



ecology and environment, inc.

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June 19, 2018

Randy Nattis, Federal On-Scene Coordinator
United States Environmental Protection Agency
Region 10 – Portland Operations Office
805 SW Broadway, Suite 500
Portland, OR 97205

Re: Final Trip Report for the Portland Junkyard Fire Emergency Response, Contract Number
EP-S7-13-07-E&E, Task Order TO-21-T2-SS11

Dear Mr. Nattis:

Enclosed please find the Final Trip Report for the Portland Junkyard Fire Emergency Response located in Portland, Oregon. If you have any questions regarding this submittal, please call Maren Fulton at (503) 248-5600 Ext. 62736.

Sincerely,

ECOLOGY AND ENVIRONMENT, INC.

Brad Martin
START-IV Emergency Response Team Leader

cc: Maren Fulton, START-IV Project Manager, E & E, Portland, Oregon

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FINAL TRIP REPORT

Portland Junkyard Fire

Portland, Oregon

TDD: *TO-21-T2-SS11*



Prepared for

U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue
Seattle, Washington 98101

Prepared by

Ecology and Environment, Inc.
720 Third Avenue, Suite 1700
Seattle, Washington 98104

June 2018

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1. SITE DETAILS

Site Name:	Portland Junkyard Fire	
Responsible Party Name:	NW Metals	
Location:	7800 NE Killingsworth Street, Portland, OR 97218	
City Property ID:	R318218	
SSID:	10QV	
CERCLIS ID:	ORN001003274	
Latitude: 45.561413	Longitude:	-122.584771
Date(s) of Trip:	March 12, 2018 through March 13, 2018	

2. PURPOSE

The United States Environmental Protection Agency (EPA) has tasked Ecology and Environment, Inc. (E & E), under Superfund Technical Assessment and Response Team (START) contract number EP-S7-13-07, Technical Direction Document number TO-21-T2-SS11, to support EPA during an emergency response by performing particulate air monitoring and effluent water sampling from during a fire at an automobile wrecking facility and junkyard. The purpose of the Portland Junkyard Fire (hereinafter referred to as “the site”) emergency response was to:

- Assess the extent and nature of air quality, at and around the site,
- Develop air quality maps based off of in situ monitoring,
- Sample effluent surface water streams from firefighting activities.

START was tasked to provide technical support and document site conditions and activities through logbook entries and photographs. Appendix A contains selected photographs taken during field activities at the site. This report is divided into the following sections:

- Background
- Establishment of Site Screening and Action Levels
- Health and Safety
- Field Activity Overview
- Sampling and Analysis
- Summary and Conclusions
- References
- Attachments
 - A – Photographic Documentation
 - B – Analytical Results Compared with Action Levels
 - C – Laboratory Data
 - D – Data Validation
 - E – Time Series Maps of Particulate Matter
 - F – Plume Models

3. PARTICIPATING ORGANIZATIONS

Agency/Company	Contact Persons/ Position	Phone Number
United States Environmental Protection Agency (EPA)	Randy Nattis, Federal On-Scene Coordinator	(503) 628-9419
AMR Medical	-	(503) 239-0389
Multnomah County Health Department	-	(503) 988-3674
Multnomah County Sheriff's Office	-	(503) 988-4300
NW Metals	-	(206) 525-0814
NW Natural Gas	-	(503) 226-4211
Oregon Department of Environmental Quality (ODEQ)	-	(503) 229-5696
Oregon Department of Transportation (ODOT)	-	(888) 275-6368
Pacific Power and Light	-	(888) 221-7070
Portland Bureau of Emergency Communications (BOEC)	-	(503) 823-3333
Portland Bureau of Emergency Management	-	(503) 823-4375
Portland Bureau of Technology Services	-	(503) 823-5199
Portland Bureau of Transportation	-	(503) 823-5185
Portland Fire and Rescue	-	(503) 823-3700
Portland Police Bureau	-	(503) 823-0000
Portland Public Schools	-	(503) 916-2000
Portland Water Bureau	-	(503) 823-7770
The Red Cross	-	(503) 284-1234
Trauma Intervention Program volunteers	-	(503) 823-3937
Tri-Met	-	(503) 238-7433
START– E & E, Inc.	Maren Fulton, Project Manager	(206) 624-9537
	David Burford	
	Bryan Ciecko	
	Bonnie Criss	
	Ilja Nieuwenhuizen	
	Ryan Whitchurch	
	Seth Wing	

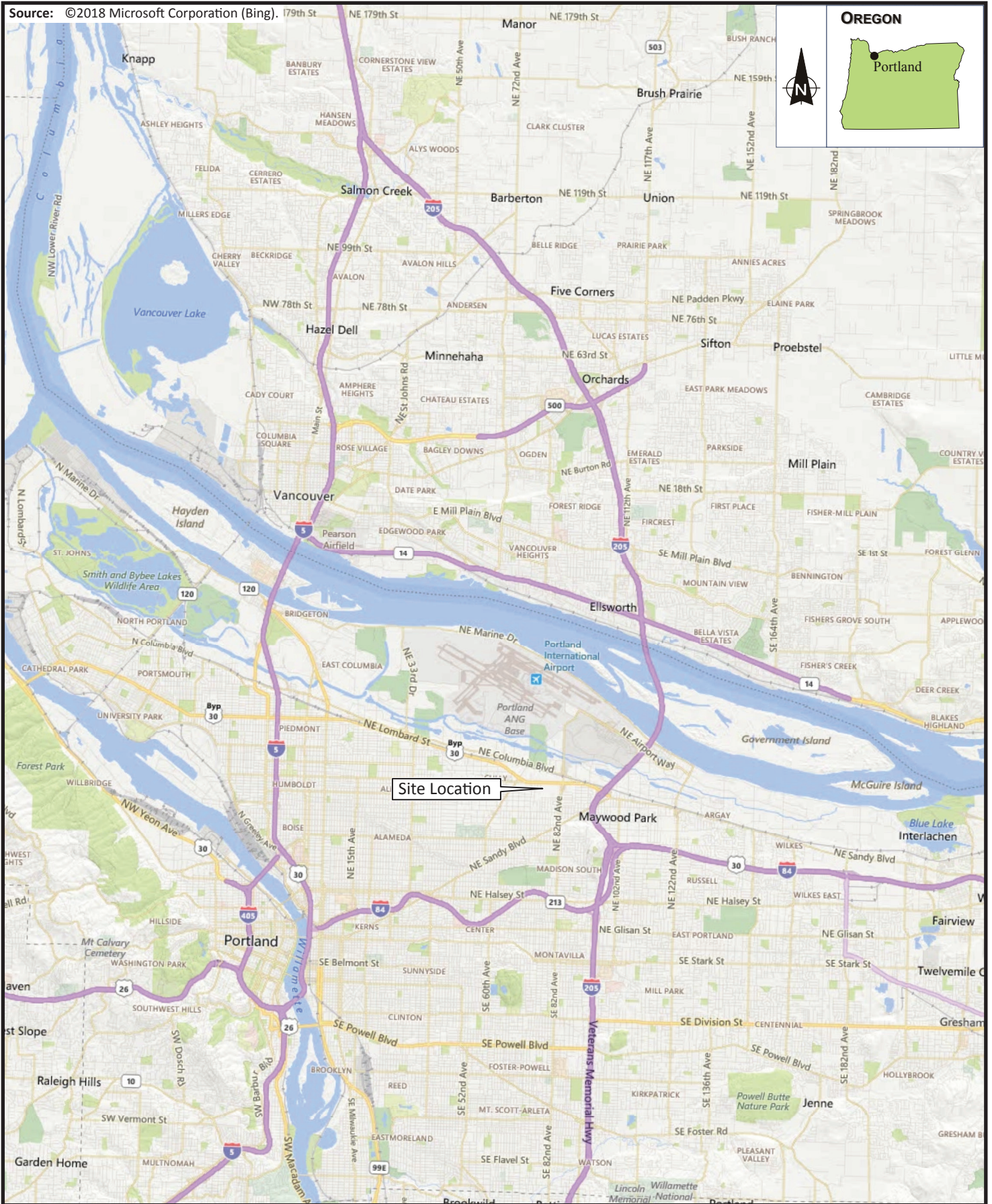
4. BACKGROUND

On Monday, March 12, 2018 at approximately 9:15 am local time, a fire broke out at the NW Metals auto salvage yard near NE 75th Avenue and NE Killingsworth in Portland, Oregon. The fire consumed crushed cars and tires intended for recycling, generating large amounts of dense black smoke. The smoke plume was driven by a steady east wind, traveling into nearby communities, business parks, an elementary school, and local parks. Additionally, the fire spread to nearby structures, including a duplex apartment building and two detached homes, displacing four families. At the height of operations, Portland Fire Department had 138 personnel, 23 fire engines, 7 ladder trucks, 1 heavy rescue, 2 rehab/air units, 9 chiefs, a mobile command unit, and a full fire investigation team on site.

By 11:00 am on March 12, 2018 the incident commander made the decision to evacuate the neighborhood to the west of the fire due to a significant amount of noxious smoke being pushed by wind and blanketing the area. It is estimated that 2,000 to 4,000 people were ultimately affected by this evacuation order. By 3:00 pm the fire had been knocked down but continued to smolder through the night, continuing to produce significant amounts of smoke. During this time, the Portland Fire Department continued water flow onto the property to prevent flare-ups. On the morning of March 13, 2018 the business owner used heavy equipment to access the debris pile and began moving cars so fire fighters could apply water to hot-spots. By 2:30 pm the fire was extinguished, stopping the production of smoke.

On the morning of March 12, 2018 the EPA was notified of the incident. The EPA OSC and two START responders were deployed and arrived soon thereafter. Two additional START responders mobilized from Seattle and arrived on site that evening with a response vehicle, additional supplies, and instrumentation.

Source: ©2018 Microsoft Corporation (Bing).



Site Location



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JUNKYARD FIRE RESPONSE Portland, Oregon



Figure 1
SITE VICINITY MAP

Date:	Drawn by:	
4/17/18	AES	10:START IV\TO21T2SS11\fig 1



ecology and environment, inc.
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Portland, Oregon

JUNKYARD FIRE RESPONSE Portland, Oregon

0 50 100
Approximate Scale in Feet

Figure 2
SITE LAYOUT MAP

Date:
5/11/18

Drawn by:
AES

10:START IV\TO21T2SS11\fig 2

5. ESTABLISHMENT OF SITE SCREENING AND ACTION LEVELS

The EPA On-scene Coordinator (OSC) designated several action levels consistent with EPA, Oregon Department of Environmental Quality, Northwest Area Contingency Plan, and Federal Register for National Ambient Air Quality Standards (NAAQS) documentation for use in decision making regarding worker and community safety. These included action levels for outdoor air quality and surface water quality for effluent from firefighting activities. Air quality monitoring was implemented in the field using the following real-time monitoring devices: TSI DustTrak DRX Aerosol Monitor 8534, TSI DustTrak DRX Aerosol Monitor 8533, Thermo Scientific DataRAM 4, MultiRAE Pro, and several AreaRAEs. Surface water quality action levels were implemented through collection of physical samples and laboratory analysis.

5.1 Surface Water Action Levels

Surface water action levels were derived from Oregon Department of Environmental Quality's Guidance for Ecological Risk Assessment: Levels I, II, III, IV (1998), sections SLV-2 through SLV-10 (See attachment B). These action levels were used in the assessment of effluent from firefighting activities. At peak flow, 500,000 gallons of water per hour was being used for firefighting activities from seven hydrants along NE Killingsworth St.

5.2 Air Action Levels

Action levels for air were established using the Northwest Area Contingency Plan (2018), section 9418.7, subsection 2.2: Particulate Matter, Table 2.3. The values within this source were taken from the EPA Air Quality Index (AQI) online calculator, and verified using the Federal Register for National Ambient Air Quality Standards (NAAQS) rulemaking (2013) established by the EPA under authority of the Clean Air Act. These threshold values represent a 24-hour average for Particulate Matter (PM) 2.5 and PM10 for a single location, rather than discrete readings. These values and results from air monitoring were provided to decision-makers for consideration in developing evacuation zones, and are presented in Table 5-1. The EPA and START site worker exposure limits were established using criteria published by the American Conference of Governmental Industrial Hygienists (ACGIH) for particulates and by the EPA Standard Operating Safety Guide (1992) for volatile organic compounds (VOCs).

Table 5-1
Community Air Monitoring Action Levels for Particulates

PM2.5 and PM10 Threshold Levels ($\mu\text{g}/\text{m}^3$) 24-Hour average	Level of Health Concern and AQI Range	Meaning
0.0 – 12.0	Good (0-50)	Air quality is considered satisfactory, and air pollution poses little or no risk.
12.1 - 35.4	Moderate (51-100)	Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people. For example, people who are unusually sensitive ⁵ to ozone may experience respiratory symptoms.
35.5 - 55.4	Unhealthy for Sensitive Groups (101 – 150)	Although the public is not likely to be affected at this level, people with lung disease, and older adults and children are at a greater risk from exposure to ozone, whereas persons with heart and lung disease, and older adults and children are at greater risk from the presence of particles in the air.
55.5 - 150.4	Unhealthy (151 – 200)	Everyone may begin to experience some adverse health effects, and members of the sensitive groups may experience effects that are more serious.
150.5 - 250.4	Very Unhealthy (201-301)	This would trigger a health alert signifying that everyone may experience more serious health effects.
> 250.5	Hazardous (> 300)	This would trigger a health warning of emergency conditions. The entire population is more likely to be affected.

Source: Northwest Area Contingency Plan, Section 9418-28*

* Threshold values taken from EPA AQI online calculator found at: http://airnow.gov/index.cfm?action=resources.aqi_conc_calc

* 24 Hour PM 2.5 “breakpoints” verified via Federal Register for National Ambient Air Quality Standards (NAAQS) rulemaking.

6. HEALTH AND SAFETY

Site-specific safety plans were completed for ER assessment activities and daily safety meetings were conducted. During the emergency response, as START assessed the surrounding community at the site, the level of personal protective equipment (PPE) was determined by particulate and VOC readings.

Level C respiratory protective equipment (full face air purifying respirator in addition to level D) was donned when airborne particulate matter exceeded $3,000 \mu\text{g}/\text{m}^3$ (ACGIH, 2018). Generally, only Level D protective equipment was required at locations upwind from the site, and more than 1,000 feet from the fire itself. Some site workers voluntarily wore respiratory protection at around $500 \mu\text{g}/\text{m}^3$ and above, closer than 1,000 feet to the site. Only in a few circumstances did particulate matter readings exceed $3,000 \mu\text{g}/\text{m}^3$ for workers. This occurred five times directly downwind (west) of the site: twice on NE 75th Ave, once on NE 74th Ave, and twice close to the intersection of NE Emerson St and NE 72nd Ave. This required workers to don level C respiratory protective equipment momentarily. Further review of worker health and safety can be found in Section 7.4: Air Monitoring Activities.

7. FIELD ACTIVITY

7.1 Overview of Field Activities

On the morning of March 12, 2018, EPA was notified by the Oregon Department of Environmental Quality (ODEQ) and Portland Fire and Rescue for assistance in assessing particulate matter in air and runoff from firefighting activities. EPA began site work on March 12, 2018 and concluded on March 13, 2018. EPA activities at the site can be broadly categorized into the following functional areas:

- Assessment and Plume Modeling
- Effluent Sampling
- Air Monitoring Activities
- Final Site Inspection & Demobilization

More detail on each of these functional areas can be found in the following sections.

7.2 Site Set Up, Assessment and Plume Modeling

EPA and Portland START arrived at the site on the afternoon of March 12, 2018 and immediately began discussions with Portland Fire and Rescue to gain situational awareness and determine plans of action moving forward. Staging at the site and sample preparation began around 2:00 pm the same day. Sampling and air monitoring began shortly thereafter. Additional Seattle based START staff mobilized late afternoon on March 12th, arriving around 7:00 pm and increasing air monitoring capabilities.

The geographic distribution of particulate matter was confined along an east-west corridor directly west of the site. This was due to a prevailing east wind that existed during the entirety of the response. The Federal Emergency Management Agency Interagency Modeling and Atmospheric Assessment Center (IMAAC) produced three separate plume models for soot for a burning pile of scrap cars and tires, approximating a tire fire as a 30 foot diameter hydrocarbon pool fire with an unknown burn rate. The models were placed onto maps and provided to site decision makers for assistance with evacuation measures and air monitoring management. IMAAC plume models can be found in Attachment F.

7.3 Effluent Sampling

By 1:40 pm on March 12, 2018 it is estimated that 1,200 gallons of foam (Ansulite® aqueous film-forming foam concentrate (AFFF) for 3% proportioning) had been used and water was flowing onto the fire at a rate of 3,000 gallons per minute. At peak flow it is estimated that 500,000 gallons of water per hour was being utilized for firefighting activities across the site. Because of this large amount of water and firefighting foam being filtered through a junkyard, there was concern of environmental pollutants migrating into adjacent soils, waterways, and the surrounding built environment. An additional AFFF product was also used by firefighting crews after all available Ansulite® product had been used, Light Water™ ATC Plus™.

Effluent surface water samples were collected at 4:10 pm March 12, 2018. See Figure 2 for the sample collection location. Laboratory samples were received on March 13, 2018 and analysis occurred between 3/13/2018 and 3/16/2018. Analysis included VOCs, semivolatile organic

compounds (SVOCs), gasoline range organics (GROs), polychlorinated biphenyls (PCBs), diesel and motor oil range organics, RCRA metals, total mercury, and dioxins. Further information on sampling can be found in Section 8 – Sampling and Analysis, and in Attachments B, C, and D.

7.4 Air Monitoring Activities

Air monitoring activities were conducted over the course of the incident by both Portland Fire and Rescue as well as START staff. Initial air monitoring on site was conducted by local first responders for the purpose of responder health and safety, as well as community air monitoring. START began air quality monitoring on March 12, 2018 at 2:00 pm, and ended on March 13, 2018 at 5:00 pm.

Particulate monitoring instruments capable of measuring PM 1, PM 2.5, PM 10, respiratory, and total particulates were deployed to continually assess the working atmosphere at and around the site. Additionally, the atmosphere was monitored for oxygen (O₂), carbon monoxide (CO), lower explosive limit (LEL), volatile organic compounds (VOCs) and hydrogen sulfide (H₂S) levels. START and EPA evaluated the particulate monitoring data against the American Conference of Governmental Industrial Hygienists (ACGIH) action levels, which is set at 3,000 µg/m³ for workers. This data was used by first responders to determine whether respiratory protection was required in the immediate working areas around the fire site. START conducted both roving air quality monitoring activities, as well as deployment of fixed air monitoring station locations. Air monitoring locations and monitoring results are presented in Figures 3 through Figure 9, located in Appendix E.

START conducted roving particulate air monitoring in the surrounding community using a DataRAM 4 and/or a handheld TSI DustTrak DRX aerosol monitor 8534. This was accomplished by one to two teams walking or driving throughout the adjacent communities, and recording discrete air quality measurements into a tablet computer that were subsequently uploaded to a web-based map service. Two mobile handheld DustTrak DRX particulate monitors and a single DataRam were used to monitor the majority of particulate data throughout the surrounding community. A summary of the particulate monitoring data is presented in Table 7-1, located in Section 7.4.1. The roving air monitoring stations, and correlating particulate concentration ranges, are presented in Figures 3 through Figure 8, located in Attachment E.

Fixed air monitoring station locations were established using DustTrak DRX 8533 monitors set to record PM10 at one-hour time-weighted averages (TWA). The stationary airborne particulate monitoring stations were deployed to monitor worst case scenario locations directly within the particulate plume, and if unsafe levels existed, to quickly identify the changing environment and take action to protect the public and responders alike. START deployed a single stationary air monitoring station, AS01, at approximately 8:00 pm on March 12, 2018, located along NE 74th Ave, located directly downwind of the fires plume to obtain worst case scenario time weighted readings. One other fixed air monitoring station, AS02a, was stationed at approximately 11:00 pm on March 12, 2018, located along NE Emerson Street near NE 70th Ave. The AS02 air monitoring station was moved to several locations (AS02b, AS02c, and AS02d), based on shifting wind conditions throughout the day in order to maintain the station location in the center of the smoke plume. These measurements were also entered into a tablet computer and uploaded to a web based map service. The stationary air monitoring stations, and correlating particulate concentration ranges, are presented in Figure 9.

START responders also conducted air monitoring surveys for O₂, CO, LEL, VOCs, and H₂S, using either a MultiRae Pro or AreaRAE. VOC monitoring results and the location GPS coordinates were entered into a tablet computer. The survey showed that levels of O₂, CO, LEL, and H₂S were all within safe levels throughout the site. VOC measurements briefly exceeded action levels on six occasions on March 13, 2018: four times at site AR01 (1.7, 1.9, 2.2, and 2.2 ppm), once at site AR02 (1.2 ppm), and once at site AR03 (1.1 ppm). Given that all of these except AR01 only momentarily exceeded the action level of 1 ppm and maintained a time weighted average below this level, it did not affect work zones or evacuation decisions. AR01, the only location with repeated VOC exceedances, was located very close to the fire, directly downwind, and well within the community evacuation zone. First responders were wearing proper PPE and using air monitoring devices to detect air quality parameters. A summary of VOC air monitoring data can be found in Table 7-2, located in Section 7.4.1. The stationary air monitoring stations, and correlating VOC concentration ranges, are presented in Figure 9.

Air monitoring was continuous during all operational periods until March 13, 2018, when EPA and START demobilized from the site.

7.4.1 Air Monitoring Results Discussion

From 2:00 pm to 9:00 pm on March 12, 2018, unhealthy particulate readings (PM >35 µg/m³) were recorded downwind of the site, westward all the way to NE 42nd Ave, and bound by NE Simpson St to the north and NE Sumner St to the south. From 9:00 pm to 1:00 am this range decreased from NE 42nd Ave to about NE 59th Ave within the east-west corridor described above. By 5:00 am on March 13, 2018 the extent of the plume had decreased even further, reaching only to NE 72nd Ave from the site. Unhealthy readings generally stayed within this region until the fire was declared extinguished at 2:30 pm.

Exceedance of the 3,000 µg/m³ ACGIH action level occurred five times directly downwind (west) of the site: twice on NE 75th Ave (6,880 and 4,110 µg/m³), once on NE 74th Ave (3,200 µg/m³), and twice close to the intersection of NE Emerson St and NE 72nd Ave (4,737 and 5,485 µg/m³). This required workers to don level C protective equipment momentarily. A summary of these readings can be found in Table 7-1.

Collected data shows that during the entire site event atmospheric particulate matter peaked at 5,485 µg/m³ at 7:42 pm on March 12, 2018, then again at 6,880 µg/m³ at 4:27 am on March 13, 2018. Apart from these two moments, discrete monitoring data generally stayed well below 1,000 µg/m³. The average (arithmetic mean) for all particulate measurements is 204.4 µg/m³, which is within the “very unhealthy” range of the Northwest Area Contingency Plan’s guidance. However, it should be noted that this average is skewed by the two events noted previously. The median (the value lying at the midpoint of a frequency distribution of observed values) is only 13.0 µg/m³, just enough to qualify as a “moderate” health risk. This same data also has a standard deviation (a measure of dispersion or variation over a data set) of 720.1 µg/m³. This shows that although there is a high overall mean-average for particulate readings during all site activities, the majority of readings were very low. Further, the 3rd quartile of this same data (the upper measure of 75% of total measurements) is 90.85 µg/m³, which qualifies as “unhealthy”, but is still well below the found mean-average of 204.4 µg/m³. A summary of particulate readings can be found in Table 7-2 and results from only 1 hour time weighted measurements

can be found in Table 7-3. The monitoring results and locations for the roving air monitoring data are presented in Figures 3 through Figure 8, located in Appendix E. The monitoring results and locations for the stationary air monitoring stations is presented in Figure 9, located in Appendix E.

Action levels for community air monitoring were taken from the Northwest Area Contingency Plan (Section 9418) and are given as a 24-hour time weighted average. Given that the site monitoring period was around 27 hours, there is only a small window of data to accurately compare action levels. Additionally, no air quality data is available for the first several hours of the fire during the initial firefighting activities, as EPA did not arrive and set up monitoring equipment until the afternoon of March 12, 2018. It would be expected that air quality would have been as impacted, or feasibly more impacted by particulate matter at the early stages of the fire prior to firefighting activity or air monitoring at the site and surrounding communities.

Table 7-1

Particulate Air Monitoring Results Summary by Day

Parameter	Date	Minimum	Maximum	Average	Sample Size	Units
PM10	3/12/2018	0	5,485	321	105	µg/m ³
PM10	3/13/2018	0	6,880	140	190	µg/m ³
PM10 (1 hour Time Weighted Average)	3/13/2018	0	1,230	182	10	µg/m ³
VOC	3/13/2018	0.0	2.2	0.5	23	ppm

Table 7-2

VOC Air Monitoring Results

Location	Date	Minimum	Maximum	Average	Sample Size	Units
AR01	3/13/2018	1.7	2.2	2	4	ppm
AR02	3/13/2018	0	1.2	0.3	5	ppm
AR03	3/13/2018	0.7	1.1	0.9	3	ppm
Site Wide Spot Checks	3/13/2018	0	0.1	0	11	ppm

Table 7-3

Stationary Air Monitoring 1 Hour Time Weighted PM Results

Location	Date	Time	Measurement	Units
NE 74th Ave/NE Roselawn St (closest to the site)	3/13/2018	12:48 AM	356	µg/m ³
NE 74th Ave/NE Roselawn St	3/13/2018	3:14 AM	33	µg/m ³
NE 74th Ave/NE Roselawn St	3/13/2018	4:36 AM	1230	µg/m ³
NE 74th Ave/NE Roselawn St	3/13/2018	7:10 AM	59	µg/m ³
NE 74th Ave/NE Roselawn St	3/13/2018	8:21 AM	12	µg/m ³
NE 74th Ave/NE Roselawn St	3/13/2018	9:34 AM	4	µg/m ³
NE 73rd Ave/NE Killingsworth St	3/13/2018	8:59 AM	0	µg/m ³
NE 72nd Ave/NE Emerson St	3/13/2018	7:26 AM	10	µg/m ³
NE 70th Ave/NE Killingsworth St	3/13/2018	4:15 AM	53	µg/m ³
NE 70th Ave/NE Emerson St (farthest from the site)	3/13/2018	1:08 AM	62	µg/m ³

7.5 Final Site Inspection & Demobilization

Shortly after the fire was put out, a last round of air monitoring took place at 3:30 pm within the boundaries of the final evacuation zone of the site and around the immediate vicinity to confirm healthy air quality for the community. All readings were at or below PM 10 $\mu\text{g}/\text{m}^3$, confirming that air quality was back to satisfactory (good) levels. VOC measurements had stayed at a very low range for the duration of the site, and did not pose a concern for community health. This was true during the final inspection of the site after fire had been put out.

By 5:30 pm on March 13, 2018 EPA had performed all requisite tasks for the site and demobilized.

8. SAMPLING AND ANALYSIS

Surface water effluent samples were collected from firefighting related runoff to better understand and record what possible pollutants may have entered into the surrounding soils, waterways, and built environment. This analytical data was then compared against Oregon Department of Environmental Quality's Guidance for Ecological Risk Assessment (1998) action levels (Attachment B).

8.1 Effluent Methodology & Collection

A firefighting runoff sample was collected on the afternoon of March 12, 2018 along the east boundary of the junkyard property, midstream of the runoff effluent. See Figure 2 for the sample collection location. At the time of sample collection, the Portland Fire Department was still applying the AFFF foam mix to the fire. The sample was sent for analysis for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), gasoline range organics (GROs), polychlorinated biphenyls (PCBs), diesel and motor oil range organics, RCRA metals, total mercury, and dioxins.

8.2 Sample Results

Results from sample collection can be found in attachments B, C, and D. Analysis included volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), gasoline range organics (GROs), polychlorinated biphenyls (PCBs), diesel and motor oil range organics, RCRA metals, total mercury, and dioxins.

When comparing sampling results to the Oregon Department of Environmental Quality's Guidance for Ecological Risk Assessment, there are seven total exceedances without a U qualifier. Of these, two have a JQ qualifier, and one has a JH qualifier as seen in Table 8-1. Below are explanations of these associated qualifiers:

- H – The sample result is biased high.
- J – The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
- Q – Detected concentration is below the method reporting limit/Contract Required Quantitation Limit, but is above the method quantitation limit.
- U – The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

Table 8-1 Surface Water, Fresh (mg/L) Action Level Exceedances						
Chemical	CAS No.	Aquatic	Birds	Mammals	Sample Result	Qualifier
Barium and compounds	7440-39-3	0.004	150	39	3.0	
Lead	7439-92-1	0.0025	28	323	0.042	
Benzo[a]anthracene	56-55-3	0.000027			0.0017	JQ
Fluorene	86-73-7	0.0039			0.0064	JQ
2-Methylphenol (o-Cresol)	95-48-7	0.013		2200	0.044	JH
Phenol	108-95-2	0.110			0.98	
Toluene	108-88-3	0.0098		104	0.11	

Of the results reported in Table 8-1, barium has is a notable exceedance, as it is 750 times the action level for aquatic life. Benzo[a]anthracene, a PAH, is also notable at 63 times the action level. Other notable reported exceedances include: lead at 17 times the action level; toluene at 11 times the action level; and phenol at 9 times the action level. No sample analytical result had fresh water exceedances for birds or mammals.

Of the 233 compounds analyzed, 118 do not have corresponding action levels in Oregon Department of Environmental Quality's Guidance for Ecological Risk Assessment. Of these, 20 do not have a U qualifier. These analytical results are reported in Table 8-2 below.

Table 8-2 Lab Analytes without a U Qualifier or a Corresponding ODEQ Action Level				
Analyte	CAS Number	Result	Units	Qualifier
1,2,4-Trimethylbenzene	95-63-6	31	µg/L	
1,3,5-Trimethylbenzene	108-67-8	11	µg/L	
4-Isopropyltoluene	99-87-6	3.8	µg/L	
Chloroethane	75-00-3	0.11	µg/L	JQ
Dichlorobromomethane	75-27-4	0.078	µg/L	JQ
Isopropylbenzene	98-82-8	6.0	µg/L	
n-Butylbenzene	104-51-8	8.6	µg/L	
N-Propylbenzene	103-65-1	4.7	µg/L	
Styrene	100-42-5	170	µg/L	
Chloromethane	74-87-3	0.88	µg/L	
Dichlorodifluoromethane	75-71-8	0.47	µg/L	
1-Methylnaphthalene	90-12-0	20	µg/L	JQ
2-Methylnaphthalene	91-57-6	24	µg/L	JH
Acenaphthylene	208-96-8	33	µg/L	JQ
Phenanthrene	85-01-8	19	µg/L	JQ

Table 8-2 Lab Analytes without a U Qualifier or a Corresponding ODEQ Action Level				
#2 Diesel (C10-C24)	STL00163	25	mg/L	
Motor Oil (>C24-C36)	STL00299	7.2	mg/L	
Gasoline	STL00228	2.3	mg/L	
1,2,4-Trimethylbenzene	95-63-6	0.088	µg/L	JQ
Gasoline	STL00228	0.068	mg/L	JQ

9. MEDIA

Interest from local and regional news media was significant during both days that the fire was active. In addition, correspondents from several news outlets sent crews to the site to cover the story, in addition to helicopter coverage of the site. EPA participated in a live press conference held for 5 to 10 on-site media outlets on March 13th at the site.

10. SUMMARY AND CONCLUSIONS

10.1 Summary of Activities

EPA began work at the site on March 12, 2018 and demobilized on March 13, 2018. EPA activities at the site can be broadly categorized into the following functional areas:

- Establishment of site screening and action levels
- Plume modeling
- Site effluent sampling
- Responder health and safety air monitoring
- Community air monitoring
- Final site inspection and demobilization

On Monday, March 12, 2018, a fire broke out at the NW Metals auto salvage yard near NE 75th Avenue and NE Killingsworth in Portland, Oregon. Upon arrival, EPA led efforts to conduct air quality monitoring at the site as well perform community wide air monitoring until the fire was put out. EPA worked closely with several local and state entities, including Portland Fire and Rescue, Oregon Department of Environmental Quality, Multnomah County Health Department, and others, to establish action levels, develop an evacuation zone, and communicate to the media and public existing health hazards.

EPA also conducted surface water sampling of firefighting effluent. Samples were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), gasoline range organics (GROs), polychlorinated biphenyls (PCBs), diesel and motor oil range organics, RCRA metals, total mercury, and dioxins. These results were compared to action levels found in the Oregon Department of Environmental Quality's Guidance for Ecological Risk Assessment (1998).

Final clearance air monitoring confirmed that air quality had returned to safe levels after the fire had been put out on March 13, 2018. EPA demobilized from the site soon thereafter the same day.

10.2 Conclusions

EPA has completed emergency community air monitoring, effluent sampling, and worker air quality monitoring at the Portland junkyard fire that occurred on March 12-13, 2018. During which time, it was found that air quality likely ranged from unhealthy to hazardous due to heightened levels of fine particulate matter, in an area directly west of the fire from at least 2:00 pm on March 12, 2018, to as late as 2:00 pm on March 13, 2018. An evacuation of this area was in place during these times and there is no longer a threat to human or environmental wellbeing from decreased air quality.

Surface water effluent samples from firefighting activity runoff showed heightened levels of several compounds, surpassing Oregon Department of Environmental Quality's action levels for aquatic life. Notable exceedances were barium and Benzo[a]anthracene for aquatic life.

No further response action at the site is anticipated at this time.

11. REFERENCES

American Conference of Governmental Industrial Hygienists (ACGIH). 2018 TLVs and BEIs. 2018. Cincinnati, Ohio.

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Northwest Area Contingency Plan, Nineteenth Release (Change 19). 2018.

ATTACHMENT A: Photographic Documentation

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JUNKYARD FIRE RESPONSE
Portland, Oregon



Photo 1 EPA and Portland Fire and Rescue observing firefighting activities at site.

Direction: South Date: 3/12/18 Time: 13:25 Taken by: MF



Photo 3 Portland Fire and Rescue observing firefighting activities at site.

Direction: South Date: 3/12/18 Time: 13:26 Taken by: MF

TO Number: TO-21-T2-SS11
Photographed by: Maren Fulton (MF), Seth Wing (SW)



Photo 2 Firefighting hoses, and foam from firefighting activity runoff.

Direction: Southwest Date: 3/12/18 Time: 13:26 Taken by: MF



Photo 4 Staged totes with unknown liquid contents, located at NW Metals site, near fire.

Direction: Southwest Date: 3/12/18 Time: 13:26 Taken by: MF

JUNKYARD FIRE RESPONSE
Portland, Oregon



Photo 5 Firefighting activities at site.

Direction: West Date: 3/12/18 Time: 13:27 Taken by: MF



Photo 7 Fire suppression activities, and tire stockpile located against NW Metals shop building.

Direction: West Date: 3/12/18 Time: 13:28 Taken by: MF

TO Number: TO-21-T2-SS11
Photographed by: Maren Fulton (MF), Seth Wing (SW)



Photo 6 Smoldering junkyard contents, firefighting water stream, and firefighting foam runoff.

Direction: Southwest Date: 3/12/18 Time: 13:27 Taken by: MF



Photo 8 Smoldering junkyard contents, firefighting water stream, and firefighting foam runoff.

Direction: Southwest Date: 3/12/18 Time: 13:28 Taken by: MF

JUNKYARD FIRE RESPONSE
Portland, Oregon



Photo 9 Firefighting activities at site, and foam runoff.

Direction: West Date: 3/12/18 Time: 13:31 Taken by: MF

TO Number: TO-21-T2-SS11
Photographed by: Maren Fulton (MF), Seth Wing (SW)



Photo 10 Firefighting activities at site, and pooled runoff on Sunbelt Rentals property, with accumulated foam.

Direction: Northwest Date: 3/12/18 Time: 13:34 Taken by: MF



Photo 11 Firefighting activities at site, and pooled runoff on Sunbelt Rentals property, with accumulated foam.

Direction: West Date: 3/12/18 Time: 13:34 Taken by: MF



Photo 12 Ditch/waterway located on south side of Sunbelt Rentals property, with pooled firefighting runoff.

Direction: West Date: 3/12/18 Time: 13:35 Taken by: MF

JUNKYARD FIRE RESPONSE
Portland, Oregon



Photo 13 Ansulite® aqueous film-forming foam concentrate (AFFF) for 3% proportioning, used by Portland Fire.

Direction: Down Date: 3/12/18 Time: 13:40 Taken by: MF



Photo 15 EPA conducting media interview.

Direction: East Date: 3/12/18 Time: 15:05 Taken by: MF

TO Number: TO-21-T2-SS11
Photographed by: Maren Fulton (MF), Seth Wing (SW)



Photo 14 Firefighting activities, and firefighting foam runoff.

Direction: West Date: 3/12/18 Time: 13:53 Taken by: MF



Photo 16 Smoke plume across NE 75th Ave.

Direction: South Date: 3/12/18 Time: 15:08 Taken by: MF

JUNKYARD FIRE RESPONSE
Portland, Oregon



Photo 17 Light Water™ ATC Plus™, the second brand of firefighting AFFF, used by Portland Fire.

Direction: Down Date: 3/12/18 Time: 16:03 Taken by: MF

TO Number: TO-21-T2-SS11
Photographed by: Maren Fulton (MF), Seth Wing (SW)



Photo 18 Portland Fire crew prepping Light Water™ ATC Plus™ for inline injection with firefighting stream.

Direction: Northwest Date: 3/12/18 Time: 16:03 Taken by: MF



Photo 19 EPA collecting firefighting effluent from midstream of runoff.

Direction: South Date: 3/12/18 Time: 16:11 Taken by: MF



Photo 20 EPA collecting firefighting effluent from midstream of runoff.

Direction: West Date: 3/12/18 Time: 16:11 Taken by: MF

JUNKYARD FIRE RESPONSE

Portland, Oregon



Photo 21 Smoldering junkyard contents, and firefighting water stream.

Direction: West Date: 3/12/18 Time: 16:18 Taken by: MF



Photo 23 Looking south towards site from Thomas Cully Park.

Direction: South Date: 3/13/18 Time: 07:40 Taken by: MF

TO Number: TO-21-T2-SS11

Photographed by: Maren Fulton (MF), Seth Wing (SW)



Photo 22 Secured DustTrak air monitoring station, located at NE Emerson and NE 70th Ave.

Direction: West Date: 3/13/18 Time: 03:38 Taken by: MF

JUNKYARD FIRE RESPONSE
Portland, Oregon



Photo 24 NW Metals sign off Killingsworth Blvd.

Direction: Southeast Date: 3/13/18 Time: 08:49 Taken by: MF

TO Number: TO-21-T2-SS11
Photographed by: Maren Fulton (MF), Seth Wing (SW)



Photo 25 Conducting air quality monitoring along NE Emerson St.

Direction: East Date: 3/13/18 Time: 09:45 Taken by: MF



Photo 26 Looking northeast towards site.

Direction: Northeast Date: 3/13/18 Time: 09:48 Taken by: MF

JUNKYARD FIRE RESPONSE
Portland, Oregon



Photo 27 Burned residences located west of junkyard.

Direction: North Date: 3/13/18 Time: 09:48 Taken by: MF

TO Number: TO-21-T2-SS11
Photographed by: Maren Fulton (MF), Seth Wing (SW)



Photo 28 Looking east along line of sight of ditch/waterway along south boundary of junkyard and Sunbelt Rentals.

Direction: East Date: 3/13/18 Time: 09:48 Taken by: MF



Photo 29 Looking along unburned, staged totes, with unknown liquid contents, located at NW Metals site.

Direction: South Date: 3/13/18 Time: 10:05 Taken by: MF



Photo 30 Unburned, staged totes, with unknown liquid contents, located at NW Metals site.

Direction: Southwest Date: 3/13/18 Time: 10:05 Taken by: MF

JUNKYARD FIRE RESPONSE
Portland, Oregon



Photo 31 NW Metals owner/operator working excavator to stage cars to access hot spots for fire crew.

Direction: West Date: 3/13/18 Time: 10:10 Taken by: MF



Photo 33 Fire crew spraying hot spots uncovered by NW Metals equipment operator.

Direction: West Date: 3/13/18 Time: 12:04 Taken by: MF

TO Number: TO-21-T2-SS11
Photographed by: Maren Fulton (MF), Seth Wing (SW)



Photo 32 Portland Fire truck and boom.

Direction: NA Date: 3/13/18 Time: 10:11 Taken by: SW



Photo 34 Fire crew spraying hot spots uncovered by NW Metals equipment operator.

Direction: West Date: 3/13/18 Time: 13:23 Taken by: MF

JUNKYARD FIRE RESPONSE
Portland, Oregon



Photo 35 Sorbent boom placed in firefighting runoff, and pooled water in southwest corner of Sunbelt Rentals property.

Direction: Southwest Date: 3/13/18 Time: 13:47 Taken by: MF

TO Number: TO-21-T2-SS11
Photographed by: Maren Fulton (MF), Seth Wing (SW)



Photo 36 Firefighting activities suppressing hot spots.

Direction: West Date: 3/13/18 Time: 13:49 Taken by: MF



Photo 37 Media crews staging for 2pm media interview.

Direction: Northwest Date: 3/13/18 Time: 15:02 Taken by: MF



Photo 38 EPA discussing air monitoring activities during media appearance.

Direction: Northwest Date: 3/13/18 Time: 15:07 Taken by: MF

ATTACHMENT B: Surface Water Analytical Results Compared with Action Levels

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Surface Water, Fresh (mg/L)							
Chemical	CAS No.	Aquatic	Birds	Mammals	Sampled Result	Qualifier	Exceedance
Inorganics							
Aluminum	7429-90-5	0.087 n,t	797 h	8 f	-	-	-
Antimony and compounds	7440-36-0	1.6 q		1 f	-	-	-
Arsenic III	7440-38-2	0.150 t	18 h	6 f,i	0.0050	U	No
Barium and compounds	7440-39-3	0.004 o	150 h	39 f	3.0		Yes (Aquatic)
Beryllium and compounds	7440-41-7	0.0053 q		5 f	-	-	-
Cadmium and compounds	7440-43-9	0.0022 t	10 h	8 f,i	0.0015	JQ	No
Calcium		116 p			-	-	-
Chromium III		0.074 t	7.2 h	2.1×104 f	-	-	-
Cobalt	7440-48-4	0.023 o		9 f,i	-	-	-
Copper and compounds	7440-50-8	0.009 t	341 h	53 f,i	-	-	-
Iron		1.000 n,q,t			-	-	-
Lead	7439-92-1	0.0025 t	28 h	323 f,i	0.042		Yes (Aquatic)
Magnesium		82 p			-	-	-
Manganese and compounds	7439-96-5	0.120 o	7242 h	676 f,i	-	-	-
Mercury (elemental, total)	7439-97-6	0.00077 t	3.3 h	10 f	0.00030	U	No
Nickel	7440-02-0	0.052 t	562 h	38 f,i	-	-	-
Potassium		53 p			-	-	-
Selenium	7782-49-2	0.005 t	3.6 h	1.5 f,i	0.040	U	No
Silver and compounds	7440-22-4	0.00012 q			0.0020	U	No
Sodium		680 p			-	-	-
Thallium		0.040 q		0.06 f,i	-	-	-
Vanadium	7440-62-2	0.020 o	82 h	1.6 f	-	-	-
Zinc	7440-66-6	0.120 t	105 h	1230 f,i	-	-	-
Organics							
SVOCs							
Acenaphthene	83-32-9	0.520 q			0.02	U	No
Acrolein	107-02-8	0.021 q			-	-	-
Acrylonitrile	107-13-1	2.6 q			-	-	-
Aniline	62-53-3				-	-	-
Anthracene	120-12-7	0.013 o			0.004	JQ	No
Benzidine	92-87-5	0.0039 o			-	-	-
Benzo[a]anthracene	56-55-3	0.000027 o			0.0017	JQ	Yes (Aquatic)
Benzo[a]pyrene	50-32-8	0.000014 o		8 f,i	0.05	U	No
Benzoic acid	65-85-0	0.042 o			0.2	U	No
Benzyl alcohol	100-51-6	0.0086 o			0.15	UJL	No
1,1-Biphenyl	92-52-4	0.014 o			-	-	-

Chemical	CAS No.	Aquatic	Birds	Mammals	Sampled Result	Qualifier	Exceedance
Bis(2-ethylhexyl)phthalate (DEHP)	117-81-7	0.003 o	8 h	73 f	0.75	U	No
4-Bromoaniline					-	-	-
4-Bromophenyl phenyl ether	101-55-3	0.0015 o			0.03	U	No
Butyl benzyl phthalate	85-68-7	0.019 o			0.5	U	No
3-Chloraniline					-	-	-
4-Chloroaniline	106-47-8				0.5	UJL	No
beta-Chloronaphthalene	91-58-7	0.032 r			0.05	U	No
2-Chlorophenol	95-57-8	2.0 q			0.03	U	No
3-Chlorophenol					-	-	-
4-Chlorophenol					-	-	-
Dibenzofuran	132-64-9	0.0037 o			0.02	U	No
Di-n-butyl phthalate	84-74-2	0.035 o	0.8 h	2200 f	0.15	U	No
2,4-Dichlorophenol	120-83-2	3.65 q			0.2	U	No
3,4-Dichlorophenol					-	-	-
Diethyl phthalate	84-66-2	0.210 o		1.8×104 f	0.6	U	No
Di-n-hexylphthalate				220 f	-	-	-
2,4-Dimethylphenol	105-67-9	0.042 r			0.2	U	No
Dimethyl phthalate	131-11-3	0.003 q			0.03	U	No
2,4-Dinitrophenol	51-28-5				0.25	U	No
Dinitrotoluene mixture	25321-14-6	0.230 q			-	-	-
2,4-Dinitrotoluene	121-14-2	0.230 q			0.05	U	No
2,6-Dinitrotoluene	606-20-2	0.230 q			0.03	U	No
Di-n-octyl phthalate	117-84-0	0.708 p			0.0094	JQ	No
1,4-Dioxane	123-91-1			4 f	-	-	-
1,2-Diphenylhydrazine	122-66-7	0.0054 r			-	-	-
Ethyl acetate	141-78-6			690 f	-	-	-
Fluoranthene	206-44-0	0.00616 n			0.15	U	No
Fluorene	86-73-7	0.0039 p			0.0064	JQ	Yes (Aquatic)
Heptane					-	-	-
Hexachlorobenzene	118-74-1				0.03	U	No
Hexachlorobutadiene	87-68-3	0.0093 q			0.0005	U	No
Hexachlorocyclopentadiene	77-47-4	0.0052 q			0.15	U	No
Hexachloroethane	67-72-1	0.540 q			0.05	U	No
n-Hexane	110-54-3	0.00058 o			-	-	-
Isophorone	78-59-1	2.34 r			0.02	U	No
1-Methylnaphthalene		0.0021 o			-	-	-
2-Methylphenol (o-Cresol)	95-48-7	0.013 o		2200 f	0.044	JH	Yes (Aquatic)
Naphthalene	91-20-3	0.620 q		284 f,i	0.11		No

Chemical	CAS No.	Aquatic	Birds	Mammals	Sampled Result	Qualifier	Exceedance
3-Nitroaniline	99-09-2				0.15	U	No
4-Nitroaniline	100-01-6				0.1	U	No
Nitrobenzene	98-95-3	0.54 r			0.03	U	No
4-Nitrophenol	100-02-7	0.150 q			0.75	U	No
N-Nitrosodi-n-butylamine	924-16-3	0.117 r			-	-	-
N-Nitrosodiethanolamine	1116-54-7	0.117 r			-	-	-
N-Nitrosodiethylamine	55-18-5	0.117 r			-	-	-
N-Nitrosodimethylamine	62-75-9	0.117 r			-	-	-
N-Nitrosodiphenylamine	86-30-6	0.210 o			0.15	U	No
N-Nitroso di-n-propylamine	621-64-7	0.117 r			0.03	U	No
N-Nitroso-N-methylethylamine	10595-95-6	0.117 r			-	-	-
Parathion	56-38-2	0.000013 q,t			-	-	-
Pentachlorobenzene	608-93-5	0.00047 o			-	-	-
Pentachloronitrobenzene	82-68-8		51 h		-	-	-
Pentachlorophenol	87-86-5	0.015 t		1.8 f	0.5	U	No
1-Pentanol		0.110 o			-	-	-
Phenanthrene		0.0063 n			-	-	-
Phenol	108-95-2	0.110 n			0.98		Yes (Aquatic)
2,3,4,6-Tetrachlorophenol					-	-	-
2,4,5-Trichlorophenol	95-95-4				0.02	U	No
2,4,6-Trichlorophenol	88-06-2	0.970 q			0.03	U	No
Pesticides							
Aldrin	309-00-2	0.00006 r		1.5 f,i	-	-	-
BHC (alpha)	319-84-6	0.0022 o			-	-	-
BHC (beta)	319-85-7	0.0022 o			-	-	-
BHC (gamma) Lindane	58-89-9	0.00008 n,q	14.5 h	62 f,i	-	-	-
BHC-technical	58-89-9		4 h	12 f	-	-	-
Chlordane	57-74-9	4.3×10 ⁻⁶ q,t	15.5 h	18 f	-	-	-
Chlorpyrifos	2921-88-2	0.000041 t			-	-	-
DDD	72-54-8	0.000001 t	0.02 h	6 f	-	-	-
DDE	72-55-9		0.02 h	6 f	-	-	-
DDT	50-29-3	0.000001 q	0.02 h	6 f,i	-	-	-
Dieldrin	60-57-1	0.000056 t	0.6 h	0.15 f	-	-	-
Endosulfan	115-29-7	0.000056 q,t	72 h	1 f	-	-	-
Endrin	72-20-8	0.000036 t	0.07 h	0.3 f	-	-	-
Heptachlor	76-44-8	3.8×10 ⁻⁶ q,t		2 f,i	-	-	-
Heptachlor epoxide	102-45-73	3.8×10 ⁻⁶ t			-	-	-
Methoxychlor	72-43-5	0.00003 q,t		30 f,i	-	-	-
Toxaphene	8001-35-2	2.0×10 ⁻⁷ q,t		60 f	-	-	-

Chemical	CAS No.	Aquatic	Birds	Mammals	Sampled Result	Qualifier	Exceedance
PCBs							
Polychlorinated biphenyls (Total)	1336-36-3	0.000014 q,t		0.27 e,i	-	-	-
Aroclor 1016	12674-11-2			13 f	0.00046	UJL	No
Aroclor 1221	11104-28-2	0.00028 o			0.00046	UJL	No
Aroclor 1232	11141-16-5	0.00058 o			0.00046	UJL	No
Aroclor 1242	53469-21-9	0.000053 o	3.0 h	0.7 f	0.00046	UJL	No
Aroclor 1248	12672-29-6	0.000081 o			0.00046	UJL	No
Aroclor 1254	11097-69-1	0.000033 o	1.3 h	0.3 f	0.00046	UJL	No
Aroclor 1260	11096-82-5	0.094 o			0.00046	UJL	No
Dioxins/Furans							
2,3,7,8-TCDD (dioxin)	1746-01-6		1.0×10 ⁻⁴ h	7.6×10 ⁻⁶ f	5.5×10 ⁻⁹	JQ	No
VOCs							
Acetone	67-64-1	1.500 o		76 f	-	-	-
Benzene	71-43-2	0.13 o		200 f	0.089		No
Carbon disulfide	75-15-0	0.00092 o			-	-	-
Carbon tetrachloride	56-23-5	0.074 r		123 f	0.0002	U	No
1,1-Dichloroethane	75-34-3	0.047 o			0.0002	U	No
1,1-Dichloroethylene	75-35-4	0.025 o		230 f	0.0002	U	No
cis-1,4-Dichloro-2-butene	764-41-0				-	-	-
trans-1,4-Dichloro-2-butene					-	-	-
2-Butanone		14 o			-	-	-
Chloroform	67-66-3	1.24 q		115 f	0.0036		No
1,2-Dichloropropane	78-87-5	5.7 q			0.0002	U	No
1,3-Dichloropropene	542-75-6	0.244 q			-	-	-
Methylene chloride	75-09-2	2.200 o		45 f	0.005	U	No
4-Methyl-2-pentanone		0.170 o			-	-	-
Toluene	108-88-3	0.0098 o		104 f	0.11		Yes (Aquatic)
2-Hexanone		0.099 o			-	-	-
Chlorobenzene	108-90-7	0.05 q			0.0002	U	No
Vinyl acetate	108-05-405-4	0.016 o			-	-	-
Vinyl chloride	75-01-4			1.3 f	0.000015	JQ	No
m-Xylene	108-38-3	0.0018 o			-	-	-
o-Xylene	95-47-6				0.03	0	No
Xylene (mixed)	1330-20-7	0.013 o		8 f	-	-	-
1,2,4-Trichlorobenzene	120-82-1	0.110 o			0.0003	U	No
1,1,1-Trichloroethane	71-55-6	0.011 o		4000 f	0.0002	U	No
1,1,2-Trichloroethane	79-00-5	9.4 q			0.0002	U	No

Chemical	CAS No.	Aquatic	Birds	Mammals	Sampled Result	Qualifier	Exceedance
Trichloroethylene (TCE)	79-01-6	21.9 q		3 f	0.0002	U	No
1,1,1,2-Tetrachloroethane	630-20-6	0.186 r			0.0003	U	No
1,1,2,2-Tetrachloroethane	79-34-5	2.4 q			0.0002	U	No
Tetrachloroethylene (PCE)	127-18-4	0.840 q		6 f	0.0005	U	No
Ethylbenzene	100-41-4	0.0073 o			0.044	O	No
1,2-Dichlorobenzene	95-50-1	0.014 o			0.0003	U	No
1,3-Dichlorobenzene	541-73-1	0.071 o			0.0003	U	No
1,4-Dichlorobenzene	106-46-7	0.015 o			0.0003	U	No
1,2,3-Trichlorobenzene					-	-	-
2-Chloroethyl vinyl ether	110-75-8	4.76 r			-	-	-
1,2-Dichloroethane (EDC)	107-06-2	20.0 q	125 h	200 f	0.00043		No
1,2-Dichloroethylene (cis)	156-59-2	0.590 o		180 f	0.0002	U	No
1,2-Dichloroethylene (trans)	156-60-5	0.590 o		180 f	0.0002	U	No
1,2-Dichloroethylene (mixture)	540-59-0	0.590 o		180 f	-	-	-
Methyl ethyl ketone	78-93-3			14000 f	-	-	-
Tribromomethane		0.320 o			-	-	-

Source: Oregon Department of Environmental Quality, Waste management and Cleanup Division, Cleanup Policy and Program Develop Section. April 1998. Guidance for Ecological Risk Assessment: Levels I, II, III, IV. Portland Oregon.

Qualifier information:

H – The sample result is biased high.

J – The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

L – The sample result is biased low.

Q – Detected concentration is below the method reporting limit/Contract Required Quantitation Limit, but is above the method quantitation limit.

R – The data is rejected and unusable. The analyte may or may not be present in the sample.

U – The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

UJ – The material was analyzed for but was not detected. The reported detection limit is estimated because QC criteria were not met.

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ATTACHMENT C: Surface Water Laboratory Data

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Portland Junkyard Fire
Final Trip Report

Analyte	CAS Number	Result	Units	Qualifier	Found in ODEQ Action Level Table
Arsenic	7440-38-2	0.0050	mg/L	U	Yes
Barium	7440-39-3	3.0	mg/L		Yes
Cadmium	7440-43-9	0.0015	mg/L	JQ	Yes
Chromium	7440-47-3	0.0034	mg/L		Yes
Lead	7439-92-1	0.042	mg/L		Yes
Selenium	7782-49-2	0.040	mg/L	U	Yes
Silver	7440-22-4	0.0020	mg/L	U	Yes
Mercury	7439-97-6	0.00030	mg/L	U	Yes
PCB-1016	12674-11-2	0.46	ug/L	UJL	Yes
PCB-1221	11104-28-2	0.46	ug/L	UJL	Yes
PCB-1232	11141-16-5	0.46	ug/L	UJL	Yes
PCB-1242	53469-21-9	0.46	ug/L	UJL	Yes
PCB-1248	12672-29-6	0.46	ug/L	UJL	Yes
PCB-1254	11097-69-1	0.46	ug/L	UJL	Yes
PCB-1260	11096-82-5	0.46	ug/L	UJL	Yes
1,1,1,2-Tetrachloroethane	630-20-6	0.30	ug/L	U	Yes
1,1,1-Trichloroethane	71-55-6	0.20	ug/L	U	Yes
1,1,2,2-Tetrachloroethane	79-34-5	0.20	ug/L	U	Yes
1,1,2-Trichloroethane	79-00-5	0.20	ug/L	U	Yes
1,1-Dichloroethane	75-34-3	0.20	ug/L	U	Yes
1,1-Dichloroethene	75-35-4	0.20	ug/L	U	Yes
1,1-Dichloropropene	563-58-6	0.20	ug/L	U	No
1,2,3-Trichlorobenzene	87-61-6	0.50	ug/L	U	No
1,2,3-Trichloropropane	96-18-4	0.20	ug/L	U	No
1,2,4-Trichlorobenzene	120-82-1	0.30	ug/L	U	Yes
1,2,4-Trimethylbenzene	95-63-6	31	ug/L		No
1,2-Dibromo-3-Chloropropane	96-12-8	2.0	ug/L	U	No
1,2-Dichlorobenzene	95-50-1	0.30	ug/L	U	Yes
1,2-Dichloroethane	107-06-2	0.43	ug/L		Yes
1,2-Dichloropropane	78-87-5	0.20	ug/L	U	Yes
1,3,5-Trimethylbenzene	108-67-8	11	ug/L		No
1,3-Dichlorobenzene	541-73-1	0.30	ug/L	U	Yes
1,3-Dichloropropane	142-28-9	0.20	ug/L	U	No
1,4-Dichlorobenzene	106-46-7	0.30	ug/L	U	Yes
2,2-Dichloropropane	594-20-7	0.50	ug/L	U	No
2-Chlorotoluene	95-49-8	0.50	ug/L	U	No
4-Chlorotoluene	106-43-4	0.30	ug/L	U	No
4-Isopropyltoluene	99-87-6	3.8	ug/L		No
Bromobenzene	108-86-1	0.20	ug/L	U	No

Portland Junkyard Fire
Final Trip Report

Analyte	CAS Number	Result	Units	Qualifier	Found in ODEQ Action Level Table
Bromoform	75-25-2	0.50	ug/L	U	No
Bromomethane	74-83-9	0.50	ug/L	U	No
Carbon tetrachloride	56-23-5	0.20	ug/L	U	Yes
Chlorobenzene	108-90-7	0.20	ug/L	U	Yes
Chlorobromomethane	74-97-5	0.20	ug/L	U	No
Chlorodibromomethane	124-48-1	0.20	ug/L	U	No
Chloroethane	75-00-3	0.11	ug/L	JQ	No
Chloroform	67-66-3	3.6	ug/L		Yes
cis-1,2-Dichloroethene	156-59-2	0.20	ug/L	U	Yes
cis-1,3-Dichloropropene	10061-01-5	0.20	ug/L	U	No
Dibromomethane	74-95-3	0.20	ug/L	U	No
Dichlorobromomethane	75-27-4	0.078	ug/L	JQ	No
Ethylbenzene	100-41-4	44	ug/L		Yes
Ethylene Dibromide	106-93-4	0.10	ug/L	U	No
Hexachlorobutadiene	87-68-3	0.50	ug/L	U	Yes
Isopropylbenzene	98-82-8	6.0	ug/L		No
Methyl tert-butyl ether	1634-04-4	0.30	ug/L	U	No
Methylene Chloride	75-09-2	5.0	ug/L	U	Yes
m-Xylene & p-Xylene	179601-23-1	0.50	ug/L	U	No
n-Butylbenzene	104-51-8	8.6	ug/L		No
N-Propylbenzene	103-65-1	4.7	ug/L		No
o-Xylene	95-47-6	30	ug/L		Yes
sec-Butylbenzene	135-98-8	1.0	ug/L	U	No
tert-Butylbenzene	98-06-6	0.50	ug/L	U	No
Tetrachloroethene	127-18-4	0.50	ug/L	U	Yes
trans-1,2-Dichloroethene	156-60-5	0.20	ug/L	U	Yes
trans-1,3-Dichloropropene	10061-02-6	0.20	ug/L	U	No
Trichloroethene	79-01-6	0.20	ug/L	U	Yes
Trichlorofluoromethane	75-69-4	0.50	ug/L	U	No
Benzene	71-43-2	89	ug/L		Yes
Naphthalene	91-20-3	110	ug/L		Yes
Styrene	100-42-5	170	ug/L		No
Toluene	108-88-3	110	ug/L		Yes
Chloromethane	74-87-3	0.88	ug/L		No
Dichlorodifluoromethane	75-71-8	0.47	ug/L		No
Vinyl chloride	75-01-4	0.015	ug/L	JQ	Yes
1,2,4-Trichlorobenzene	120-82-1	20	ug/L	U	Yes
1,2-Dichlorobenzene	95-50-1	30	ug/L	U	Yes
1,3-Dichlorobenzene	541-73-1	20	ug/L	U	Yes

Portland Junkyard Fire
Final Trip Report

Analyte	CAS Number	Result	Units	Qualifier	Found in ODEQ Action Level Table
1,4-Dichlorobenzene	106-46-7	20	ug/L	U	Yes
1-Methylnaphthalene	90-12-0	20	ug/L	JQ	No
2,4,5-Trichlorophenol	95-95-4	20	ug/L	U	Yes
2,4,6-Trichlorophenol	88-06-2	30	ug/L	U	Yes
2,4-Dichlorophenol	120-83-2	200	ug/L	U	Yes
2,4-Dimethylphenol	105-67-9	200	ug/L	U	Yes
2,4-Dinitrophenol	51-28-5	250	ug/L	U	Yes
2,4-Dinitrotoluene	121-14-2	50	ug/L	U	Yes
2,6-Dinitrotoluene	606-20-2	30	ug/L	U	Yes
2-Chloronaphthalene	91-58-7	50	ug/L	U	Yes
2-Chlorophenol	95-57-8	30	ug/L	U	Yes
2-Methylnaphthalene	91-57-6	24	ug/L	JH	No
2-Methylphenol	95-48-7	44	ug/L	JH	Yes
2-Nitroaniline	88-74-4	30	ug/L	U	No
2-Nitrophenol	88-75-5	50	ug/L	U	No
3 & 4 Methylphenol	15831-10-4	40	ug/L	U	No
3,3'-Dichlorobenzidine	91-94-1	750	ug/L	U	No
3-Nitroaniline	99-09-2	150	ug/L	U	Yes
4,6-Dinitro-2-methylphenol	534-52-1	250	ug/L	U	No
4-Bromophenyl phenyl ether	101-55-3	30	ug/L	U	Yes
4-Chloro-3-methylphenol	59-50-7	30	ug/L	U	No
4-Chloroaniline	106-47-8	500	ug/L	UJL	Yes
4-Chlorophenyl phenyl ether	7005-72-3	30	ug/L	U	No
4-Nitroaniline	100-01-6	100	ug/L	U	Yes
4-Nitrophenol	100-02-7	750	ug/L	U	Yes
Acenaphthene	83-32-9	20	ug/L	U	Yes
Acenaphthylene	208-96-8	33	ug/L	JQ	No
Anthracene	120-12-7	4.0	ug/L	JQ	Yes
Benzo[a]anthracene	56-55-3	1.7	ug/L	JQ	Yes
Benzo[a]pyrene	50-32-8	50	ug/L	U	Yes
Benzo[b]fluoranthene	205-99-2	50	ug/L	U	No
Benzo[g,h,i]perylene	191-24-2	50	ug/L	U	No
Benzo[k]fluoranthene	207-08-9	50	ug/L	U	No
Benzoic acid	65-85-0	200	ug/L	U	Yes
Benzyl alcohol	100-51-6	150	ug/L	UJL	Yes
Bis(2-chloroethoxy)methane	111-91-1	30	ug/L	U	No
Bis(2-chloroethyl)ether	111-44-4	30	ug/L	U	No
Bis(2-ethylhexyl) phthalate	117-81-7	750	ug/L	U	Yes

Portland Junkyard Fire
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Analyte	CAS Number	Result	Units	Qualifier	Found in ODEQ Action Level Table
bis(chloroisopropyl) ether	108-60-1	30	ug/L	U	No
Butyl benzyl phthalate	85-68-7	500	ug/L	U	Yes
Carbazole	86-74-8	30	ug/L	U	No
Chrysene	218-01-9	30	ug/L	U	No
Dibenz(a,h)anthracene	53-70-3	30	ug/L	U	No
Dibenzofuran	132-64-9	20	ug/L	U	Yes
Diethyl phthalate	84-66-2	600	ug/L	U	Yes
Dimethyl phthalate	131-11-3	30	ug/L	U	Yes
Di-n-butyl phthalate	84-74-2	150	ug/L	U	Yes
Di-n-octyl phthalate	117-84-0	9.4	ug/L	JQ	Yes
Fluoranthene	206-44-0	150	ug/L	U	Yes
Fluorene	86-73-7	6.4	ug/L	JQ	Yes
Hexachlorobenzene	118-74-1	30	ug/L	U	Yes
Hexachlorobutadiene	87-68-3	50	ug/L	U	Yes
Hexachlorocyclopentadiene	77-47-4	150	ug/L	U	Yes
Hexachloroethane	67-72-1	50	ug/L	U	Yes
Indeno[1,2,3-cd]pyrene	193-39-5	50	ug/L	U	No
Isophorone	78-59-1	20	ug/L	U	Yes
Naphthalene	91-20-3	85	ug/L	JH	Yes
Nitrobenzene	98-95-3	30	ug/L	U	Yes
N-Nitrosodi-n-propylamine	621-64-7	30	ug/L	U	Yes
N-Nitrosodiphenylamine	86-30-6	150	ug/L	U	Yes
Pentachlorophenol	87-86-5	500	ug/L	U	Yes
Phenanthrene	85-01-8	19	ug/L	JQ	No
Phenol	108-95-2	980	ug/L		Yes
Pyrene	129-00-0	100	ug/L	U	No
#2 Diesel (C10-C24)	STL00163	25	mg/L		No
Motor Oil (>C24-C36)	STL00299	7.2	mg/L		No
Gasoline	STL00228	2.3	mg/L		No
1,1,1,2-Tetrachloroethane	630-20-6	0.30	ug/L	U	Yes
1,1,1-Trichloroethane	71-55-6	0.20	ug/L	U	Yes
1,1,2,2-Tetrachloroethane	79-34-5	0.20	ug/L	U	Yes
1,1,2-Trichloroethane	79-00-5	0.20	ug/L	U	Yes
1,1-Dichloroethane	75-34-3	0.20	ug/L	U	Yes
1,1-Dichloroethene	75-35-4	0.20	ug/L	U	Yes
1,1-Dichloropropene	563-58-6	0.20	ug/L	U	No
1,2,3-Trichlorobenzene	87-61-6	0.50	ug/L	U	No
1,2,3-Trichloropropane	96-18-4	0.20	ug/L	U	No
1,2,4-Trichlorobenzene	120-82-1	0.30	ug/L	U	Yes

Portland Junkyard Fire
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Analyte	CAS Number	Result	Units	Qualifier	Found in ODEQ Action Level Table
1,2,4-Trimethylbenzene	95-63-6	0.088	ug/L	JQ	No
1,2-Dibromo-3-Chloropropane	96-12-8	2.0	ug/L	U	No
1,2-Dichlorobenzene	95-50-1	0.30	ug/L	U	Yes
1,2-Dichloroethane	107-06-2	0.20	ug/L	U	Yes
1,2-Dichloropropane	78-87-5	0.20	ug/L	U	Yes
1,3,5-Trimethylbenzene	108-67-8	0.50	ug/L	U	No
1,3-Dichlorobenzene	541-73-1	0.30	ug/L	U	Yes
1,3-Dichloropropane	142-28-9	0.20	ug/L	U	No
1,4-Dichlorobenzene	106-46-7	0.30	ug/L	U	Yes
2,2-Dichloropropane	594-20-7	0.50	ug/L	U	No
2-Chlorotoluene	95-49-8	0.50	ug/L	U	No
4-Chlorotoluene	106-43-4	0.30	ug/L	U	No
4-Isopropyltoluene	99-87-6	0.30	ug/L	U	No
Benzene	71-43-2	0.035	ug/L	JQ	Yes
Bromobenzene	108-86-1	0.20	ug/L	U	No
Bromoform	75-25-2	0.50	ug/L	U	No
Bromomethane	74-83-9	0.50	ug/L	U	No
Carbon tetrachloride	56-23-5	0.20	ug/L	U	Yes
Chlorobenzene	108-90-7	0.20	ug/L	U	Yes
Chlorobromomethane	74-97-5	0.20	ug/L	U	No
Chlorodibromomethane	124-48-1	0.20	ug/L	U	No
Chloroethane	75-00-3		ug/L	R	No
Chloroform	67-66-3	0.33	ug/L		Yes
Chloromethane	74-87-3	0.50	ug/L	UJL	No
cis-1,2-Dichloroethene	156-59-2	0.20	ug/L	U	Yes
cis-1,3-Dichloropropene	10061-01-5	0.20	ug/L	U	No
Dibromomethane	74-95-3	0.20	ug/L	U	No
Dichlorobromomethane	75-27-4	0.20	ug/L	U	No
Dichlorodifluoromethane	75-71-8	0.40	ug/L	UJL	No
Ethylbenzene	100-41-4	0.2	ug/L	U	Yes
Ethylene Dibromide	106-93-4	0.10	ug/L	U	No
Hexachlorobutadiene	87-68-3	0.50	ug/L	U	Yes
Isopropylbenzene	98-82-8	1.0	ug/L	U	No
Methyl tert-butyl ether	1634-04-4	0.30	ug/L	U	No
Methylene Chloride	75-09-2	5.0	ug/L	U	Yes
m-Xylene & p-Xylene	179601-23-1	0.50	ug/L	U	No
Naphthalene	91-20-3	0.31	ug/L	JQ	Yes
n-Butylbenzene	104-51-8	0.50	ug/L	U	No
N-Propylbenzene	103-65-1	0.30	ug/L	U	No

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Analyte	CAS Number	Result	Units	Qualifier	Found in ODEQ Action Level Table
o-Xylene	95-47-6	0.5	ug/L	U	Yes
sec-Butylbenzene	135-98-8	1.0	ug/L	U	No
Styrene	100-42-5	0.5	ug/L	U	No
tert-Butylbenzene	98-06-6	0.50	ug/L	U	No
Tetrachloroethene	127-18-4	0.50	ug/L	U	Yes
Toluene	108-88-3	0.050	ug/L	JQ	Yes
trans-1,2-Dichloroethene	156-60-5	0.20	ug/L	U	Yes
trans-1,3-Dichloropropene	10061-02-6	0.20	ug/L	U	No
Trichloroethene	79-01-6	0.20	ug/L	U	Yes
Trichlorofluoromethane	75-69-4	0.50	ug/L	U	No
Vinyl chloride	75-01-4	0.020	ug/L	UJL	Yes
Gasoline	STL00228	0.068	mg/L	JQ	No
1,2,3,4,6,7,8-HpCDD	35822-46-9	110	pg/L	B	No
1,2,3,4,6,7,8-HpCDF	67562-39-4	340	pg/L	U	No
1,2,3,4,7,8,9-HpCDF	55673-89-7	400	pg/L	U	No
1,2,3,4,7,8-HxCDD	39227-28-6	8.0	pg/L	JQ	No
1,2,3,4,7,8-HxCDF	70648-26-9	54	pg/L	JL	No
1,2,3,6,7,8-HxCDD	57653-85-7	10	pg/L	JQ	No
1,2,3,6,7,8-HxCDF	57117-44-9	88	pg/L	JL	No
1,2,3,7,8,9-HxCDD	19408-74-3	11	pg/L	JQ	No
1,2,3,7,8,9-HxCDF	72918-21-9	52	pg/L	UJL	No
1,2,3,7,8-PeCDD	40321-76-4	52	pg/L	U	No
1,2,3,7,8-PeCDF	57117-41-6	57	pg/L		No
13C-1,2,3,4,6,7,8-HpCDD	109719-83-7	26	%	*	No
13C-1,2,3,4,6,7,8-HpCDF	109719-84-8	27	%	*	No
13C-1,2,3,4,7,8-HxCDF	114423-98-2	28	%	*	No
13C-1,2,3,6,7,8-HxCDD	109719-81-5	35	%	*	No
13C-1,2,3,7,8-PeCDD	109719-79-1	42	%		No
13C-1,2,3,7,8-PeCDF	109719-77-9	46	%		No
13C-2,3,7,8-TCDD	76523-40-5	57	%		No
13C-2,3,7,8-TCDF	89059-46-1	61	%		No
13C-OCDD	114423-97-1	24	%	*	No
2,3,4,6,7,8-HxCDF	60851-34-5	53	pg/L	JL	No
2,3,4,7,8-PeCDF	57117-31-4	100	pg/L		No
2,3,7,8-TCDD	1746-01-6	5.5	pg/L	JQ	Yes
OCDD	3268-87-9	620	pg/L	JL	No
OCDF	39001-02-0	130	pg/L	JL	No
13C-2,3,7,8-TCDF	89059-46-1	56	%		No
2,3,7,8-TCDF	51207-31-9	61	pg/L		No

Analyte	CAS Number	Result	Units	Qualifier	Found in ODEQ Action Level Table
<p><i>Qualifier Information:</i></p> <p><i>H – The sample result is biased high.</i></p> <p><i>J – The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.</i></p> <p><i>L – The sample result is biased low.</i></p> <p><i>Q – Detected concentration is below the method reporting limit/Contract Required Quantitation Limit, but is above the method quantitation limit.</i></p> <p><i>R – The data is rejected and unusable. The analyte may or may not be present in the sample.</i></p> <p><i>U – The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.</i></p> <p><i>UU – The material was analyzed for but was not detected. The reported detection limit is estimated because QC criteria were not met.</i></p>					

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ATTACHMENT D: Data Validation

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MEMORANDUM

DATE: March 21, 2018

TO: Maren Fulton, START-IV Project Manager, E & E, Portland, Oregon

FROM: Mark Woodke, START-IV Chemist, E & E, Seattle, Washington *MW*

SUBJ: **Organic Data Quality Assurance Review, Junkyard Fire Response Site, Portland, Oregon**

REF: TO: TO-21-T2-SS11 PAN: 1004530.0021.012.02

The data quality assurance review of 1 water sample collected from the Junkyard Fire Response site in Portland, Oregon, has been completed. Polychlorinated Dibenzo-p-Dioxin (PCDD)/Polychlorinated Dibenzo Furan (PCDF) analyses (EPA SW-846 Method 8290 and the Laboratory SOP) was performed by Test America, Inc., Tacoma, Washington. All sample analyses were evaluated following EPA's Stage 2B and/or 4 Data Validation Manual Process (S2B/4VM).

The sample was numbered: 18030001

Data Qualifications:

1. Holding Times, Storage, and Preservation: Acceptable.

The sample was maintained at $< 6^{\circ}\text{C}$ from collection to receipt at the laboratory. The sample was collected on March 13, 2018, was extracted on March 16, 2018, and was analyzed on March 20, 2018. There are no holding time limits for EPA Method 8290 dioxins/furans in soil samples.

2. Mass Calibration and Mass Spectrometer Resolution: Acceptable.

Mass spectrometer (MS) resolution of $\geq 10,000$ was demonstrated at the beginning of each 12-hour analytical sequence.

3. Window Defining Mix: Acceptable.

The window defining mix (WDM) was analyzed after the initial MS resolution analysis and prior to calibration standards. Positive sample results were within the retention time limits established by the WDM for the corresponding homologue.

4. Chromatographic Resolution: Acceptable.

The chromatographic peak separation on a DB-5 (or equivalent) column between the 2,3,7,8-TCDD peak and the 1,2,3,8-TCDD peak was resolved with a valley of $\leq 25\%$. The chromatographic peak

separation on a DB-225 (or equivalent) column between the 2,3,7,8-TCDF peak and the 1,2,3,9-TCDF and 2,3,4,7-TCDF peaks was resolved with a valley of $\leq 25\%$.

5. Initial Calibration: Acceptable.

The relative ion abundance criteria were met for all CDD/CDF peaks. The RTs of the isomers were within the appropriate WDM RT windows. For all calibration solutions the S/N ratio was ≥ 10.0 . The %RSD of the five RRFs was less than 20%.

6. Calibration Verification: Acceptable.

All ion abundance ratio criteria were met. The RRTs of the native and labeled CDDs/CDFs were within QC limits. The Signal-to-Noise (S/N) ratio was ≥ 10.0 for all CDD/CDF peaks. The measured RRFs and RRs of each analyte and standard were within $\pm 30\%$ for isotope dilution analytes and within $\pm 20\%$ of the mean values established during initial calibration for the other analytes.

7. Identification Criteria: Acceptable.

The RRTs for the 2,3,7,8-substituted compounds were within the appropriate windows. The RTs for the non-2,3,7,8-substituted compounds were within the RT windows established by the WDM. The SICP ion current responses for the two quantitation ions for each analyte maximized simultaneously (within 2 seconds). For each positive result, the S/N ratio was >2.5 and the detector has not been saturated. Ion abundance ratios were within QC limits.

8. Method Blank Analysis: Satisfactory.

A method blank was prepared at the required frequency of every time samples were extracted for each matrix and concentration or every 20 samples (whichever is greater). The method blanks are free from contamination except 1,2,3,4,6,7,8-HpCDD (0.785 pg/L), 1,2,3,4,6,7,8-HpCDF (0.528 pg/L), and OCDD (4.44 pg/L). The concentrations of these analytes in the sample were greater than five times the blank concentrations or were not detection in the sample; therefore, no qualifications were applied based on the blank contamination.

9. Laboratory Control Sample (LCS)/LCS Duplicate (LCSD) Analysis: Acceptable.

All LCS and LCSD recoveries were within QC limits.

10. Performance Evaluation Samples: Not Provided.

Performance evaluation samples were not provided to the laboratory.

11. Second Column Confirmation: Acceptable.

Second column confirmation was employed whenever 2,3,7,8-TCDF was detected in any sample. Quantitation was performed on both columns. The result from the secondary column was used for the sample result.

12. Labeled Compound Recoveries: Satisfactory.

From the laboratory Case Narrative: *The Isotope Dilution Analyte (IDA) recovery associated with the following sample is below the method recommended limit: 18030001. Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample. All detection limits are below the lower calibration with the exception of those that are affected by the elevated noise or matrix interferences causing elevation of the detection limit (EDL) which have been appropriately flagged.* Sample results associated with the IDA outliers were qualified as estimated quantities with a low bias (JL or UJL).

13. Overall Assessment

A total of 17 results were validated in this data memorandum. No sample results were qualified as estimated quantities (J) based on duplicate precision outliers. A total of 12 sample results were qualified as estimated quantities (J) based on spike accuracy outliers. No sample results were rejected (R). No sample results were qualified as estimated quantities (J) based on holding time outliers, incorrect sample containers, or sample temperature outliers. The following potential contaminants of concern were detected in the laboratory blanks: 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, and OCDD.

The reviewer used professional judgment to apply a single bias qualifier when more than one bias qualifier was applicable to an individual estimated sample result. The WHO 2005 Total TEQ (mammal) for this sample is 72.2 pg/L.

The overall usefulness of the data is based on the criteria outlined in the Site-Specific Sampling Plan and/or Sampling and Quality Assurance Plan, the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the EPA Region 10 Emergency Management Program SOG 144E Analytical Data Validation, the OSRTI Directive "USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Chlorinated Dibenzo-p-Dioxins (CDDs) and Chlorinated Dibenzofurans (CDFs) Data Review" (EPA-540-R-11-016, September 2011), and the analytical method(s). Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

- H - The sample result is biased high.
- J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
- K - The bias of the sample is not known.
- L - The sample result is biased low.
- Q - Detected concentration is below the method reporting limit/Contract Required Quantitation Limit, but is above the method quantitation limit.
- R - The data is rejected and unusable. The analyte may or may not be present in the sample.
- U - The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
- UJ - The material was analyzed for but was not detected. The reported detection limit is estimated

because QC criteria were not met.

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37029-1

SDG No.: _____

Client Sample ID: 18030001 Lab Sample ID: 320-37029-1

Matrix: Water Lab File ID: 20MR1810D5_4.d

Analysis Method: 8290A Date Collected: 03/12/2018 16:10

Extract. Method: 8290 Date Extracted: 03/16/2018 10:25

Sample wt/vol: 958.3(mL) Date Analyzed: 03/20/2018 11:24

Con. Extract Vol.: 20.0(uL) Dilution Factor: 1

Injection Volume: 2(uL) Level: (low/med) Low

% Moisture: _____ GPC Cleanup: (Y/N) N

Analysis Batch No.: 213900 Units: pg/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	5.5	JQ	10	2.8
40321-76-4	1,2,3,7,8-PeCDD	57		52	12
57117-41-6	1,2,3,7,8-PeCDF	57		52	25
57117-31-4	2,3,4,7,8-PeCDF	100		52	26
39227-28-6	1,2,3,4,7,8-HxCDD	8.0	JQ	52	4.0
57653-85-7	1,2,3,6,7,8-HxCDD	10	JQ	52	3.7
19408-74-3	1,2,3,7,8,9-HxCDD	11	JQ	52	3.6
70648-26-9	1,2,3,4,7,8-HxCDF	54	JL	52	46
57117-44-9	1,2,3,6,7,8-HxCDF	88	JL	52	44
72918-21-9	1,2,3,7,8,9-HxCDF	53		52	50
60851-34-5	2,3,4,6,7,8-HxCDF	53	JL	52	45
35822-46-9	1,2,3,4,6,7,8-HpCDD	110	JL	52	6.9
67562-39-4	1,2,3,4,6,7,8-HpCDF	ND		340	340
55673-89-7	1,2,3,4,7,8,9-HpCDF	ND		400	400
3268-87-9	OCDD	620	JL	100	4.9
39001-02-0	OCDF	130	JL	100	39

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	57		40-135
89059-46-1	13C-2,3,7,8-TCDF	61		40-135
109719-79-1	13C-1,2,3,7,8-PeCDD	42		40-135
109719-77-9	13C-1,2,3,7,8-PeCDF	46		40-135
109719-81-5	13C-1,2,3,6,7,8-HxCDD	35		40-135
114423-98-2	13C-1,2,3,4,7,8-HxCDF	28		40-135
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	26		40-135
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	27		40-135
114423-97-1	13C-OCDD	24		40-135

32148

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37029-1
 SDG No.: _____
 Client Sample ID: 18030001 RA Lab Sample ID: 320-37029-1 RA
 Matrix: Water Lab File ID: 20MR1811D2_005.d
 Analysis Method: 8290A Date Collected: 03/12/2018 16:10
 Extract. Method: 8290 Date Extracted: 03/16/2018 10:25
 Sample wt/vol: 958.3(mL) Date Analyzed: 03/20/2018 11:44
 Con. Extract Vol.: 20.0(uL) Dilution Factor: 1
 Injection Volume: 2(uL) Level: (low/med) Low
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 213916 Units: pg/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
51207-31-9	2,3,7,8-TCDF	61		10	4.0

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
89059-46-1	13C-2,3,7,8-TCDF	56		40-135

MW
3248



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MEMORANDUM

DATE: March 21, 2018

TO: Maren Fulton, START-IV Project Manager, E & E, Portland, Oregon

FROM: Mark Woodke, START-IV Chemist, E & E, Seattle, Washington *MW*

SUBJ: **Organic Data Quality Assurance Review, Junkyard Fire Response Site, Portland, Oregon**

REF: TO: EO-21-T2-SS11 PAN: 1004530.0021.012.02

The data quality assurance review of 1 water sample collected from the Junkyard Fire Response site in Portland, Oregon, has been completed. Diesel range total petroleum hydrocarbons analysis (Ecology Method NWTPH-Dx) was performed by Test America, Inc., Tacoma, Washington. All sample analyses were evaluated following EPA's Stage 2B and/or 4 Data Validation Manual Process (S2B/4VM).

The sample was numbered: 18030001

Data Qualifications:

1. Sample Holding Times: Acceptable.

The sample was maintained at $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$. The sample was collected on March 12, 2018, extracted on March 14, 2018, and analyzed by March 15, 2018, therefore meeting QC criteria of less than 7 days between collection and extraction for unpreserved water samples and less than 40 days between extraction and analysis.

2. Initial Calibration: Acceptable.

Calculations were verified as correct. All relative percent differences (RPDs) were within the laboratory control limits.

3. Continuing Calibration: Satisfactory.

Calculations were verified as correct. All percent differences (%Ds) were within the laboratory control limits. All continuing calibration % differences (% D) were within QC limits except two low o-terphenyl results; no actions were taken based on these calibration outliers as the o-terphenyl recovery in the sample was within QC limits.

4. Error Determination: Not Performed.

Samples necessary for bias and precision determination were not provided to the laboratory. All samples were flagged RND (Recovery Not Determined) and PND (Precision Not Determined), although the flags are not found on the Form I's.

5. Blanks: Acceptable.

A method blank was analyzed for each extraction batch for each matrix and analysis system. Diesel- and motor oil-range TPHs were not detected in the method blank.

6. System Monitoring Compounds (SMC): Acceptable.

All recoveries of the SMCs were greater than 10% and within QC limits.

7. Performance Evaluation Samples: Not Provided.

Performance evaluation samples were not provided to the laboratory.

8. Blank Spike (BS) and BS Duplicate (BSD): Acceptable.

BS and BSD recoveries were within QC limits.

9. Duplicates: Acceptable.

All spike duplicate results were within QC limits.

10. Quantitation and Quantitation Limits: Acceptable.

Sample concentrations were correctly calculated.

11. Laboratory Contact: Not Required.

No laboratory contact was required.

12. Overall Assessment of Data for Use

A total of 2 results were validated in this data memorandum. No sample results were qualified as estimated quantities (J) based on duplicate precision outliers, spike accuracy outliers, holding time outliers, incorrect sample containers, sample temperature outliers. No sample results were rejected (R). No potential contaminants of concern were detected in the laboratory blanks.

The reviewer used professional judgment to apply a single bias qualifier when more than one bias qualifier was applicable to an individual estimated sample result.

The overall usefulness of the data is based on the criteria outlined in the Site-Specific Sampling Plan and/or Sampling and Quality Assurance Plan, the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method(s), the EPA Region 10 Emergency Management Program SOG 144E Analytical Data Validation, and/or the Office of Emergency and Remedial Response Publication "National Functional Guidelines for Superfund Organic Methods Data Review, January 2018". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

- H - The sample result is biased high.
- J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
- K - The bias of the sample is not known.
- L - The sample result is biased low.
- Q - Detected concentration is below the method reporting limit/Contract Required Quantitation Limit, but is above the method quantitation limit.
- R - The data is rejected and unusable. The analyte may or may not be present in the sample.
- U - The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
- UJ - The material was analyzed for but was not detected. The reported detection limit is estimated because QC criteria were not met.

FORM I
GC SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Seattle Job No.: 580-75691-1
 SDG No.: _____
 Client Sample ID: 18030001 Lab Sample ID: 580-75691-1
 Matrix: Water Lab File ID: 031518A013b.D
 Analysis Method: NWTPH-Dx Date Collected: 03/12/2018 16:10
 Extraction Method: 3510C Date Extracted: 03/14/2018 08:49
 Sample wt/vol: 999.5(mL) Date Analyzed: 03/15/2018 20:57
 Con. Extract Vol.: 1(mL) Dilution Factor: 10
 Injection Volume: 1(uL) GC Column: ZB-1HT ID: 0.25(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 269170 Units: mg/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
STL00163	#2 Diesel (C10-C24)	25		1.1	0.65
STL00299	Motor Oil (>C24-C36)	7.2		3.5	0.96

CAS NO.	SURROGATE	%REC	Q	LIMITS
84-15-1	o-Terphenyl	97		50-150

Handwritten signature and date: 3-21-18



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MEMORANDUM

DATE: March 21, 2018

TO: Maren Fulton, START-IV Project Manager, E & E, Portland, Oregon

FROM: Mark Woodke, START-IV Chemist, E & E, Seattle, Washington *MW*

SUBJ: **Organic Data Quality Assurance Review, Junkyard Fire Response Site, Portland, Oregon**

REF: TO: TO-21-T2-SS11 PAN: 1004530.0021.012.02

The data quality assurance review of 2 water samples collected from the Junkyard Fire Response site in Portland, Oregon, has been completed. Gasoline range total petroleum hydrocarbons analysis (Ecology Method NWTPH-Gx) was performed by Test America, Inc., Tacoma, Washington. All sample analyses were evaluated following EPA's Stage 2B and/or 4 Data Validation Manual Process (S2B/4VM).

The samples were numbered: 18030001 18030002

Data Qualifications:

1. Sample Holding Times: Acceptable.

The samples were maintained and received within the QC limits of $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$. The samples were collected on March 12, 2018, and were analyzed by March 14, 2018, therefore meeting QC criteria of less than 14 days between collection and analysis for preserved water samples.

2. Initial Calibration: Acceptable.

Calculations were verified as correct. All relative percent differences (RPDs) were less than or equal to the laboratory control limits.

3. Continuing Calibration: Acceptable.

Calculations were verified as correct. All percent differences were less than or equal to the laboratory control limits.

4. Error Determination: Not Performed.

Samples necessary for bias and precision determination were not provided to the laboratory. All samples were flagged RND (Recovery Not Determined) and PND (Precision Not Determined), although the flags are not found on the Form Ts.

5. Blanks: Satisfactory.

A method blank was analyzed at the required frequency of every 12 hours for each matrix, preparation technique, and analysis system. Gasoline-range TPHs were not detected in the method blank. Gasoline range TPHs were detected at 0.068 mg/L in trip blank; no actions were taken as the sample result was more than 5 times the trip blank result.

6. System Monitoring Compounds (SMC): Acceptable.

All recoveries of the SMCs were greater than 10% and within QC limits.

7. Performance Evaluation Samples: Not Provided.

Performance evaluation samples were not provided to the laboratory.

8. Blank Spikes (BS) and BS Duplicate (BSD) Analyses: Acceptable.

BS and BSD results were within laboratory QC limits.

9. Duplicates: Acceptable.

All duplicate and spike duplicate results were within laboratory QC limits.

10. Quantitation and Quantitation Limits: Acceptable.

Sample quantitation and sample quantitation limits were correctly calculated.

11. Laboratory Contact: Not Required.

No laboratory contact was required.

12. Overall Assessment of Data for Use

A total of 2 results were validated in this data memorandum. No sample results were qualified as estimated quantities (J) based on duplicate precision outliers, spike accuracy outliers, holding time outliers, incorrect sample containers, or sample temperature outliers. No sample results were rejected (R). No potential contaminants of concern were detected in the laboratory blanks. The following potential contaminants of concern were detected in the trip blank: gasoline range TPHs.

The reviewer used professional judgment to apply a single bias qualifier when more than one bias qualifier was applicable to an individual estimated sample result.

The overall usefulness of the data is based on the criteria outlined in the Site-Specific Sampling Plan and/or Sampling and Quality Assurance Plan, the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method(s), the EPA Region 10 Emergency Management Program SOG 144E Analytical Data Validation, and/or the Office of Emergency and Remedial Response Publication "National Functional Guidelines for Superfund Organic Methods Data Review, January 2018". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

- H - The sample result is biased high.
- J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
- K - The bias of the sample is not known.
- L - The sample result is biased low.
- Q - Detected concentration is below the method reporting limit/Contract Required Quantitation Limit, but is above the method quantitation limit.
- R - The data is rejected and unusable. The analyte may or may not be present in the sample.
- U - The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
- UJ - The material was analyzed for but was not detected. The reported detection limit is estimated because QC criteria were not met.

FORM I
GC VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Seattle Job No.: 580-75691-1
SDG No.: _____
Client Sample ID: 18030001 Lab Sample ID: 580-75691-1
Matrix: Water Lab File ID: 03141816.D
Analysis Method: NWTPH-Gx Date Collected: 03/12/2018 16:10
Sample wt/vol: 5 (mL) Date Analyzed: 03/14/2018 17:47
Soil Aliquot Vol: _____ Dilution Factor: 1
Soil Extract Vol.: _____ GC Column: RTX-VRX ID: 0.45 (mm)
% Moisture: _____ Level: (low/med) Low
Analysis Batch No.: 269040 Units: mg/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
STL00228	Gasoline	2.3		0.25	0.050

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	111		58-133
98-08-8	Trifluorotoluene (Surr)	122		77-128

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FORM I
GC VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Seattle Job No.: 580-75691-1
 SDG No.: _____
 Client Sample ID: 18030002 Lab Sample ID: 580-75691-2
 Matrix: Water Lab File ID: 03141817.D
 Analysis Method: NWTPH-Gx Date Collected: 03/12/2018 16:10
 Sample wt/vol: 5 (mL) Date Analyzed: 03/14/2018 18:19
 Soil Aliquot Vol: _____ Dilution Factor: 1
 Soil Extract Vol.: _____ GC Column: RTX-VRX ID: 0.45 (mm)
 % Moisture: _____ Level: (low/med) Low
 Analysis Batch No.: 269040 Units: mg/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
STL00228	Gasoline	0.068	J <u>Q</u>	0.25	0.050

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	90		58-133
98-08-8	Trifluorotoluene (Surr)	111		77-128

JW 3248



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MEMORANDUM

DATE: March 21, 2018

TO: Maren Fulton, START-IV Project Manager, E & E, Portland, Oregon

FROM: Mark Woodke, START-IV Chemist, E & E, Seattle, Washington *MW*

SUBJ: **Organic Data Quality Assurance Review, Junkyard Fire Response Site, Portland, Oregon**

REF: TO: TO-21-T2-SS11 PAN: 1004530.0021.012.02

The data quality assurance review of 1 water sample collected from the Junkyard Fire Response site in Portland, Oregon, has been completed. Polychlorinated biphenyl (PCB) analysis (EPA Method 8082) was performed by Test America, Inc., Tacoma, Washington. All sample analyses were evaluated following EPA's Stage 2B and/or 4 Data Validation Manual Process (S2B/4VM).

The sample was numbered: 18030001

Data Qualifications:

1. Sample Holding Times: Acceptable.

The sample was maintained at 0°C to 6°C. The sample was collected on March 12, 2018, extracted on March 14, 2018, and was analyzed by March 14, 2018. There are no holding time limits for Method 8082 PCB analyses.

2. Instrument Performance: Acceptable.

The surrogate retention time percent difference between the initial calibration standards and the remaining standards and samples was $\leq 0.3\%$ for capillary column analyses.

3. Initial and Continuing Calibration: Satisfactory.

All initial calibration relative standard deviations (RSDs) were within QC limits. All continuing calibration % differences (% D) were within QC limits except high Aroclor 1016 and 1260 results; no actions were taken based on these calibration outliers as no PCBs were detected in the sample.

4. Error Determination: Not Provided.

Samples necessary for bias and precision determination were not provided to the laboratory. All samples were flagged RND (Recovery Not Determined) and PND (Precision Not Determined), although the flags are not found on the Form I's.

5. Blanks: Acceptable.

A method blank was prepared at the required frequency of every time samples were extracted for each matrix and for each concentration level, or every 20 samples, whichever is greater, and for each analytical system. No target analytes were detected in the laboratory blanks.

6. Performance Evaluation Samples: Not Provided.

Performance evaluation samples were not provided to the laboratory.

7. System Monitoring Compounds (SMCs): Satisfactory.

All recoveries of the SMCs were within the established control limits except the low DCB recovery in the sample; associated sample quantitation limits were qualified as estimated quantities with a low bias (UJL).

8. Blank Spike (BS) and BS Duplicate (BSD) Analyses: Acceptable.

BS and BSD recoveries were within QC limits.

9. Duplicates: Acceptable, Satisfactory, or Not Acceptable.

Relative Percent Differences (RPDs) of all spiked analytes were within QC limits.

10. Compound Identification: Not Applicable.

No PCBs were detected in the sample.

11. Target Compound Quantitation and Quantitation Limits: Acceptable.

Sample results and quantitation limits were correctly calculated.

12. Laboratory Contact

No laboratory contact was required.

13. Overall Assessment

A total of 7 results were validated in this data memorandum. No sample results were qualified as estimated quantities (J) based on duplicate precision outliers. A total of 7 sample results were qualified as estimated quantities (J) based on spike accuracy outliers. No sample results were rejected (R). No sample results were qualified as estimated quantities (J) based on holding time outliers, incorrect sample containers, or sample temperature outliers. No potential contaminants of concern were detected in the laboratory blanks.

The reviewer used professional judgment to apply a single bias qualifier when more than one bias qualifier was applicable to an individual estimated sample result.

The overall usefulness of the data is based on the criteria outlined in the Site-Specific Sampling Plan and/or Sampling and Quality Assurance Plan, the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method(s), the EPA Region 10 Emergency Management Program SOG 144E Analytical Data Validation, and/or the Office of Emergency and Remedial Response Publication "National Functional Guidelines for Superfund Organic Methods Data Review, January 2018". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

- H - The sample result is biased high.
- J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
- K - The bias of the sample is not known.
- L - The sample result is biased low.
- Q - Detected concentration is below the method reporting limit/Contract Required Quantitation Limit, but is above the method quantitation limit.
- R - The data is rejected and unusable. The analyte may or may not be present in the sample.
- U - The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
- UJ - The material was analyzed for but was not detected. The reported detection limit is estimated because QC criteria were not met.

FORM I
PCBS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Seattle Job No.: 580-75691-1
 SDG No.: _____
 Client Sample ID: 18030001 Lab Sample ID: 580-75691-1
 Matrix: Water Lab File ID: 34C1418019.d
 Analysis Method: 8082A Date Collected: 03/12/2018 16:10
 Extraction Method: 3510C Date Extracted: 03/14/2018 08:48
 Sample wt/vol: 976.6(mL) Date Analyzed: 03/14/2018 18:03
 Con. Extract Vol.: 10(mL) Dilution Factor: 1
 Injection Volume: 1(uL) GC Column: ZB-CLPest-1 ID: 0.25 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 269060 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
12674-11-2	PCB-1016	ND		0.46	0.062
11104-28-2	PCB-1221	ND		0.46	0.077
11141-16-5	PCB-1232	ND		0.46	0.065
53469-21-9	PCB-1242	ND		0.46	0.060
12672-29-6	PCB-1248	ND		0.46	0.053
11097-69-1	PCB-1254	ND		0.46	0.077
11096-82-5	PCB-1260	ND		0.46	0.062

CAS NO.	SURROGATE	%REC	Q	LIMITS
2051-24-3	DCB Decachlorobiphenyl	9		38-134
877-09-8	Tetrachloro-m-xylene	65		54-115

MW 32418



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MEMORANDUM

DATE: March 21, 2018

TO: Maren Fulton, START-IV Project Manager, E & E, Portland, Oregon

FROM: Mark Woodke, START-IV Chemist, E & E, Seattle, Washington *MW*

SUBJ: **Inorganic Data Quality Assurance Review, Junkyard Fire Response Site, Portland, Oregon**

REF: TO: TO-21-T2-SS11 PAN: 1004530.0021.012.02

The data quality assurance review of 1 water sample collected from the Junkyard Fire Response site in Portland, Oregon, has been completed. Resource Conservation and Recovery Act (RCRA) metals analysis (EPA 6000/7000 Series Methods) was performed by Test America, Inc., Tacoma, Washington. All sample analyses were evaluated following EPA's Stage 2B and/or 4 Data Validation Manual Process (S2B/4VM).

The sample was numbered: 18030001

Data Qualifications:

1. Sample Holding Times: Acceptable.

The samples was maintained at $< 6^{\circ}\text{C}$ (only applies to mercury). The sample was collected on March 12, 2018, and was analyzed by March 15, 2018, therefore meeting QC criteria of less than 6 months between collection, extraction, and analysis (28 days for mercury).

2. Initial and Continuing Calibration: Acceptable.

A minimum of one calibration standard and a blank were analyzed at the beginning of the ICP analysis sequence and after every 10 samples. No results were greater than 110% of the highest calibration standard. All ICP recoveries were within the QC limits. All AA recoveries were within QC limits and the initial calibration correlation coefficient was > 0.995 .

3. Blanks: Acceptable.

A preparation blank was analyzed for each 20 samples or per matrix per concentration level. Blanks were analyzed after each Initial or Continuing Calibration Verification. There were no detections in any blanks.

4. ICP Interference Check Sample: Acceptable.

An Interference Check Sample (ICS) was analyzed at the beginning of each sequence or at least twice every 8 hours, whichever was more frequent. All applicable ICS (solution AB) results were within QC limits of 80% - 120% recovery.

5. Precision and Bias Determination: Not Performed.

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

6. Performance Evaluation Sample Analysis: Not Provided.

Performance evaluation samples were not provided to the laboratory.

7. Duplicate Analysis: Acceptable.

A laboratory spike duplicate analysis was performed per SDG or per matrix per concentration level, whichever was more frequent. All spike duplicate results were within QC limits.

8. Laboratory Control Sample Analysis: Acceptable.

A Laboratory Control Sample (LCS) and LCS duplicate (LCSD) was analyzed per SDG per matrix. All LCS and LCSD results were within the established control limits.

9. Overall Assessment of Data for Use

A total of 8 results were validated in this data memorandum. No sample results were qualified as estimated quantities (J) based on duplicate precision outliers, spike accuracy outliers, holding time outliers, incorrect sample containers, or sample temperature outliers.. No sample results were rejected (R). No potential contaminants of concern were detected in the laboratory blanks.

The reviewer used professional judgment to apply a single bias qualifier when more than one bias qualifier was applicable to an individual estimated sample result.

The overall usefulness of the data is based on the criteria outlined in the Site-Specific Sampling Plan and/or Sampling and Quality Assurance Plan, the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method(s), the EPA Region 10 Emergency Management Program SOG 144E Analytical Data Validation, and/or the Office of Emergency and Remedial Response Publication "National Functional Guidelines for Superfund Inorganic Methods Data Review, January 2018". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

H - The sample result is biased high.

J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

K - The bias of the sample is not known.

L - The sample result is biased low.

Q - Detected concentration is below the method reporting limit/Contract Required Quantitation Limit, but is above the method quantitation limit.

- R - The data is rejected and unusable. The analyte may or may not be present in the sample.
- U - The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
- UJ - The material was analyzed for but was not detected. The reported detection limit is estimated because QC criteria were not met.

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: 18030001

Lab Sample ID: 580-75691-1

Lab Name: TestAmerica Seattle

Job No.: 580-75691-1

SDG ID.:

Matrix: Water

Date Sampled: 03/12/2018 16:10

Reporting Basis: WET

Date Received: 03/13/2018 09:15

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7439-97-6	Mercury	NA	0.00030	0.00015	mg/L			1	7470A

JWW 32418

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS - TOTAL RECOVERABLE

Client Sample ID: 18030001

Lab Sample ID: 580-75691-1

Lab Name: TestAmerica Seattle

Job No.: 580-75691-1

SDG ID.:

Matrix: Water

Date Sampled: 03/12/2018 16:10

Reporting Basis: WET

Date Received: 03/13/2018 09:15

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-38-2	Arsenic	NA	0.0050	0.0014	mg/L			5	6020B
7440-39-3	Barium	3.0	0.0060	0.00027	mg/L			5	6020B
7440-43-9	Cadmium	0.0015	0.0020	0.00050	mg/L	J	Q	5	6020B
7440-47-3	Chromium	0.0034	0.0020	0.00071	mg/L			5	6020B
7439-92-1	Lead	0.042	0.0040	0.0010	mg/L			5	6020B
7782-49-2	Selenium	ND	0.040	0.010	mg/L			5	6020B
7440-22-4	Silver	ND	0.0020	0.00022	mg/L			5	6020B

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MEMORANDUM

DATE: March 21, 2018

TO: Maren Fulton, START-IV Project Manager, E & E, Portland, Oregon

FROM: Mark Woodke, START-IV Chemist, E & E, Seattle, Washington *MW*

SUBJ: **Organic Data Quality Assurance Review, Junkyard Fire Response Site, Portland, Oregon**

REF: TO: TO-21-T2-SS11 PAN: 1004530.0021.012.02

The data quality assurance review of 1 water sample collected from the Junkyard Fire Response site in Portland, Oregon, has been completed. Semivolatile Organic Compound (SVOC) analysis (EPA Method 8270) was performed by Test America, Inc., Tacoma, Washington. All sample analyses were evaluated following EPA's Stage 2B and/or 4 Data Validation Manual Process (S2B/4VM).

The sample was numbered: 18030001

Data Qualifications:

1. Sample Holding Times: Acceptable.

The sample was maintained and received within the QC limits of 0°C to 6°C. The sample was collected on March 12, 2018, was extracted and analyzed by March 15, 2018, therefore meeting holding time criteria of less than 7 days between collection and extraction and less than 40 days between extraction and analysis.

2. Tuning: Acceptable.

Tuning was performed at the beginning of each 12-hour analysis sequence. All results were within QC limits.

3. Initial Calibration: Acceptable.

All average Relative Response Factors (RRFs) were within the QC limits. All Relative Standard Deviations (RSDs) were within the QC limits.

4. Continuing Calibration: Acceptable.

All RRFs were within the QC limits. All % differences were within the QC limits.

5. Blanks: Acceptable.

A method blank was analyzed for each 20 sample batch per matrix. There were no detections in any method blank.

6. System Monitoring Compounds (SMCs): Satisfactory.

All SMC recoveries were within QC limits except nitrobenzene-d5 and 2,4,6-tribromophenol with high recoveries (associated positive results were qualified as estimated quantities with a high bias [JH]) and phenol-d5 with a low recovery (0% recovery –no additional actions were taken as the other two acid SMCs were either within limits or had high recoveries).

7. Blank Spike (BS)/BS Duplicate (BSD) Analysis: Satisfactory.

BS and BSD analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within QC limits except 4-chloroaniline and benzyl alcohol with low BS and BSD recoveries (associated positive results and sample quantitation limits were qualified as estimated quantities [JL or UJL]).

8. Duplicate Analysis: Satisfactory.

Spike duplicate analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All spike duplicate results were within QC limits except 1,3-dichlorobenzene, 1,4-dichlorobenzene, 1,2-dichlorobenzene, hexachloroethane, nitrobenzene, benzyl alcohol, 1,2,4-trichlorobenzene, 4-chloroaniline, hexachlorocyclopentadiene, 3,3'-dichlorobenzidine, and bis(2-chloroisopropyl)ether. Positive sample results were qualified as estimated quantities with an unknown bias (JK).

9. Internal Standards: Acceptable.

All internal standards (IS) were within ± 30 seconds of the continuing calibration IS retention times. All area counts were within 50 % to 200 % of the continuing calibration area counts.

10. Precision and Bias Determination: Not Performed.

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

11. Performance Evaluation Sample Analysis: Not Provided.

Performance evaluation samples were not provided to the laboratory.

12. Overall Assessment of Data for Use

A total of 67 results were validated in this data memorandum. A total of 11 sample results were qualified as estimated quantities (J) based on duplicate precision outliers. A total of 2 sample results were qualified as estimated quantities (J) based on spike accuracy outliers. No sample results were rejected (R). No sample results were qualified as estimated quantities (J) based on holding time outliers, incorrect sample containers, or sample temperature outliers. No potential contaminants of concern were detected in the laboratory blanks.

The reviewer used professional judgment to apply a single bias qualifier when more than one bias qualifier was applicable to an individual estimated sample result.

The overall usefulness of the data is based on the criteria outlined in the Site-Specific Sampling Plan and/or Sampling and Quality Assurance Plan, the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method(s), the EPA Region 10 Emergency Management Program SOG 144E Analytical Data Validation, and/or the Office of Emergency and Remedial Response

Publication "National Functional Guidelines for Superfund Organic Methods Data Review, January 2018". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

- H - The sample result is biased high.
- J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
- K - The bias of the sample is not known.
- L - The sample result is biased low.
- N - The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".
- NJ - The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.
- Q - Detected concentration is below the method reporting limit/Contract Required Quantitation Limit, but is above the method quantitation limit.
- R - The data is rejected and unusable. The analyte may or may not be present in the sample.
- U - The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
- UJ - The material was analyzed for but was not detected. The reported detection limit is estimated because QC criteria were not met.

FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Seattle

Job No.: 580-75691-1

SDG No.: _____

Client Sample ID: 18030001

Lab Sample ID: 580-75691-1

Matrix: Water

Lab File ID: 23_031518b018.D

Analysis Method: 8270D

Date Collected: 03/12/2018 16:10

Extract. Method: 3520C

Date Extracted: 03/13/2018 13:08

Sample wt/vol: 1001.3(mL)

Date Analyzed: 03/15/2018 23:05

Con. Extract Vol.: 10(mL)

Dilution Factor: 10

Injection Volume: 1(uL)

Level: (low/med) Low

% Moisture: _____

GPC Cleanup: (Y/N) N

Analysis Batch No.: 269155

Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
108-95-2	Phenol	980		200	46
111-44-4	Bis(2-chloroethyl)ether	ND		30	5.0
95-57-8	2-Chlorophenol	ND		30	11
541-73-1	1,3-Dichlorobenzene	ND		20	5.0
106-46-7	1,4-Dichlorobenzene	ND		20	3.0
100-51-6	Benzyl alcohol	ND		150	34
95-50-1	1,2-Dichlorobenzene	ND		30	5.0
95-48-7	2-Methylphenol	44	JH	30	5.0
15831-10-4	3 & 4 Methylphenol	ND		40	9.0
621-64-7	N-Nitrosodi-n-propylamine	ND		30	5.0
67-72-1	Hexachloroethane	ND		50	5.0
98-95-3	Nitrobenzene	ND		30	11
78-59-1	Isophorone	ND		20	5.0
88-75-5	2-Nitrophenol	ND		50	7.0
105-67-9	2,4-Dimethylphenol	ND		200	41
65-85-0	Benzoic acid	ND		200	42
111-91-1	Bis(2-chloroethoxy)methane	ND		30	5.0
120-83-2	2,4-Dichlorophenol	ND		200	26
120-82-1	1,2,4-Trichlorobenzene	ND		20	2.0
91-20-3	Naphthalene	85	JH	20	5.0
106-47-8	4-Chloroaniline	ND		500	100
87-68-3	Hexachlorobutadiene	ND		50	5.0
59-50-7	4-Chloro-3-methylphenol	ND		30	5.0
91-57-6	2-Methylnaphthalene	21	JH	20	3.0
77-47-4	Hexachlorocyclopentadiene	ND		150	64
88-06-2	2,4,6-Trichlorophenol	ND		30	5.0
95-95-4	2,4,5-Trichlorophenol	ND		20	5.0
91-58-7	2-Chloronaphthalene	ND		50	6.5
88-74-4	2-Nitroaniline	ND		30	5.0
131-11-3	Dimethyl phthalate	ND		30	5.0
208-96-8	Acenaphthylene	33	Q	50	5.0
606-20-2	2,6-Dinitrotoluene	ND		30	5.0
99-09-2	3-Nitroaniline	ND		150	36
83-32-9	Acenaphthene	ND		20	4.0

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FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Seattle

Job No.: 580-75691-1

SDG No.: _____

Client Sample ID: 18030001

Lab Sample ID: 580-75691-1

Matrix: Water

Lab File ID: 23_031518b018.D

Analysis Method: 8270D

Date Collected: 03/12/2018 16:10

Extract. Method: 3520C

Date Extracted: 03/13/2018 13:08

Sample wt/vol: 1001.3(mL)

Date Analyzed: 03/15/2018 23:05

Con. Extract Vol.: 10(mL)

Dilution Factor: 10

Injection Volume: 1(uL)

Level: (low/med) Low

% Moisture: _____

GPC Cleanup: (Y/N) N

Analysis Batch No.: 269155

Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
51-28-5	2,4-Dinitrophenol	ND		250	50
100-02-7	4-Nitrophenol	ND		750	89
132-64-9	Dibenzofuran	ND		20	3.0
121-14-2	2,4-Dinitrotoluene	ND		50	7.0
84-66-2	Diethyl phthalate	ND		600	140
7005-72-3	4-Chlorophenyl phenyl ether	ND		30	5.0
86-73-7	Fluorene	6.4	JQ	100	4.5
100-01-6	4-Nitroaniline	ND		100	14
534-52-1	4,6-Dinitro-2-methylphenol	ND		250	50
86-30-6	N-Nitrosodiphenylamine	ND		150	30
101-55-3	4-Bromophenyl phenyl ether	ND		30	5.0
118-74-1	Hexachlorobenzene	ND		30	5.0
87-86-5	Pentachlorophenol	ND		500	120
85-01-8	Phenanthrene	19	JQ	50	6.5
120-12-7	Anthracene	4.0	JQ	750	1.0
84-74-2	Di-n-butyl phthalate	ND		150	27
206-44-0	Fluoranthene	ND		150	7.5
129-00-0	Pyrene	ND		100	19
85-68-7	Butyl benzyl phthalate	ND		500	200
91-94-1	3,3'-Dichlorobenzidine	ND		750	52
56-55-3	Benzo[a]anthracene	1.7	JQ	50	1.0
218-01-9	Chrysene	ND		30	8.5
117-81-7	Bis(2-ethylhexyl) phthalate	ND		750	310
117-84-0	Di-n-octyl phthalate	9.4	JQ	50	9.0
50-32-8	Benzo[a]pyrene	ND		50	1.0
193-39-5	Indeno[1,2,3-cd]pyrene	ND		50	2.5
53-70-3	Dibenz(a,h)anthracene	ND		30	1.0
191-24-2	Benzo[g,h,i]perylene	ND		50	2.5
86-74-8	Carbazole	ND		30	5.0
90-12-0	1-Methylnaphthalene	20	JQ	50	3.5
205-99-2	Benzo[b]fluoranthene	ND		50	2.5
207-08-9	Benzo[k]fluoranthene	ND		50	1.0
108-60-1	bis(chloroisopropyl) ether	ND		30	5.0

Handwritten signature and date: 3/16/18

FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Seattle</u>	Job No.: <u>580-75691-1</u>
SDG No.: _____	
Client Sample ID: <u>18030001</u>	Lab Sample ID: <u>580-75691-1</u>
Matrix: <u>Water</u>	Lab File ID: <u>23_031518b018.D</u>
Analysis Method: <u>8270D</u>	Date Collected: <u>03/12/2018 16:10</u>
Extract. Method: <u>3520C</u>	Date Extracted: <u>03/13/2018 13:08</u>
Sample wt/vol: <u>1001.3(mL)</u>	Date Analyzed: <u>03/15/2018 23:05</u>
Con. Extract Vol.: <u>10(mL)</u>	Dilution Factor: <u>10</u>
Injection Volume: <u>1(uL)</u>	Level: (low/med) <u>Low</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>269155</u>	Units: <u>ug/L</u>

CAS NO.	SURROGATE	%REC	Q	LIMITS
367-12-4	2-Fluorophenol (Surr)	85		50-120
4165-62-2	Phenol-d5 (Surr)	0	X	52-120
4165-60-0	Nitrobenzene-d5 (Surr)	142	X	52-120
321-60-8	2-Fluorobiphenyl	67		50-120
118-79-6	2,4,6-Tribromophenol (Surr)	292	X	48-125
1718-51-0	Terphenyl-d14 (Surr)	91		49-133

MW 3248



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MEMORANDUM

DATE: March 21, 2018

TO: Maren Fulton, START-IV Project Manager, E & E, Portland, Oregon

FROM: Mark Woodke, START-IV Chemist, E & E, Seattle, Washington MW

SUBJ: **Organic Data Quality Assurance Review, Junkyard Fire Response Site, Portland, Oregon**

REF: TO: TO-21-T2-SS11 PAN: 1004530.0021.012.02

The data quality assurance review of 2 water samples collected from the Junkyard Fire Response site in Portland, Oregon, has been completed. Volatile Organic Compound (VOC) analysis (EPA Method 8260) was performed by Test America, Inc., Tacoma, Washington. All sample analyses were evaluated following EPA's Stage 2B and/or 4 Data Validation Manual Process (S2B/4VM).

The samples were numbered: 18030001 18030002

Data Qualifications:

1. Sample Holding Times: Acceptable.

The samples were maintained and received within the QC limits of $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$. The samples were collected on March 12, 2018, and were analyzed by March 16, 2018, therefore meeting QC criteria of less than 14 days between collection and analysis for preserved water samples.

2. Tuning: Acceptable.

Tuning was performed at the beginning of each 12-hour analysis sequence. All results were within QC limits.

3. Initial Calibration: Satisfactory.

All average Relative Response Factors (RRFs) were within the QC limits except chloroethane on March 14, 2018. Associated sample quantitation limits were rejected (R). All Relative Standard Deviations (RSDs) and/or correlation coefficients were within the QC limits.

4. Continuing Calibration: Satisfactory.

All RRFs were within the QC limits. All % differences were within the QC limits except low recoveries for dichlorodifluoromethane, chloromethane, and vinyl chloride (associated positive results and sample quantitation limits were qualified as estimated quantities with a low bias [JL or UJL]).

5. Blanks: Satisfactory.

A method blank was analyzed for each 20 sample batch per matrix. There were no detections in any method blank except m&p-xylene (0.174 ug/L), o-xylene (0.157 ug/L), styrene (0.213 ug/L), n-propyl benzene (0.136 ug/L), n-butylbenzene (0.0926 ug/L), 4-chlorotoluene (0.0653 ug/L), ethylbenzene,

(0.0417 ug/L), and methyl t-butyl ether (0.125 ug/L) in the March 13, 2018 method blank. There were no detections in the trip blank (sample 18030002) except benzene (0.035 ug/L), 1,2,4-trimethylbenzene (0.088 ug/L), toluene (0.05 ug/L), naphthalene (0.31 ug/L), and chloroform (0.33 ug/L). Associated sample results less than five times the blank results were qualified as not detected (U).

6. System Monitoring Compounds (SMCs): Acceptable.

All SMC recoveries were within QC limits.

7. Blank Spike (BS)/BS Duplicate (BSD) Analysis: Satisfactory.

BS and BSD analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within QC limits except a high chlorobenzene BS recovery; associated positive results were qualified as estimated quantities with a high bias (JH).

8. Duplicate Analysis: Acceptable.

Spike duplicate analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All spike duplicate results were within QC limits.

9. Internal Standards: Acceptable.

All internal standards were within ± 30 seconds of the continuing calibration internal standard retention times. All area counts were within 50 % to 200 % of the continuing calibration area counts.

10. Precision and Bias Determination: Not Performed.

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

11. Performance Evaluation Sample Analysis: Not Provided.

Performance evaluation samples were not provided to the laboratory.

12. Overall Assessment of Data for Use

A total of 120 results were validated in this data memorandum. No sample results were qualified as estimated quantities (J) based on duplicate precision outliers, spike accuracy outliers, holding time outliers, incorrect sample containers, or sample temperature outliers. One sample result was rejected (R). The following potential contaminants of concern were detected in the laboratory blanks: m&p-xylene, o-xylene, styrene, n-propyl benzene, n-butylbenzene, 4-chlorotoluene, ethylbenzene, and methyl t-butyl ether. The following potential contaminants of concern were detected in the trip blank: benzene, 1,2,4-trimethylbenzene, toluene, naphthalene, and chloroform.

The reviewer used professional judgment to apply a single bias qualifier when more than one bias qualifier was applicable to an individual estimated sample result.

The overall usefulness of the data is based on the criteria outlined in the Site-Specific Sampling Plan and/or Sampling and Quality Assurance Plan, the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method(s), the EPA Region 10 Emergency Management Program SOG 144E Analytical Data Validation, and/or the Office of Emergency and Remedial Response Publication "National Functional Guidelines for Superfund Organic Methods Data Review, January 2018". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

- H - The sample result is biased high.
- J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
- K - The bias of the sample is not known.
- L - The sample result is biased low.
- N - The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".
- NJ - The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.
- Q - Detected concentration is below the method reporting limit/Contract Required Quantitation Limit, but is above the method quantitation limit.
- R - The data is rejected and unusable. The analyte may or may not be present in the sample.
- U - The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
- UJ - The material was analyzed for but was not detected. The reported detection limit is estimated because QC criteria were not met.

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Seattle</u>	Job No.: <u>580-75691-1</u>
SDG No.: _____	
Client Sample ID: <u>18030001</u>	Lab Sample ID: <u>580-75691-1</u>
Matrix: <u>Water</u>	Lab File ID: <u>C13180019.D</u>
Analysis Method: <u>8260C</u>	Date Collected: <u>03/12/2018 16:10</u>
Sample wt/vol: <u>10(mL)</u>	Date Analyzed: <u>03/13/2018 19:49</u>
Soil Aliquot Vol: _____	Dilution Factor: <u>1</u>
Soil Extract Vol.: _____	GC Column: <u>DB-VRX</u> ID: <u>0.25 (mm)</u>
% Moisture: _____	Level: (low/med) <u>Low</u>
Analysis Batch No.: <u>268917</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
95-50-1	1,2-Dichlorobenzene	ND		0.30	0.050
95-49-8	2-Chlorotoluene	ND		0.50	0.12
96-18-4	1,2,3-Trichloropropane	ND		0.20	0.050
56-23-5	Carbon tetrachloride	ND		0.20	0.025
10061-01-5	cis-1,3-Dichloropropene	ND		0.20	0.090
108-90-7	Chlorobenzene	ND		0.20	0.025
135-98-8	sec-Butylbenzene	ND		1.0	0.17
74-95-3	Dibromomethane	ND		0.20	0.062
179601-23-1	m-Xylene & p-Xylene	ND <i>mw</i>		0.50	0.12
95-47-6	o-Xylene	30 <i>mw</i>		0.50	0.15
120-82-1	1,2,4-Trichlorobenzene	ND		0.30	0.072
74-97-5	Chlorobromomethane	ND <i>mw</i>		0.20	0.025
75-27-4	Dichlorobromomethane	0.078 <i>JQ</i>		0.20	0.060
541-73-1	1,3-Dichlorobenzene	ND <i>mw</i>		0.30	0.050
75-00-3	Chloroethane	0.11 <i>JQ</i>		0.50	0.096
10061-02-6	trans-1,3-Dichloropropene	ND		0.20	0.092
87-61-6	1,2,3-Trichlorobenzene	ND <i>mw</i>		0.50	0.15
103-65-1	N-Propylbenzene	4.7 <i>mw</i>		0.30	0.091
99-87-6	4-Isopropyltoluene	3.8		0.30	0.050
104-51-8	n-Butylbenzene	8.6 <i>mw</i>		0.50	0.080
563-58-6	1,1-Dichloropropene	ND		0.20	0.036
156-59-2	cis-1,2-Dichloroethene	ND		0.20	0.055
79-34-5	1,1,2,2-Tetrachloroethane	ND <i>mw</i>		0.20	0.056
95-63-6	1,2,4-Trimethylbenzene	31		0.30	0.072
108-67-8	1,3,5-Trimethylbenzene	11		0.50	0.15
142-28-9	1,3-Dichloropropane	ND <i>mw</i>		0.20	0.056
67-66-3	Chloroform	3.6		0.20	0.030
106-43-4	4-Chlorotoluene	ND		0.30	0.050
124-48-1	Chlorodibromomethane	ND		0.20	0.055
79-00-5	1,1,2-Trichloroethane	ND		0.20	0.070
98-06-6	tert-Butylbenzene	ND		0.50	0.10
75-09-2	Methylene Chloride	ND		5.0	1.7
75-35-4	1,1-Dichloroethene	ND <i>mw</i>		0.20	0.10
98-82-8	Isopropylbenzene	6.0		1.0	0.19
107-06-2	1,2-Dichloroethane	0.43		0.20	0.094
127-18-4	Tetrachloroethene	ND		0.50	0.084

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Seattle Job No.: 580-75691-1
 SDG No.: _____
 Client Sample ID: 18030001 Lab Sample ID: 580-75691-1
 Matrix: Water Lab File ID: C13180019.D
 Analysis Method: 8260C Date Collected: 03/12/2018 16:10
 Sample wt/vol: 10 (mL) Date Analyzed: 03/13/2018 19:49
 Soil Aliquot Vol: _____ Dilution Factor: 1
 Soil Extract Vol.: _____ GC Column: DB-VRX ID: 0.25 (mm)
 % Moisture: _____ Level: (low/med) Low
 Analysis Batch No.: 268917 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	ND		0.20	0.025
594-20-7	2,2-Dichloropropane	ND		0.50	0.060
106-93-4	Ethylene Dibromide	ND		0.10	0.025
75-25-2	Bromoform	ND		0.50	0.16
96-12-8	1,2-Dibromo-3-Chloropropane	ND		2.0	0.44
75-69-4	Trichlorofluoromethane	ND		0.50	0.11
79-01-6	Trichloroethene	ND		0.20	0.066
108-86-1	Bromobenzene	ND		0.20	0.035
78-87-5	1,2-Dichloropropane	ND		0.20	0.060
630-20-6	1,1,1,2-Tetrachloroethane	ND		0.30	0.095
100-41-4	Ethylbenzene	44		0.20	0.030
156-60-5	trans-1,2-Dichloroethene	ND		0.20	0.089
87-68-3	Hexachlorobutadiene	ND		0.50	0.15
75-34-3	1,1-Dichloroethane	ND		0.20	0.025
74-83-9	Bromomethane	ND		0.50	0.16
106-46-7	1,4-Dichlorobenzene	ND		0.30	0.050
1634-04-4	Methyl tert-butyl ether	ND		0.30	0.070

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	106		81-120
2037-26-5	Toluene-d8 (Surr)	98		75-125
98-08-8	Trifluorotoluene (Surr)	92		74-118
1868-53-7	Dibromofluoromethane (Surr)	96		42-132
17060-07-0	1,2-Dichloroethane-d4 (Surr)	101		46-150

MW 3-21-18

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Seattle Job No.: 580-75691-1
 SDG No.: _____
 Client Sample ID: 18030001 RA Lab Sample ID: 580-75691-1 RA
 Matrix: Water Lab File ID: C15180027.D
 Analysis Method: 8260C Date Collected: 03/12/2018 16:10
 Sample wt/vol: 10 (mL) Date Analyzed: 03/16/2018 01:57
 Soil Aliquot Vol.: _____ Dilution Factor: 1
 Soil Extract Vol.: _____ GC Column: DB-VRX ID: 0.25 (mm)
 % Moisture: _____ Level: (low/med) Low
 Analysis Batch No.: 269182 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-01-4	Vinyl chloride	0.015	JQ	0.020	0.013
75-71-8	Dichlorodifluoromethane	0.47		0.40	0.13
74-87-3	Chloromethane	0.88		0.50	0.15

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	106		81-120
2037-26-5	Toluene-d8 (Surr)	100		75-125
98-08-8	Trifluorotoluene (Surr)	102		74-118
1868-53-7	Dibromofluoromethane (Surr)	96		42-132
17060-07-0	1,2-Dichloroethane-d4 (Surr)	93		46-150

Jan 32 HB

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Seattle Job No.: 580-75691-1
 SDG No.: _____
 Client Sample ID: 18030001 DL Lab Sample ID: 580-75691-1 DL
 Matrix: Water Lab File ID: C15180026.D
 Analysis Method: 8260C Date Collected: 03/12/2018 16:10
 Sample wt/vol: 10(mL) Date Analyzed: 03/16/2018 01:31
 Soil Aliquot Vol: _____ Dilution Factor: 10
 Soil Extract Vol.: _____ GC Column: DB-VRX ID: 0.25 (mm)
 % Moisture: _____ Level: (low/med) Low
 Analysis Batch No.: 269182 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
100-42-5	Styrene	170	<i>mw</i>	5.0	1.9
71-43-2	Benzene	89		2.0	0.30
108-88-3	Toluene	110		2.0	0.50
91-20-3	Naphthalene	110		10	2.2

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	109		81-120
2037-26-5	Toluene-d8 (Surr)	102		75-125
98-08-8	Trifluorotoluene (Surr)	102		74-118
1868-53-7	Dibromofluoromethane (Surr)	97		42-132
17060-07-0	1,2-Dichloroethane-d4 (Surr)	93		46-150

mw 32HB

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Seattle

Job No.: 580-75691-1

SDG No.: _____

Client Sample ID: 18030002

Lab Sample ID: 580-75691-2

Matrix: Water

Lab File ID: C13180020.D

Analysis Method: 8260C

Date Collected: 03/12/2018 16:10

Sample wt/vol: 10(mL)

Date Analyzed: 03/13/2018 20:16

Soil Aliquot Vol: _____

Dilution Factor: 1

Soil Extract Vol.: _____

GC Column: DB-VRX ID: 0.25(mm)

% Moisture: _____

Level: (low/med) Low

Analysis Batch No.: 268917

Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
95-50-1	1,2-Dichlorobenzene	ND		0.30	0.050
95-49-8	2-Chlorotoluene	ND		0.50	0.12
96-18-4	1,2,3-Trichloropropane	ND		0.20	0.050
56-23-5	Carbon tetrachloride	ND		0.20	0.025
10061-01-5	cis-1,3-Dichloropropene	ND		0.20	0.090
108-90-7	Chlorobenzene	ND		0.20	0.025
75-01-4	Vinyl chloride	ND		0.020	0.013
135-98-8	sec-Butylbenzene	ND		1.0	0.17
74-95-3	Dibromomethane	ND		0.20	0.062
179601-23-1	m-Xylene & p-Xylene	ND		0.50	0.12
95-47-6	o-Xylene	0.17	J	0.50	0.15
120-82-1	1,2,4-Trichlorobenzene	ND		0.30	0.072
100-42-5	Styrene	0.29	J	0.50	0.19
74-97-5	Chlorobromomethane	ND		0.20	0.025
75-27-4	Dichlorobromomethane	ND		0.20	0.060
541-73-1	1,3-Dichlorobenzene	ND		0.30	0.050
71-43-2	Benzene	0.035	J	0.20	0.030
75-00-3	Chloroethane	ND		0.50	0.096
10061-02-6	trans-1,3-Dichloropropene	ND		0.20	0.092
87-61-6	1,2,3-Trichlorobenzene	ND		0.50	0.15
103-65-1	N-Propylbenzene	ND		0.30	0.091
99-87-6	4-Isopropyltoluene	ND		0.30	0.050
104-51-8	n-Butylbenzene	ND		0.50	0.080
563-58-6	1,1-Dichloropropene	ND		0.20	0.036
156-59-2	cis-1,2-Dichloroethene	ND		0.20	0.055
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.20	0.056
95-63-6	1,2,4-Trimethylbenzene	0.088	J	0.30	0.072
108-88-3	Toluene	0.050	J	0.20	0.050
91-20-3	Naphthalene	0.31	J	1.0	0.22
108-67-8	1,3,5-Trimethylbenzene	ND		0.50	0.15
142-28-9	1,3-Dichloropropane	ND		0.20	0.056
67-66-3	Chloroform	0.33		0.20	0.030
106-43-4	4-Chlorotoluene	ND		0.30	0.050
124-48-1	Chlorodibromomethane	ND		0.20	0.055
75-71-8	Dichlorodifluoromethane	ND		0.40	0.13
79-00-5	1,1,2-Trichloroethane	ND		0.20	0.070

mm 3248

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Seattle Job No.: 580-75691-1
 SDG No.: _____
 Client Sample ID: 18030002 Lab Sample ID: 580-75691-2
 Matrix: Water Lab File ID: C13180020.D
 Analysis Method: 8260C Date Collected: 03/12/2018 16:10
 Sample wt/vol: 10(mL) Date Analyzed: 03/13/2018 20:16
 Soil Aliquot Vol: _____ Dilution Factor: 1
 Soil Extract Vol.: _____ GC Column: DB-VRX ID: 0.25 (mm)
 % Moisture: _____ Level: (low/med) Low
 Analysis Batch No.: 268917 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
98-06-6	tert-Butylbenzene	ND		0.50	0.10
74-87-3	Chloromethane	ND		0.50	0.15
75-09-2	Methylene Chloride	ND		5.0	1.7
75-35-4	1,1-Dichloroethene	ND		0.20	0.10
98-82-8	Isopropylbenzene	ND		1.0	0.19
107-06-2	1,2-Dichloroethane	ND		0.20	0.094
127-18-4	Tetrachloroethene	ND		0.50	0.084
71-55-6	1,1,1-Trichloroethane	ND		0.20	0.025
594-20-7	2,2-Dichloropropane	ND		0.50	0.060
106-93-4	Ethylene Dibromide	ND		0.10	0.025
75-25-2	Bromoform	ND		0.50	0.16
96-12-8	1,2-Dibromo-3-Chloropropane	ND		2.0	0.44
75-69-4	Trichlorofluoromethane	ND		0.50	0.11
79-01-6	Trichloroethene	ND		0.20	0.066
108-86-1	Bromobenzene	ND		0.20	0.035
78-87-5	1,2-Dichloropropane	ND		0.20	0.060
630-20-6	1,1,1,2-Tetrachloroethane	ND		0.30	0.095
100-41-4	Ethylbenzene	0.054		0.20	0.030
156-60-5	trans-1,2-Dichloroethene	ND		0.20	0.089
87-68-3	Hexachlorobutadiene	ND		0.50	0.15
75-34-3	1,1-Dichloroethane	ND		0.20	0.025
74-83-9	Bromomethane	ND		0.50	0.16
106-46-7	1,4-Dichlorobenzene	ND		0.30	0.050
1634-04-4	Methyl tert-butyl ether	ND		0.30	0.070

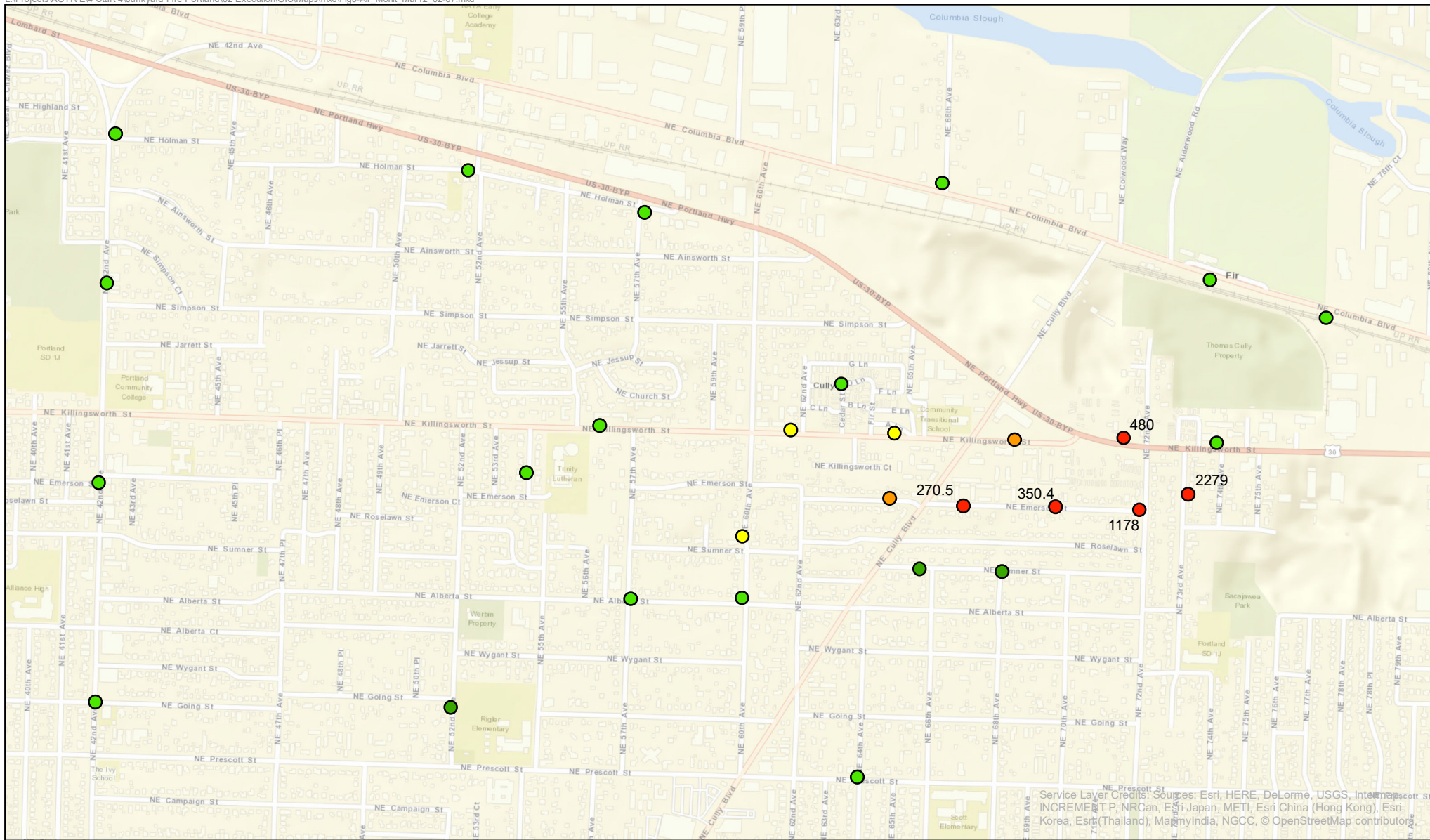
CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	108		81-120
2037-26-5	Toluene-d8 (Surr)	99		75-125
98-08-8	Trifluorotoluene (Surr)	94		74-118
1868-53-7	Dibromofluoromethane (Surr)	101		42-132
17060-07-0	1,2-Dichloroethane-d4 (Surr)	94		46-150

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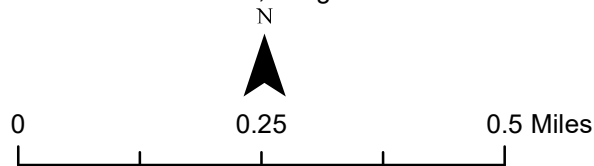
ATTACHMENT E: Time Series Maps of Particulate Matter

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Date: 6/5/2018

FIGURE 3
ROVING AIR MONITORING
TIME PERIOD: MARCH 12, 2018
2:13 PM - 7:13 PM
Portland, Oregon



Legend

March 12: 2:13-7:13

- 0 ug/m3
- 0-35 ug/m3
- 35-150 ug/m3
- 150-250 ug/m3
- 250-10,000 ug/m3

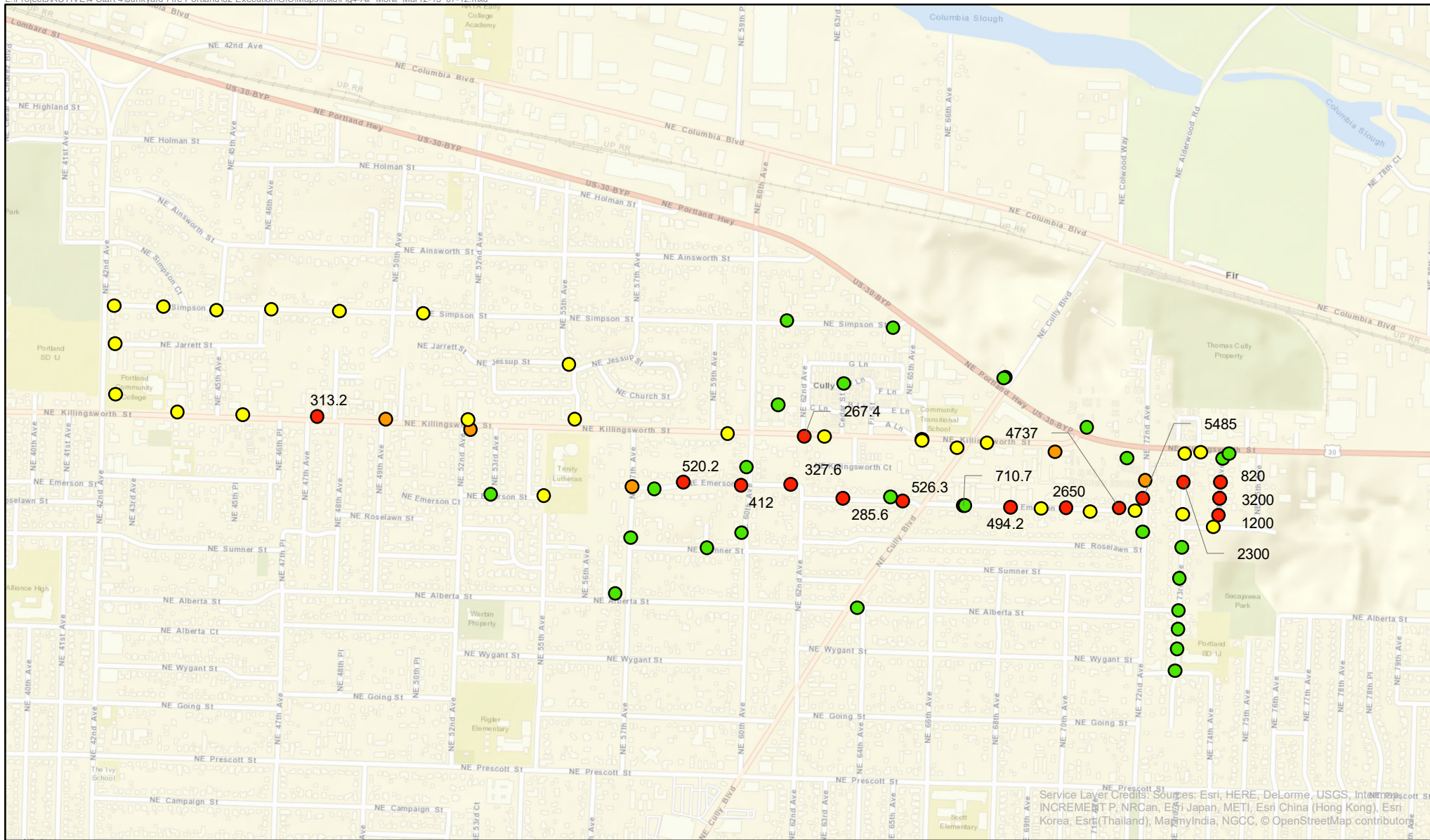
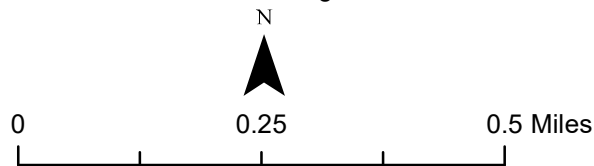


FIGURE 4
ROVING AIR MONITORING
TIME PERIOD: MARCH 12, 2018, 7:13 PM
TO MARCH 13, 2018, 12:13 AM
Portland, Oregon



Legend

March 12-13: 07:13-12:13

- 0 ug/m3
- 0-35 ug/m3
- 35-150 ug/m3
- 150-250 ug/m3
- 250-10,000 ug/m3

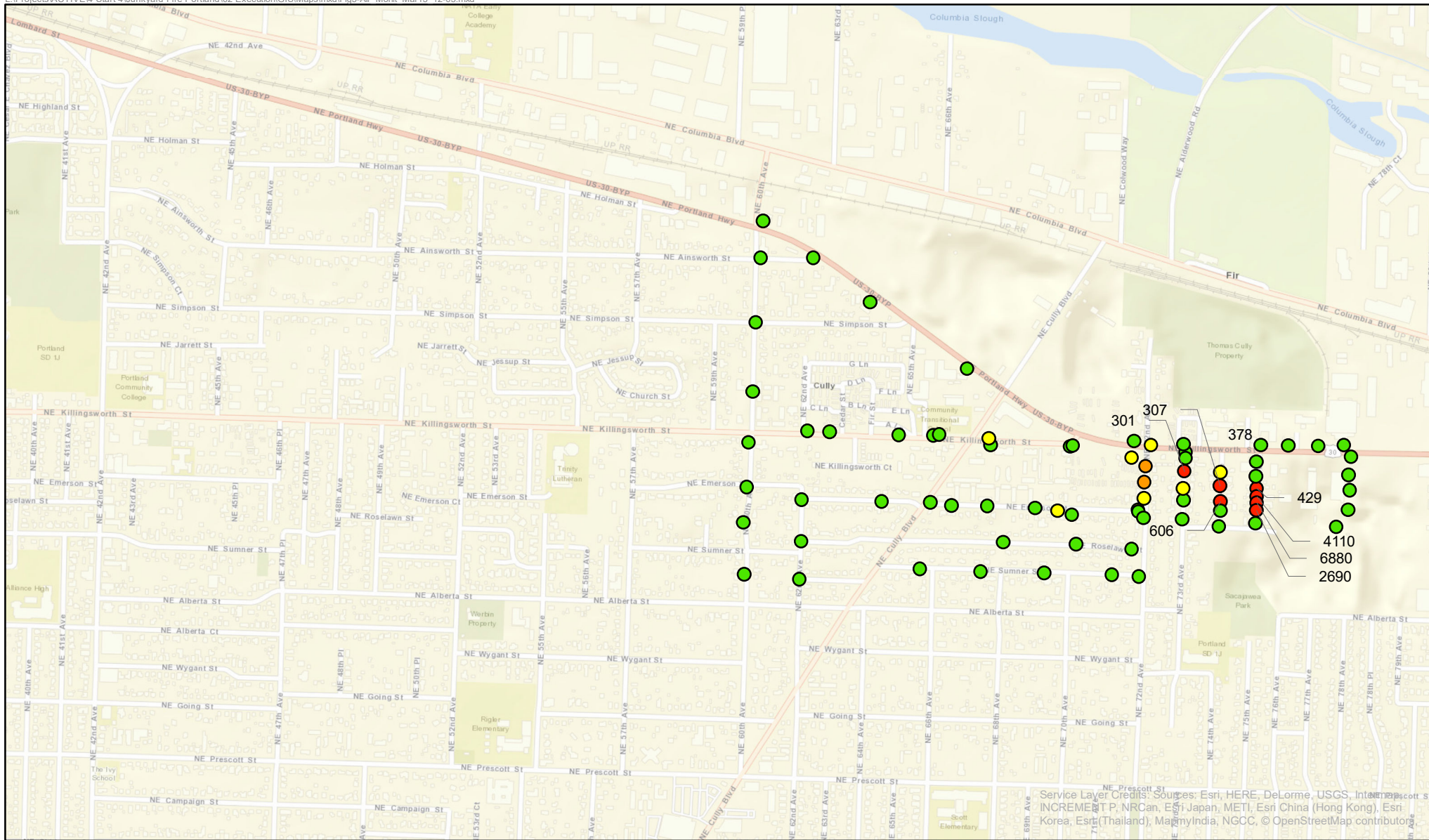
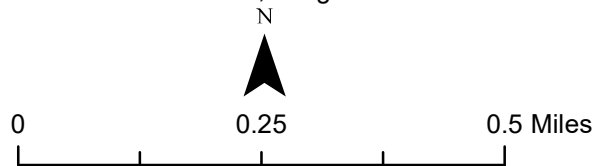


FIGURE 5
ROVING AIR MONITORING
TIME PERIOD: MARCH 13, 2018
12:13 AM - 05:13 AM
Portland, Oregon

Date: 6/5/2018



Legend

March 13: 12:13-05:13

- 0 ug/m3
- 0-35 ug/m3
- 35-150 ug/m3
- 150-250 ug/m3
- 250-10,000 ug/m3

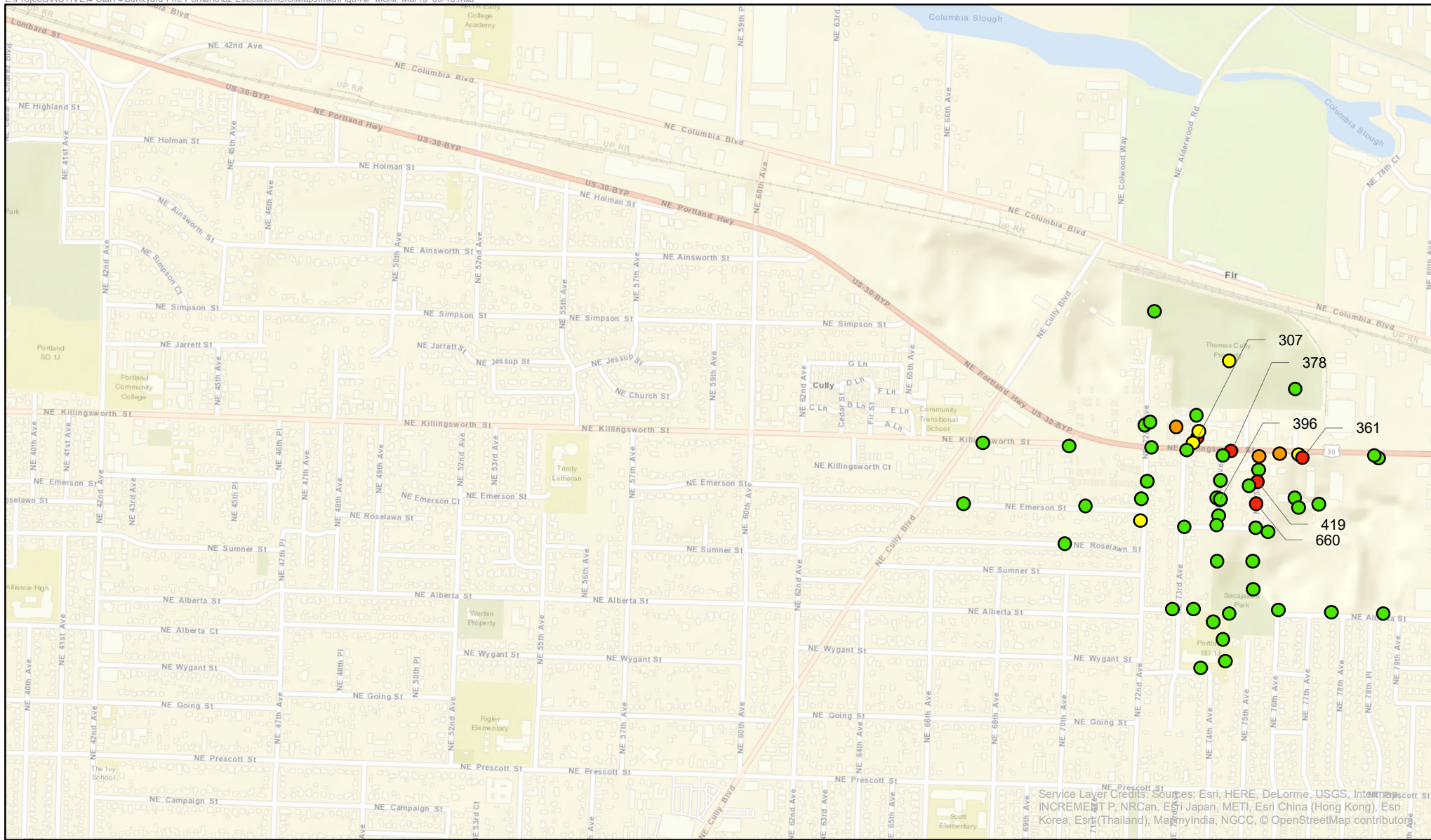


FIGURE 6
ROVING AIR MONITORING
TIME PERIOD: MARCH 13, 2018
5:13 AM - 10:13 AM
Portland, Oregon

Date: 6/5/2018

0 0.25 0.5 Miles

Legend

March 13: 05:13-10:13

- 0 ug/m³
- 0-35 ug/m³
- 35-150 ug/m³
- 150-250 ug/m³
- 250-10,000 ug/m³

N

Date: 6/5/2018



- 0 ug/m3
- 0-35 ug/m3
- 35-150 ug/m3
- 150-250 ug/m3
- 250-10,000 ug/m3

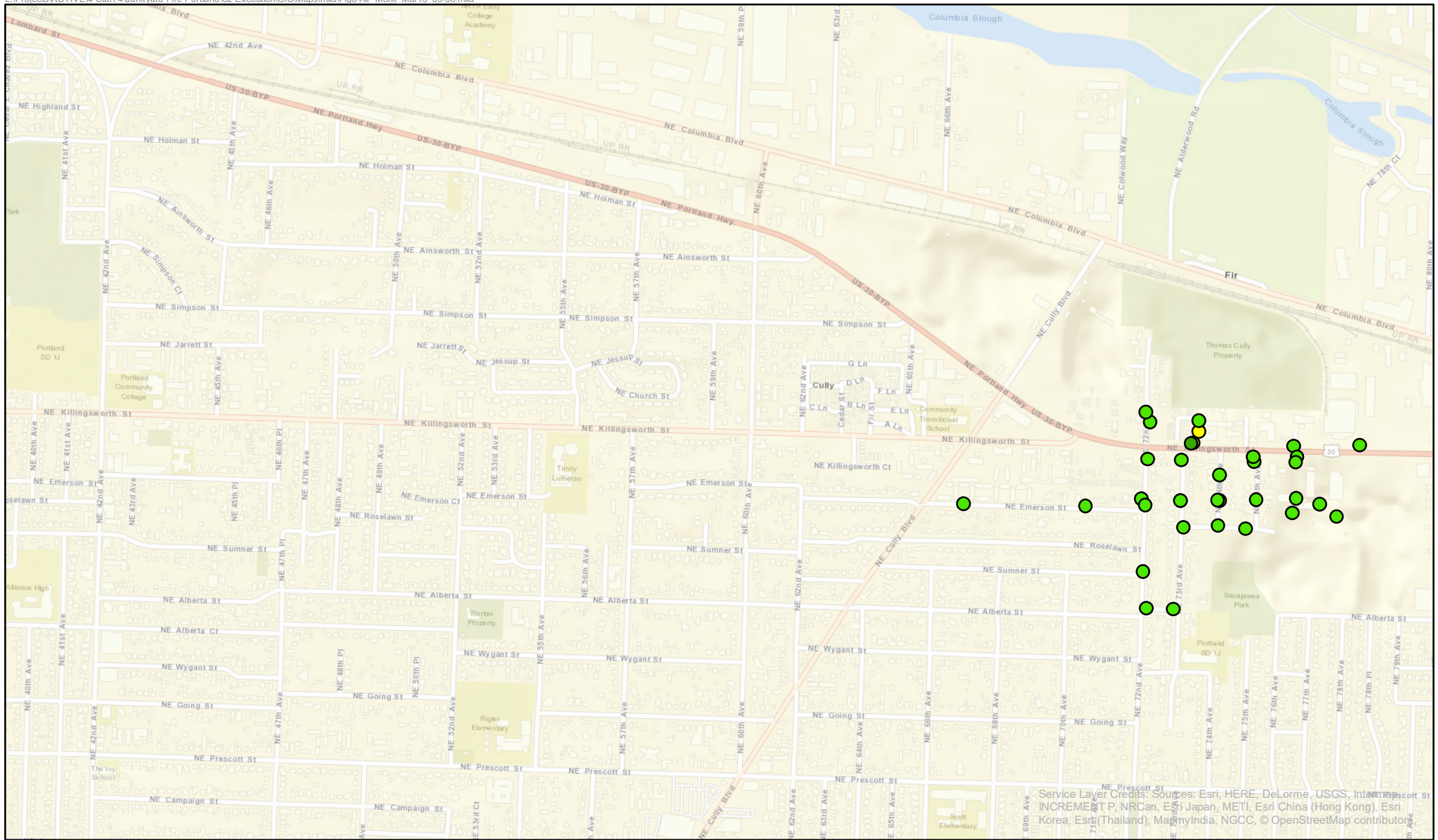
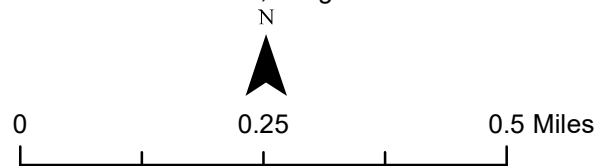


FIGURE 8
ROVING AIR MONITORING
TIME PERIOD: MARCH 13, 2018
3:13 PM - 8:13 PM
Portland, Oregon



Date: 6/5/2018



Legend

March 13: 3:13-8:13

- 0 ug/m3
- 0-35 ug/m3
- 35-150 ug/m3
- 150-250 ug/m3
- 250-10,000 ug/m3

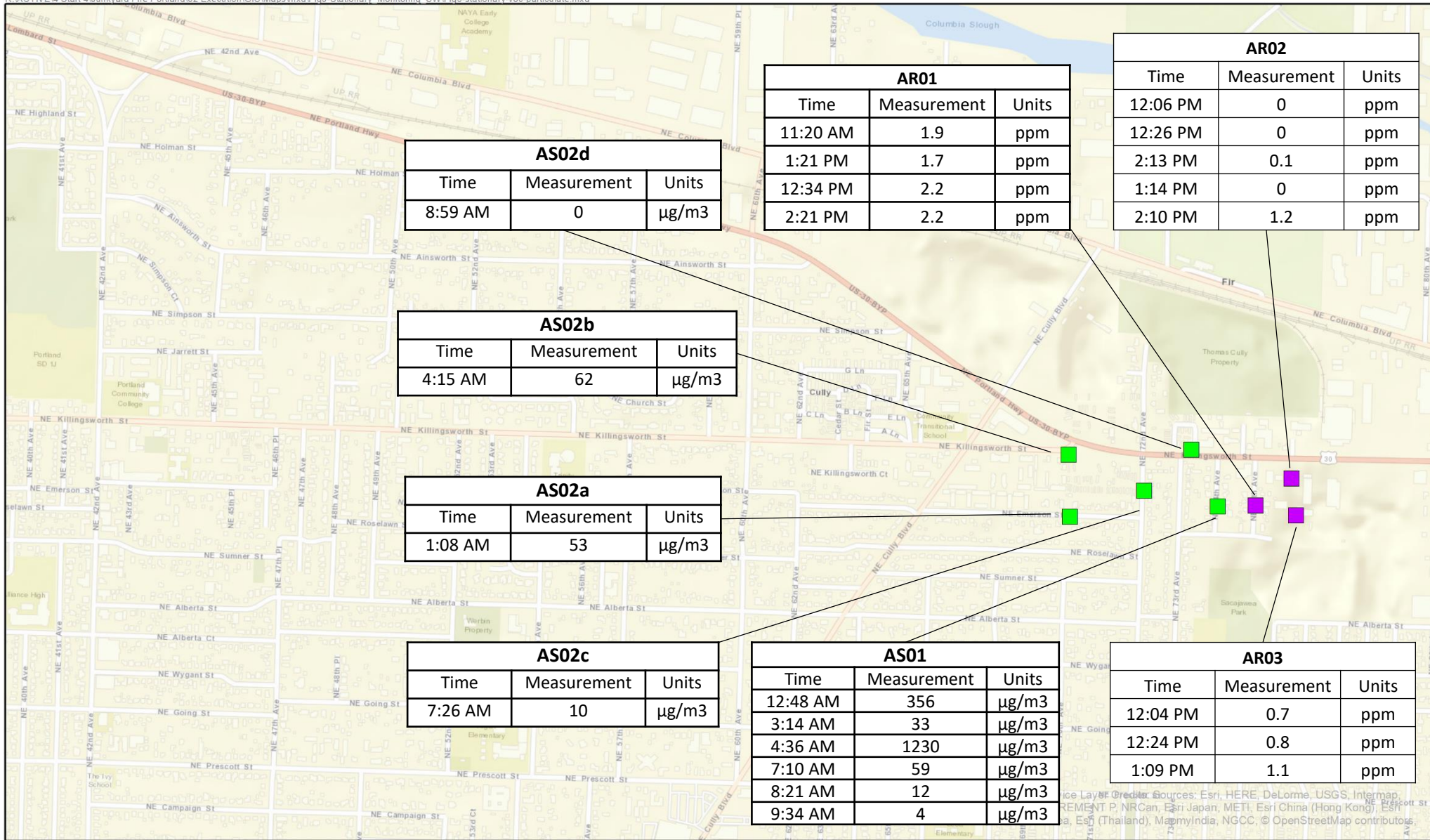


FIGURE 9
PARTICULATE TIME WEIGHTED AVERAGE
& VOC AIR MONITORING
MARCH 13, 2018
Portland, Oregon



Legend

- VOC Monitoring
- 1 Hour TWA Particulate Monitoring

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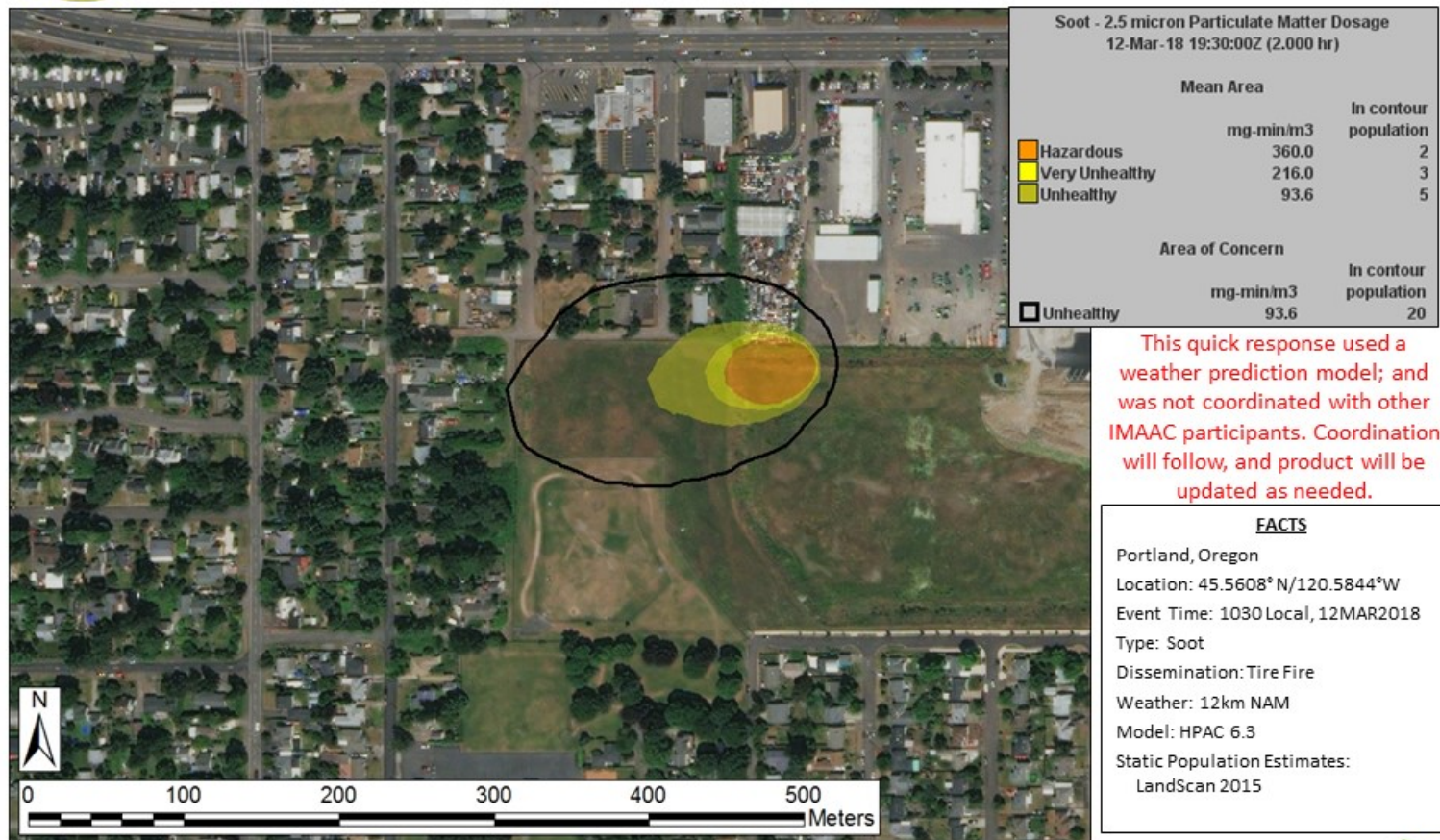
ATTACHMENT F: Plume Models

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Soot Surface Dosage – 1930 Z – Initial Response



This quick response used a weather prediction model; and was not coordinated with other IMAAC participants. Coordination will follow, and product will be updated as needed.

12MAR2018 2000Z

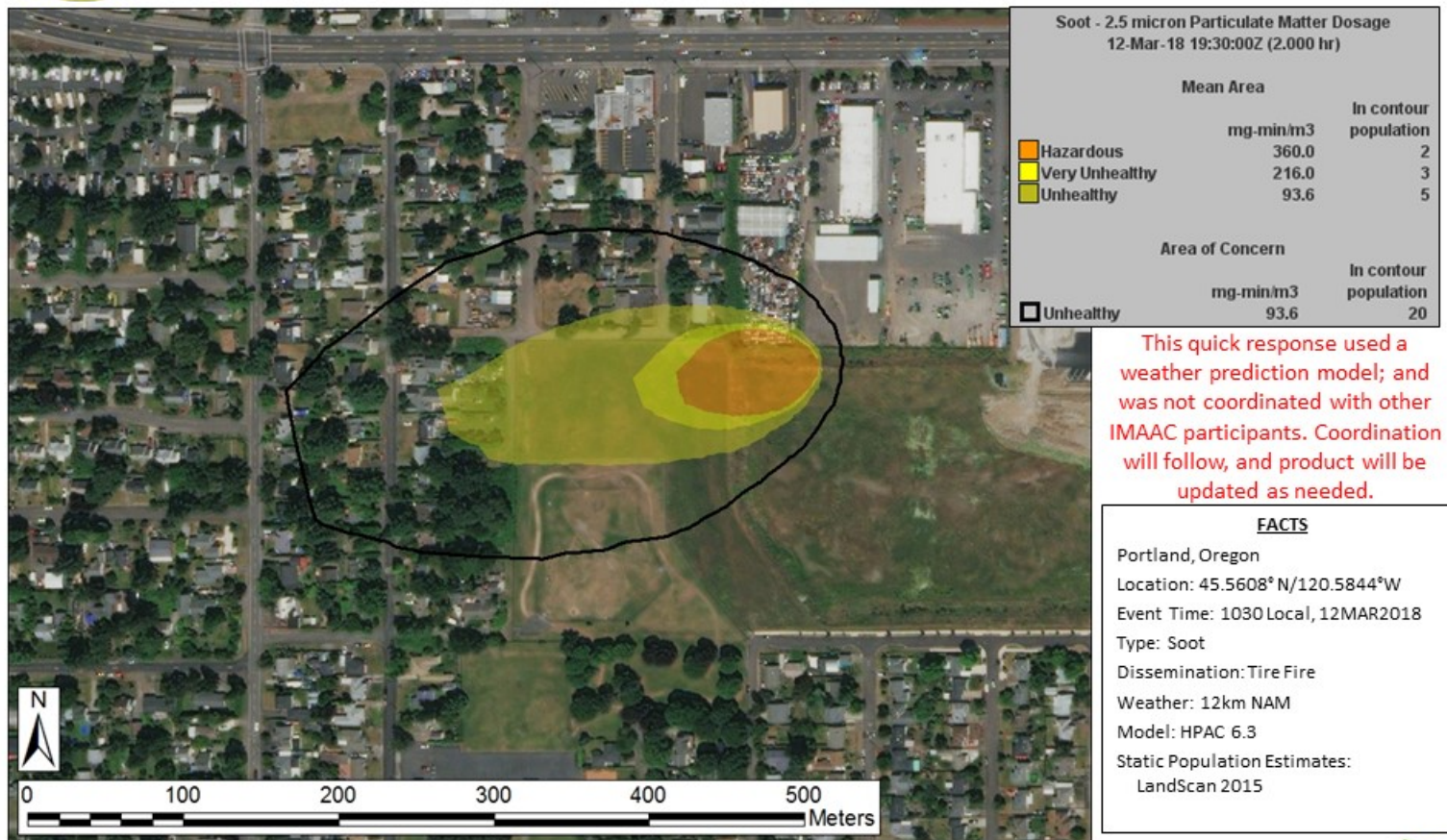
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Soot Surface Dosage – 2130 Z – Initial Response



This quick response used a weather prediction model; and was not coordinated with other IMAAC participants. Coordination will follow, and product will be updated as needed.

12MAR2018 2000Z

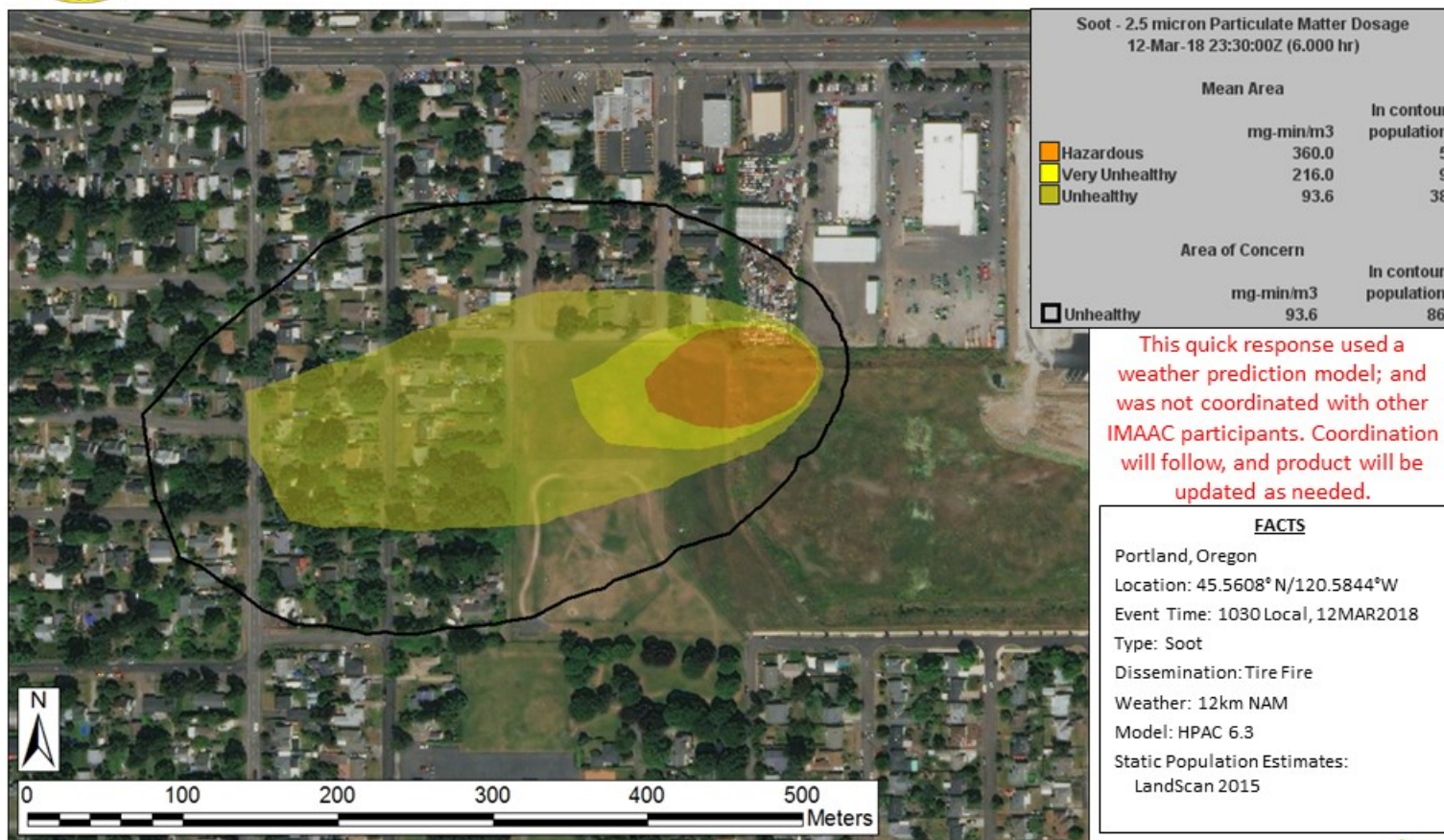
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Soot Surface Dosage – 2330 Z – Initial Response



This quick response used a weather prediction model; and was not coordinated with other IMAAC participants. Coordination will follow, and product will be updated as needed.

12MAR2018 2000Z

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10