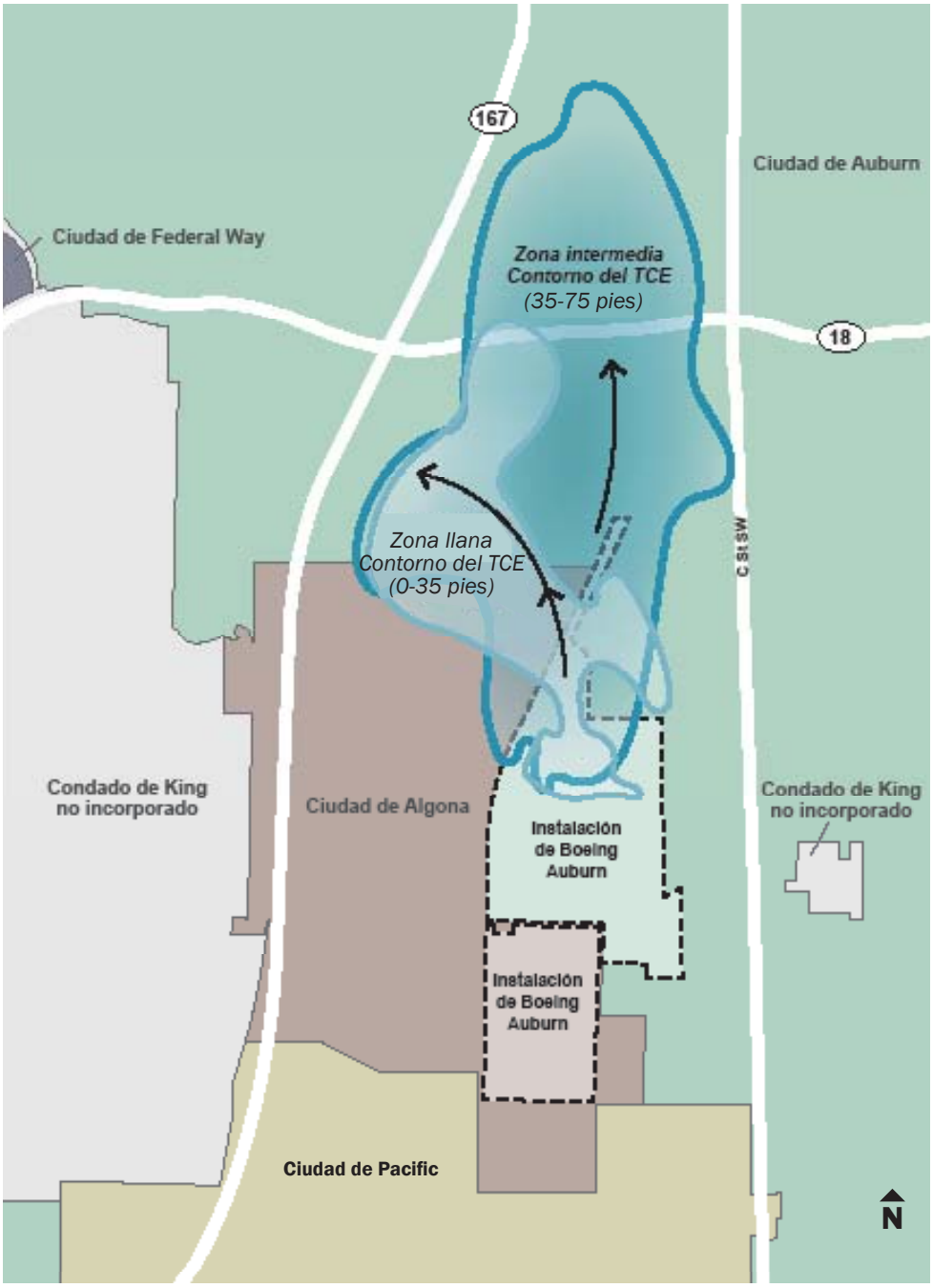
Ecología está recomendando que Boeing continúe la evaluación del agua subterránea en todo el sitio y que se evalúe más a fondo en el FS.

El agua subterránea es el agua que se encuentra bajo la superficie y que se mueve lentamente a través del suelo, la arena y las rocas. Ecología está considerando una estrategia que limpiará el agua subterránea a los estándares del estado no solo en lugares específicos donde la contaminación se originó pero también en otros lugares a través de todo el sitio (se le define como una “estrategia de todo el sitio” en el borrador del RI). Los datos recopilados de las fuentes originales de la contaminación a los penachos de agua subterránea contaminada en la instalación no indican la necesidad hacer limpieza de fuentes adicionales en este momento. Si los niveles de contaminación están por encima de los niveles de limpieza, Ecología propondrá descontaminación o limpieza adicional en esos lugares.

Calidad del aire (intrusión de vapor)

En vista de que no hay indicios de riesgos para la salud, Ecología no recomienda que se conduzca una evaluación adicional del aire interior y el aire interior no será parte del FS.

Ecología revisó los datos de la calidad del aire de muestras tomadas en áreas residenciales y comerciales sobre el agua subterránea contaminada, y el Departamento de Salud revisó los resultados de los datos de muestreo del aire. Ninguno de los datos indica riesgos a la salud humana por inhalación del aire en estos lugares.



*El **sitio** incluye áreas donde se realizó la investigación del agua subterránea.*

Próximos pasos después del RI

El siguiente paso en el proceso de limpieza bajo MTCA es el FS, el cual desarrollará y evaluará alternativas de acción de limpieza. Ecología requiere que Boeing continúe evaluando:

- Cuatro SWMUs y AOCs en la Instalación para la descontaminación de hidrocarburos de petróleo y metales.
- Agua subterránea y agua superficial la través del sitio para la descontaminación del TCE y del VC.

Consulte el borrador del Informe del RI

Para ver una copia impresa, visite uno de estos lugares:

- **Departamento de Ecología**
  3190 160th Ave SE
  Bellevue, WA 98008
- **Biblioteca de Auburn**
  1102 Auburn Way S
  Auburn, WA 98002
- **Biblioteca Algona-Pacific**
  255 Ellingson Rd
  Pacific, WA 98047

Este material también se puede ver en línea visitando el sitio web del proyecto.

Para más información

Llame a nuestra línea directa (inglés/español): (253) 219-7645
Envíe un correo electrónico al proyecto: BoeingAuburnSite@ecy.wa.gov
Visite el sitio web: Bit.ly/EcyBoeingAuburn
Visite el sitio web en español: Bit.ly/FabricaciónBoeingAuburn
Suscríbase a la lista de correos electrónicos (listserv): Bit.ly/2f6dyqz

Para solicitar acomodación de acuerdo con la Ley sobre Estadounidenses con Discapacidades (Americans with Disabilities Act, ADA) o los materiales impresos en un formato para personas con deficiencia visual, llame a Ecología al (425) 649-7000 o visite www.ecy.wa.gov/accessibility.html. Personas con discapacidad auditiva pueden llamar al Servicio de Retransmisión de Washington al 711. Personas con discapacidad del habla pueden llamar vía TTY al (877) 833-6341.

FSID #:2018 CSID #:5049

La Instalación de Boeing es una fuente de contaminación

Ecología solicita sus comentarios acerca del borrador del reporte de la Investigación Correctiva, la cual evaluó el alcance y la concentración de la contaminación originándose en la Instalación de Boeing Auburn. Este folio ofrece una visión general del propósito y de los resultados de la Investigación Correctiva (RI, por sus siglas en inglés), los organismos involucrados las agencias involucradas y las oportunidades para que el público provea sus comentarios.

En partes de Auburn y Algona, el agua subterránea, que fluye bajo la superficie a través del suelo, está contaminada con una sustancia química desengrasante llamada tricloroetileno (Trichloroethene, TCE) y sus productos de degradación. Estos productos químicos se originaron en Sitio de Fabricación de Boeing Auburn (Instalación) y se cree que son el resultado de operaciones históricas, probablemente desde mediados de los años sesenta hasta mediados de los años ochenta. El área del agua subterránea contaminada, llamada penacho, se extiende aproximadamente una milla al noroeste de la Instalación (vea el mapa, página 3).

El Departamento de Ecología (Ecología) está supervisando la investigación de Boeing sobre la contaminación y revisará y seleccionará un plan de limpieza. La aprobación de Ecología es requerida en cada paso de la investigación para asegurar que se cumplan con los estándares estatales de limpieza.

Período de comentario público sobre el borrador de la Investigación Correctiva: DEL 8 DE MARZO AL 8 DE MAYO DE 2017

Якщо ви хочете отримати інформацію про забруднення ґрунтових вод у Алгоні та Оберні українською мовою, будь ласка, зателефонуйте (425) 649-7181, щоб поговорити зі співробітником Департаменту Екології та перекладачем.

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DEPARTMENT OF ECOLOGY
State of Washington

Sitio de Fabricación de Boeing Auburn

SUELO
Resultados de la Investigación Correctiva

La contaminación del suelo en la propiedad de Boeing Auburn (Instalación) requiere una evaluación adicional

La Investigación Correctiva encontró contaminación del suelo en la Instalación de Boeing

El Departamento de Ecología (Ecología) supervisó una investigación exhaustiva de la contaminación, llamada Investigación Correctiva (RI, por sus siglas inglés), en la instalación de Boeing (Instalación). La investigación evaluó las Unidades de Manejo de Desechos Sólidos (SWMUs, por sus siglas inglés) y las Áreas de Preocupación (AOCs, por sus siglas inglés) durante la Investigación Correctiva (RI). De los 62 SWMUs y AOCs identificadas en la Instalación como parte de la evaluación de la Ley de Conservación y Recuperación de los Recursos (Resource Conservation and Recovery Act, RCRA), Ecología requirió que la Boeing Company (Boeing) investigara más a fondo 31 SWMUs y AOCs.

Ecología determinó que cuatro de los 31 SWMUs y AOCs investigadas requerirán una evaluación adicional por parte de Boeing en el Estudio de Viabilidad (Feasibility Study, FS), la siguiente fase en el proceso de limpieza. De los SWMUs y AOCs investigadas, la mayoría tenía algunas trazas de metales, hidrocarburos de petróleo y compuestos orgánicos volátiles (VOCs, por sus siglas inglés). Afortunadamente, la mayor parte de las detecciones estaba por debajo de los niveles conservadores. Sin embargo, Ecología requerirá una evaluación adicional del suelo en el FS.

Ecología recomienda la descontaminación para dos Unidades de Manejo de Desechos Sólidos

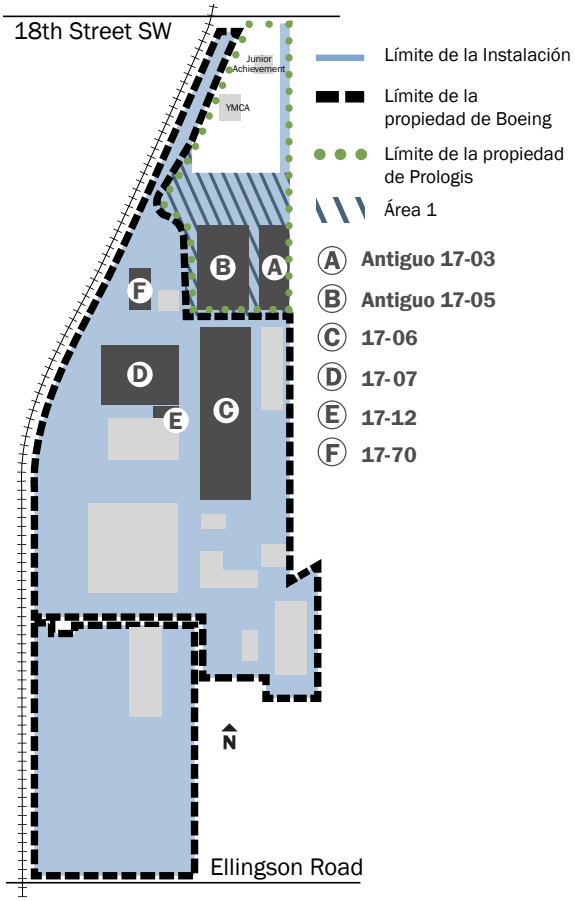
Dos SWMUs bajo el Edificio 17-06 (SWMU S-15a y S-16) en la Instalación tienen evidencia de una o más liberaciones y se recomiendan para un estudio adicional. Como parte de un RI general, se evaluaron 17 SWMUs. Cada investigación de los SWMUs incluyó la discusión de cualquier investigación o las actividades que se llevaron a cabo antes de las evaluaciones del RI, del suelo o del agua subterránea durante el RI y recomendaciones en caso de que el SWMU necesitara una evaluación adicional en el FS.

El hidrocarburo de petróleo, un contaminante de la gasolina o el aceite, se encontró en el suelo a lo largo del lado este del Edificio 17-06 de la Instalación. La fuente de liberación de hidrocarburos de petróleo posiblemente fueron las estructuras asociadas al fresado de piezas de aluminio. Las dos áreas de contaminación del suelo se llevarán adelante como una nuevo AOC para la evaluación en el FS para abordar los impactos sobre el agua subterránea de los hidrocarburos de petróleo.

Haga sus comentarios sobre el borrador del informe del RI: DEL 8 DE MARZO AL 8 DE MAYO DE 2017

Puede hacer comentarios sobre el borrador del Informe del RI en línea con solo visitar **FabricacionBoeingAuburn.participate.online**.

Ecología espera recibir sus comentarios sobre la exhaustividad de la investigación del sitio.



Ecología recomienda la descontaminación para dos Áreas de Preocupación

Se investigaron 14 AOCs como parte del RI. La investigación en cada AOC incluyó cualquier investigación o actividades que se llevaron a cabo antes de las evaluaciones del RI, del suelo o del agua subterránea durante el RI y recomendaciones para determinar si el AOC necesitaba una evaluación adicional en el FS. Dos AOCs (una debajo del terreno entre los Edificios 17-06 y 17-07 y la otra debajo del Edificio 17- 07) en la Instalación tienen evidencia de una o más liberaciones y se recomiendan para un trabajo adicional.

- En AOC A-01, las fugas de un tanque de almacenamiento subterráneo de gasolina entre el Edificio 17-06 y 17-07 contaminaron el terreno con hidrocarburos de petróleo. Esta área de suelo contaminado será evaluada para abordar los impactos sobre el agua subterránea de los hidrocarburos de petróleo en el FS.
- En AOC A-09, las liberaciones de metales se asociaron a una fuga de un depurador ácido en el lado sur del Edificio 17-07 en la Instalación. Se realizó una descontaminación parcial del área antes del RI; sin embargo, las muestras de suelo recolectadas después de la descontaminación indicaron que se dejaron cadmio, cobre, plomo y cianuro en el lugar por encima de los niveles conservadores. El suelo en esta área será evaluado para tratar los metales y la contaminación por cianuro en el agua subterránea.

Próximos pasos: El Estudio de Viabilidad propondrá alternativas de limpieza

La limpieza de las dos SWMUs y las dos AOCs se incluirán en el FS para tratar la contaminación del suelo (y el agua subterránea relacionada). Ecología y Boeing tendrán más información sobre las alternativas de limpieza cuando el FS sea lanzado a finales de 2017.

Якщо ви хочете отримати інформацію про забруднення грунтових вод у Алгоні та Оберні українською мовою, будь ласка, зателефонуйте (425) 649-7181, щоб поговорити зі співробітником Департаменту Екології та перекладачем.

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Términos clave

Tricloroetileno (Trichloroethene, TCE)
Un desengrasante líquido usado para limpiar la grasa y el aceite de los objetos metálicos; un compuesto orgánico volátil.

Cloruro de vinilo (Vinyl Chloride, VC)
Un producto de degradación del TCE; un compuesto orgánico volátil.

Compuestos orgánicos volátiles (Volatile Organic Compound, VOCs)
Compuestos que se evaporan fácilmente del agua en el aire a temperaturas normales, tales como un agente desengrasante industrial o solvente.

Evaluación de la Instalación de la RCRA
La fase inicial de la acción de remediación de acuerdo con la Ley de Conservación y Recuperación de los Recursos (Resource Conservation and Recovery Act, RCRA).

Ley Modelo para el Control de Sustancias Tóxicas (Model Toxics Control Act, MTCA)
Ley de descontaminación de Washington para sitios contaminados.

Instalación
La Instalación de Fabricación de Boeing en Auburn, también conocida como la propiedad de Boeing.

Sitio
La propiedad de Boeing, el penacho y todas las áreas afectadas.

Investigación Correctiva (Remedial Investigation, RI)
Una investigación sobre la contaminación de un sitio.

Estudio de Viabilidad (Feasibility Study, FS)
Un estudio detallado para identificar y evaluar las alternativas de limpieza.

Penacho
El área cubierta por la extensión de agua subterránea contaminada.

Unidades de Manejo de Desechos Sólidos (SWMUs)
Cualquier unidad de la instalación de la cual los contaminantes pudieron migrar.

Áreas de Preocupación (Areas of Concern, AOCs)
Lugares con contaminación real o potencial que requieren investigación de la descontaminación.

Nivel de limpieza
La concentración de una sustancia peligrosa en el suelo, el agua, el aire o el sedimento que se determina que protege la salud humana y el medio ambiente bajo condiciones de exposición especificadas.

Niveles de detección
Niveles de concentración de contaminantes utilizados en fase temprana en una investigación cuando el conocimiento sobre los contaminantes y el impacto es bajo (por ejemplo: las rutas de exposición son desconocidas, el número de contaminantes es desconocido). Si se superan los niveles de detección, se realizará una investigación más detallada y enfocada.

DEPARTMENT OF ECOLOGY
State of Washington

Sitio de Fabricación de Boeing Auburn

Contaminación del agua subterránea bajo partes de las zonas de Algona y Auburn

La Investigación Correctiva determina que se necesita limpieza o acción correctiva

El Departamento de Ecología (Ecología) supervisó una investigación exhaustiva de la contaminación, llamada Investigación Correctiva (RI, por sus siglas inglés), en la instalación de Boeing (Instalación). La contaminación del agua subterránea se encontró bajo las zonas de Algona y Auburn. El RI determinó que se necesita limpieza o acción correctiva. Ecología requerirá que el agua subterránea contaminada más allá del límite de la propiedad de Boeing y tres lugares que son fuentes de contaminación en la Instalación se sometan a limpieza o acción correctiva.

Los tres lugares de la instalación incluyen:

1. Edificio 17-06 (SWMU 15a/ SWMU 16)
2. Entre los edificios 17-06 y 17-07 (AOC A-01); y
3. Edificio 17-07 (AOC A-09).

La forma en la que se hará la limpieza o acción correctiva se evaluará más a fondo en el Estudio de Viabilidad (Feasibility Study, FS), la siguiente fase en el proceso de limpieza.

Ecología supervisó la Investigación Correctiva del agua subterránea

Las emisiónes históricas de una sustancia química llamada tricloroetileno (TCE, por sus siglas inglés) en la Instalación contaminaron el agua subterránea bajo algunas partes de las zonas de Algona y Auburn. El agua subterránea es el agua que se encuentra bajo tierra y que se mueve lentamente a través del suelo, la arena y las rocas.

Ecología supervisó el RI para conocer la ubicación y la concentración de la contaminación en el agua subterránea, y para determinar si las concentraciones estaban cambiando con el tiempo. La evaluación del agua subterránea midió principalmente los contaminantes TCE y su producto de degradación, el cloruro de vinilo (VC, por sus siglas inglés).

Ecología evaluó los resultados del muestreo del agua subterránea en tres niveles bajo la superficie del terreno: poco profundo (hasta 35 pies debajo de la superficie), intermedio (35-75 pies debajo de la superficie) y profundo (75-100 pies debajo de la superficie).

La Investigación Correctiva encontró dos fuentes de contaminación por TCE

Los penachos del agua subterránea de TCE y VC de todo el sitio se denominan penacho del Área 1 y penacho occidental. Ambos penachos contaminados se extienden al

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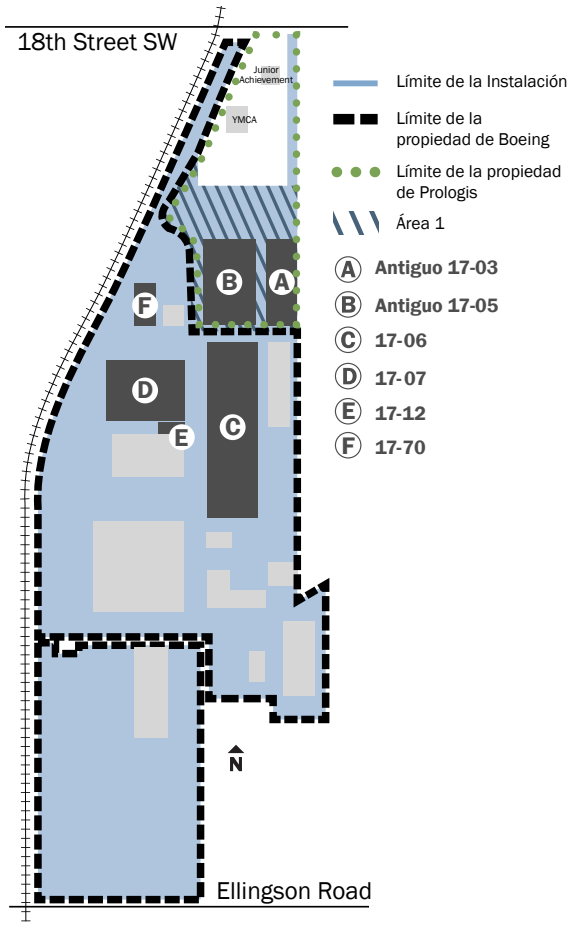

noroeste de la propiedad de Boeing bajo algunas partes de las zonas de Algona y Auburn, transportando contaminantes en el agua subterránea que fluye. Las concentraciones de TCE y VC en los penachos están relativamente diluidas y se espera que disminuyan con el tiempo.

Contaminación en la Instalación de Boeing

La compañía Boeing (Boeing) entrevistó a empleados de larga data y llevó a cabo una extensa revisión de documentos históricos y diseños de ingeniería para investigar el uso de TCE en la Instalación.

La mayor parte del TCE se usó históricamente en tres edificios (Edificio 17-07 y antiguos Edificios 17-03 y 17-05) con desengrasantes estacionarios de vapor TCE utilizados para limpiar partes metálicas.

Penacho del Área 1

El antiguo Edificio 17-05, que tenía un desengrasante TCE y una línea de tanques, es la fuente del penacho del agua subterránea del Área 1. De 2004 a 2006, Boeing trabajó con Ecología para limpiar el TCE residual (a esta operación se le llamó Acción Correctiva Provisional) de esa área.

Penacho occidental

El desengrasante de vapor TCE anterior en el edificio 17-07 (S-13a) es la fuente probable del penacho de agua subterránea occidental, de acuerdo con la historia de operaciones y los datos del agua subterránea y del gas del suelo. El antiguo tanque de almacenamiento de residuos de cromo y la antigua laguna norte de la propiedad de Boeing también pueden haber contribuido al penacho de agua subterránea. Esta estructura desengrasante, el tanque de retención y las tuberías fueron retirados y la laguna norte fue cerrada. La futura limpieza del agua subterránea se incorporará en las propuestas de limpieza del agua subterránea de todo el sitio para el FS.

Los penachos de agua subterránea contaminada son estables

Las tendencias de concentración de contaminantes de TCE y VC en la mayoría de los pozos en el sitio no son detectadas, son estables o decrecientes con el tiempo, según el análisis estadístico actual. Cuando las concentraciones de contaminación en el agua subterránea permanecen iguales o disminuyen con el tiempo, el penacho se considera estable. Ecología continuará evaluando la estabilidad del penacho durante el FS.

Ecología puede determinar que se necesita más evaluación

El área donde el agua subterránea necesita ser evaluada puede cambiar si el muestreo señala que los penachos se han expandido más allá de sus límites actuales. Una vez que los niveles de limpieza del agua subterránea se establecen en el FS, los penachos serán evaluados para la limpieza, de acuerdo con las áreas donde los niveles de concentración de TCE y VC están por encima de los niveles de limpieza.

Términos clave

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Penacho
El área cubierta por la extensión de agua subterránea contaminada.

Nivel de limpieza
La concentración de una sustancia peligrosa en el suelo, el agua, el aire o el sedimento que se determina para proteger la salud humana y el medio ambiente en condiciones de exposición especificadas.

Próximos pasos: El Estudio de Factibilidad propondrá las alternativas de limpieza

Ecología y Boeing tendrán más información sobre cómo se limpiará el sitio en el FS. El FS incluirá alternativas para limpiar la contaminación restante del agua subterránea que se ha alejado de la fuente del Área 1 y los penachos occidentales.

Para obtener información adicional sobre los resultados, visite: **www.ecy.wa.gov/programs/hwtr/CleanupSites/boeing-fabn/GroundwaterResults.html**

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DEPARTMENT OF ECOLOGY
State of Washington

Sitio de Fabricación de Boeing Auburn

AGUA SUPERFICIAL
Resultados de la Investigación Correctiva

El agua superficial en Auburn y Algona no es un peligro para la salud humana

Ecología supervisó la Investigación Correctiva del agua superficial

El Departamento de Ecología (Ecología) supervisó una investigación exhaustiva de la contaminación, llamada Investigación Correctiva (RI, por sus siglas en inglés), en la Instalación de Boeing (Instalación). La investigación se centró en los compuestos orgánicos volátiles (VOCs, por sus siglas en inglés), el tricloroetileno (TCE, por sus siglas en inglés) y su producto de degradación, el cloruro de vinilo (VC, por sus siglas en inglés).

Los resultados del RI no indican efectos negativos para la salud si las personas tocan el agua superficial en Auburn y Algona. Durante la investigación, la compañía Boeing (Boeing) tomó muestras de agua superficial, humedales y aguas pluviales (zanjas), así como agua de los patios. Los contaminantes de la Instalación generalmente no se detectaron en Mill Creek o en los humedales del Auburn Environmental Park.

Las muestras del agua superficial en Algona reportan alguna contaminación

Las muestras del agua superficial se tomaron de Government Canal, la zanja de Chicago Avenue y los patios y zanjas en Algona. Las concentraciones para todas las muestras estaban por debajo de los requerimientos de agua potable. Ecología requerirá que los niveles de limpieza sean más bajos (más rigurosos) que los estándares de agua potable.

Resultados de las zanjas Government Canal y Chicago Avenue

Las muestras del agua superficial tomadas de Government Canal, que fluye hacia el sur, no detectaron ninguno de los contaminantes. Sin embargo, las muestras del agua superficial tomadas en la zanja de Chicago Avenue, que fluye hacia el norte, si detectaron contaminación, muy probablemente del agua subterránea poco profunda que sube hacia las zanjas. Varios años de monitoreo de datos de la zanja y de las características de las aguas pluviales circundantes no indican efectos adversos para la salud debido a tocar de manera ocasional o consumir de forma accidental esta agua. El agua en estas zanjas no es una fuente de agua potable, pero está protegida aguas abajo como una posible fuente de agua potable en el futuro.

Resultados del agua superficial de los patios

Se recolectaron muestras de agua superficial de patios residenciales en Algona durante

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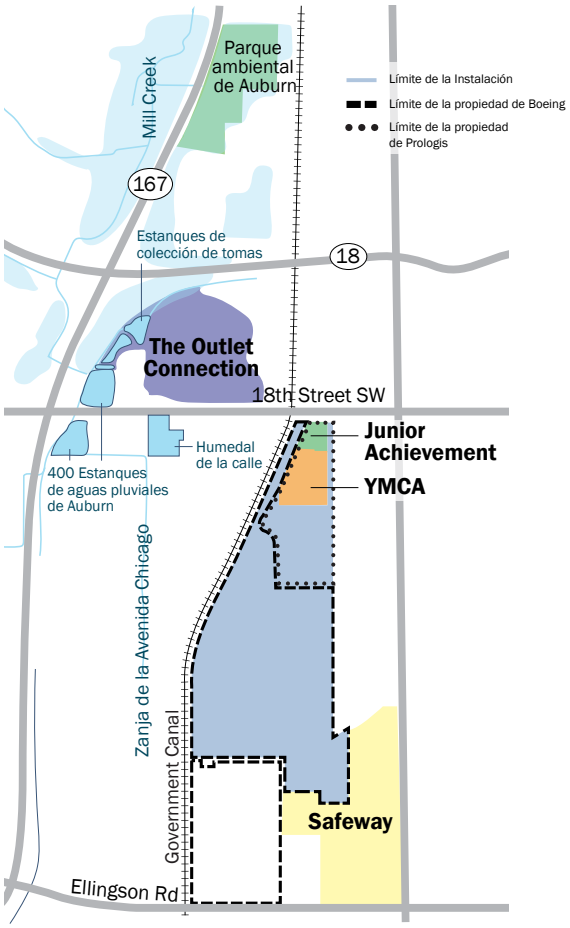

las inundaciones invernales para probar si el agua subterránea podría subir hasta allí. Todos los resultados estuvieron muy por debajo de los niveles de detección basados en la salud y no indicaron la necesidad de una evaluación posterior.

Ecología invitó a 27 hogares a participar en pruebas de agua de los patios. Cinco aceptaron participar. En los hogares que aceptaron el muestreo, no hubo detecciones de TCE o VC en muestras de agua de los patios, excepto en un lugar. En ese lugar, el resultado de la muestra estaba justo en el límite de detección y muy por debajo de los niveles de detección.

La calidad del agua en la zona comercial de Auburn no está en riesgo

Las investigaciones también evaluaron las áreas en Auburn, que incluyeron los humedales de O Street, del Auburn Environmental Park, los estanques de Outlet Collection, los estanques de aguas pluviales de Auburn 400, la porción canalizada de los humedales al oeste de State Route 167 y Mill Creek. Las únicas detecciones en Auburn fueron en los estanques de aguas pluviales de Auburn 400 y justo aguas abajo.

La mayoría de las concentraciones de VOCs medidas en el agua superficial estuvo por debajo de los niveles que requerían limpieza. Sin embargo, algunas detecciones de TCE y VC en los estanques de aguas pluviales de Auburn 400 están por encima de los límites de detección y también sobre los más rigurosos criterios de calidad de agua superficial que están destinados a proteger esta agua para usos beneficiosos, tales como beber agua y comer pescado.

Próximos pasos: El Estudio de Viabilidad propondrá alternativas de limpieza

Ecología recomienda que Boeing continúe el monitoreo del agua superficial y determinará las acciones de limpieza durante y después del FS para asegurar que el agua se protegerá en el futuro.

Aunque el TCE y el VC se detectaron en algunos estanques de recolección de aguas pluviales y canales en Algona y el suroeste de Auburn, su extensión es limitada. Las concentraciones no indican que los impactos negativos para la salud resultarían de tocar o consumir el agua de manera ocasional o de respirar el aire.

Más sobre el agua potable

Ninguno de los contaminantes se detecta actualmente en el agua potable. El agua potable es suministrada por el sistema público de Auburn (cuyos pozos se extraen de lo más profundo del terreno y están situados al este, lejos de la dirección del flujo del agua subterránea). El suministro de agua potable se supervisa para detectar contaminantes que incluyen el TCE y el VC. Los pozos privados no se supervisan como el agua potable pública. Si tiene un pozo privado, por favor póngase en contacto con Ecología.

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Términos clave

Tricloroetileno (Trichloroethene, TCE)
Un desengrasante industrial y un compuesto orgánico volátil.

Cloruro de vinilo (Vinyl Chloride, VC)
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Instalación
La Instalación de Fabricación de Boeing en Auburn, también conocida como propiedad de Boeing.

Sitio
La propiedad de Boeing, el penacho y todas las áreas afectadas.

Investigación Correctiva (Remedial Investigation, RI)
Una investigación sobre la contaminación de un sitio.

Estudio de Viabilidad (Feasibility Study, FS)
Un estudio detallado para identificar y evaluar las alternativas de limpieza.

Penacho
El área cubierta por la extensión de agua subterránea contaminada.

Límite de detección
La concentración mínima de un compuesto que se puede medir y presentar con 99 por ciento de confianza.

Nivel de limpieza
La concentración de una sustancia peligrosa en el suelo, el agua, el aire o el sedimento que se determina que protege la salud humana y el medio ambiente en condiciones de exposición especificadas.

Niveles de detección
Niveles de concentración de contaminantes utilizados en fase temprana en una investigación cuando el conocimiento sobre los contaminantes y el impacto es bajo (por ejemplo, las rutas de exposición son desconocidas, el número de contaminantes es desconocido). Si se superan los niveles de detección, se realizará una investigación más detallada y enfocada.

DEPARTMENT OF ECOLOGY
State of Washington

Sitio de Fabricación de Boeing Auburn

CALIDAD DEL AIRE
RESULTADOS DE LA INVESTIGACIÓN CORRECTIVA

La calidad del aire en Algona y Auburn está libre del vapor de agua subterránea contaminada

La Investigación Correctiva determinó que la calidad del aire de Algona y Auburn no está sometida a riesgos procedentes del sitio de Boeing Auburn

El Departamento de Ecología (Ecología) supervisó una investigación exhaustiva de la contaminación, llamada Investigación Correctiva (RI, por sus siglas inglés), en la Instalación de Boeing (Instalación). Como parte de esta investigación, desde 2003 se evaluó la calidad del aire industrial, comercial y residencial. Sobre la base de estos resultados, se determinó que la exposición a los compuestos orgánicos volátiles (VOCs, por sus siglas inglés) no es un problema de salud en el sitio. Ecología no requiere mayor evaluación del aire interior y la calidad del aire no se investigará más a fondo en el Estudio de Viabilidad (FS, por sus siglas inglés).

Ecología supervisó la Investigación Correctiva de la Calidad del Aire

El aire se sometió a prueba para determinar si los VOCs que se utilizaron en la Instalación afectaban la calidad del aire. Los VOCs encontrados con más frecuencia en el sitio incluyen tricloroetileno (TCE, por sus siglas inglés) y su producto de degradación, el cloruro de vinilo (VC, por sus siglas inglés). Si bien algunas detecciones del TCE se encontraron en el aire interior, se concluyó que las concentraciones no suponen un riesgo para la salud. No se detectó VC.

Las residencias no están en riesgo de intrusión de vapor

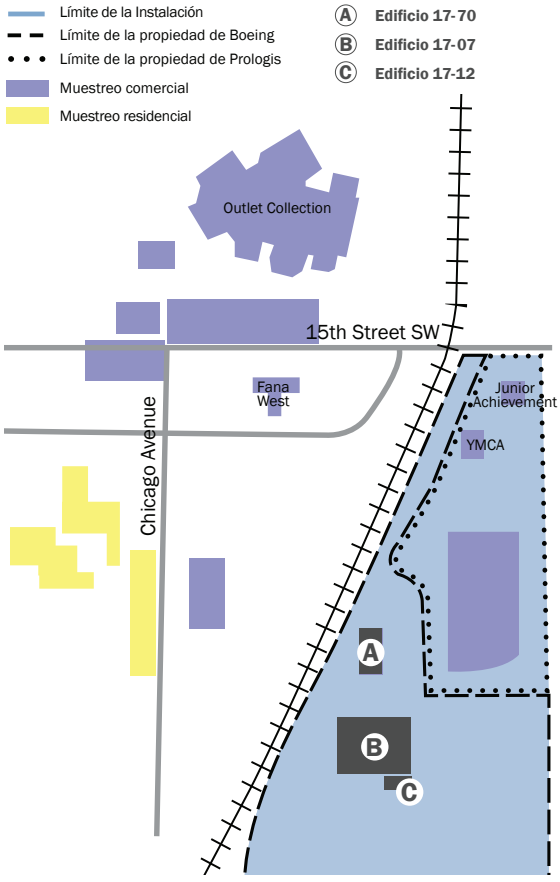
La intrusión de vapor de la contaminación del agua subterránea no es la fuente de detecciones limitadas del TCE en los hogares sometidos a prueba. En el noreste de Algona, se cumplieron dos fases de las pruebas del aire interior en los hogares de las áreas donde se encontró contaminación en el agua subterránea poco profunda. La evaluación inicial del agua subterránea se realizó en 2012 y 2013. Ecología requirió que la compañía Boeing (Boeing) ofreciera pruebas para la intrusión de vapor en 24 hogares en dos fases: fase I durante el verano de 2013 y fase II durante el invierno siguiente.

Los resultados de los eventos de muestreo de intrusión de vapor de la Fase I y Fase II concluyeron que la intrusión de vapor no se pudo identificar como la fuente de las detecciones limitadas del TCE en los hogares sometidos a prueba. Además, se determinó que la exposición a los VOCs no resultaba un problema de salud en el área residencial de Algona. Por lo tanto, no se necesitó otra medida para evaluar las condiciones o reducir la exposición en algunas de las residencias.

Haga sus comentarios sobre el borrador del informe del RI: DEL 8 DE MARZO AL 8 DE MAYO DE 2017

Puede hacer comentarios sobre el borrador del Informe del RI en línea con solo visitar **FabricacionBoeingAuburn.participate.online**.

Ecología espera recibir sus comentarios sobre la exhaustividad de la investigación del sitio.



Boeing donó propiedades a YMCA y Junior Achievements

En 2003, Boeing donó una porción de su propiedad en el extremo norte de la Instalación a YMCA y Junior Achievement. Como parte de la transferencia de la propiedad, se realizó un estudio por separado del gas del suelo para determinar si había impactos potenciales para el aire interior desde el agua subterránea contaminada. Ecología determinó que las concentraciones de los VOCs en el agua subterránea no conducirían a concentraciones en el aire por encima de los niveles de acción basados en la salud. De 2004 a 2006, Boeing trabajó con Ecología para limpiar el TCE residual (a esta operación se le llamó Acción Correctiva Provisional) desde el lugar de origen del TCE al sur de YMCA y la propiedad de Junior Achievement.

Las pruebas dentro y fuera de la propiedad de Boeing indican que la calidad del aire no está afectada

Los resultados globales de las investigaciones de la calidad del aire del agua subterránea, del gas del suelo y del aire interior concluyeron que el aire es seguro para respirar, incluso en áreas donde se detectó el TCE. La tabla que se muestra a continuación proporciona más detalles de estas investigaciones.

		Agua subterránea Prueba de Nivel 1	Gas del suelo Prueba de Nivel 1	Aire interior Prueba de Nivel 2	Detalles
En la propiedad de Boeing	Edificio 17-07	●	▲	■	Las muestras de gas del suelo superaron los niveles de detección en varias áreas de este edificio. El muestreo de seguimiento del aire interior no detectó TCE o VC.
	Edificio 17-12	●	●	◆	Las muestras del gas del suelo no encontraron TCE o VC en concentraciones por encima de los niveles de detección basados en la salud.
	Edificio 17-70	●	■	■	No se detectaron TCE ni VC en el aire interior o en el gas del suelo.
Fuera de la propiedad de Boeing	Outlet Collection	●	●	●	Se detectaron trazas de TCE y VC en muestras del agua subterránea y suelo. El muestreo de seguimiento del aire interior concluyó que las concentraciones encontradas no suponen un riesgo para la salud.
	Prologis	●	●	■	No se detectaron TCE ni VC en el aire interior.
	Fana West	●	●	■	No se detectaron TCE ni VC en el aire interior.
	YMCA	●	●	●	Se detectaron TCE y VC en el aire interior, pero estaban por debajo de los niveles de detección basados en la salud.
	Junior Achievement	●	●	■	No se detectaron TCE ni VC en el aire interior.

● Se determinaron detecciones de TCE o VC, pero están por debajo de los niveles de detección basados en la salud.

▲ Se determinaron detecciones de TCE o VC y están por encima de los niveles de detección basados en la salud.

■ No se determinaron las detecciones de TCE o VC.

◆ No se recolectaron datos: las concentraciones de agua subterránea y gas del suelo estaban por debajo de los niveles de detección basados en la salud.

Якщо ви хочете отримати інформацію про забруднення ґрунтових вод у Алгоні та Оберні українською мовою, будь ласка, зателефонуйте (425) 649-7181, щоб поговорити зі співробітником Департаменту Екології та перекладачем.

ਅਲਗੋਨਾ (Algona) ਅਤੇ ਔਬਰਨ (Auburn) ਵਿੱਚ ਭੂਮੀਗਤ ਪਾਣੀ ਦੇ ਦੂਸ਼ਣ ਬਾਰੇ ਪੰਜਾਬੀ ਵਿੱਚ ਹੋਰ ਜਾਣਕਾਰੀ ਲਈ, ਕਰਿਪਾ ਕਰਕੇ ਚੌਗਰਿਦਾ ਵਰਿਆਿਨ (Ecology) ਦੇ ਸਟਾਫ ਮੈਂਬਰ ਅਤੇ ਇੱਕ ਦੁਭਾਸ਼ੀਏ ਨਾਲ ਗੱਲ ਕਰਨ ਲਈ (425) 649-7181 ਤੇ ਫੋਨ ਕਰੋ।

Para sa higit pang impormasyon tungkol sa pagkakontamina ng groundwater sa Algona at Auburn na nasa wikang Tagalog, mangyaring tumawag sa (425) 649-7181 upang makipag-usap sa isang miyembro ng kawani ng Ecology

Para solicitar acomodación de acuerdo con la Ley sobre Estadounidenses con Discapacidades (Americans with Disabilities Act, ADA) o materiales impresos en un formato para las personas con deficiencia visual, llame a Ecología al (425) 649-7000 o visite www.ecy.wa.gov/accessibility.html. Personas con discapacidad auditiva pueden llamar al Servicio de Retransmisión de Washington por al 711. Personas con discapacidad del habla pueden llamar vía TTY al (877) 833-6341.

Esta hoja informativa debe ir acompañada del Folio de Investigación Correctiva y es una de las cuatro hojas informativas que presentan datos sobre los resultados de la investigación.

Términos clave

Tricloroetileno (Trichloroethene, TCE)
Un desengrasante industrial y un compuesto orgánico volátil.

Cloruro de vinilo (Vinyl Chloride, VC)
Un producto de degradación del TCE.

Compuestos orgánicos volátiles (Volatile Organic Compound, VOCs)
Compuestos que se evaporan fácilmente del agua en el aire a temperaturas normales. Ejemplos de productos domésticos que contienen estos compuestos incluyen: gasolina, líquido de limpieza en seco, solventes y diluyentes de pintura.

Ley Modelo para el Control de Sustancias Tóxicas (Model Toxics Control Act, MTCA)
Ley de descontaminación de Washington para sitios contaminados.

Gas del suelo
El aire entre las partículas del suelo.

Intrusión de vapor
Se produce cuando los químicos que forman vapor (VOCs) migran de una fuente subterránea (agua subterránea) en un edificio superpuesto a través de grietas u otras aberturas en los cimientos del edificio.

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Investigación de Nivel I
Una investigación que evalúa si los productos químicos en el agua subterránea o el gas del suelo se producen en concentraciones que podrían suponer una amenaza de intrusión de vapor a la calidad del aire interior. Si representan una amenaza, se realiza una evaluación de Nivel II.

Investigación de Nivel II
Una investigación que evalúa los edificios específicos para determinar si los productos químicos están presentes en el aire interior por encima de los niveles de limpieza del estado de Washington.