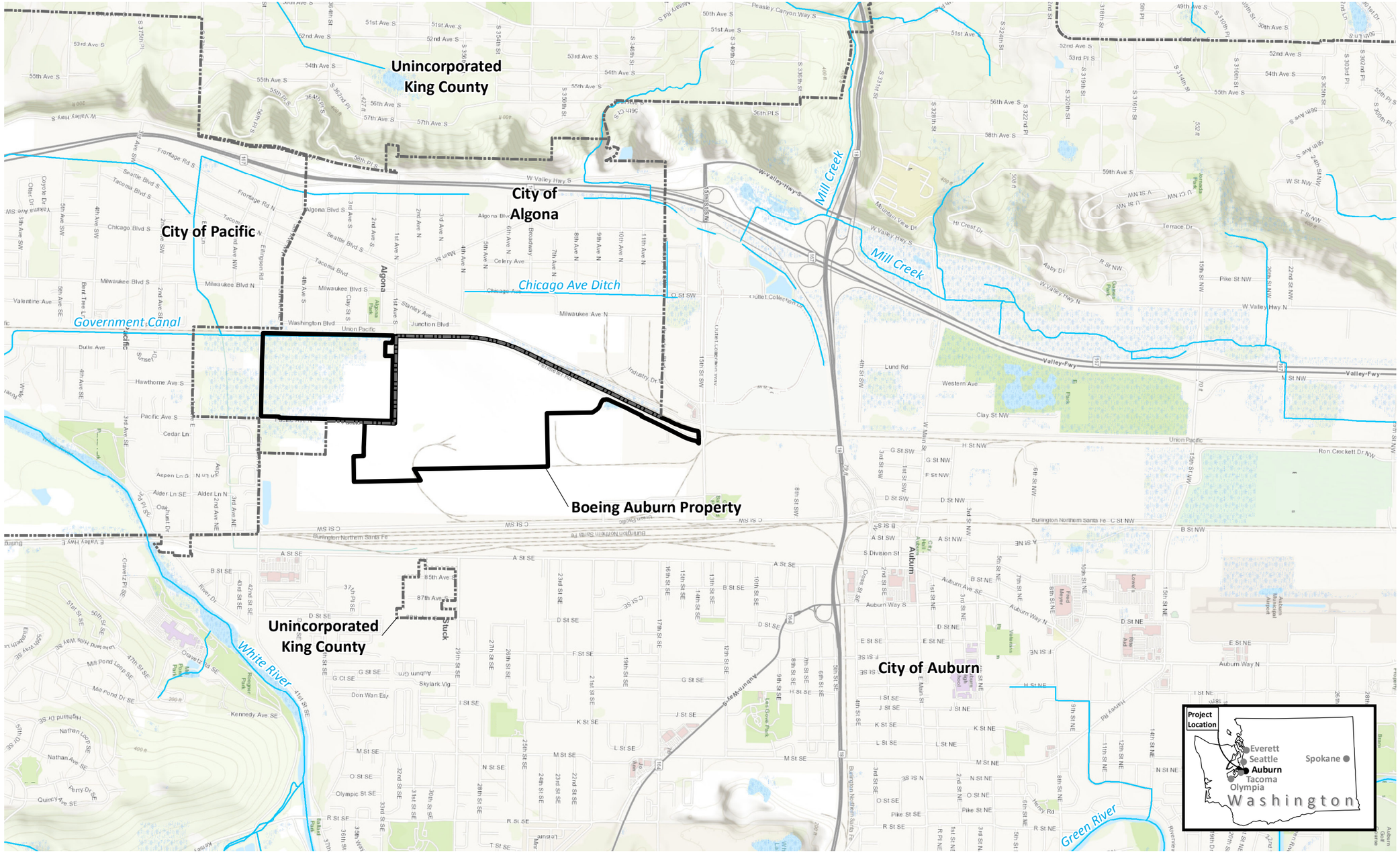

Legend

- Boeing Property
- City Limits
- Waterways
- Water Bodies
- Wetland Areas

Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

0 2,000 4,000

Scale in Feet

Data Source:Esri World Topo Map

Boeing Auburn Feasibility Study Auburn, Washington	**Vicinity Map**	Figure 1-1

LANDAU ASSOCIATES

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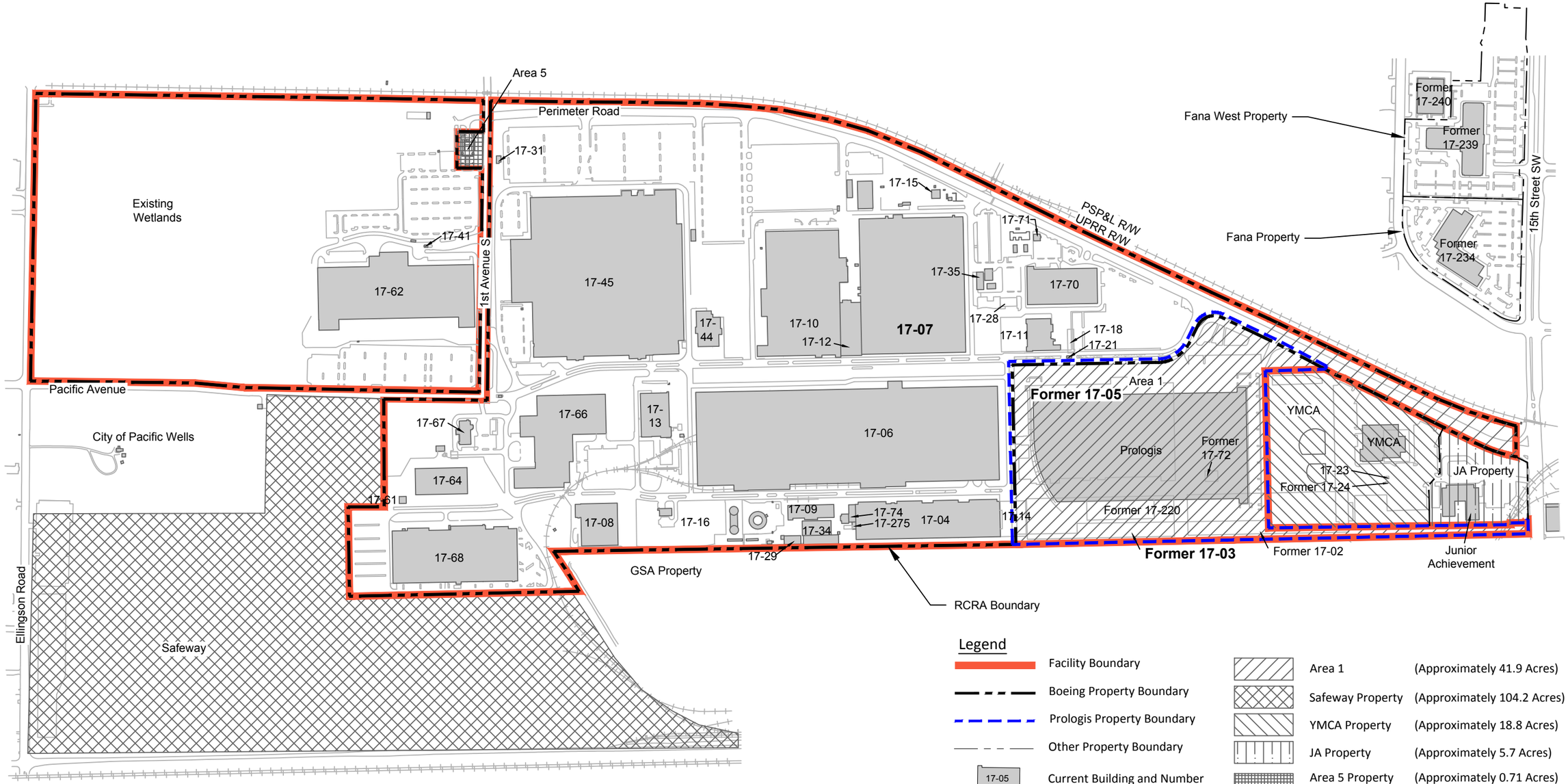

Legend

- Facility Boundary
- Boeing Property Boundary
- Prologis Property Boundary
- Other Property Boundary
- 17-05 Current Building and Number

Area 1	(Approximately 41.9 Acres)	
Safeway Property	(Approximately 104.2 Acres)	
YMCA Property	(Approximately 18.8 Acres)	
JA Property	(Approximately 5.7 Acres)	
Area 5 Property (PSE Property)	(Approximately 0.71 Acres)	

Notes

1. Former Building Numbers 17-234, 17-239 and 17-240 are currently owned by Fana.
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

N

0 600 1200

Scale in Feet

Base map source: Geomatrix 2003

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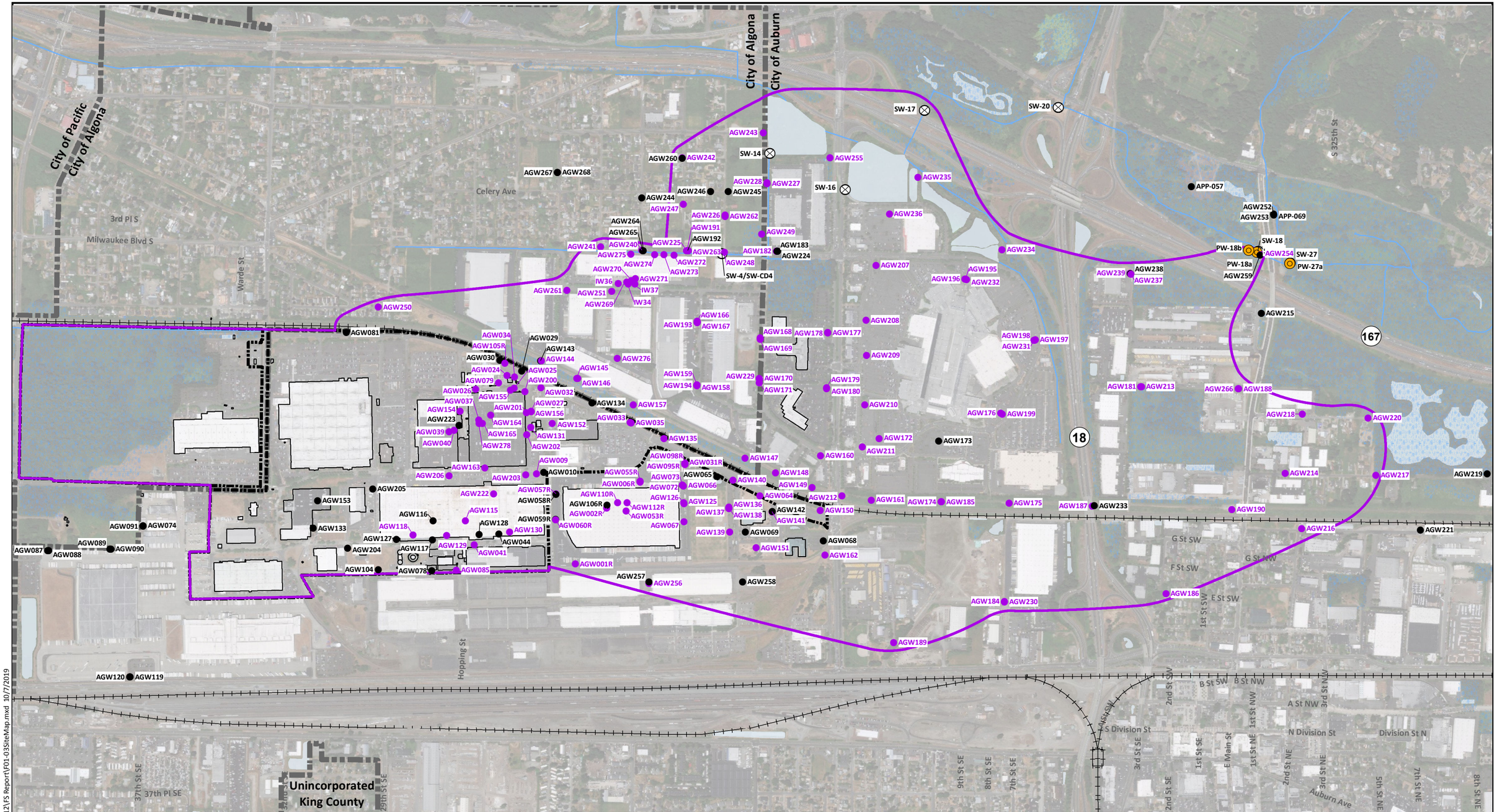
Boeing Auburn
Feasibility Study
Auburn, Washington

Facility Map

Figure
1-2

Boeing\Remedial Investigation Report | G:\Projects\025\164\170\112\FS Report\F01-02_F02-01 FacilityMap.dwg (A) "Figure 1-2" 10/7/2019



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Notes

1. Detections of chlorinated volatile organic compounds (CVOCs), trichloroethene (TCE), cis-1,2-Dichloroethene (cDCE), and vinyl chloride (VC) determined based on most recent data as of December 2018.
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Legend

- Well with no Detections of TCE, cDCE, or VC
- Well with Detections of TCE, cDCE, or VC
- Current Surface Water Sample Location
- Pore Water Sample Location
- City Limits
- Boeing Property
- Approximate Extent of Site (Including Facility and Monitoring Wells with Detections of CVOCs)
- Wetland Areas
- Water Bodies
- Waterways

N

0 1,000 2,000

Scale in Feet

Base Map Source: Geometrix 2003; Parcel Data Source: King County 2015; Aerial Photo Source: Esri World Imagery.

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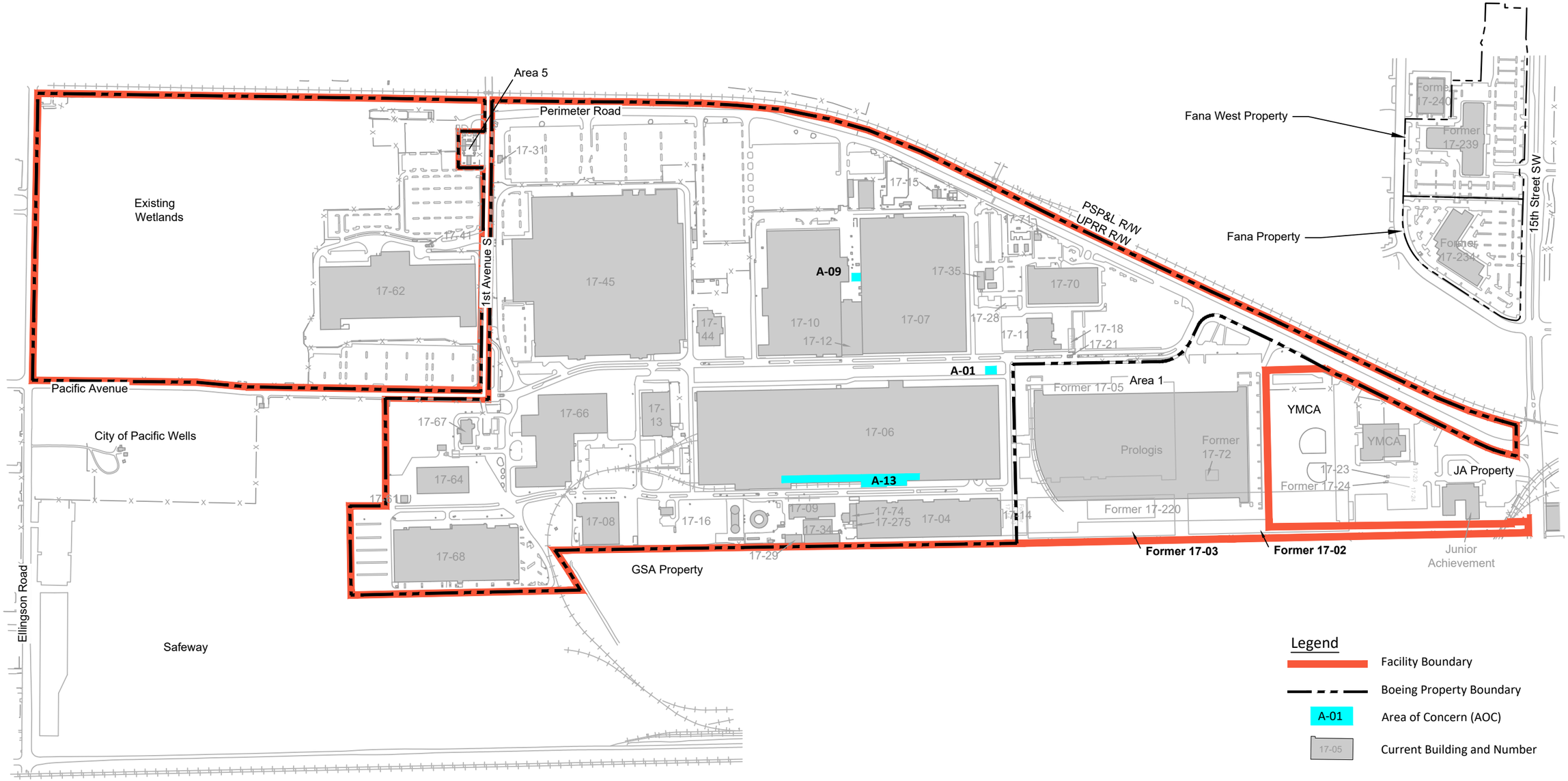
Boeing Auburn Feasibility Study Auburn, Washington	**Site Map**	Figure 1-3



Legend

- Facility Boundary
- Boeing Property Boundary
- A-01 — Area of Concern (AOC)
- 17-05 — Current Building and Number

Notes

1. Former Building Numbers 17-234, 17-239 and 17-240 are currently owned by Fana.
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

N

0 600 1200

Scale in Feet

Base map source: Geomatrix 2003

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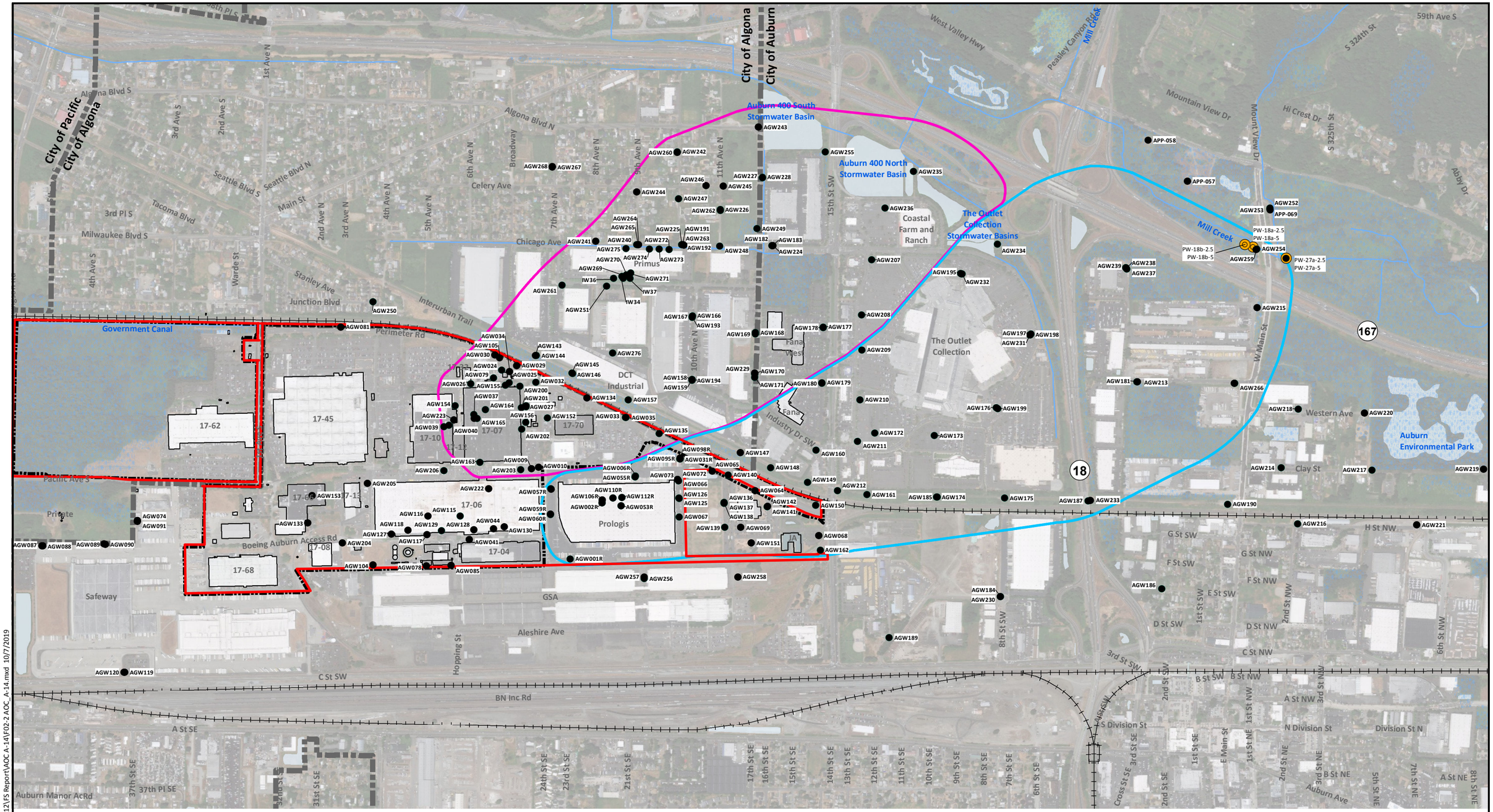
Boeing Auburn
Feasibility Study
Auburn, Washington

Facility Areas of Concern Carried Forward to the Feasibility Study

Figure 2-1



Notes

1. The current monitoring well network is shown.
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Legend

- Monitoring Well
- Pore Water Sample Location
- Area 1 Plume
- Western Plume
- City Limits
- Facility Boundary
- Boeing Property
- Wetland Areas
- Water Bodies
- Waterways

0 1,000 2,000

Scale in Feet

N

Base map source: Geometrix 2003; Aerial Photo Source: Esri World Imagery; Parcel Data Source: King County GIS 2012

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Boeing Auburn Feasibility Study Auburn, Washington	**Monitoring Well Network and Approximate Extent of Area 1 and Western Plumes**	Figure 2-2

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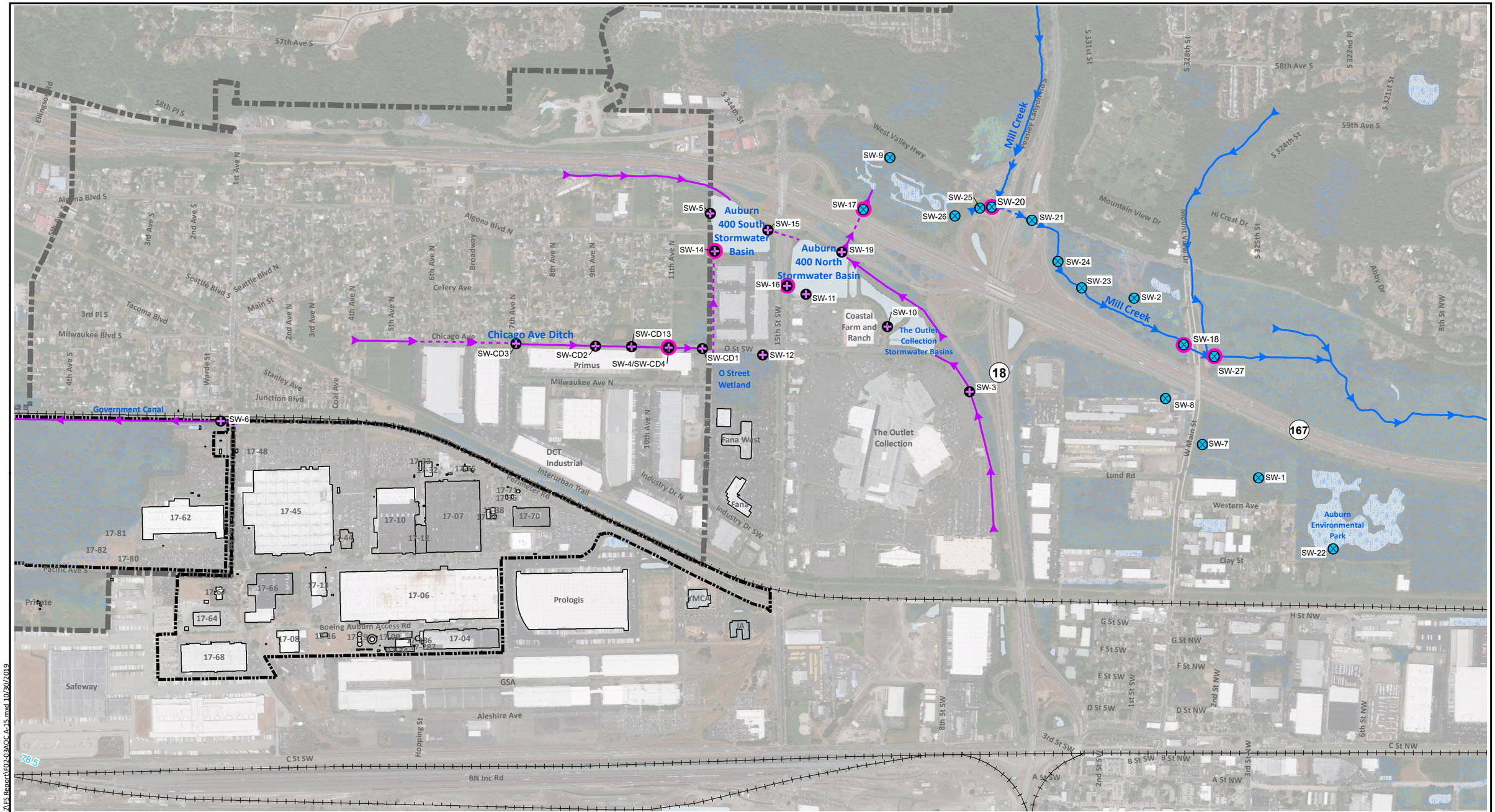

Legend

- Stormwater Sample Location
- Surface Water Sample Location
- Ongoing Sample Location
- Open Surface Water Channel
- Open Stormwater Ditch
- Piped Surface Water Conveyance
- Piped Stormwater Conveyance
- Wetland Areas
- Boeing Property
- City Limits

Notes

1. Surface water sampling locations are designated by SW.
2. The locations of stormwater/surface water features are approximate.
3. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

N

0 1,000 2,000

Scale in Feet

Base Map Source: Geometrix 2003; Parcel Data Source: King County 2015; Aerial Photo Source: Esri World Imagery.

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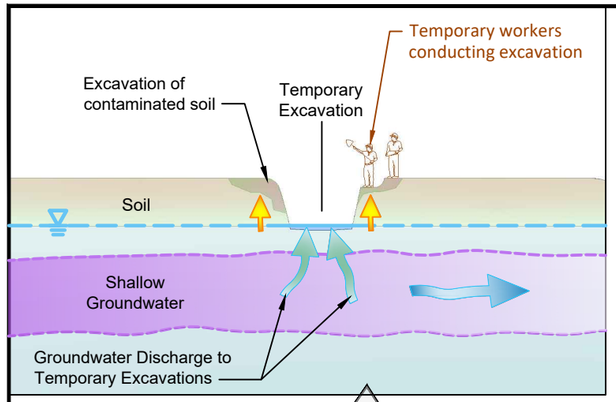
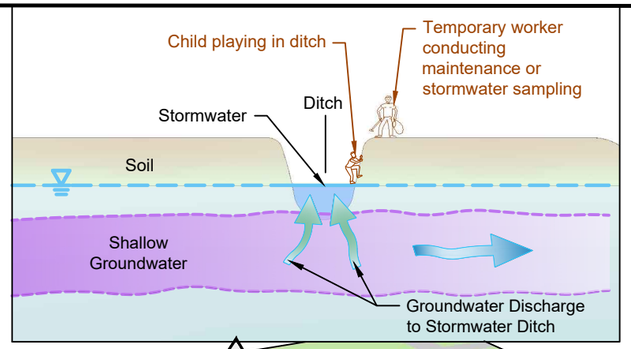
LANDAU ASSOCIATES

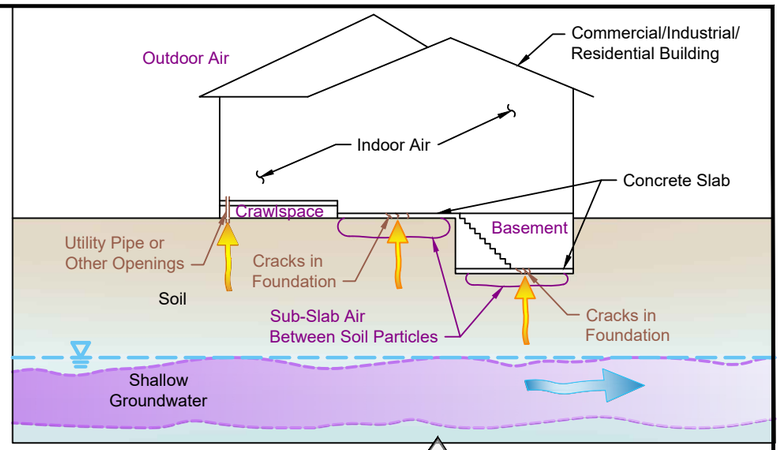
Boeing Auburn
Feasibility Study
Auburn, Washington

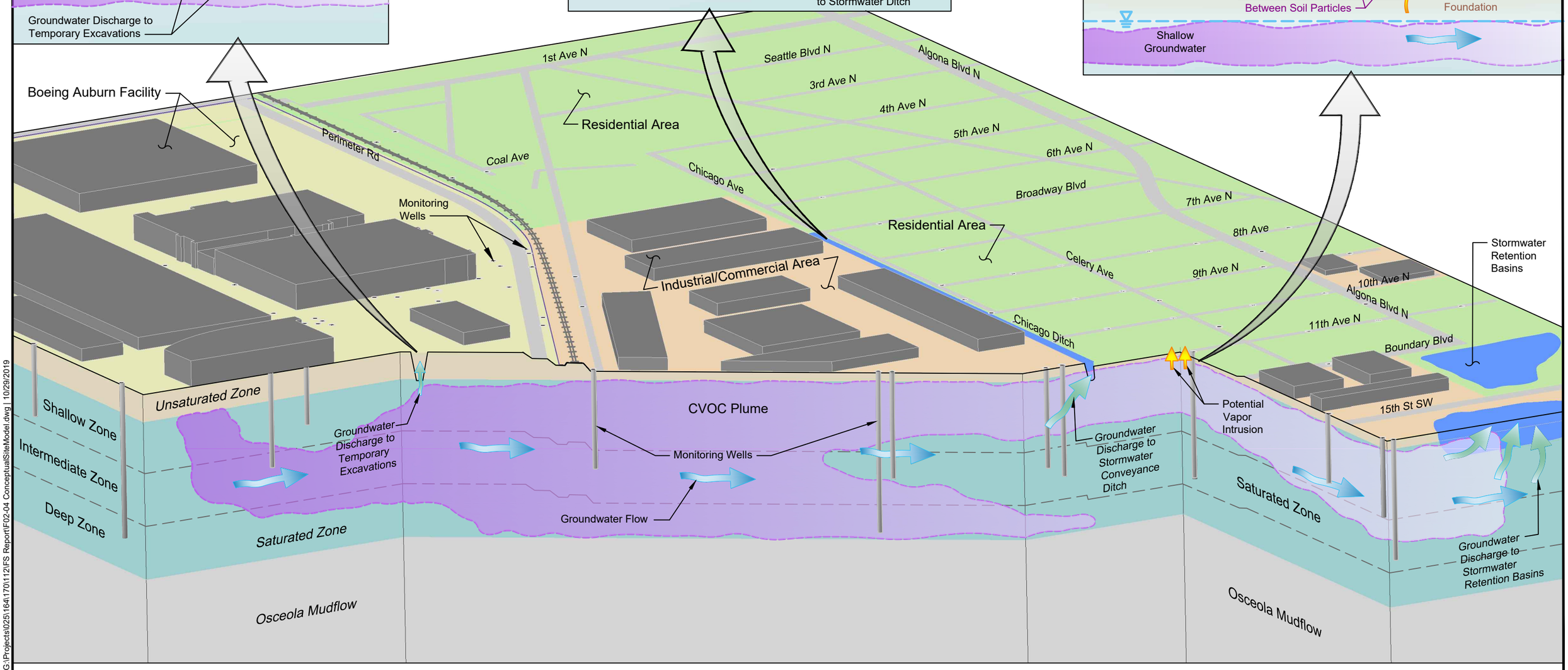
Stormwater and Surface Water Features

Figure
2-3









Legend

- Groundwater Flow
- Surface Water Discharge
- Potential Vapor Intrusion

Notes

1. Not to scale.
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

CVOC = chlorinated volatile organic compounds

N

Boeing Auburn Feasibility Study Auburn, Washington	**Conceptual Site Model**	Figure 2-4

LANDAU ASSOCIATES

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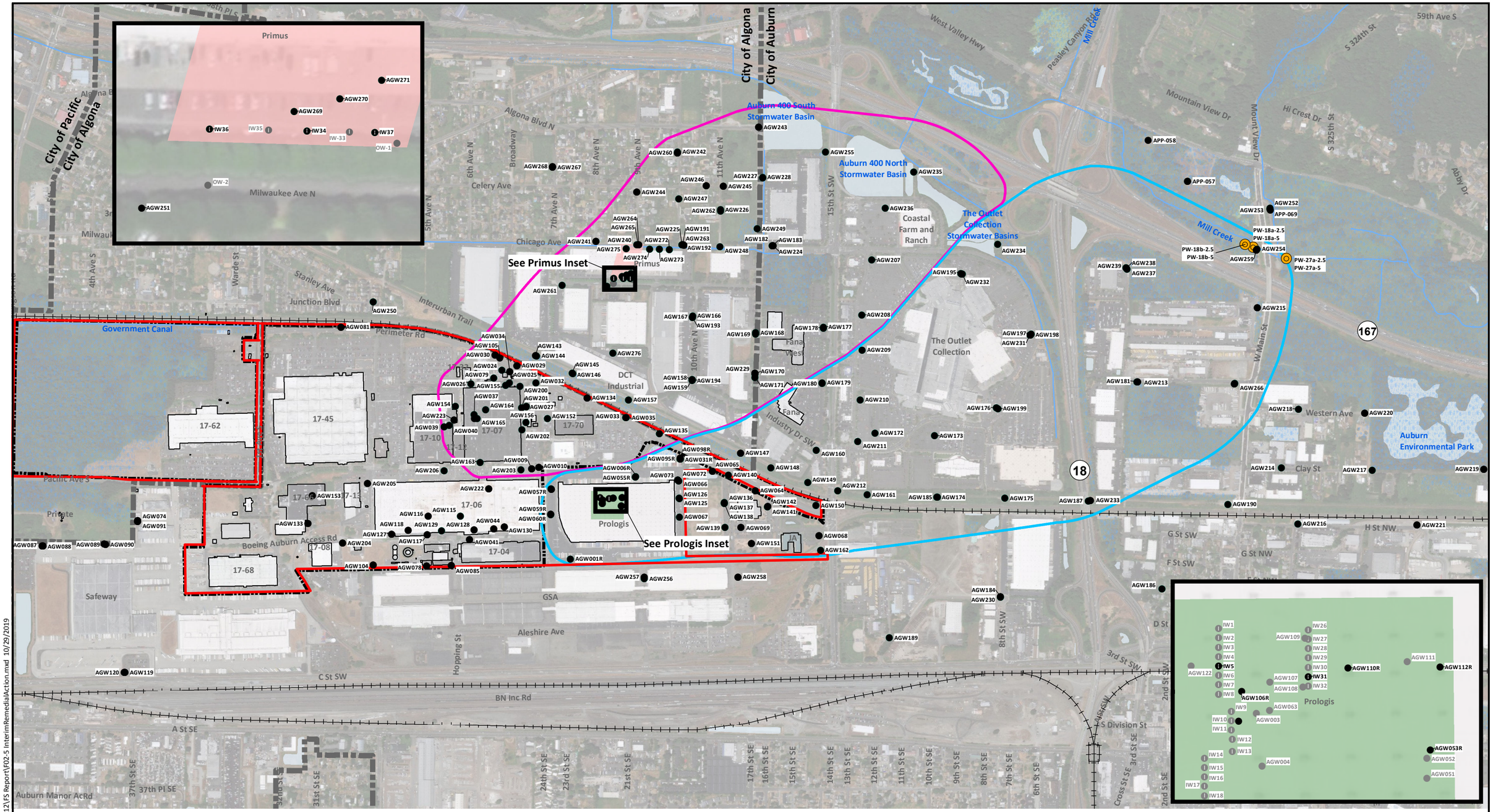

Notes

1. The current monitoring well network is shown.
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Base map source: Geometrix 2003; Aerial Photo Source: Esri World Imagery; Parcel Data Source: King County GIS 2012

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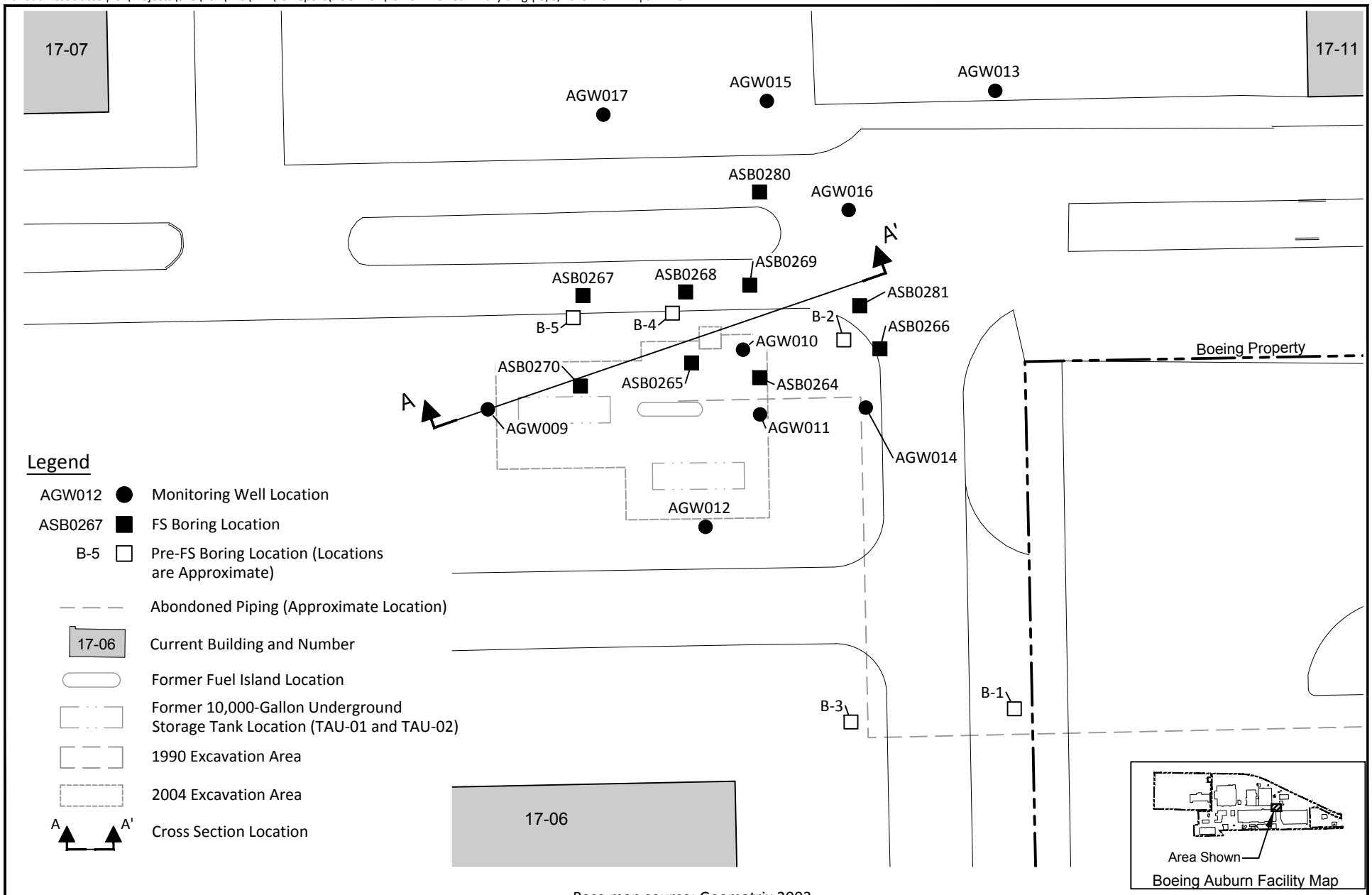
LANDAU ASSOCIATES

Boeing Auburn Feasibility Study Auburn, Washington	**Locations of Interim Remedial Action and Enhanced *In Situ* Bioremediation Pilot Test**	Figure 2-5



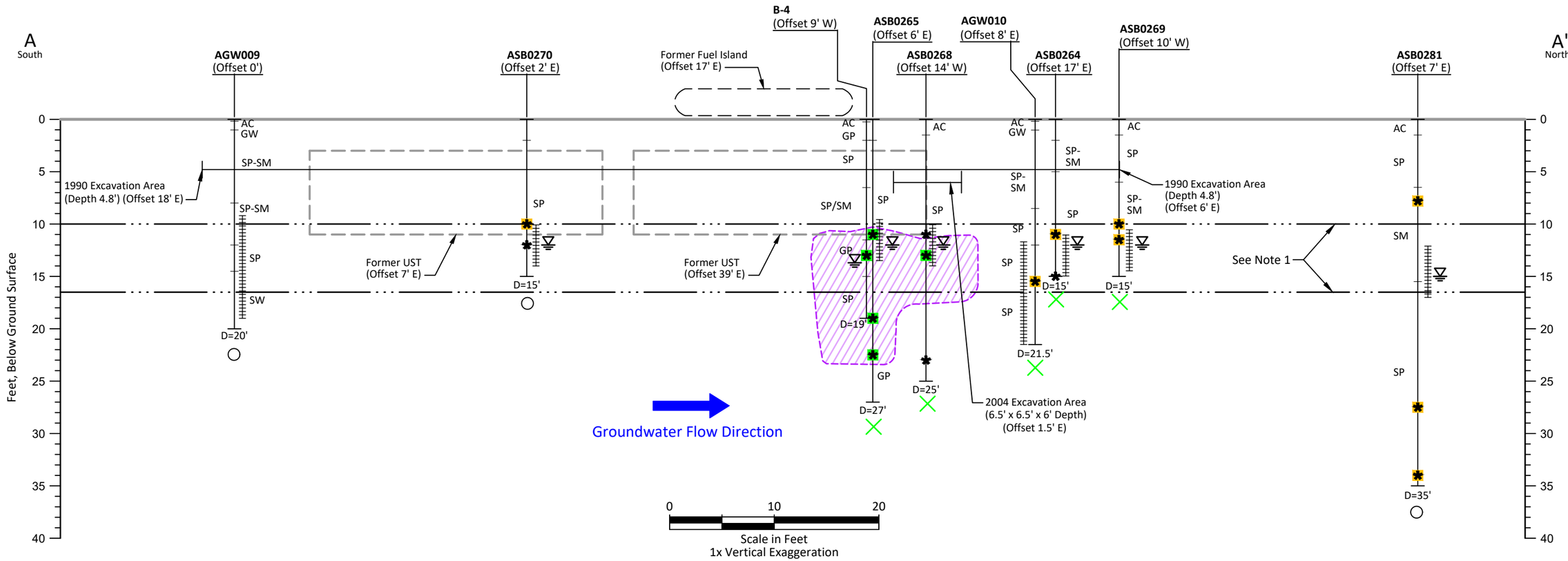
Base map source: Geomatrix 2003

LANDAU ASSOCIATES

Boeing Auburn
Feasibility Study
Auburn, Washington

AOC A-01: Building 17-06 Former Underground Storage Tanks (TAU-01 and TAU-02) Exploration Summary

Figure
4-1



Legend

- **ASB0281** (offset: 7' E) — Exploration Designation
- Top of Exploration
- = Soil sample (Analytes = Not detected)
- = Soil sample (Analytes = Detected, below pCULs)
- = Soil sample (Analytes = Detected, above pCULs)
- SM — Unified Soil Classification Symbol (USCS)
- Water Level (At Time of Drilling)
- Screen Interval
- D=35' — Depth of Exploration (feet)
- = Analytes not detected in groundwater
- = Analytes detected below pCULs in groundwater
- = Analytes detected above pCULs in groundwater
- = Analytes detected above pCULs in soil

AOC A-01	Groundwater pCUL (µg/L)	Soil pCUL (mg/kg)
Benzene	5	2,400
Ethylbenzene	700	5.9
Toluene	640	280,000
Total Xylenes	1,600	14
GRO (a)	800/1,000	30/100
DRO	500	2,000

(a) Lower pCUL is used if benzene is detected; higher pCUL is used if benzene is not detected.

USCS Soil Legend

AC = asphalt/concrete pavement
GP = poorly graded gravel; gravel/sand mixture(s); little or no fines
GW = well-graded gravel; gravel/sand mixture(s); little or no fines
SM = silty sand; sand/silt mixture(s)
SP = poorly graded sand; gravelly sand; little or no fines
SW = well-graded sand; gravelly sand; little or no fines

Acronyms / Abbreviations

AOC = area of concern
DRO = diesel-range organics
GRO = gasoline-range organics
mg/kg = milligrams per kilogram
pCUL = proposed cleanup level
µg/L = micrograms per liter
UST = underground storage tank

Notes

1. Lines indicated show the maximum and minimum water level elevation measured from AGW009 or AGW010 from December 2003 to December 2018.
2. B-4, AGW009, and AGW010 were completed August 1991, and borings in the "ASB" series were completed June or August 2017.
3. Green, orange, and black symbols beneath monitoring wells reflect the most recent data.
4. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

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Boeing Auburn
Feasibility Study
Auburn, Washington

AOC A-01: Building 17-06 Former Underground Storage Tanks (TAU-01 and TAU-02) Exploration Cross-Section

Figure 4-2

Legend

- AGW012 ● Monitoring Well Location
- ASB0267 ■ FS Boring Location
- B-5 □ Pre-FS Boring Location (Locations are Approximate)

No highlighting = No detection
Orange = Detection below pCUL
Green = Exceedance of pCUL

- Abondoned Piping (Approximate Location)
- 17-06 Current Building and Number
- Former Fuel Island Location
- Former 10,000-Gallon Underground Storage Tank Location
- 1990 Excavation Area
- 2004 Excavation Area

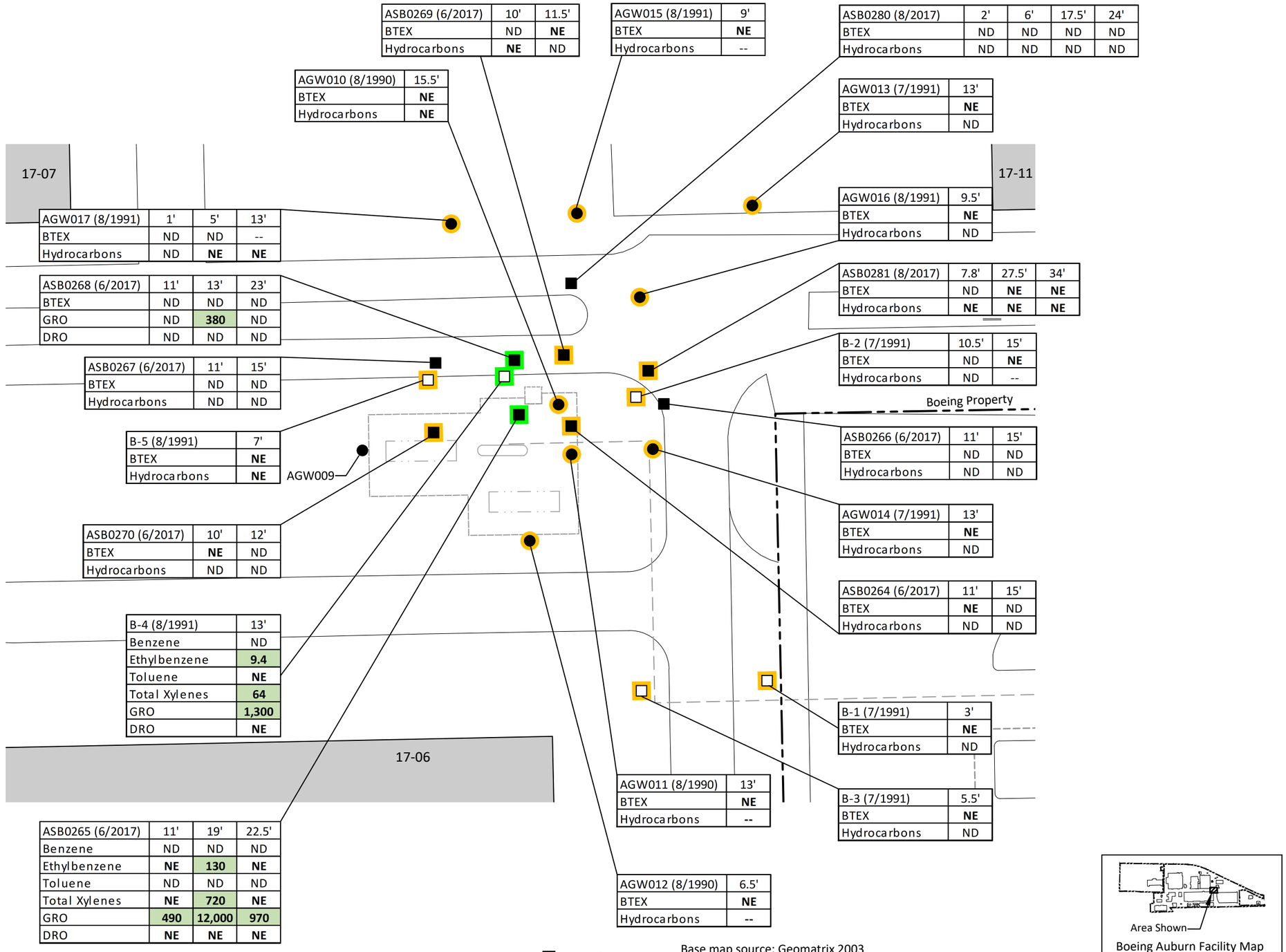
AOC A-01	Soil pCUL (mg/kg)
Benzene	2,400
Ethylbenzene	5.9
Toluene	280,000
Total Xylenes	14
GRO (a)	30/100
DRO	2,000

(a) 30 mg/kg is used if benzene is detected;
100 mg/kg is used if benzene is not detected

Notes

1. All analytes are shown in milligrams per kilogram (mg/kg).
2. In the data boxes: **Bold** text indicates detected analyte. Green shading indicates exceedance of proposed cleanup level (pCUL).
3. Hydrocarbons for Area of Concern (AOC) A-09 include GRO (gasoline-range organics) and DRO (diesel-range organics) only. ORO (oil-range organics) is not included because it does not exceed pCULs at any location.
4. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

-- = not analyzed
BTEX = benzene, toluene, ethylbenzene, total xylenes
ND = non-detect, the analyte was analyzed for, but was not detected
NE = no exceedance, one or more analytes were detected but do not exceed pCULs



Base map source: Geomatrix 2003

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LANDAU ASSOCIATES

Boeing Auburn
Feasibility Study
Auburn, Washington

AOC A-01: Building 17-06 Former Underground Storage Tanks (TAU-01 and TAU-02) Soil Results

Figure 4-3

Legend

AGW012 ● Monitoring Well Location

ASB0267 ■ FS Boring Location

B-5 □ Pre-FS Boring Location (Locations are Approximate)

No highlighting = No detection
Orange = Detection below groundwater pCUL
Green = Exceedance of groundwater pCUL

Abandoned Piping (Location is Approximate)

17-06 Current Building and Number

Former Fuel Island Location

Former 10,000-Gallon Underground Storage Tank Location

1990 Excavation Area

2004 Excavation Area

AOC A-01	Groundwater pCUL (µg/L)
Benzene	5
Ethylbenzene	700
Toluene	640
Total Xylenes	1,600
GRO (a)	800/1,000
DRO	500

(a) 800 µg/L is used if benzene is detected; 1,000 µg/L is used if benzene is not detected.

Notes

1. All analytes are shown in micrograms per liter (µg/L).
2. For monitoring wells, the most recent data are shown.
3. All monitoring wells on this figure are screened across the water table.
4. In the data boxes: **Bold** text indicates detected analyte. Green shading indicates exceedance of proposed cleanup level (pCUL).
5. Hydrocarbons for Area of Concern (AOC) A-09 include GRO (gasoline-range organics) and DRO (diesel-range organics) only. ORO (oil-range organics) is not included because it does not exceed pCULs at any location.
6. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

BTEX = benzene, toluene, ethylbenzene, total xylenes
ND = non-detect, the analyte was analyzed for, but was not detected
NE = no exceedance, one or more analytes were detected but do not exceed pCULs

AGW015	Most Recent	Date
BTEX	ND	9/2017
GRO	ND	9/2017
DRO	**NE**	9/2017

AGW013	Most Recent	Date
BTEX	ND	12/2004
Hydrocarbons	ND	12/2004

AGW017	Most Recent	Date
BTEX	ND	6/2009
Hydrocarbons	ND	12/2004

AGW016	Most Recent	Date
BTEX	ND	6/2017
Hydrocarbons	ND	6/2017

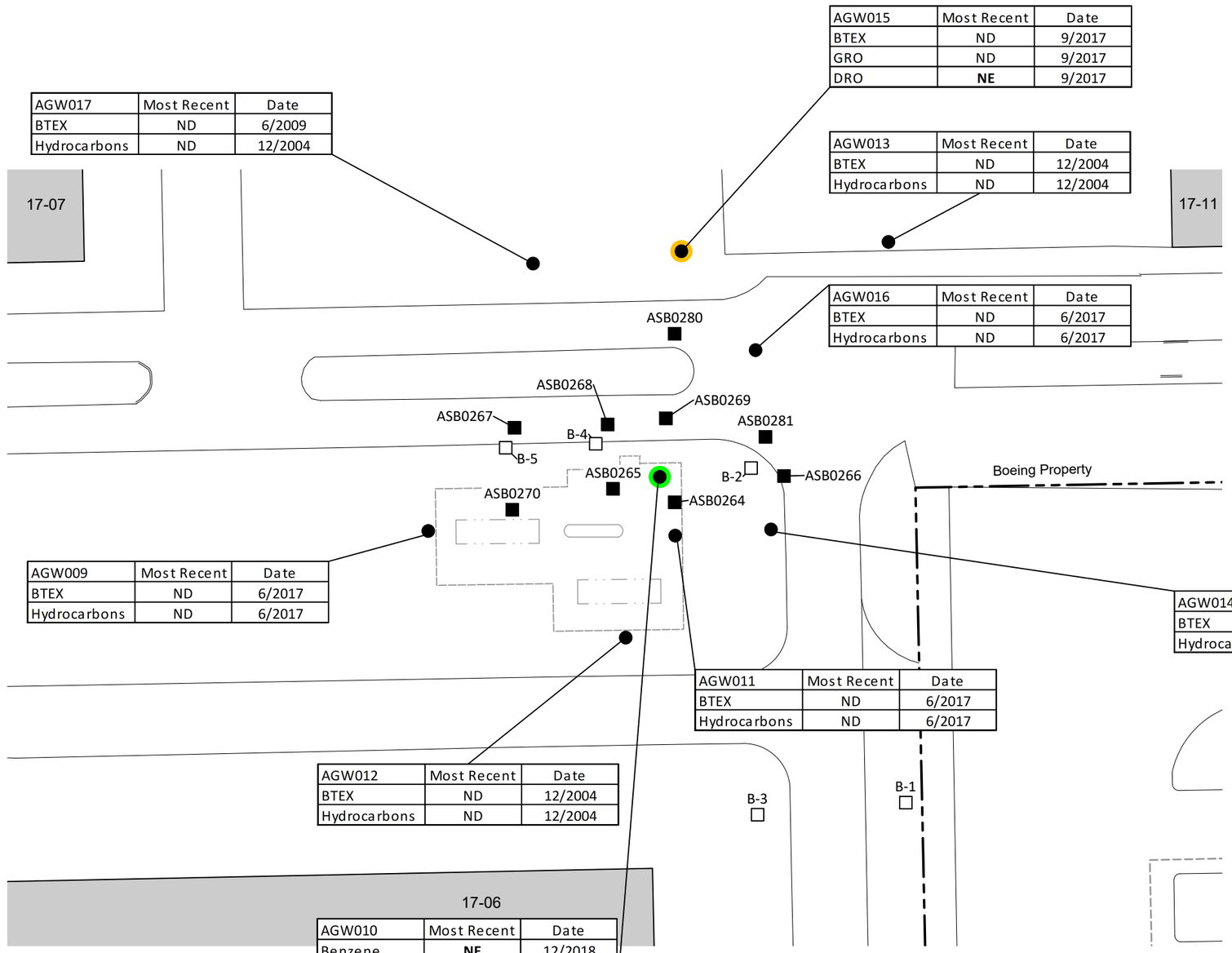
AGW009	Most Recent	Date
BTEX	ND	6/2017
Hydrocarbons	ND	6/2017

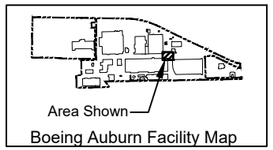
AGW014	Most Recent	Date
BTEX	ND	6/2017
Hydrocarbons	ND	6/2017

AGW011	Most Recent	Date
BTEX	ND	6/2017
Hydrocarbons	ND	6/2017

AGW012	Most Recent	Date
BTEX	ND	12/2004
Hydrocarbons	ND	12/2004

AGW010	Most Recent	Date
Benzene	**NE**	12/2018
Ethylbenzene	**1,150**	12/2018
Toluene	**NE**	12/2018
Total Xylenes	**2,600**	12/2018
GRO	**41,500**	12/2018
DRO	**733**	12/2018





N

0 40 80

Scale in Feet

Base map source: Geomatrix 2003

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Boeing Auburn
Feasibility Study
Auburn, Washington

AOC A-01: Building 17-06 Former Underground Storage Tanks (TAU-01 and TAU-02) Groundwater Results

Figure 4-4

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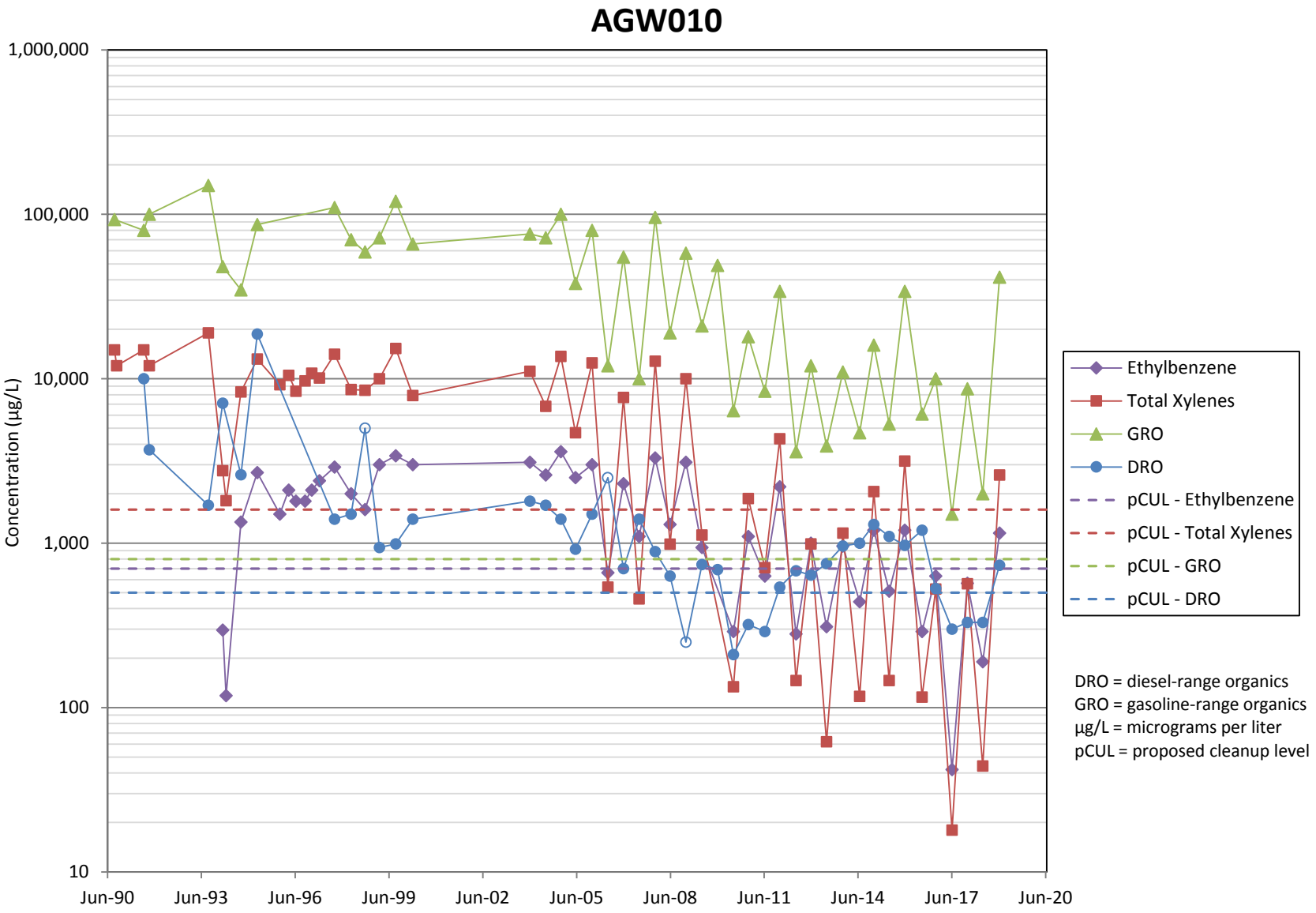

DRO = diesel-range organics
GRO = gasoline-range organics
µg/L = micrograms per liter
pCUL = proposed cleanup level

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Boeing Auburn
Feasibility Study
Auburn, Washington

AOC A-01: AGW010 Time Series Plot

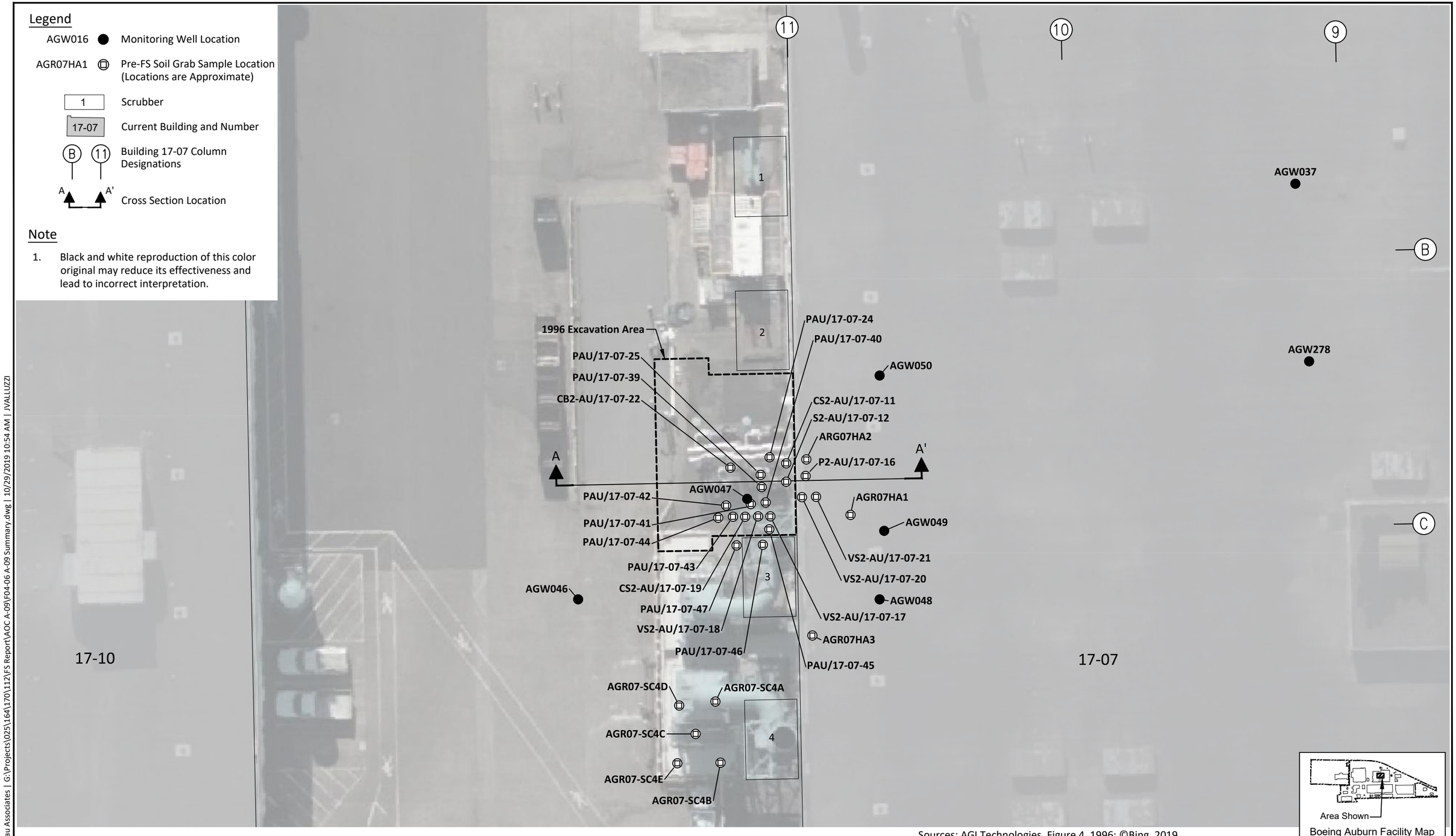
Figure
4-5

Legend

- AGW016 — Monitoring Well Location
- AGR07HA1 — Pre-FS Soil Grab Sample Location (Locations are Approximate)
- 1 — Scrubber
- 17-07 — Current Building and Number
- B 11 — Building 17-07 Column Designations
- A A' — Cross Section Location

Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.



N

0 20 40

Scale in Feet

Sources: AGI Technologies, Figure 4, 1996; ©Bing, 2019

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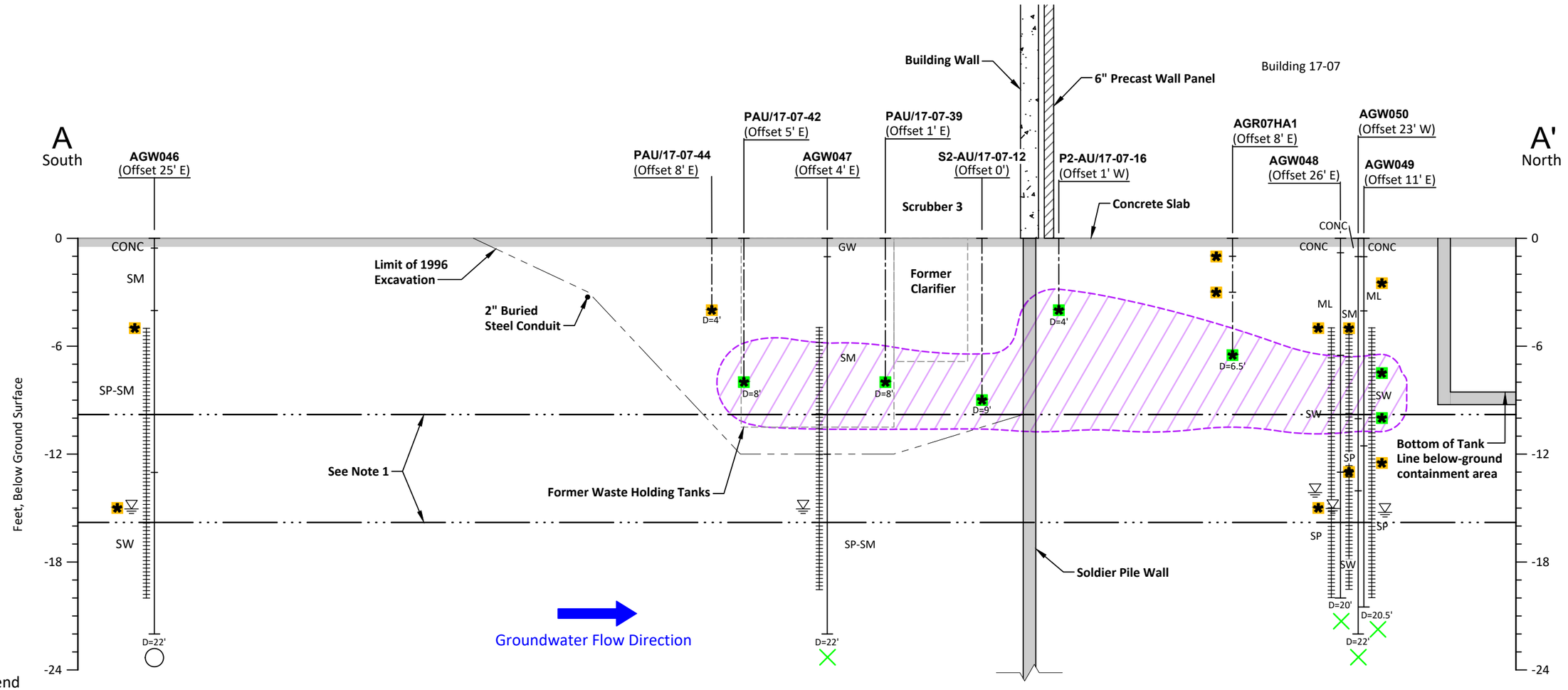
Boeing Auburn Feasibility Study Auburn, Washington	**AOC A-09: Building 17-07 Acid Scrubber Drain Line Leak Exploration Summary**	Figure 4-6



Legend

- **AGW046** (Offset: 25' E) — Exploration Designation
- Top of Exploration
- Grab Sample
- ✱ = Soil sample (Analytes = Not detected)
- ✱ = Soil sample (Analytes = Detected, below pCULs)
- ✱ = Soil sample (Analytes = Detected, above pCULs)
- SM — Unified Soil Classification Symbol (USCS)
- Water Level (At Time of Drilling)
- Screen Interval / Sampling Interval
- D=4' — Depth of Exploration (feet)
- ○ = Analytes not detected in groundwater
- ┼ = Analytes detected below pCULs in groundwater
- ✕ = Analytes detected above pCULs in groundwater
- ▨ = Analytes detected above pCULs in soil

AOC A-09	Groundwater pCUL (µg/L)	Soil pCUL (mg/kg)
Cadmium	5.0	0.69
Copper	640	280
Cyanide	10	2,200

USCS Soil Legend

Conc = Concrete
GW = Well-graded gravel; gravel/sand mixture(s); little or no fines
ML = Silt
SM = Silty sand; sand/silt mixture(s)
SP = Poorly graded sand; gravelly sand; little or no fines
SW = Well-graded sand; gravelly sand; little or no fines

Acronyms / Abbreviations

AOC = area of concern
mg/kg = milligrams per kilogram
pCUL = proposed cleanup level
µg/L = micrograms per liter

Notes

1. Lines indicated show the maximum and minimum water level elevation measured from AGW047-AGW050 from August 2004 to December 2018.
2. All borings and wells shown on this figure were completed in July, August, and September 1996.
3. The limits of the 1996 excavation may not extend to 12 feet below ground surface at all locations. Soil samples shown were collected from soil remaining in place.
4. Green, orange, and black symbols beneath monitoring wells reflect the most recent data.
5. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

0 6 12
Scale in Feet
1x Vertical Exaggeration

LANDAU ASSOCIATES

Boeing Auburn
Feasibility Study
Auburn, Washington

AOC A-09: Building 17-07 Acid Scrubber Drain Line Leak Exploration Cross-Section

Figure 4-7

Legend

AGW016 ● Monitoring Well Location

AGR07HA1 ◎ Pre-FS Soil Grab Sample Location (Locations are Approximate)

No highlighting = No detection
Orange = Detection below pCUL
Green = Exceedance of pCUL

1 Scrubber

17-07 Current Building and Number

B 11 Building 17-07 Column Designations

AOC A-09	Soil pCUL (mg/kg)
Cadmium	1
Copper	280

Notes

1. All analytes are shown in milligrams per kilogram (mg/kg).
2. Data are presented for locations where one or more analytes exceed the proposed cleanup level (pCUL).
3. In the data boxes: **Bold** text indicates detected analyte. Green shading indicates exceedance of pCUL.
4. Cyanide and nickel are not included as there are no exceedances of pCULs in soil at any location at Area of Concern (AOC) A-09.
5. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

ND = non-detect, the analyte was analyzed for, but was not detected
NE = no exceedance, one or more analytes were detected but do not exceed pCULs

PAU/17-07-25 (8/1996)	9.5'
Cadmium	**124**
Copper	**NE**

PAU/17-07-39 (8/1996)	8'
Cadmium	**163**
Copper	**NE**

PAU/17-07-40 (8/1996)	8'
Cadmium	**146**
Copper	**NE**

PAU/17-07-41 (8/1996)	9'
Cadmium	**84**
Copper	**NE**

PAU-17-07-42 (8/1996)	8'
Cadmium	**1.5**
Copper	**NE**

CS2-AU/17-07-19 (7/1996)	6'
Cadmium	**642**
Copper	**NE**

VS2-AU/17-07-18 (7/1996)	7'
Cadmium	**169**
Copper	**NE**

PAU/17-07-46 (8/1996)	7'
Cadmium	**15**
Copper	**NE**

S2-AU/17-07-12 (7/1996)	9'
Cadmium	**353**
Copper	**NE**

AGR07-HA2 (9/1996)	3.75'	6'
Cadmium	**NE**	ND
Copper	**NE**	**385**

P2-AU/17-07-16 (7/1996)	4'
Cadmium	**492**
Copper	**NE**

VS2-AU/17-07-21 (7/1996)	6'
Cadmium	**224**
Copper	**NE**

AGR07-HA1 (9/1996)	1'	3'	6.5'
Cadmium	ND	ND	**248**
Copper	**NE**	**NE**	**378**

AGW049 (9/1996)	2'	7.5'	10'	12.5'
Cadmium	ND	**37.8**	**NE**	ND
Copper	**NE**	**NE**	**619**	**NE**

VS2-AU/17-07-20 (7/1996)	6'
Cadmium	**77.9**
Copper	**NE**

PAU/17-07-45 (8/1996)	6.5'
Cadmium	**148**
Copper	**NE**

CS2-AU/17-07-11
PAU/17-07-24
CB2-AU/17-07-22
AGW047
PAU/17-07-44
1996 Excavation Area
PAU/17-07-43
AGW046
PAU/17-07-47
AGR07HA3
AGR07-SC4D
AGR07-SC4A
AGR07-SC4B
AGR07-SC4C
AGR07-SC4E
AGW050
AGW037
AGW278-1
AGW048
VS2-AU/17-07-17
17-07
17-10
1
2
3
4
11
10
9
B
C

Area Shown
Boeing Auburn Facility Map

N

0 20 40
Scale in Feet

Sources: AGI Technologies, Figure 4, 1996

Landau Associates | G:\Projects\025\164\170\112\FS Report\AOC A-09\F04-08 A-09 SoilDetections.dwg | 10/4/2019 4:41 PM | JVALLUZZI

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Boeing Auburn
Feasibility Study
Auburn, Washington

AOC A-09: Building 17-07 Acid Scrubber Drain Line Leak Soil Results

Figure 4-8

Legend

AGW016 ● Monitoring Well Location

AGR07HA1 ◎ Pre-FS Soil Grab Sample Location (Locations are Approximate)

No highlighting = No detection
Orange = Detection below groundwater pCULs
Green = Exceedance of groundwater pCULs

1 Scrubber

17-07 Current Building and Number

B 11 Building 17-07 Column Designations

AOC A-09	Groundwater pCUL (µg/L)
Cadmium	5.0
Copper	640
Free or Total Cyanide	10

Notes

1. All analytes are shown in micrograms per liter (µg/L).
2. The most recent data for each constituent is shown except cyanide which shows June 2018 results when both free and total cyanide were collected. Since the pCUL can be compared to either the free or total cyanide values, the most appropriate value was selected for each well.
3. All monitoring wells on this figure are screened in the shallow zone.
4. Groundwater samples collected from AGW278 were never analyzed for metals.
5. In the data boxes: **Bold** text indicates detected analyte. Green shading indicates exceedance of proposed cleanup level (pCUL).
6. Nickel is not included as there are no exceedances of the pCUL in groundwater at Area of Concern (AOC) A-09 during the most recent groundwater sampling event.
7. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

ND = non-detect, the analyte was analyzed for, but was not detected
NE = no exceedance, one or more analytes were detected but do not exceed pCULs

AGW037	Most Recent	Date
Cadmium	ND	12/2004
Copper	ND	12/2004
Total Cyanide	ND	6/2018

AGW050	Most Recent	Date
Cadmium	**10.7**	12/2018
Copper	**NE**	12/2004
Free Cyanide	**10.9**	6/2018

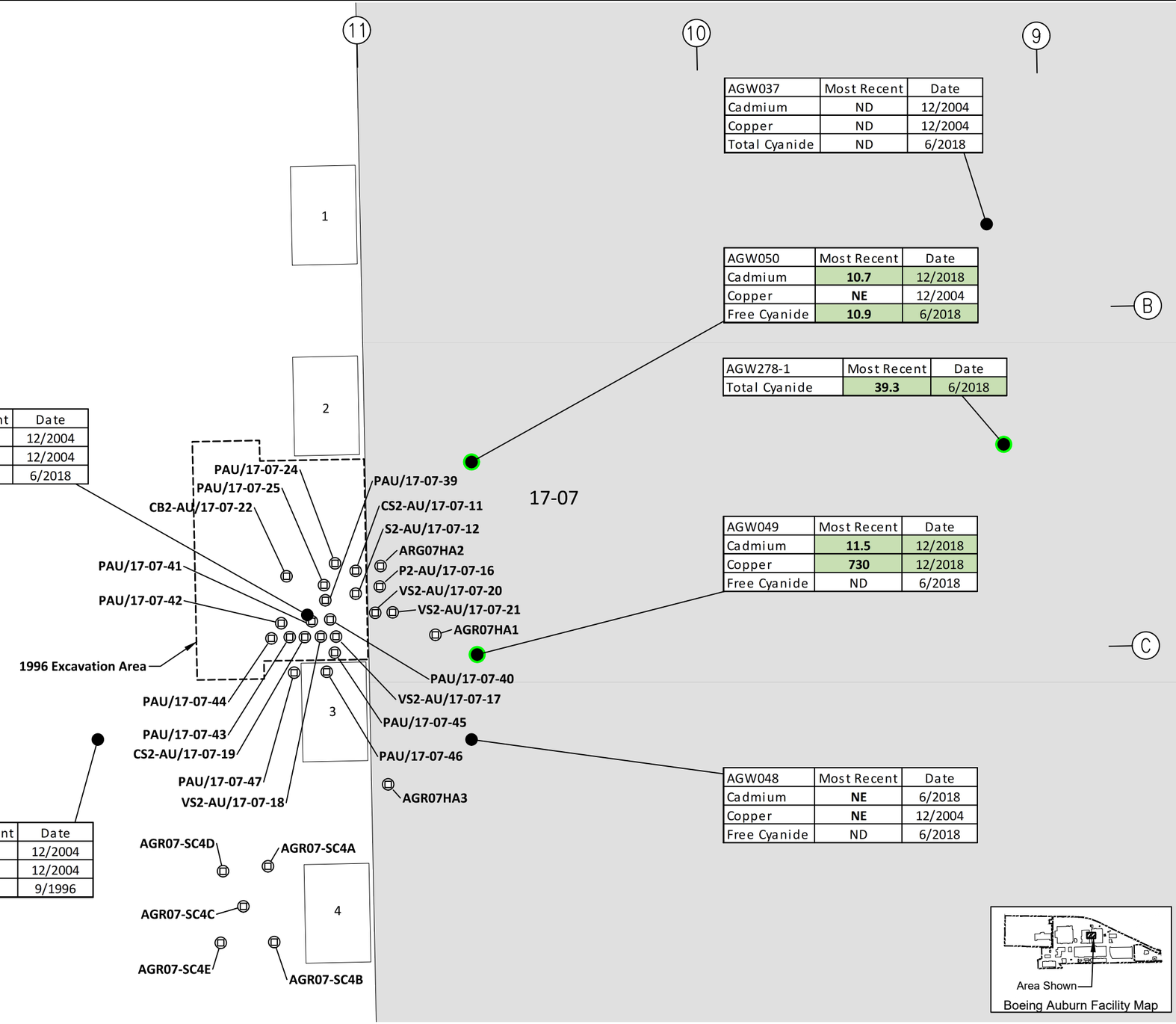
AGW278-1	Most Recent	Date
Total Cyanide	**39.3**	6/2018

AGW049	Most Recent	Date
Cadmium	**11.5**	12/2018
Copper	**730**	12/2018
Free Cyanide	ND	6/2018

AGW048	Most Recent	Date
Cadmium	**NE**	6/2018
Copper	**NE**	12/2004
Free Cyanide	ND	6/2018

AGW047	Most Recent	Date
Cadmium	ND	12/2004
Copper	**NE**	12/2004
Free Cyanide	ND	6/2018

AGW046	Most Recent	Date
Cadmium	ND	12/2004
Copper	ND	12/2004
Total Cyanide	ND	9/1996



Sources: AGI Technologies, Figure 4, 1996

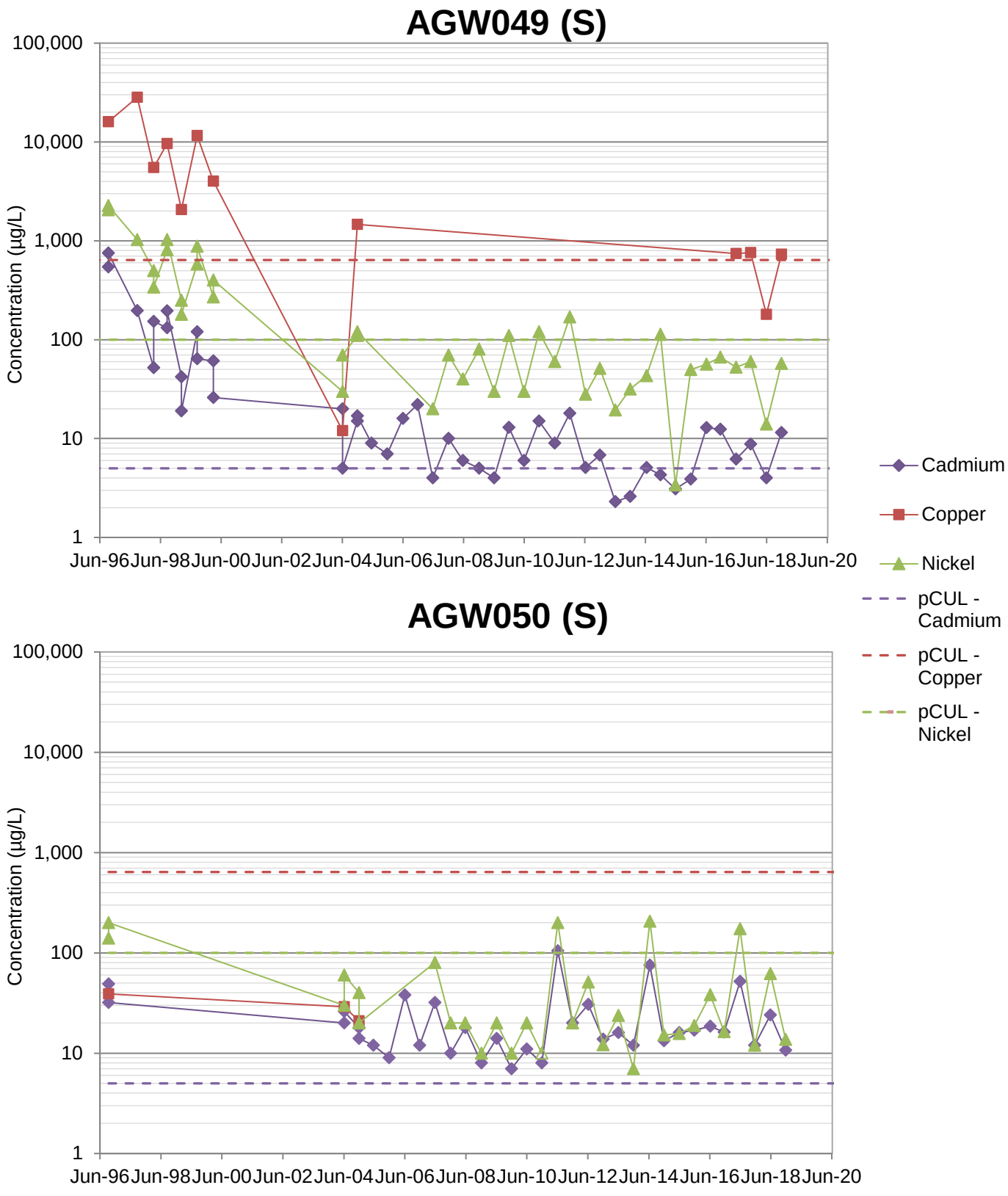
0 20 40
Scale in Feet

Landau Associates

Boeing Auburn
Feasibility Study
Auburn, Washington

AOC A-09: Building 17-07
Acid Scrubber Drain Line Leak
Groundwater Results

Figure 4-9



Open markers on plots denote non-detect values; values shown represent analytical reporting limit.
µg/L = micrograms per liter
pCUL = proposed cleanup level

10/30/19 Y:\025\164\R\FS\Figures\F0 4-10 TS Plot_needs PC review.docx

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Boeing Auburn Feasibility Study Auburn, Washington	**AOC A-09 Metals Concentrations Time Series Plots**	Figure 4-10

Legend

- AGW016 ● Feasibility Study (FS) Monitoring Well Location and Designation
- ASB0149 ■ FS Soil Boring Location and Designation
- ASB0149 ⊠ Abandoned Monitoring Well Location and Designation
- ASB0089 ○ Pre-FS Sample Boring Location and Designation (Locations are Approximate)
- Ⓢ Sump
- A-13 Area of Concern (AOC)
- 17-06 Current Building and Number
- Ⓓ Ⓖ Building 17-06 Column Designations

30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3

A B C D E

17-06

ASB0159

Aluminum Trench Conveyor System (Approximate Location)

AGW116 AGW115 AGW279 AGW280 ASB0287 ASB0271 ASB0288 ASB0286 AGW277 ASB0272 AGW282 ASB0289 AGW045A ASB0160R AGW281 AGW130 ASB0167 ASB0169 ASB0172 ASB0275 AGW044 ASB0030 ASB0171 AGW129 AGW118 A-13 ASB0274 ASB0031 ASB0029 AGW043 AGW128 S-15a Sump SAU06-12 ASB0168 ASB0024 AGW127 ASB0170 ASB0026 ASB0025 ASB0023 ASB0022 AGW117 AGW042 ASB0028 AGW041 ASB0027

17-09 17-74 17-275 17-04

Area Shown
Boeing Auburn Facility Map

N

0 120 240
Scale in Feet

Base map source: Geomatrix 2003

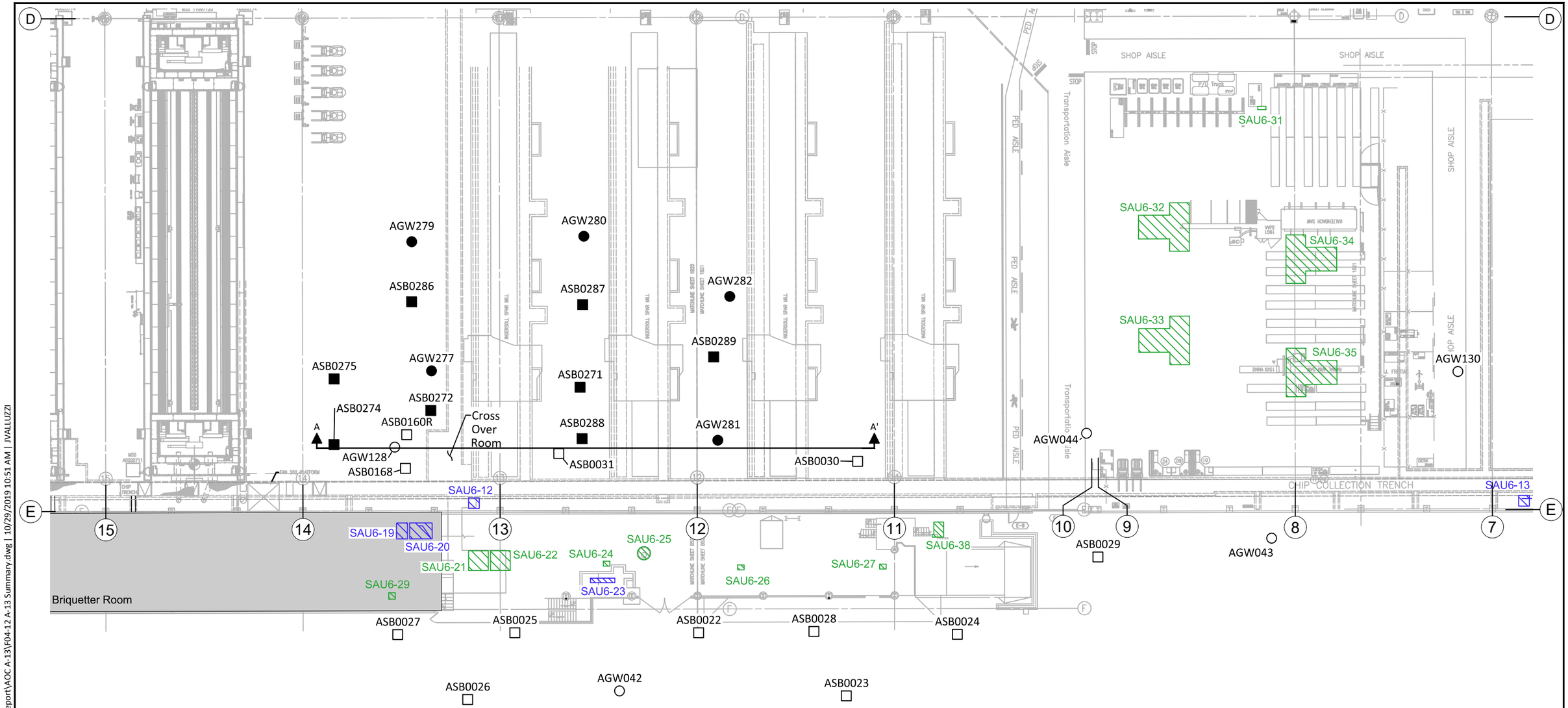
Boeing Auburn
Feasibility Study
Auburn, Washington

AOC A-13: Petroleum Hydrocarbon Contamination on East Side of Building 17-06 Exploration Summary

Figure 4-11

LANDAU ASSOCIATES

Boeing\Remedial Investigation Report | G:\Projects\025\164\170\112\FS Report\AOC A-13\F04-11 A-13 RI.dwg (A) "Figure 4-11" 10/29/2019



Legend

AGW277	●	FS Monitoring Well Location
ASB0274	■	FS Boring Location
AGW128	○	Pre-FS Monitoring Well Location
ASB0031	□	Pre-FS Boring Location

SAU6-34 Chip runoff Sump Location and Designation

SAU6-26 Water Sump Location and Designation (Cooling Water, Storm/Rain Water, Condensate)

Building 17 06 Column Designations

D 7 / A A' Cross Section Alignment, See Figure 4-13

Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

N

0 30 60

Scale in Feet

Area Shown

Boeing Auburn Facility Map

Base map source: Geomatrix 2003a

LANDAU ASSOCIATES

Boeing Auburn Feasibility Study Auburn, Washington	**AOC A-13: Petroleum Hydrocarbon Contamination on East Side of Building 17-06 Focused Exploration Summary**	Figure 4-12

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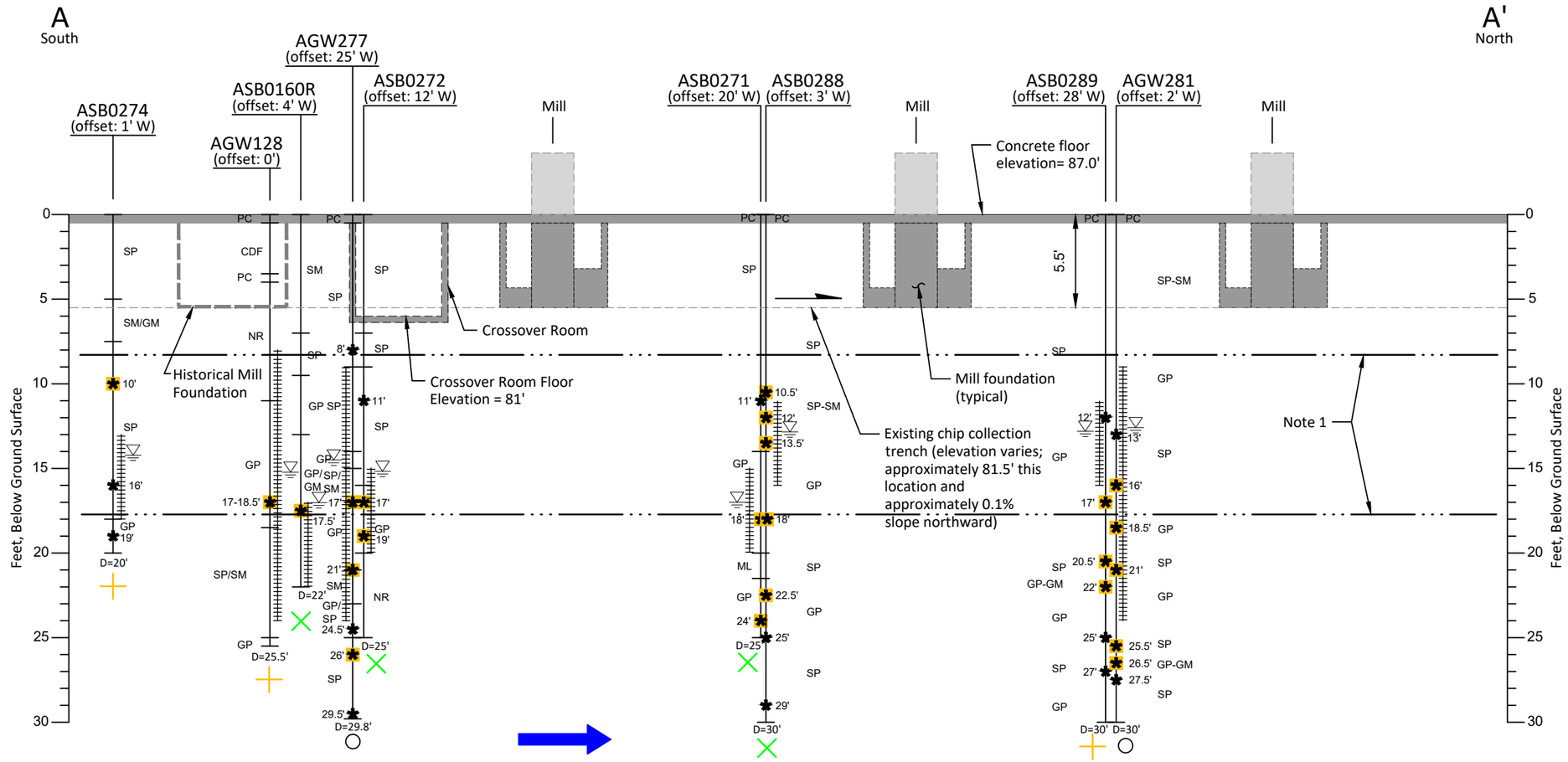

Legend

- **ASB0274** (offset: 1' W) — Exploration Designation
- Top of Exploration
- ✱ = Soil sample (Analytes = Not detected)
- ✱ = Soil sample (Analytes = Detected, below pCULs)
- ✱ = Soil sample (Analytes = Detected, above pCULs)
- SM — Unified Soil Classification Symbol (USCS)
- Water Level (At Time of Drilling)
- Screen Interval
- D=35 — Depth of Exploration (feet)
- ○ = Analytes not detected in groundwater
- ┼ = Analytes detected below pCULs in groundwater
- ╳ = Analytes detected above pCULs in groundwater

0 — 15 — 30

Scale in Feet
2x Vertical Exaggeration

AOC A-13	Groundwater pCUL (µg/L)	Soil pCUL (mg/kg)
TPH	20,000	71,000

USCS Soil Legend

- CDF = Control-density fill
- GM = Silty gravel; gravel/sand/silt mixture(s)
- GP = Poorly graded gravel; gravel/sand mixture(s); little or no fines
- GW = Well-graded gravel; gravel/sand mixture(s); little or no fines
- ML = Silt
- NR = No recovery
- PC = Portland cement pavement
- SM = Silty sand; sand/silt mixture(s)
- SP = Poorly graded sand; gravelly sand; little or no fines

Acronyms / Abbreviations

- AOC = area of concern
- mg/kg = milligrams per kilogram
- pCUL = proposed cleanup level
- TPH = total petroleum hydrocarbons
- µg/L = micrograms per liter

Notes

1. Lines indicated show the maximum and minimum water level elevation measured from AGW128 from September 2008 to December 2018.
2. Boring ASB0160R was completed in September 2004. Well AGW128 was completed in September 2008. Well AGW277 and borings ASB0271, ASB0272, and ASB0274 were completed in August 2017. Well AGW281 and borings ASB0288 and ASB0289 were completed in December 2017.
3. Green, orange, and black symbols beneath monitoring wells reflect the most recent data.
4. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

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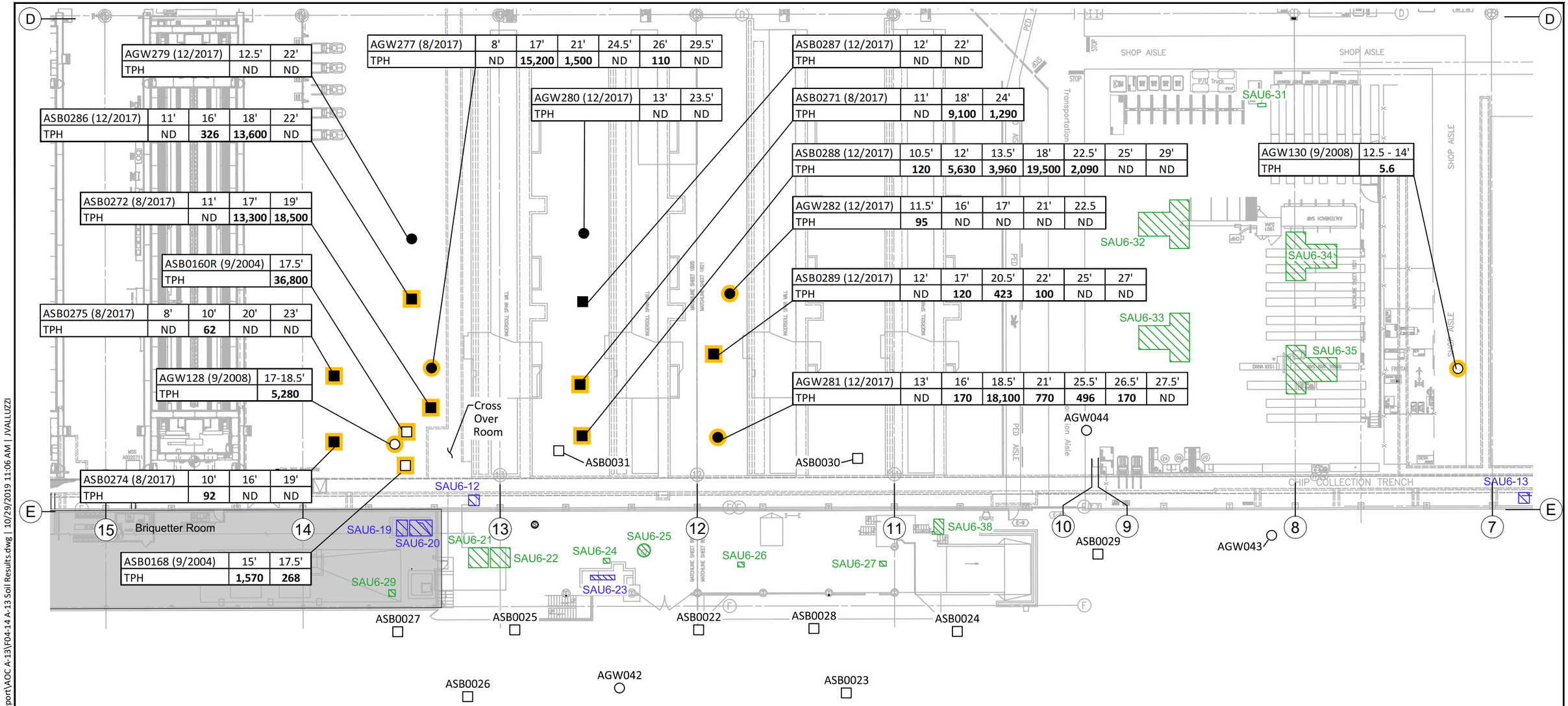
Feasibility Study
Auburn, Washington

AOC A-13: Petroleum Hydrocarbon Contamination on East Side of Building 17-06 Focused Exploration Cross-Section

Figure 4-13



Notes

1. All analytes are shown in milligrams per kilogram (mg/kg).
2. Total petroleum hydrocarbons (TPH) are the sum of diesel-range and oil-range petroleum hydrocarbon detections.
3. In the databoxes: **Bold** text indicates detected analyte. Green shading indicates exceedance of proposed cleanup level (pCUL).
4. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

ND = non-detect, the analyte was analyzed for, but was not detected

Legend

AGW277 ● FS Monitoring Well Location
ASB0274 ■ FS Boring Location
AGW128 ○ Pre-FS Monitoring Well Location
ASB0031 □ Pre-FS Boring Location
Black = No detection
Orange = Detection below pCUL
Green = Exceedance of pCUL

SAU6-34 Chip runoff Sump Location and Designation
SAU6-26 Water Sump Location and Designation (Cooling Water, Storm/Rain Water, Condensate)

(D) (7) Building 17-06 Column Designations

AOC A-13	Soil pCUL (mg/kg)
TPH	71,000

0 30 60
Scale in Feet

Area Shown
Boeing Auburn Facility Map

Base map source: Geomatrix 2003a

Boeing Auburn
Feasibility Study
Auburn, Washington

AOC A-13: Petroleum Hydrocarbon Contamination on East Side of Building 17-06 Soil Results

Figure 4-14

LANDAU ASSOCIATES

AGW277	Most Recent	Date
TPH	ND	12/2018

AGW279	Most Recent	Date
TPH	ND	12/2018

AGW280	Most Recent	Date
TPH	ND	12/2018

AGW282	Most Recent	Date
TPH	ND	12/2018

AGW281	Most Recent	Date
TPH	**250**	12/2018

AGW128	Most Recent	Date
TPH	**2,885**	12/2018

AGW130	Most Recent	Date
TPH	ND	12/2018

AGW044	Most Recent	Date
TPH	**1,300**	6/2018

AGW043	Most Recent	Date
TPH	ND	1/2009

AGW041	Most Recent	Date
TPH	ND	6/2013

ASB0286 ASB0287 ASB0289 ASB0275 ASB0271 ASB0272 ASB0274 ASB0160R Cross Over Room ASB0288 ASB0168 ASB0031 ASB0030 ASB0029 ASB0027 ASB0025 ASB0022 ASB0028 ASB0024 ASB0026 AGW042 ASB0023

SAU6-12 SAU6-13 SAU6-19 SAU6-20 SAU6-21 SAU6-22 SAU6-24 SAU6-25 SAU6-26 SAU6-27 SAU6-38 SAU6-23 SAU6-29 SAU6-31 SAU6-32 SAU6-34 SAU6-33 SAU6-35

SHOP AISLE Transportation Aisle PED AISLE CHIP COLLECTION TRENCH Briquetter Room

AOC A-13	Groundwater pCUL (µg/L)
TPH	20,000

Legend

- AGW277 ● FS Monitoring Well Location
- ASB0274 ■ FS Boring Location
- AGW128 ○ Pre-FS Monitoring Well Location
- ASB0031 □ Pre-FS Boring Location
- Black = No detection
- Orange = Detection below pCUL

SAU6-34 Chip runoff Sump Location and Designation

SAU6-26 Water Sump Location and Designation (Cooling Water, Storm/Rain Water, Condensate)

D 7 Building 17 06 Column Designations

A A' Cross Section Alignment, See Figure 4-13

Notes

1. All analytes are shown in micrograms per liter (µg/L).
2. For monitoring wells, the most recent data is shown.
3. All monitoring wells on this figure are screened across the water table.
4. Total petroleum hydrocarbons (TPH) are the sum of diesel-range and oil-range petroleum hydrocarbon detections.
5. In the databoxes: **Bold** text indicates detected analyte. Green shading indicates exceedance of proposed cleanup level (pCUL).
6. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

ND = non-detect, the analyte was analyzed for, but was not detected

Base map source: Geomatrix 2003a

N

0 30 60

Scale in Feet

Area Shown

Boeing Auburn Facility Map

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Boeing Auburn
Feasibility Study
Auburn, Washington

AOC A-13: Petroleum Hydrocarbon Contamination on East Side of Building 17-06 Groundwater Results

Figure 4-15

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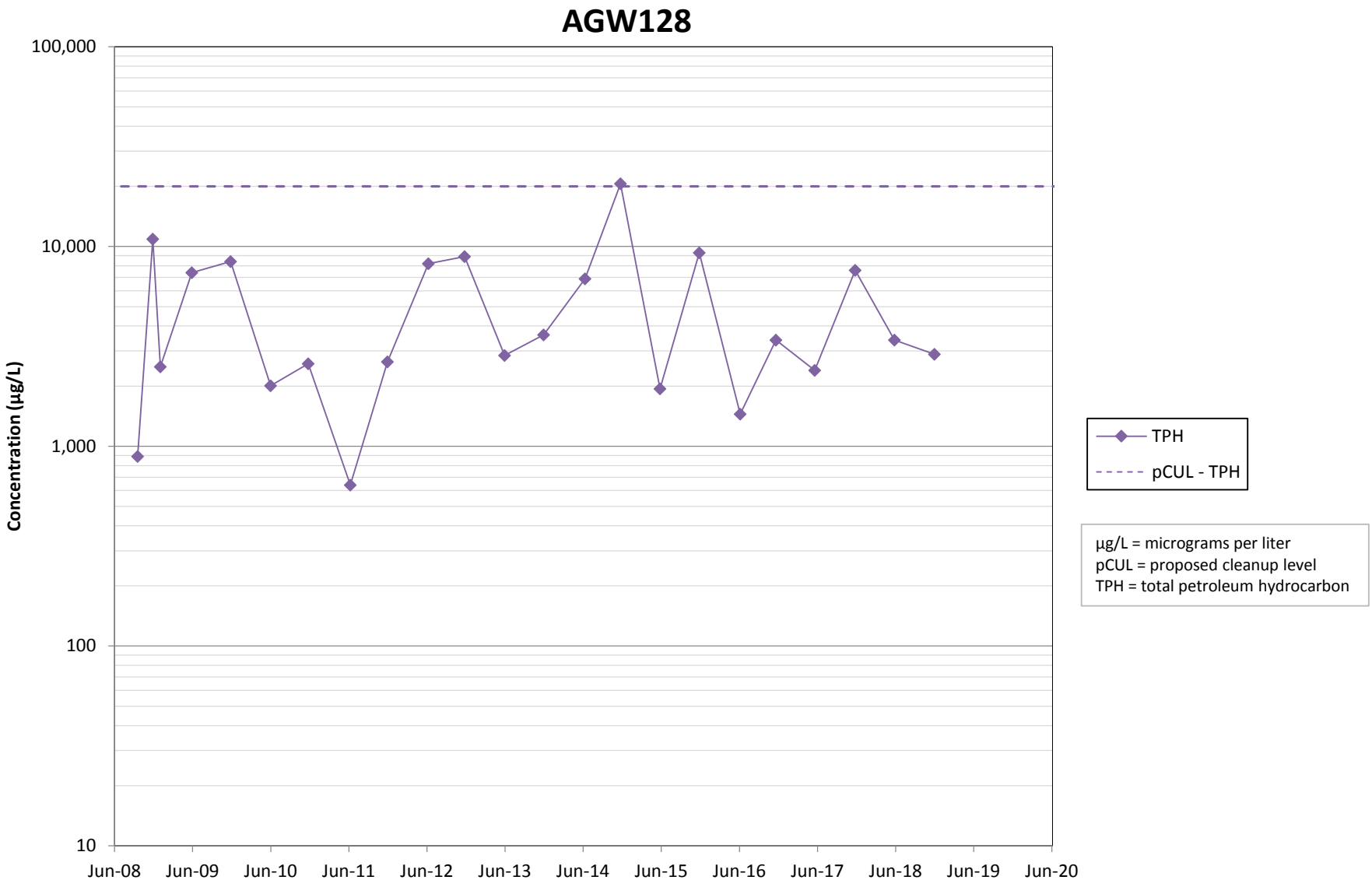

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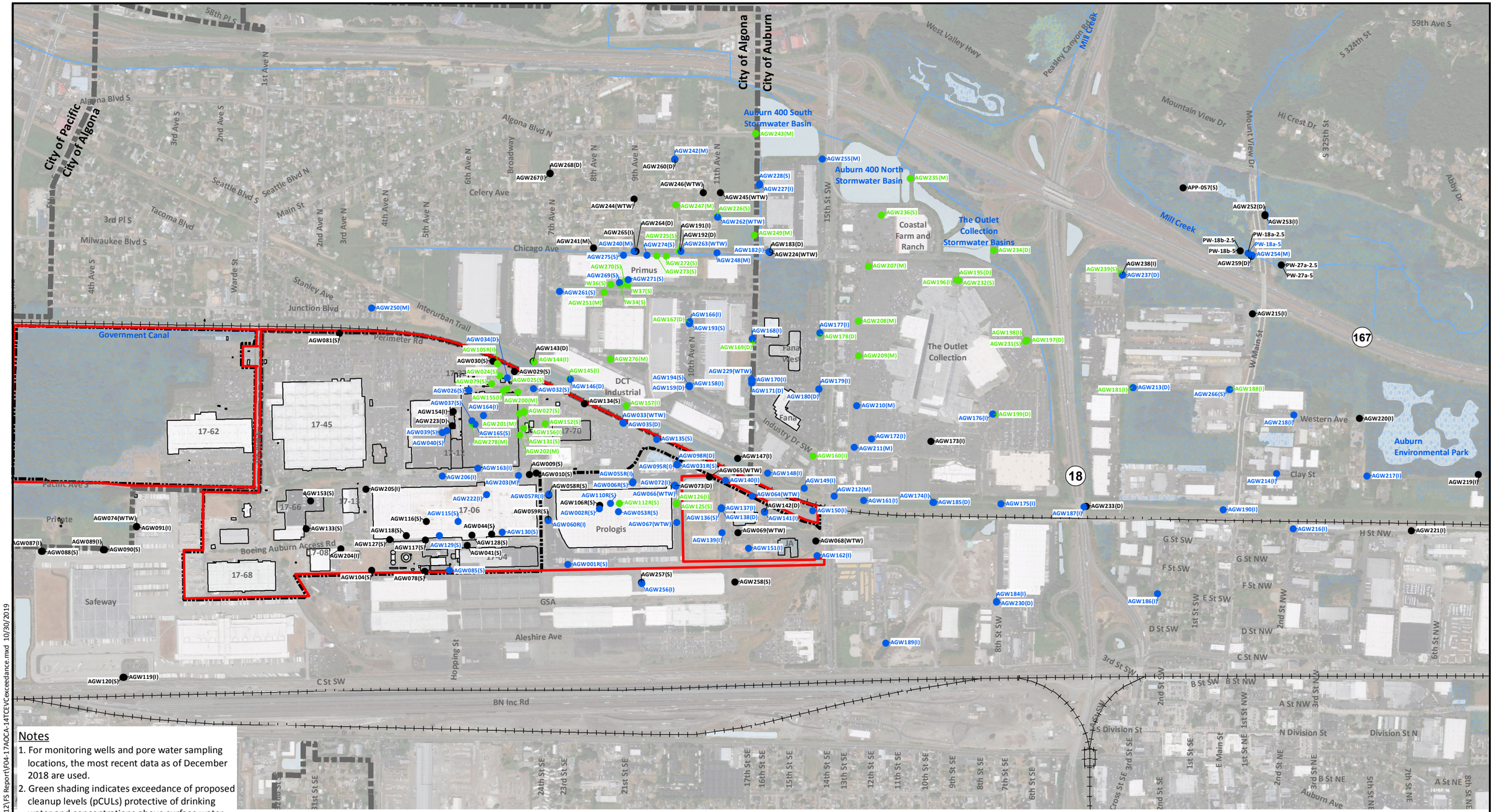
Feasibiilty Study
Auburn, Washington

AOC A-13: Petroleum Hydrocarbons Time Series Plot

Figure
4-16



Notes

1. For monitoring wells and pore water sampling locations, the most recent data as of December 2018 are used.
2. Green shading indicates exceedance of proposed cleanup levels (pCULs) protective of drinking water and concentrations above surface water quality standards (SWQS) in groundwater.
3. Exceedances shown at multilevel wells reflect an exceedance in any channel.
4. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Legend

- No Exceedance
- Exceedance of Groundwater pCUL (Protective of Drinking Water) (TCE>4 µg/L and/or VC>0.29 µg/L)
- Concentrations above SWQS in Groundwater (TCE>0.3 µg/L and/or VC>0.2 µg/L)
- Facility Boundary
- City Limits
- Boeing Property
- Wetland Areas
- Water Bodies
- Waterways

0 1,000 2,000

Scale in Feet

N

Base map source: Geometrix 2003; Aerial Photo Source: Esri World Imagery; Parcel Data Source: King County GIS 2012

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Feasibility Study
Auburn, Washington

AOC A-14:
Site-Wide Groundwater
TCE and VC Results

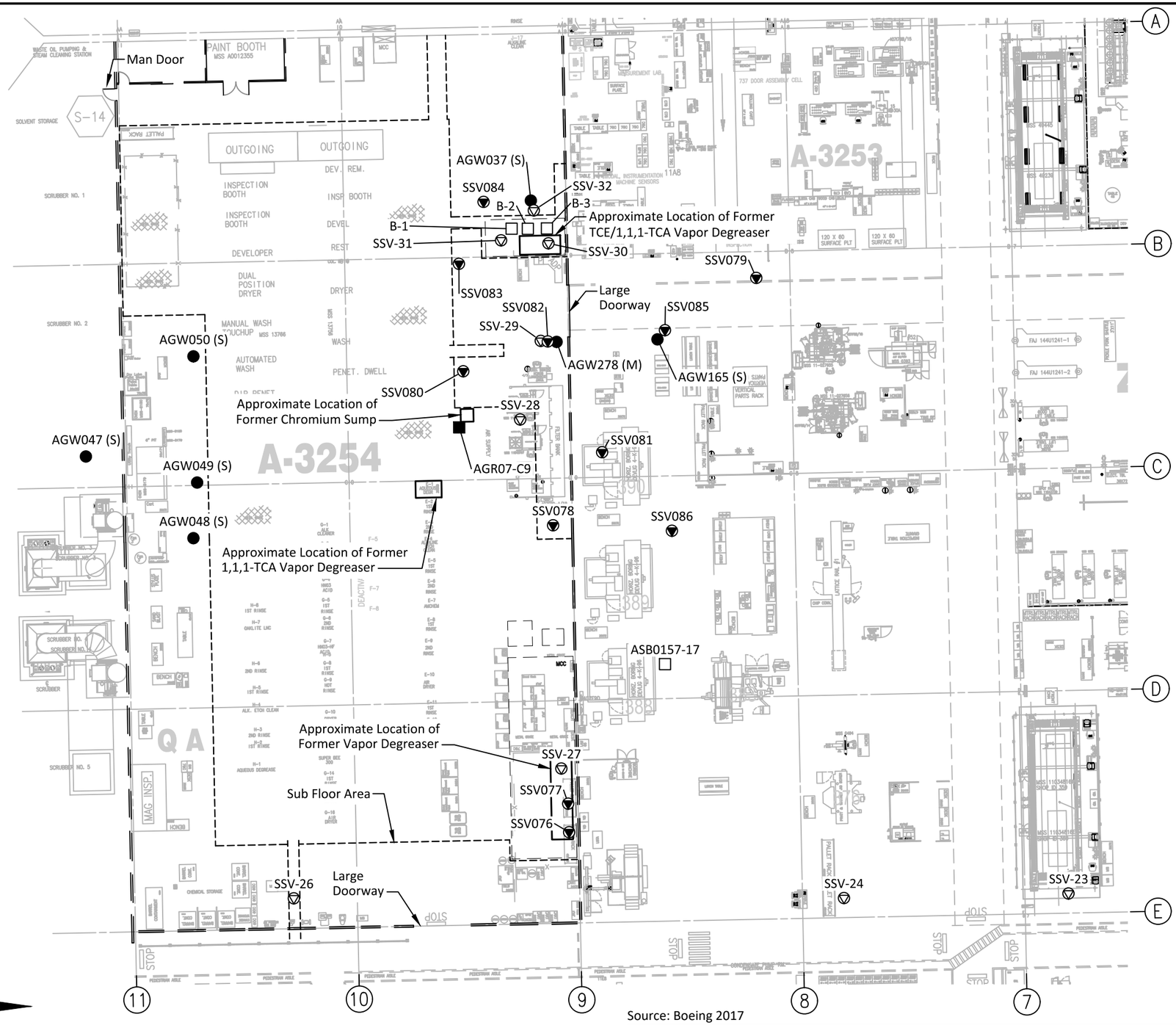
Figure
4-17

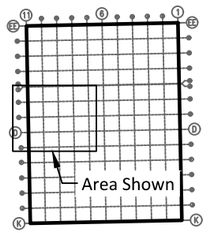
Legend

AGW047	●	Monitoring Well Location
AGR07-C9	■	FS Boring Location
B-1	□	Pre-FS Boring Location
SSV084	▼	FS Sub-slab Vapor Sampling Location
SSV-31	▽	Pre-FS Sub-slab Vapor Sampling Location
		Tank Line Area
D 7		Building 17-07 Column Designations

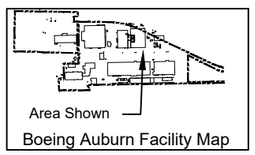
Note

1. Groundwater wells are identified by the AGW prefix. The designations behind the identifications indicate the zone. (S) = shallow zone, (I) = intermediate zone, (D) = deep zone, (M) = multi-level well; screens in multiple groundwater zones.





17-07 Building



Boeing Auburn Facility Map

N

0 30 60

Scale in Feet

Source: Boeing 2017

LANDAU ASSOCIATES

Boeing Auburn Feasibility Study Auburn, Washington	**AOC A-14: Building 17-07 Release Area Exploration Summary**	Figure 4-18

Legend

AGW047	●	Monitoring Well Location
AGR07-C9	■	FS Boring Location
B1	□	Pre-FS Boring Location
SSV084	▼	FS Sub-slab Soil Gas Vapor Sampling Location
SSV-31	▽	Pre-FS Sub-slab Soil Gas Vapor Sampling Location

No highlighting = No detection

Orange = Detection below pCUL

Green = Exceedance of pCUL

(D) (7) Tank Line Area

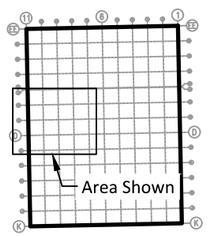
Building 17-07 Column Designations

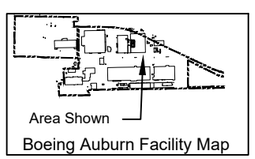
AOC A-14	Soil pCUL (mg/kg)
TCE	0.025

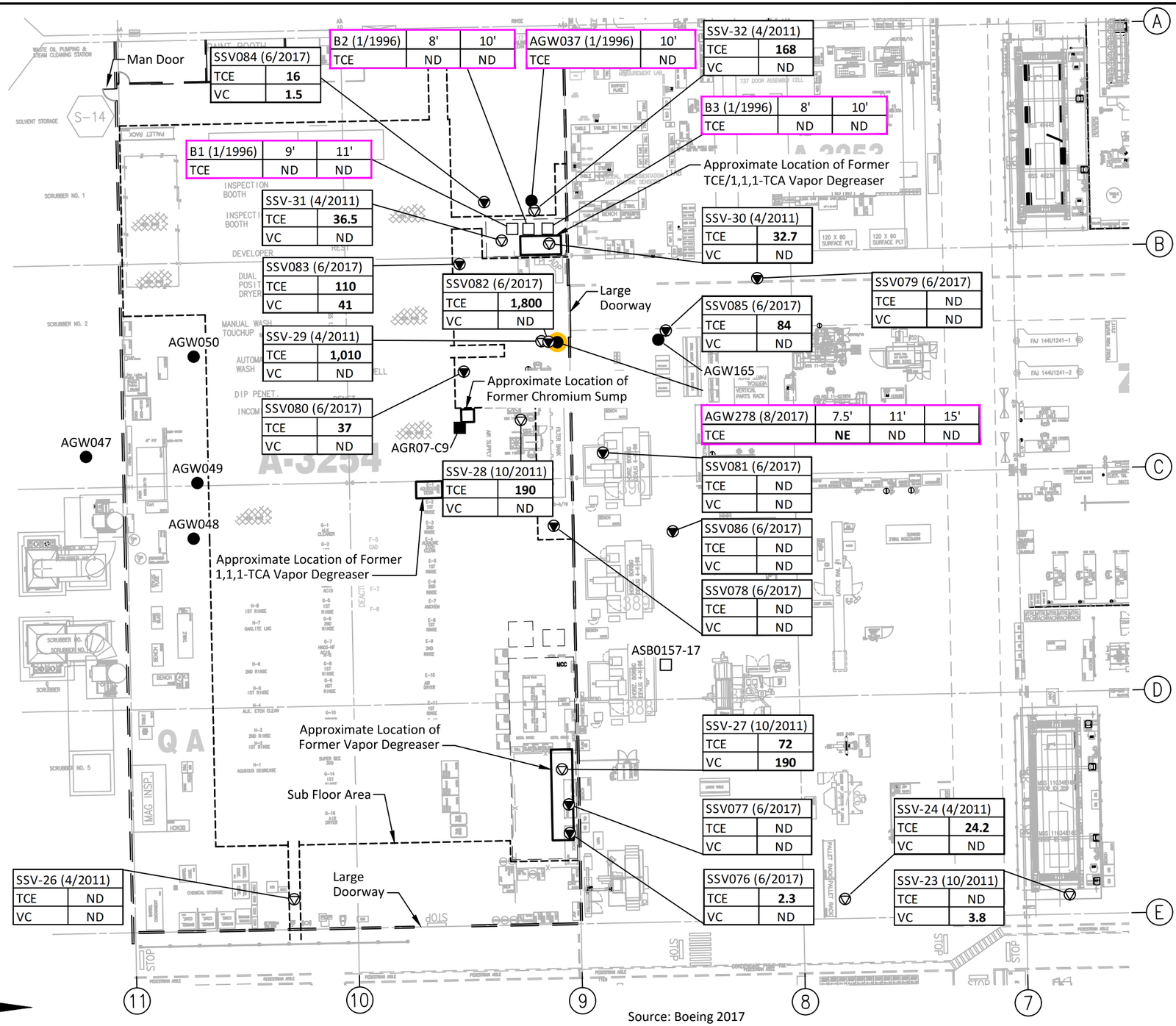
Notes

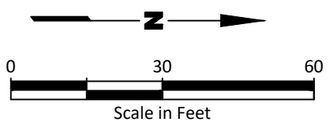
1. Soil gas results are identified with black data boxes. Soil gas data is shown in micrograms per cubic meter (µg/m^3).
2. Soil results are identified with purple data boxes. Soil data is shown in milligrams per kilogram (mg/kg).
3. In the databoxes: **Bold** text indicates detected analyte. Green shading indicates exceedance of proposed cleanup level (pCUL).
4. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

ND = non-detect, the analyte was analyzed for, but was not detected









Source: Boeing 2017

LANDAU ASSOCIATES

Boeing Auburn Feasibility Study Auburn, Washington	**AOC A-14: Building 17-07 Release Area Soil and Soil Gas Results**	Figure 4-19

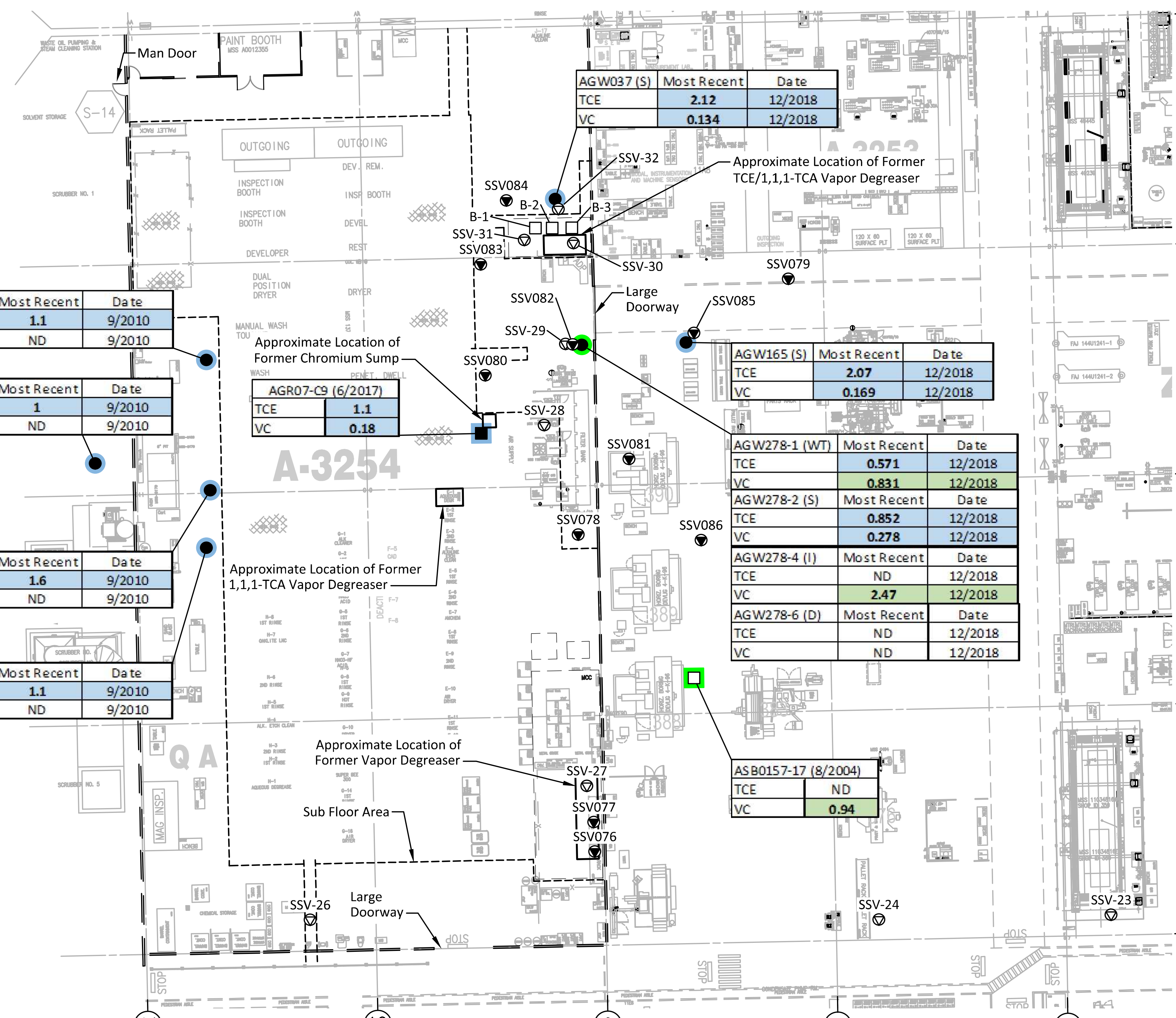
Legend

- AGW047 ● Monitoring Well Location
- AGR07-C9 ■ FS Boring Location
- B-1 □ Pre-FS Boring Location
- SSV084 FS Sub-slab Vapor Sampling Location
- SSV-31 Pre-FS Sub-slab Vapor Sampling Location
- No highlighting = No detection
- Green = Exceedance of Groundwater pCUL (protective of drinking water) (TCE>4 µg/L and/or VC>0.29 µg/L)
- Blue = Concentratations above SWQS in Groundwater (TCE>0.3 µg/L and/or VC>0.2 µg/L)
- Tank Line Area
- (D) (7) Building 17-07 Column Designations

Notes

1. All analytes are shown in micrograms per liter (µg/L).
2. For monitoring wells, the most recent data are shown.
3. In the databoxes: **Bold** text indicates detected analyte. Green shading indicates exceedance of proposed cleanup level (pCUL) and concentrations above surface water quality standards (SWQS) in groundwater. Blue shading indicates concentrations above SWQS in groundwater.
4. Groundwater wells are identified by the AGW prefix. The designations behind the identifications indicate the zone. (S) = shallow zone, (I) = intermediate zone, (D) = deep zone, (M) = multi-level well; screens in multiple groundwater zones.
5. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

ND = non-detect, the analyte was analyzed for, but was not detected



AGW050 (S)	Most Recent	Date
TCE	1.1	9/2010
VC	ND	9/2010

AGW047 (S)	Most Recent	Date
TCE	1	9/2010
VC	ND	9/2010

AGW049 (S)	Most Recent	Date
TCE	1.6	9/2010
VC	ND	9/2010

AGW048 (S)	Most Recent	Date
TCE	1.1	9/2010
VC	ND	9/2010

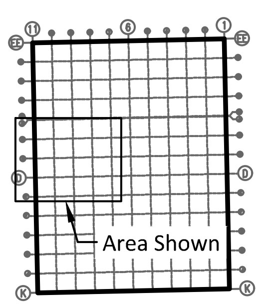
AGR07-C9 (6/2017)	
TCE	**1.1**
VC	**0.18**

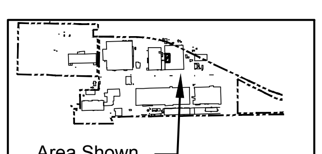
AGW037 (S)	Most Recent	Date
TCE	**2.12**	12/2018
VC	**0.134**	12/2018

AGW165 (S)	Most Recent	Date
TCE	**2.07**	12/2018
VC	**0.169**	12/2018

AGW278-1 (WT)	Most Recent	Date
TCE	**0.571**	12/2018
VC	**0.831**	12/2018
AGW278-2 (S)	Most Recent	Date
TCE	**0.852**	12/2018
VC	**0.278**	12/2018
AGW278-4 (I)	Most Recent	Date
TCE	ND	12/2018
VC	**2.47**	12/2018
AGW278-6 (D)	Most Recent	Date
TCE	ND	12/2018
VC	ND	12/2018

ASB0157-17 (8/2004)	
TCE	ND
VC	**0.94**





Boeing Auburn Facility Map

N

0 30 60
Scale in Feet

Source: Boeing 2017

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LANDAU ASSOCIATES

Boeing Auburn
Feasibility Study
Auburn, Washington

AOC A-14: Building 17-07
Release Area Groundwater Results

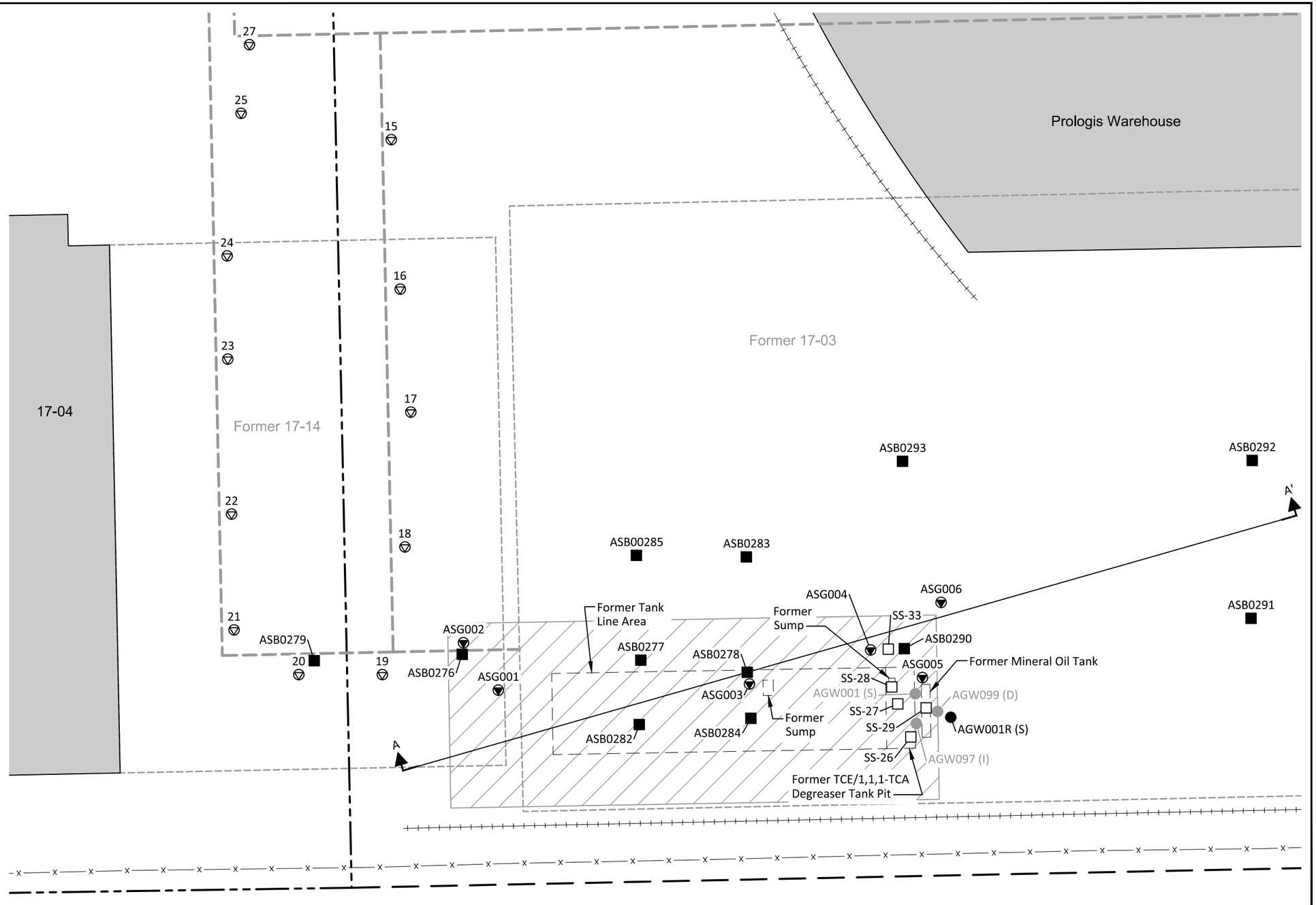
Figure 4-20

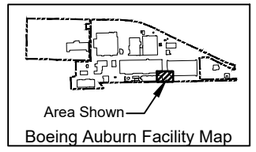
Legend

- ASB0280 — FS Boring Location
- SS-33 — Pre-FS Boring Location
- ASG001 — FS Soil Gas Sampling Location
- 18 — Pre-FS Soil Gas Location
- AGW001R (S) — Monitoring Well Location
- AGW001 (S) — Decommissioned Well Location
- 17-07 — Current Building and Number
- 17-14 — Former Building and Number
- Former Building 17-03 Release Area
- Boeing Property Line
- Adjacent Property Line
- Existing Fence Line
- Existing Railroad Track
- Chrome Waste Line
- A — A' — Cross Section Location

Note

1. Groundwater wells are identified by the AGW prefix. The designations behind the identifications indicate the zone. (S) = shallow zone, (I) = intermediate zone, (D) = deep zone, (M) = multi-level well; screens in multiple groundwater zones.





N

0 40 80

Scale in Feet

Base map source: Geomatrix 2003; Kennedy Jenks

Boeing Auburn
Feasibility Study
Auburn, Washington

AOC A-14: Former Building 17-03 Release Area Exploration Summary

Figure 4-21

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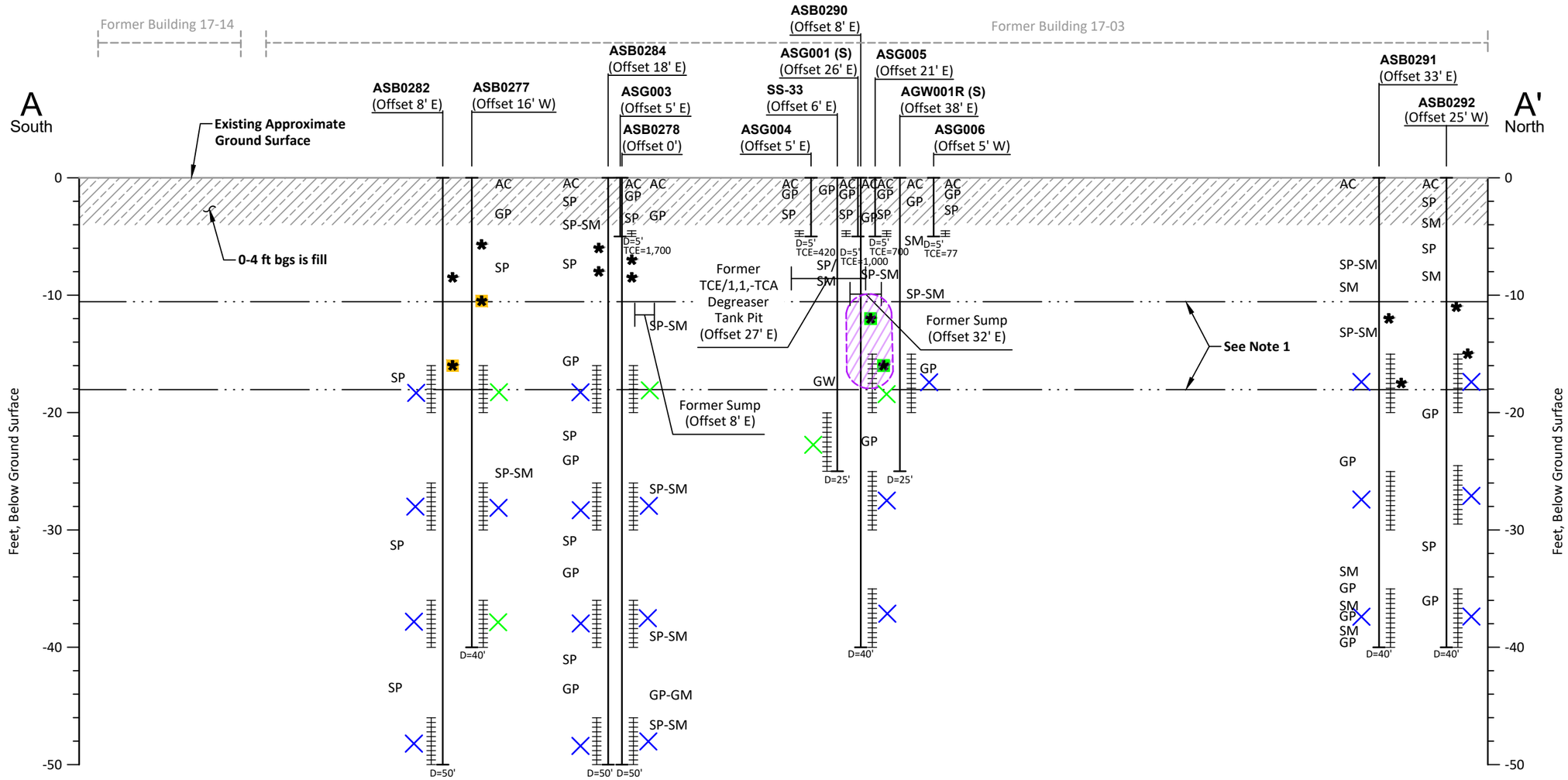

Legend

ASB0282 (Offset: 8' E) — Exploration Designation

Top of Exploration

- ✱ = Soil sample (Analytes = Not detected)
- ✱ = Soil sample (Analytes = Detected, below pCULs)
- ✱ = Soil sample (Analytes = Detected, above pCULs)

SM — Unified Soil Classification Symbol (USCS)

Screen Interval

D=20.5' — Depth of Exploration (feet)

TCE=77 — TCE Concentration in Soil Gas (µg/m³)

- X = Analytes detected above SWQS in groundwater
- X = Analytes detected above GW pCUL (protective of drinking water)
- ▨ = Analytes detected above pCULs in soil

AOC A-14	Groundwater pCUL	SWQS in Groundwater	Soil pCUL (mg/kg)
TCE	4	0.3	0.025
VC	0.29	0.02	N/A

USCS Soil Legend

Conc	=	Concrete
GW	=	Well-graded gravel; gravel/sand mixture(s); little or no fines
ML	=	Silt
SM	=	Silty sand; sand/silt mixture(s)
SP	=	Poorly graded sand; gravelly sand; little or no fines
SW	=	Well-graded sand; gravelly sand; little or no fines

Notes

1. Lines indicated show the maximum and minimum water level elevation measured from AGW001/AGW001R from December 2003 to December 2018.
2. ASG001 through ASG006 were installed in June 2017. Borings ASB0277, ASB0278, ASB0282, and ASB0284 were completed in August and September 2017. Borings ASB0290 through ASB0292 were installed in December 2018.
3. Symbols at well screens reflect the most recent data.
4. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

0 30 60

Scale in Feet
3x Vertical Exaggeration

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Auburn, Washington

AOC A-14: Former Building 17-03 Release Area Cross-Section

Figure 4-22

Legend

- ASB0280 ■ FS Boring Location
- SS-33 □ Pre-FS Boring Location
- ASG001 ▽ FS Soil Gas Sampling Location
- 18 ▽ Pre-FS Soil Gas Location
- AGW001R (S) ● Monitoring Well Location
- AGW001 (S) ● Decommissioned Well Location

No highlighting = No detection
Orange = Detection below pCUL
Green = Exceedance of pCUL

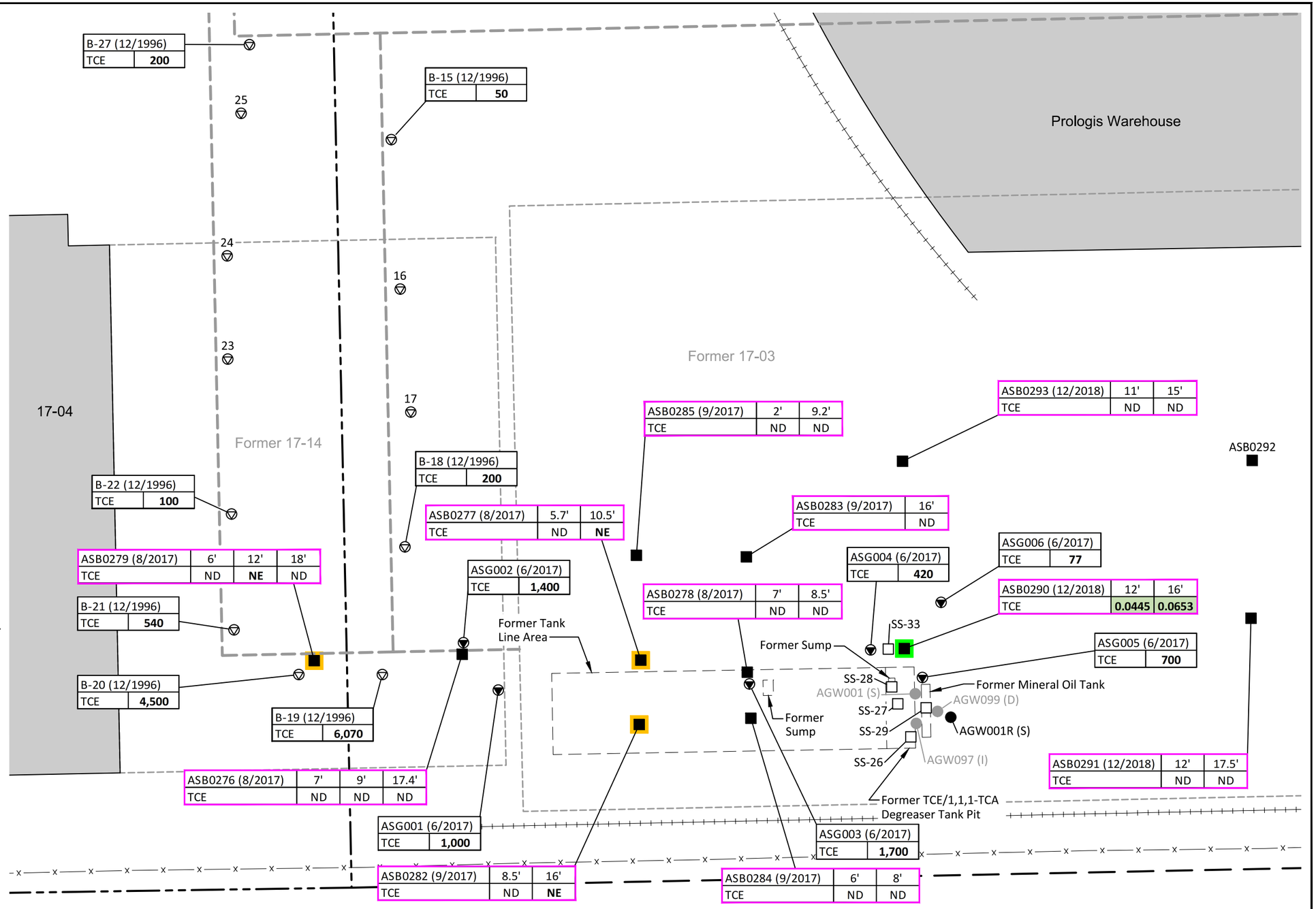
- 17-07 Current Building and Number
- 17-14 Former Building and Number
- Boeing Property Line
- Adjacent Property Line
- Existing Fence Line
- Existing Railroad Track
- Chrome Waste Line

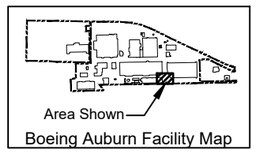
AOC A-14	Soil pCUL (mg/kg)
TCE	0.025
VC	N/A

Notes

1. Soil gas results are identified with black data boxes. Soil gas data is shown in micrograms per cubic meter (µg/m^3).
2. Soil results are identified with purple data boxes. Soil data is shown in milligrams per kilgram (mg/kg).
3. For soil and soil gas results, TCE was the only constituent of concern detected above preliminary cleanup levels or screening levels, and only TCE results are shown.
4. Groundwater monitoring wells are identified by the AGW prefix. The designations beside the identifications indicate the zone (S) = Shallow zone, (I) = Intermediate zone, (D) = deep zone.
5. In the databoxes: **Bold** text indicates detected analyte. Green shading indicates exceedance of proposed cleanup level (pCUL).
6. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

ND = non-detect, the analyte was analyzed for, but was not detected
NE = no exceedance, one or more analytes were detected, but do not exceed pCULs





N

0 40 80

Scale in Feet

Base map source: Geomatrix 2003; Kennedy Jenks

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Auburn, Washington

AOC A-14: Former Building 17-03 Release Area Soil and Soil Gas Results

Figure 4-23

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Legend

ASB0280 ■	FS Boring Location
SS-33 □	Pre-FS Boring Location
ASG001 ▼	FS Soil Gas Sampling Location
18 ▽	Pre-FS Soil Gas Location
AGW001R (S) ●	Monitoring Well Location
AGW001 (S) ●	Decommissioned Well Location

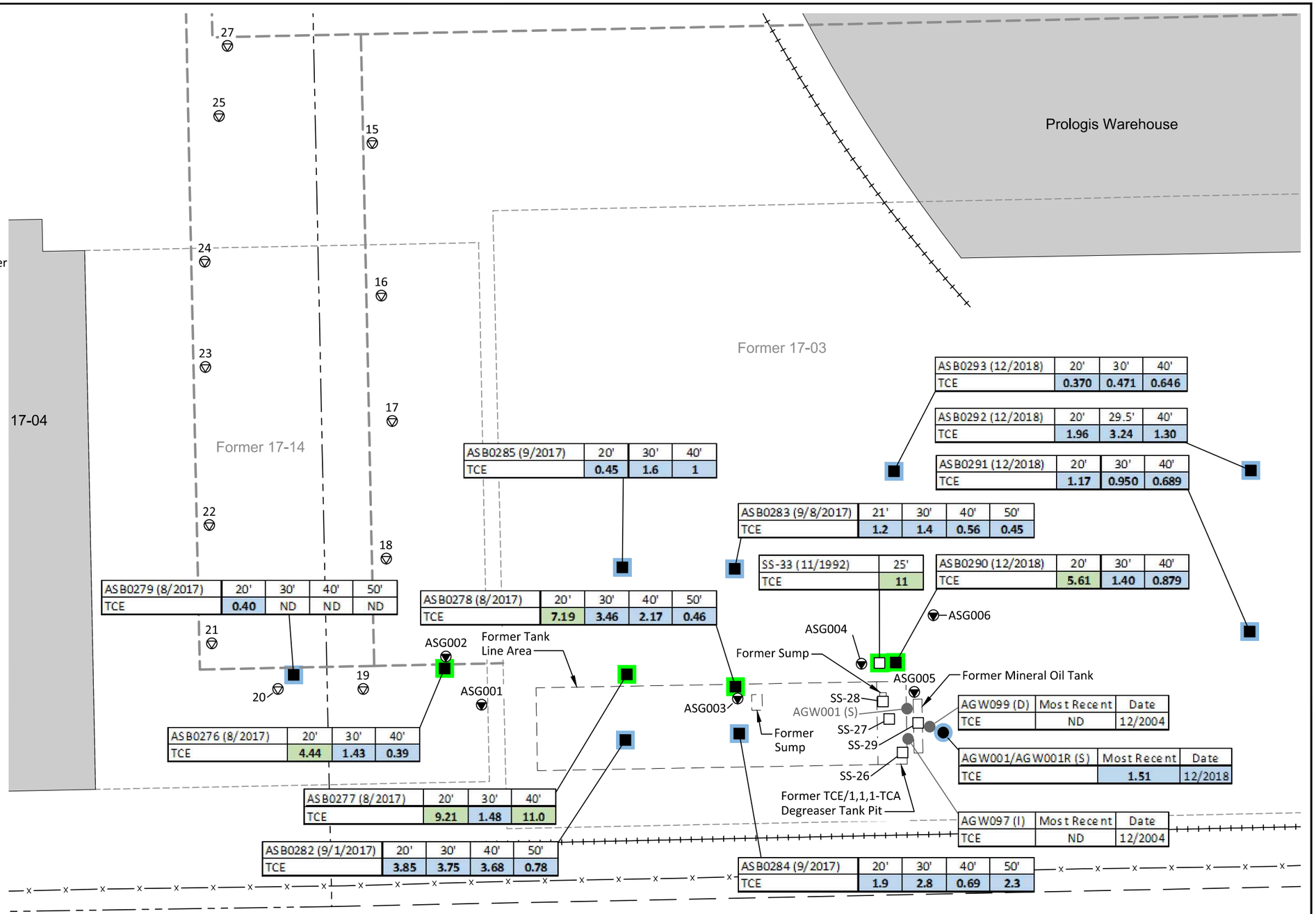
No highlighting = No detection
Green = Exceedance of Groundwater pCUL (protective of drinking water) (TCE>4 µg/L and/or VC>0.29 µg/L)
Blue = Concentration above SWQS in Groundwater (TCE>0.3 µg/L and/or VC>0.2 µg/L)

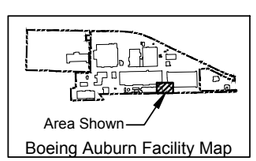
17-07	Current Building and Number
17-14	Former Building and Number
	Boeing Property Line
	Adjacent Property Line
x x	Existing Fence Line
	Existing Railroad Track
	Chrome Waste Line

Notes

1. All TCE results are shown in micrograms per liter (µg/L).
2. For groundwater results, TCE was the only constituent of concern detected above cleanup levels, and only TCE results are shown.
3. Groundwater monitoring wells are identified by the AGW prefix. The designations beside the identifications indicate the zone (S) = Shallow zone, (I) = Intermediate zone, (D) = deep zone.
4. In the databoxes: **Bold** text indicates detected analyte. Green shading indicates exceedance of proposed cleanup level (pCUL) and concentrations above surface water quality standards (SWQS) in groundwater. Blue shading indicates concentrations above SWQS in groundwater.
5. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

ND = non-detect, the analyte was analyzed for, but was not detected





N

0 40 80

Scale in Feet

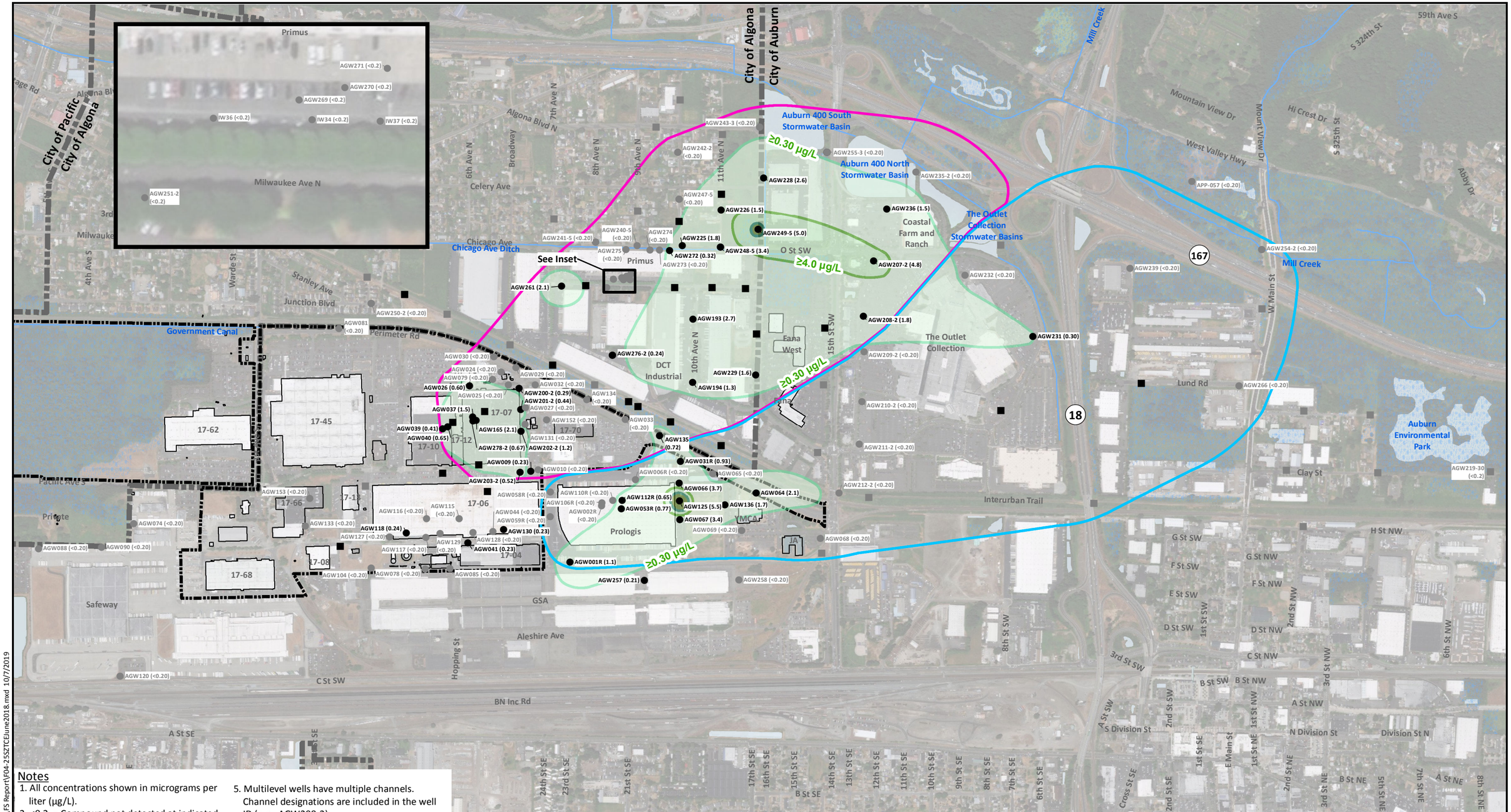
Base map source: Geomatrix 2003; Kennedy Jenks

Boeing Auburn
Feasibility Study
Auburn, Washington

AOC A-14: Former Building 17-03 Release Area Groundwater Results

Figure 4-24

LANDAU ASSOCIATES



Notes

1. All concentrations shown in micrograms per liter (µg/L).
2. <0.2 = Compound not detected at indicated reporting limit.
3. Monitoring well results are the most recent.
4. Black well and boring symbols indicate locations where the compound was detected. Gray well and boring symbols indicate locations where the compound was not detected.
5. Multilevel wells have multiple channels. Channel designations are included in the well ID (e.g., AGW208-2).
6. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Legend

- Monitoring Well Location
- Historical Borehole Grab Sample Location
- Non-Detect
- TCE Contour (≥5.0 µg/L)
- TCE Contour (≥4.0 µg/L)
- TCE Contour (≥0.30 µg/L)
- Area 1 Plume
- Western Plume
- City Limits
- Boeing Property
- Wetland Areas
- Water Bodies
- Waterways

0 1,000 2,000

Scale in Feet

N

Base Map Source: Geometrix 2003; Parcel Data Source: King County 2015; Aerial Photo Source: Esri World Imagery.

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Boeing Auburn Feasibility Study Auburn, Washington	**AOC A-14: Shallow Zone Trichloroethene Concentrations June 2018**	Figure 4-25

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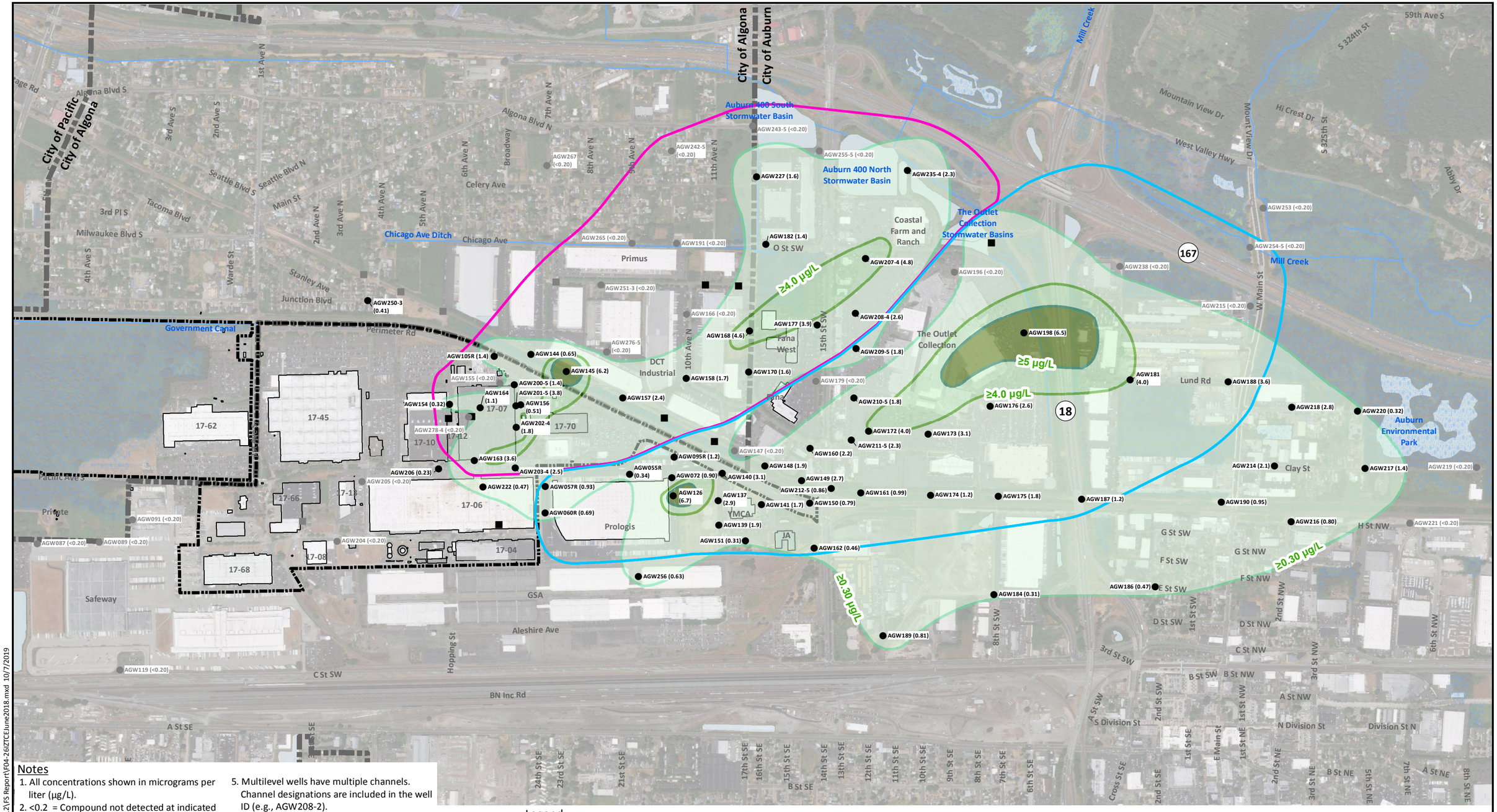

Notes

1. All concentrations shown in micrograms per liter (µg/L).
2. <0.2 = Compound not detected at indicated reporting limit.
3. Monitoring well results are the most recent.
4. Black well and boring symbols indicate locations where the compound was detected. Gray well and boring symbols indicate locations where the compound was not detected.
5. Multilevel wells have multiple channels. Channel designations are included in the well ID (e.g., AGW208-2).
6. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Legend

- Monitoring Well Location
- Historical Borehole Grab Sample Location
- Non-Detect
- TCE Contour (≥5.0 µg/L)
- TCE Contour (≥4.0 µg/L)
- TCE Contour (≥0.30 µg/L)
- Area 1 Plume
- Western Plume
- City Limits
- Boeing Property
- Wetland Areas
- Water Bodies
- Waterways

0 1,000 2,000

Scale in Feet

N

Base Map Source: Geometrix 2003; Parcel Data Source: King County 2015; Aerial Photo Source: Esri World Imagery.

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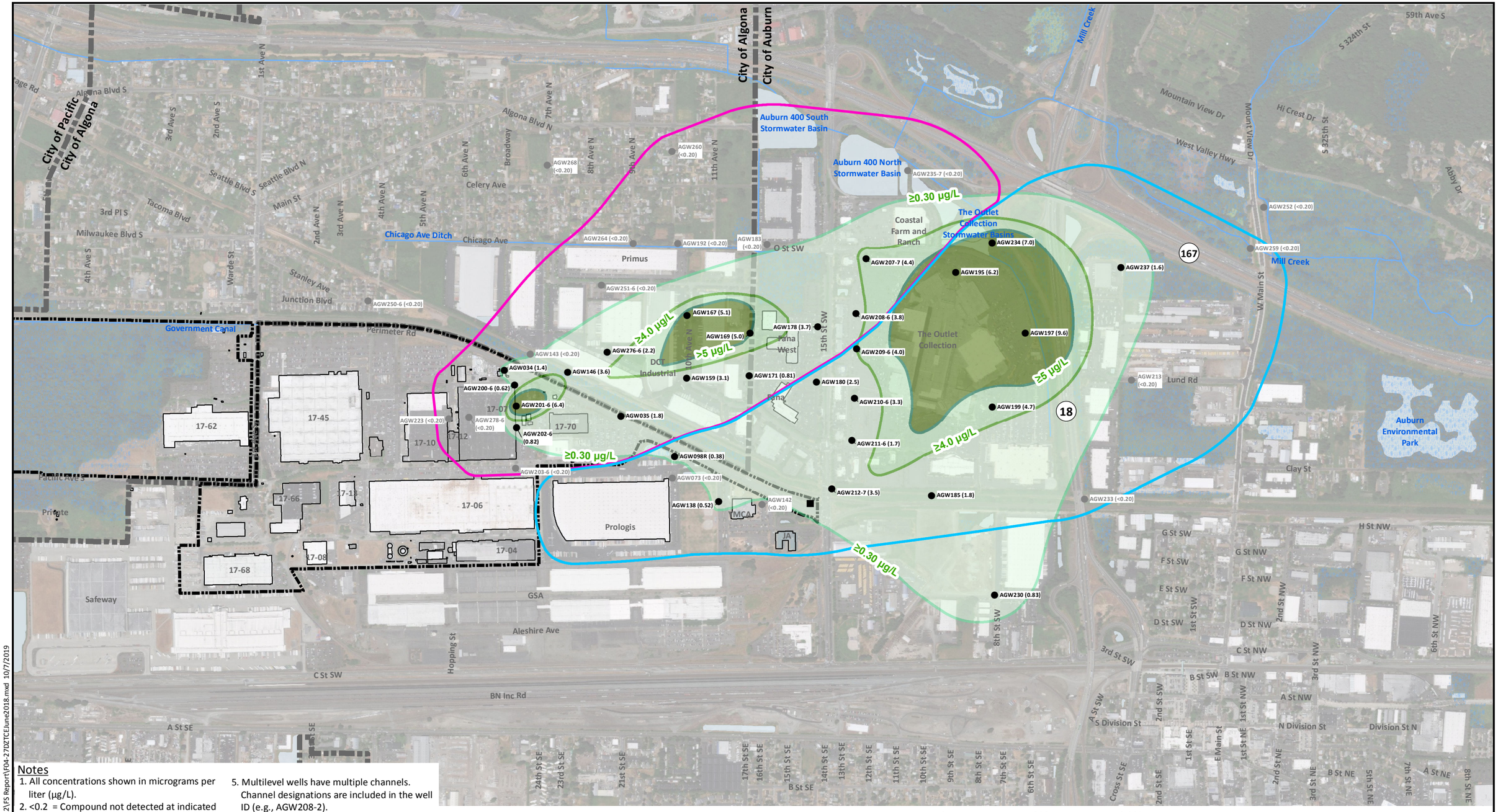
Boeing Auburn Feasibility Study Auburn, Washington	**AOC A-14: Intermediate Zone Trichloroethene Concentrations June 2018**	Figure 4-26



Notes

1. All concentrations shown in micrograms per liter (µg/L).
2. <0.2 = Compound not detected at indicated reporting limit.
3. Monitoring well results are the most recent.
4. Black well and boring symbols indicate locations where the compound was detected. Gray well and boring symbols indicate locations where the compound was not detected.
5. Multilevel wells have multiple channels. Channel designations are included in the well ID (e.g., AGW208-2).
6. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Legend

- Monitoring Well Location
- Historical Borehole Grab Sample Location
- Non-Detect
- TCE Contour (≥5.0 µg/L)
- TCE Contour (≥4.0 µg/L)
- TCE Contour (≥0.30 µg/L)
- Area 1 Plume
- Western Plume
- City Limits
- Boeing Property
- Wetland Areas
- Water Bodies
- Waterways

0 1,000 2,000

Scale in Feet

Base Map Source: Geometrix 2003; Parcel Data Source: King County 2015; Aerial Photo Source: Esri World Imagery.

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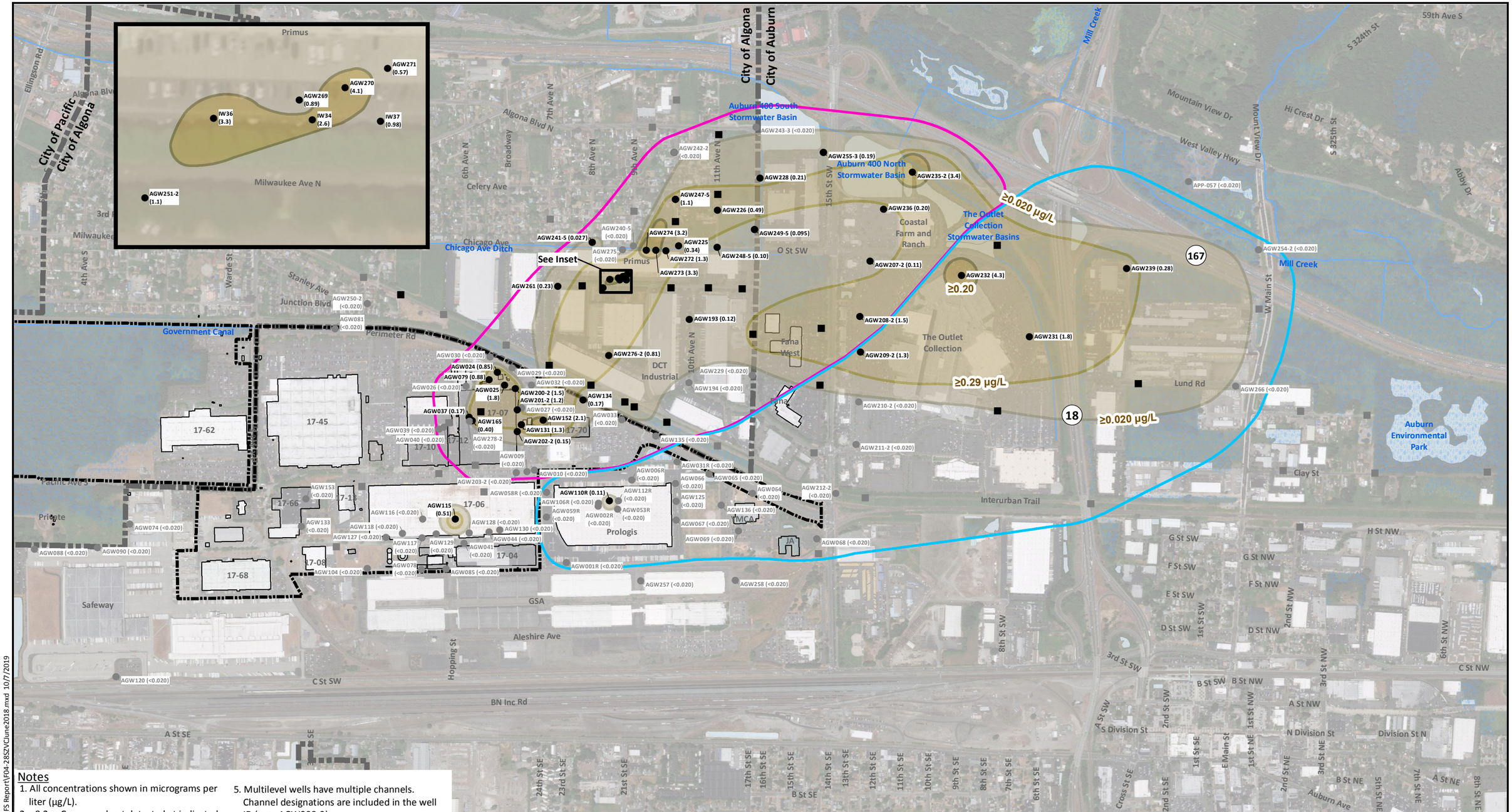
Boeing Auburn Feasibility Study Auburn, Washington	**AOC A-14: Deep Zone Trichloroethene Concentrations June 2018**	Figure 4-27



Notes

1. All concentrations shown in micrograms per liter (µg/L).
2. <0.2 = Compound not detected at indicated reporting limit.
3. Monitoring well results are the most recent.
4. Black well and boring symbols indicate locations where the compound was detected. Gray well and boring symbols indicate locations where the compound was not detected.
5. Multilevel wells have multiple channels. Channel designations are included in the well ID (e.g., AGW208-2).
6. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Legend

- Monitoring Well Location
- Historical Borehole Grab Sample Location
- Non-Detect
- Vinyl Chloride Contour (≥2.0 µg/L)
- Vinyl Chloride Contour (≥0.29 µg/L)
- Vinyl Chloride Contour (≥0.020 µg/L)
- Area 1 Plume
- Western Plume
- City Limits
- Boeing Property
- Wetland Areas
- Water Bodies
- Waterways

0 1,000 2,000

Scale in Feet

N

Base Map Source: Geometrix 2003; Parcel Data Source: King County 2015; Aerial Photo Source: Esri World Imagery.

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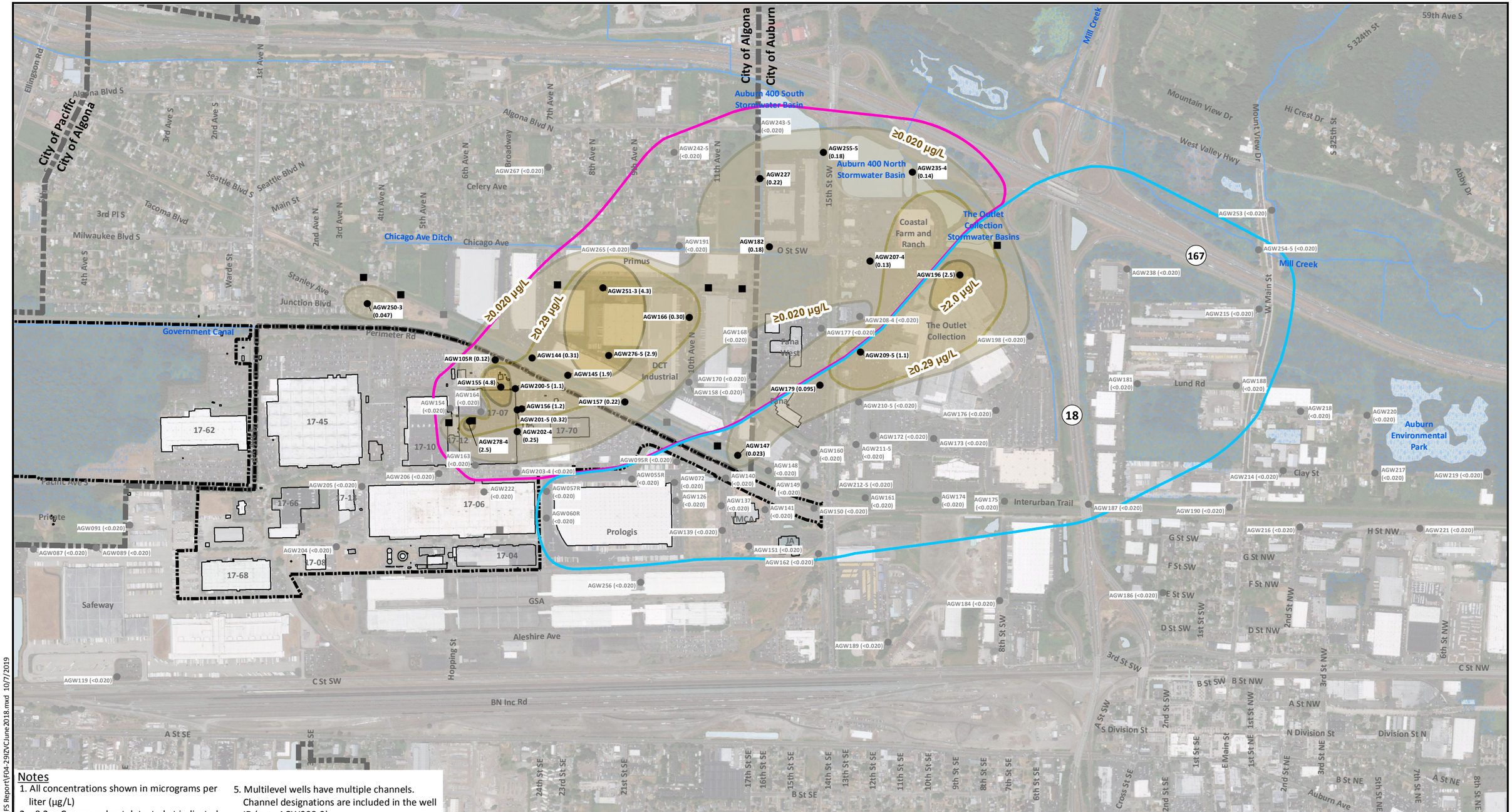
AOC A-14: Shallow Zone
Vinyl Chloride Concentrations
June 2018

Figure
4-28

G:\Projects\025\164\170\112\FS Report\F04-28ZVCJune2018.mxd 10/7/2019



Notes

1. All concentrations shown in micrograms per liter (µg/L)
2. <0.2 = Compound not detected at indicated reporting limit.
3. Monitoring well results are the most recent.
4. Black well and boring symbols indicate locations where the compound was detected. Gray well and boring symbols indicate locations where the compound was not detected.
5. Multilevel wells have multiple channels. Channel designations are included in the well ID (e.g., AGW208-2).
6. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Legend

- Monitoring Well Location
- Historical Borehole Grab Sample Location
- Non-Detect
- Vinyl Chloride Contour (≥2.0 µg/L)
- Vinyl Chloride Contour (≥0.29 µg/L)
- Vinyl Chloride Contour (≥0.020 µg/L)
- Area 1 Plume
- Western Plume
- City Limits
- Boeing Property
- Wetland Areas
- Water Bodies
- Waterways

0 1,000 2,000

Scale in Feet

N

Base Map Source: Geometrix 2003; Parcel Data Source: King County 2015; Aerial Photo Source: Esri World Imagery.

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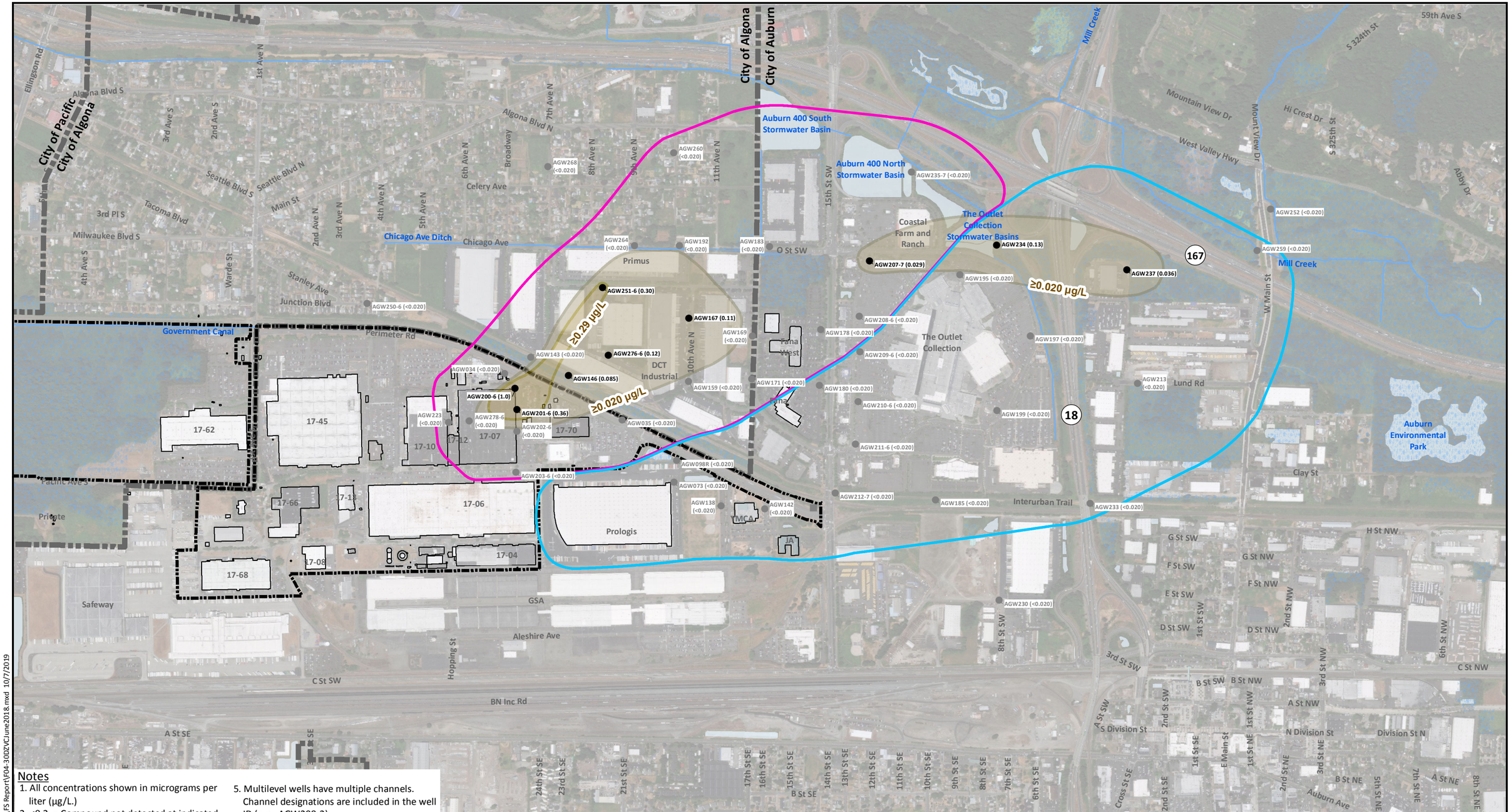
Boeing Auburn
Feasibility Study
Auburn, Washington

AOC A-14: Intermediate Zone Vinyl Chloride Concentrations June 2018

Figure 4-29

G:\Projects\025\164\170\112\FS Report\F04-29IZVCJune2018.mxd 10/7/2019



Notes

1. All concentrations shown in micrograms per liter (µg/L.)
2. <0.2 = Compound not detected at indicated reporting limit.
3. Monitoring well results are the most recent.
4. Black well and boring symbols indicate locations where the compound was detected. Gray well and boring symbols indicate locations where the compound was not detected.
5. Multilevel wells have multiple channels. Channel designations are included in the well ID (e.g., AGW208-2).
6. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Legend

- Monitoring Well Location
- Historical Borehole Grab Sample Location
- Non-Detect
- Vinyl Chloride Contour (≥2.0 µg/L)
- Vinyl Chloride Contour (≥0.29 µg/L)
- Vinyl Chloride Contour (≥0.020 µg/L)
- Area 1 Plume
- Western Plume
- City Limits
- Boeing Property
- Wetland Areas
- Water Bodies
- Waterways

0 1,000 2,000

Scale in Feet

N

Base Map Source: Geometrix 2003; Parcel Data Source: King County 2015; Aerial Photo Source: Esri World Imagery.

G:\Projects\025\164\170\112\FS Report\F04-30DZVCJune2018.mxd 10/7/2019

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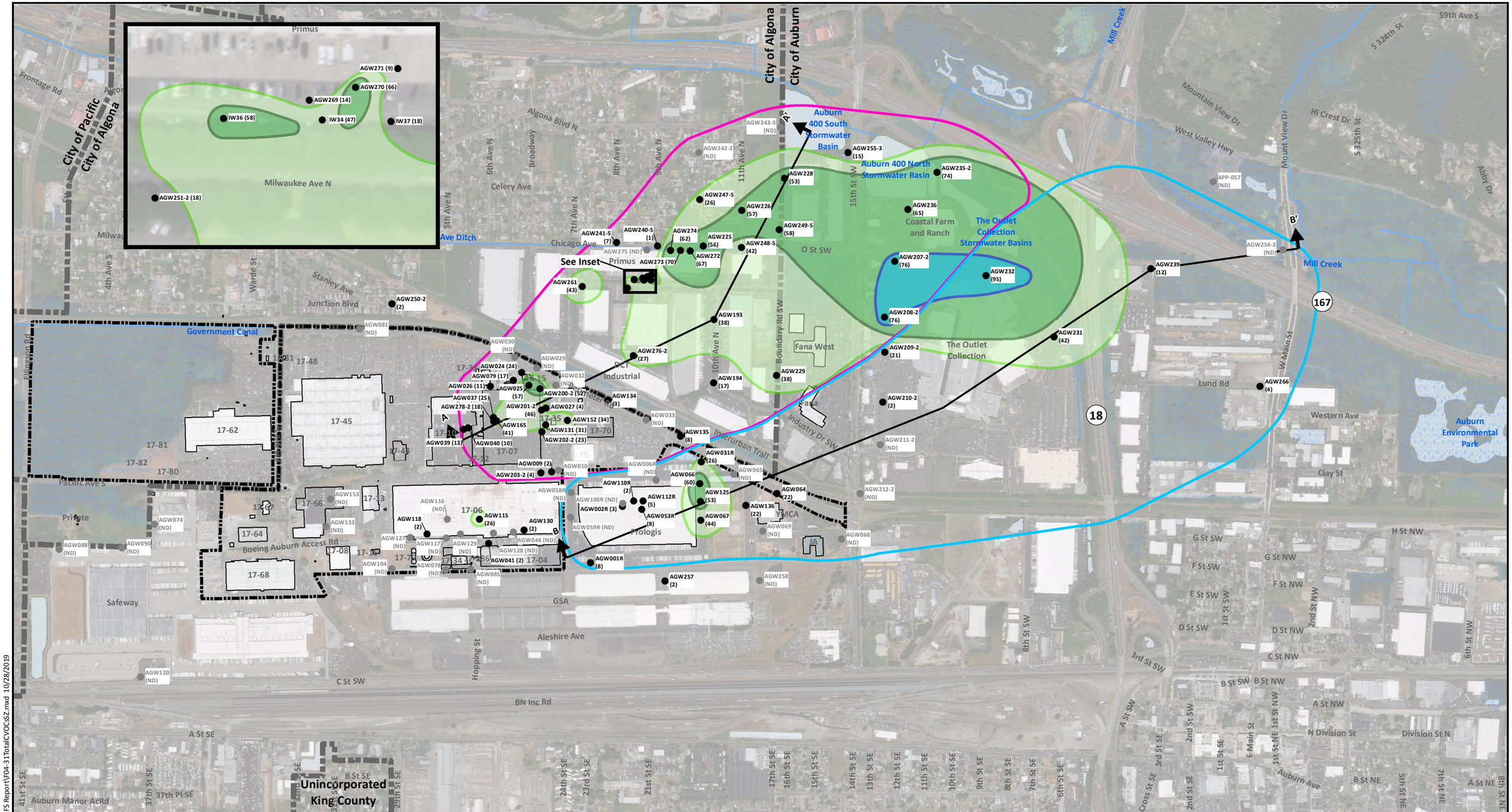
Feasibility Study
Auburn, Washington

AOC A-14: Deep Zone
Vinyl Chloride Concentrations
June 2018

Figure
4-30



Notes

1. All concentrations shown in nanomoles per liter (nmol/L).
2. Multilevel wells have seven well channels. Channel designations are included in the well ID (ex: AGW208-1).
3. Total chloroethenes include TCE, DCE, and VC.
4. ND = TCE, DCE, and VC were not detected at the laboratory reporting limits.
5. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

N

Legend

- Monitoring Well Location
- Monitoring Well Location (Non-Detect)
- Nanomole Contour ≥ 100 nmol/L
- Nanomole Contour ≥ 75 nmol/L
- Nanomole Contour ≥ 50 nmol/L
- Nanomole Contour ≥ 25 nmol/L
- Area 1 Plume
- Western Plume
- City Limits
- Boeing Property
- Wetland Areas
- Water Bodies
- Waterways
- Cross Section Location

0 1,000 2,000

Scale in Feet

Data Sources: King County GIS; Esri World Imagery.

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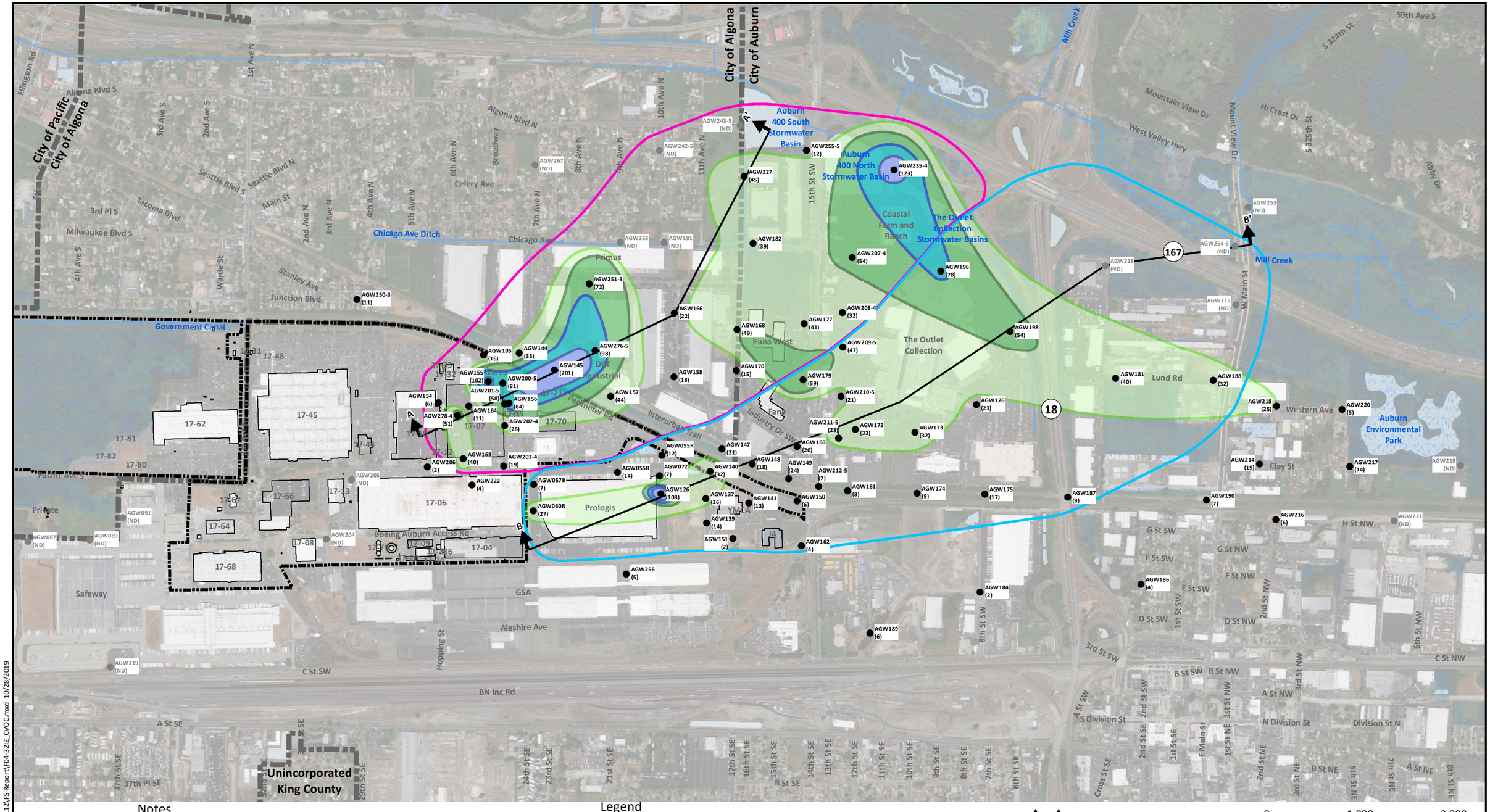
Boeing Auburn
Feasibility Study
Auburn, Washington

AOC A-14: Shallow Zone
Total Chlorinated Volatile Organic Compound Concentrations - June 2018

Figure
4-31

G:\Projects\025\164\170\112\FS Report\F04-31TotalCVOC.SZ.mxd 10/28/2019



Notes

1. All concentrations shown in nanomoles per liter (nmol/L).
2. Multilevel wells have seven well channels. Channel designations are included in the well ID (ex: AGW208-1).
3. Total chloroethenes include TCE, DCE, and VC.
4. ND = TCE, DCE, and VC were not detected at the laboratory reporting limits.
5. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

N

Legend

- Monitoring Well Location
- Monitoring Well Location (Non-Detect)
- Nanomole Contour ≥ 100 nmol/L
- Nanomole Contour ≥ 75 nmol/L
- Nanomole Contour ≥ 50 nmol/L
- Nanomole Contour ≥ 25 nmol/L
- Area 1 Plume
- Western Plume
- City Limits
- Boeing Property
- Wetland Areas
- Water Bodies
- Waterways
- Cross Section Location

Data Sources: King County GIS; Esri World Imagery.

0 1,000 2,000

Scale in Feet

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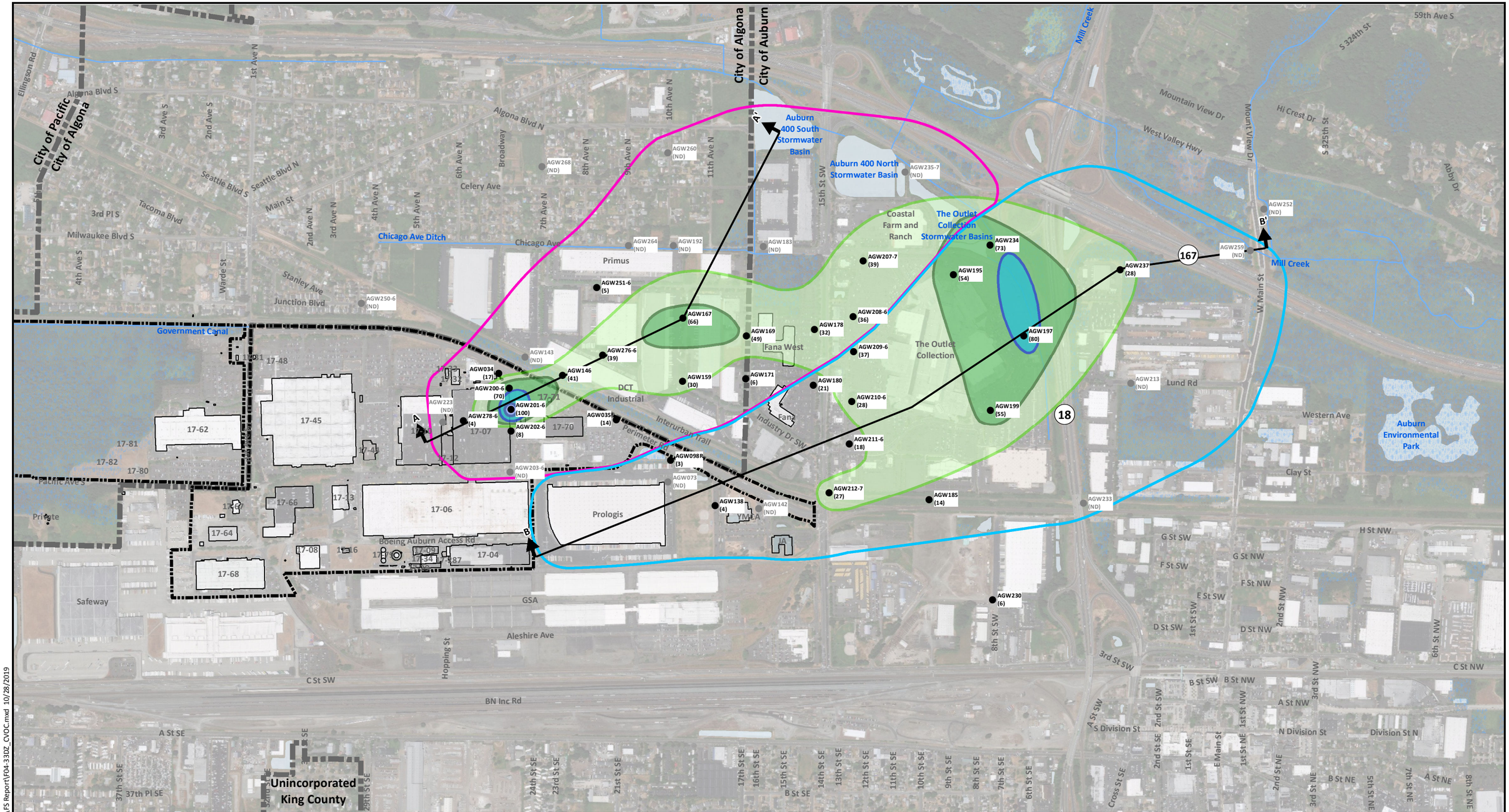
Boeing Auburn
Feasibility Study
Auburn, Washington

AOC A-14: Intermediate Zone
Total Chlorinated Volatile Organic Compound Concentrations - June 2018

Figure 4-32

G:\Projects\025\164\170\112\FS Report\F04-32IZ_CVOC.mxd 10/28/2019



Notes

1. All concentrations shown in nanomoles per liter (nmol/L).
2. Multilevel wells have seven well channels. Channel designations are included in the well ID (ex: AGW208-1).
3. Total chloroethenes include TCE, DCE, and VC.
4. ND = TCE, DCE, and VC were not detected at the laboratory reporting limits.
5. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

N

Legend

- ● Monitoring Well Location
- ● Monitoring Well Location (Non-Detect)
- 🟪 Nanomole Contour ≥ 100 nmol/L
- 🟦 Nanomole Contour ≥ 75 nmol/L
- 🟩 Nanomole Contour ≥ 50 nmol/L
- 🟩 Nanomole Contour ≥ 25 nmol/L
- Area 1 Plume
- Western Plume
- City Limits
- Boeing Property
- Wetland Areas
- Water Bodies
- Waterways
- Cross Section Location

0 1,000 2,000

Scale in Feet

Data Sources: King County GIS; Esri World Imagery.

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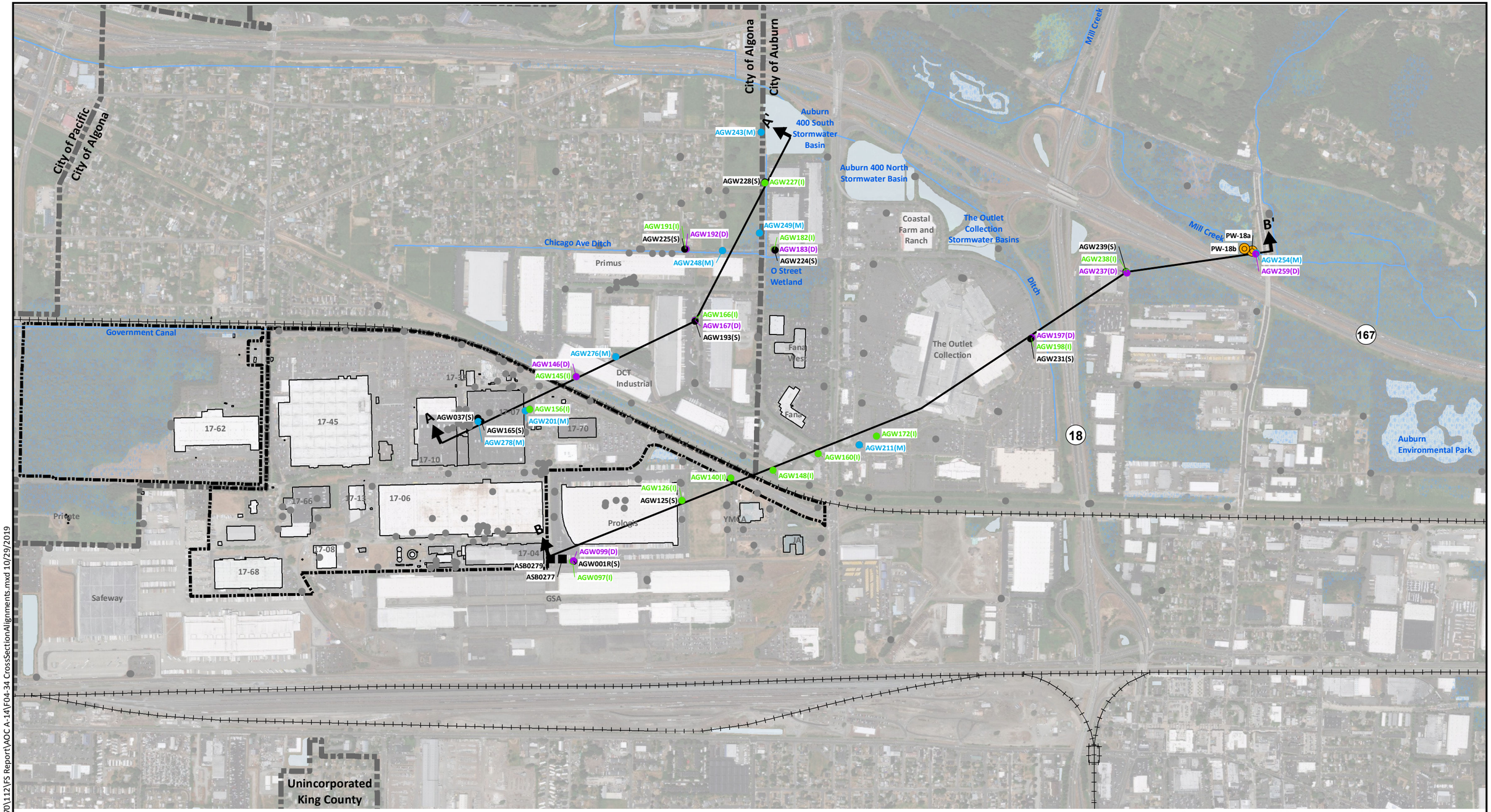
Boeing Auburn
Feasibility Study
Auburn, Washington

AOC A-14: Deep Zone
Total Chlorinated Volatile Organic Compound Concentrations - June 2018

Figure
4-33

G:\Projects\025\164\170\112\FS Report\F04-33DZ_CVOC.mxd 10/28/2019



Notes

1. Groundwater wells are identified by the AGW prefix. The designations behind the identifications indicate the zone. If there is no designation, the well is screened in the shallow zone. (I) = intermediate zone, (D) = deep zone, (M) = multi-level well; screens in multiple groundwater zones.
2. Well designations beginning with APP are installed and owned by WSDOT.
3. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Legend

- AGW165(S) ● Shallow Monitoring Well (2 to 30 ft bgs)
- AGW145(I) ● Intermediate Monitoring Well (40 to 60 ft bgs)
- AGW146(D) ● Deep Monitoring Well (80 to 100 ft bgs)
- AGW276(M) ● Multi-Level Well
- ● Wells Not Associated with Cross-Sections
- ASB0277 ■ FS Boring Location
- Pore Water Sample Location
- Wetland Areas
- Water Bodies
- Waterways
- Cross-Section Location

0 1,000 2,000

Scale in Feet

Base Map Source: Geometrix 2003; Parcel Data Source: King County 2015; Aerial Photo Source: Esri World Imagery.

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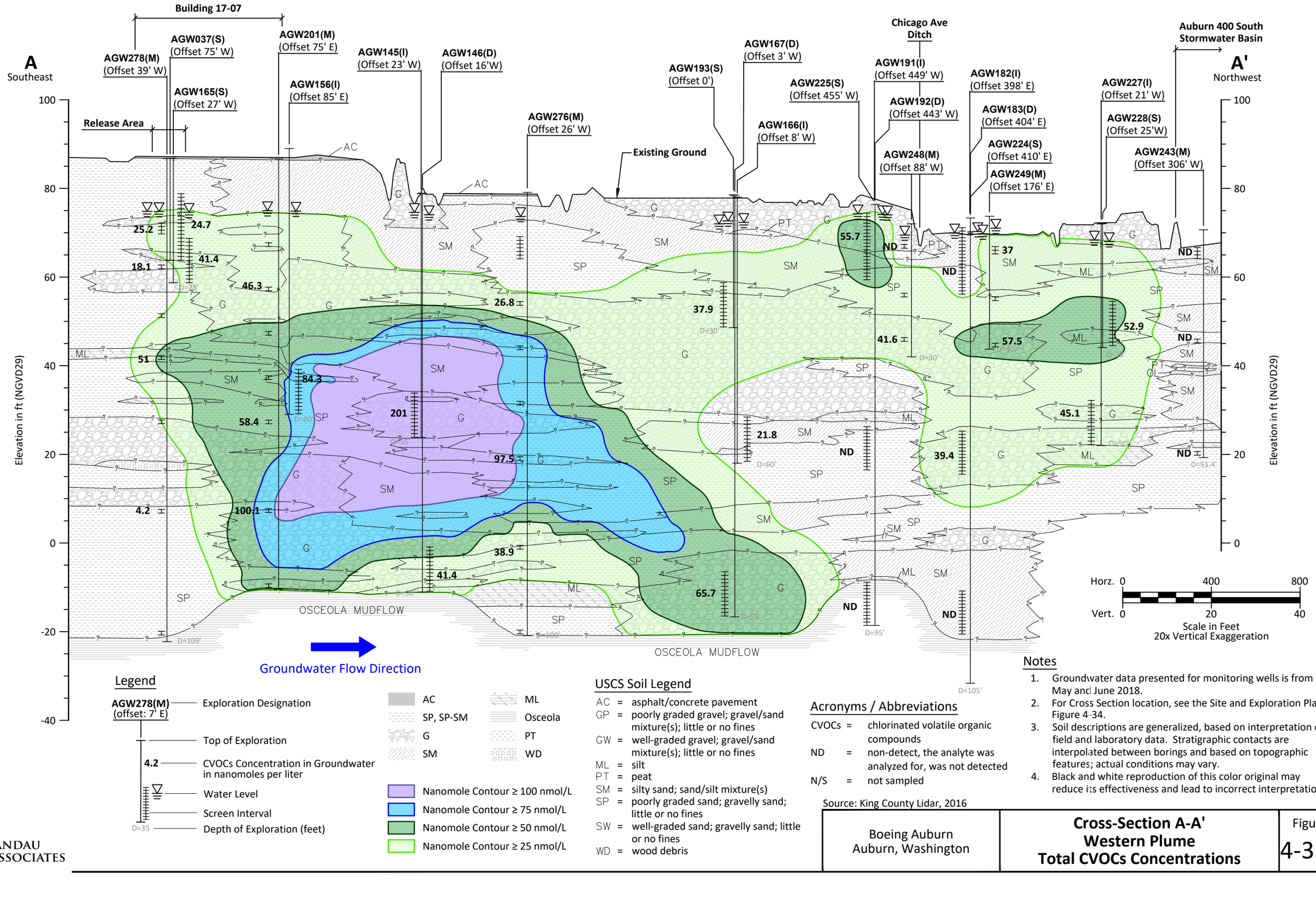
Boeing Auburn
Feasibility Study
Auburn, Washington

Western Plume and Area 1 Plume Cross-Section Alignments

Figure 4-34

G:\Projects\025\164\170\112\FS Report\AOC A-14\F04-34 CrossSectionAlignments.mxd 10/29/2019



Legend

AGW278(M) (offset: 7' E) — Exploration Designation

Top of Exploration

4.2 — CVOCs Concentration in Groundwater in nanomoles per liter

Water Level

Screen Interval

D=35 — Depth of Exploration (feet)

AC
SP, SP-SM
G
SM
ML
Osceola
PT
WD

Nanomole Contour ≥ 100 nmol/L
Nanomole Contour ≥ 75 nmol/L
Nanomole Contour ≥ 50 nmol/L
Nanomole Contour ≥ 25 nmol/L

USCS Soil Legend

AC = asphalt/concrete pavement
GP = poorly graded gravel; gravel/sand mixture(s); little or no fines
GW = well-graded gravel; gravel/sand mixture(s); little or no fines
ML = silt
PT = peat
SM = silty sand; sand/silt mixture(s)
SP = poorly graded sand; gravelly sand; little or no fines
SW = well-graded sand; gravelly sand; little or no fines
WD = wood debris

Acronyms / Abbreviations

CVOCs = chlorinated volatile organic compounds
ND = non-detect, the analyte was analyzed for, was not detected
N/S = not sampled

Notes

1. Groundwater data presented for monitoring wells is from May and June 2018.
2. For Cross Section location, see the Site and Exploration Plan, Figure 4-34.
3. Soil descriptions are generalized, based on interpretation of field and laboratory data. Stratigraphic contacts are interpolated between borings and based on topographic features; actual conditions may vary.
4. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Source: King County Lidar, 2016

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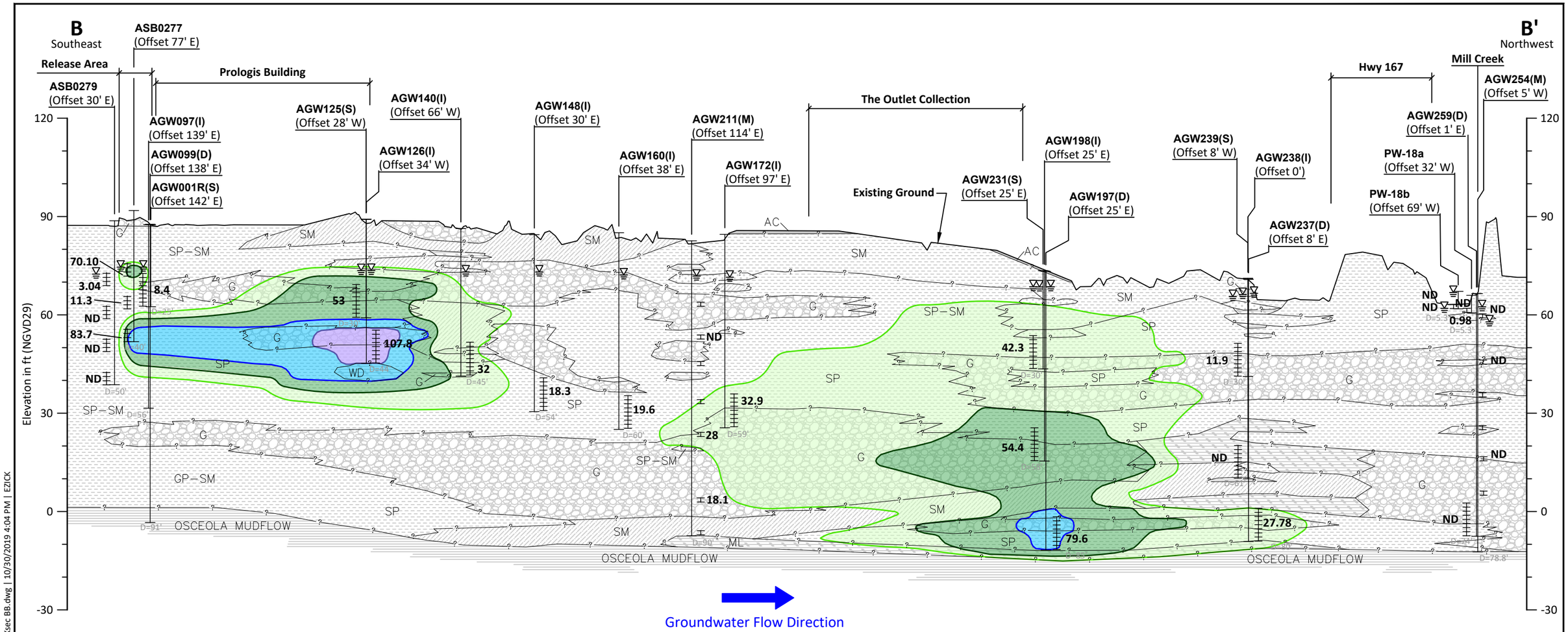
Boeing Auburn
Auburn, Washington

Cross-Section A-A'
Western Plume
Total CVOCs Concentrations

Figure
4-35a



Legend

- **ASB0281** (offset: 7' E) — Exploration Designation
- Top of Exploration
- **18.1** — CVOCs Concentration in Groundwater in nanomoles per liter
- Water Level
- Screen Interval
- D=35 — Depth of Exploration (feet)

Horz. 0 600 1200
Vert. 0 30 60
Scale in Feet
20x Vertical Exaggeration

- AC
- SP, SP-SM, GP/SP
- G
- SM
- ML
- Osceola
- PT

- Nanomole Contour ≥ 100 nmol/L
- Nanomole Contour ≥ 75 nmol/L
- Nanomole Contour ≥ 50 nmol/L
- Nanomole Contour ≥ 25 nmol/L

Acronyms / Abbreviations

CVOCs = chlorinated volatile organic compounds
ND = non-detect, the analyte was analyzed for, was not detected

USCS Soil Legend

AC = asphalt/concrete pavement
GP = poorly graded gravel; gravel/sand mixture(s); little or no fines
GW = well-graded gravel; gravel/sand mixture(s); little or no fines
ML = silt
PT = peat
SM = silty sand; sand/silt mixture(s)
SP = poorly graded sand; gravelly sand; little or no fines
SW = well-graded sand; gravelly sand; little or no fines
WD = wood debris

Notes

1. Groundwater data presented for monitoring wells is from May and June 2018. Groundwater data for borings are from August 2017. Pore water data is from October 2018.
2. For Cross Section location, see the Site and Exploration Plan, Figures 4-34.
3. Soil descriptions are generalized, based on interpretation of field and laboratory data. Stratigraphic contacts are interpolated between borings and based on topographic features; actual conditions may vary.
4. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Source: King County Lidar, 2016

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Auburn, Washington

Cross-Section B-B'
Area 1 Plume
Total CVOCs Concentrations

Figure
4-35b

SW-19	Most Recent	Date
TCE	ND	9/5/2014
VC	**0.13**	9/5/2014

SW-14	Most Recent	Date
TCE	**0.47**	9/27/2018
VC	**0.31**	9/27/2018

SW-16	Most Recent	Date
TCE	**0.33**	9/27/2018
VC	**0.22**	9/27/2018

SW-11	Most Recent	Date
TCE	ND	6/19/2012
VC	**0.087**	6/19/2012

SW-CD2	Most Recent	Date
TCE	ND	9/5/2014
VC	**0.10**	9/5/2014

SW-CD13	Most Recent	Date
TCE	ND	12/2/2014
VC	**0.54**	12/2/2014

SW-CD1	Most Recent	Date
TCE	**1.3**	9/17/2012
VC	**0.059**	9/17/2012

SW4/SW-CD4	Most Recent	Date
TCE	**1.8**	9/27/2018
VC	**0.14**	9/27/2018

Legend

- Stormwater Sample Location (Detect)
- Stormwater Sample Location (Non-Detect)
- Surface Water Sample Location (Non-Detect)
- Ongoing Sample Location
- Open Surface Water Waterway
- Open Stormwater Waterway
- Piped Surface Water Waterway
- Piped Stormwater Waterway
- Wetland Areas
- Boeing Property
- City Limits

Notes

1. Surface water sampling locations are designated by SW.
2. The locations of surface water features are approximate.
3. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

N

0 1,000 2,000

Scale in Feet

Base Map Source: Geometrix 2003; Parcel Data Source: King County 2015; Aerial Photo Source: Esri World Imagery.

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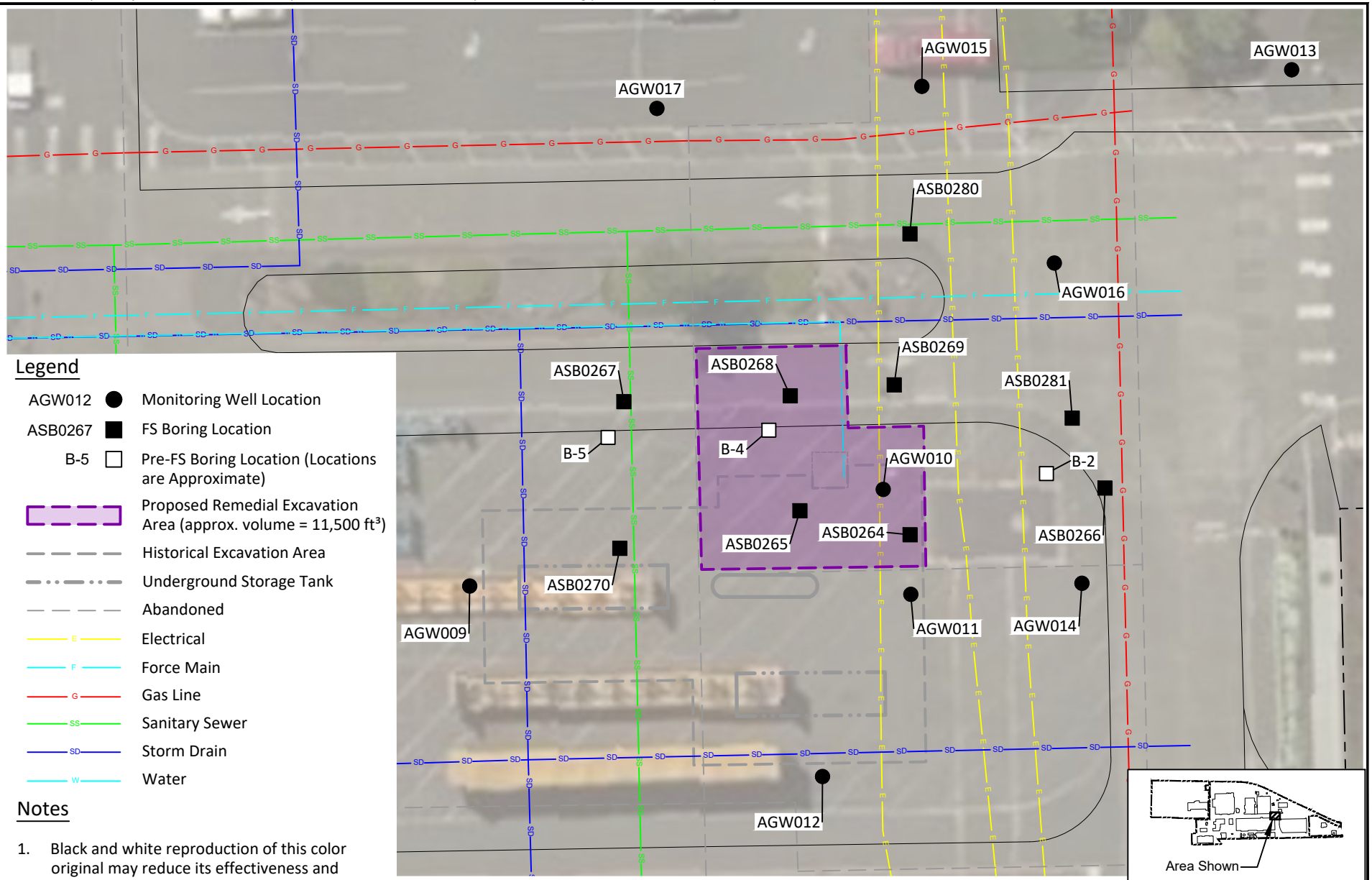
Auburn, Washington

AOC A-15: Site-Wide Stormwater and Surface Water Results

Figure
4-36

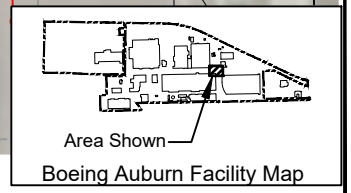


Legend

AGW012 ●	Monitoring Well Location
ASB0267 ■	FS Boring Location
B-5 □	Pre-FS Boring Location (Locations are Approximate)
	Proposed Remedial Excavation Area (approx. volume = 11,500 ft³)
	Historical Excavation Area
	Underground Storage Tank
	Abandoned
E	Electrical
F	Force Main
G	Gas Line
SS	Sanitary Sewer
SD	Storm Drain
W	Water

Notes

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.



Base map source: Geomatrix 2003, ©Bing Imagery, 2018

N

0 25 50

Scale in Feet

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Feasibility Study
Auburn, Washington

AOC A-01: Conceptual Excavation Alternative

Figure
5-1

Legend

AGW016 ● Monitoring Well Location

AGW046 ● Wells Selected for A-09 Monitoring

AGR07HA1 ▣ Pre-FS Grab Sample Location (Locations are Approximate)

No highlighting = No detection
Orange = Detection below pCUL
Green = Exceedance of pCUL

1 Scrubber

17-07 Current Building and Number

B 11 Building 17-07 Column Designations

A A' Cross Section Location

Notes

1. Groundwater wells are identified by the AGW prefix. The designations behind the identifications indicate the zone. (S) = shallow zone, (I) = intermediate zone, (D) = deep zone, (M) = multi-level well; screens in multiple groundwater zones.
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

11 10 9

B C

1 2 3 4

1996 Excavation Area

PAU/17-07-24
PAU/17-07-40
PAU/17-07-25
PAU/17-07-39
CB2-AU/17-07-22
CS2-AU/17-07-11
S2-AU/17-07-12
ARG07HA2
P2-AU/17-07-16
AGW047 (S)
PAU/17-07-42
PAU/17-07-41
PAU/17-07-44
PAU/17-07-43
AGW046 (S)
CS2-AU/17-07-19
PAU/17-07-47
VS2-AU/17-07-18
PAU/17-07-46
AGR07HA1
AGW049 (S)
VS2-AU/17-07-21
VS2-AU/17-07-20
AGW048 (S)
VS2-AU/17-07-17
AGR07HA3
PAU/17-07-45
AGR07-SC4D
AGR07-SC4A
AGR07-SC4C
AGR07-SC4E
AGR07-SC4B
AGW050 (S)
AGW037 (S)
AGW278 (M)

A A'

17-10

17-07

Area Shown
Boeing Auburn Facility Map

N

0 20 40
Scale in Feet

Sources: AGI Technologies, Figure 4, 1996; ©Bing, 2019

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Auburn, Washington

AOC A-09: Conceptual Containment and MNA Alternative (Alternative B1)

Figure
5-2

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Legend

- Proposed Injection Well Location
- AGW037 (S) — Monitoring Well Location
- Pre-FS Soil Grab Sample Location
- Radius of Injection (15 ft)

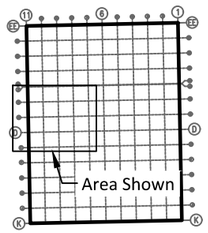
No highlighting = No detection
Orange = Detection below pCUL
Green = Exceedance of pCUL

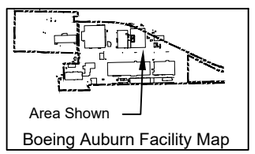
- Tank Line Area
- D / 7 — Building 17-07 Column Designations

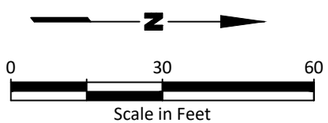
Notes

1. Groundwater wells are identified by the AGW prefix. The designations behind the identifications indicate the zone. (S) = shallow zone, (I) = intermediate zone, (D) = deep zone, (M) = multi-level well; screens in multiple groundwater zones.
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Source: Boeing 2017







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Boeing Auburn Feasibility Study Auburn, Washington	**AOC A-09: Conceptual *In Situ* Groundwater Treatment Alternative (Alternative B2)**	Figure 5-3

Legend

AGW016 ● Monitoring Well Location

AGR07HA1 ◎ Pre-RI Grab Sample Location (Locations are Approximate)

No highlighting = No detection
Orange = Detection below the pCUL
Green = Exceedance of pCUL

ARG07HA2 = Highlighted sample label identifies where soil contamination above pCULs was left in place.

1 Scrubber

17-07 Current Building and Number

B 11 Building 17-07 Column Designations

Notes

1. Groundwater wells are identified by the AGW prefix. The designations behind the identifications indicate the zone. (S) = shallow zone, (I) = intermediate zone, (D) = deep zone, (M) = multi-level well; screens in multiple groundwater zones.

2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

11 10 9

B

C

1

2

3

4

1996 Excavation Area

Proposed Remedial Excavation Area (Approximate Volume= 9,200 ft^3)

AGW037 (S)

AGW278 (M)

AGW050 (S)

AGW049 (S)

AGW048 (S)

AGW047 (S)

AGW046 (S)

PAU/17-07-40
PAU/17-07-24
PAU/17-07-25
PAU/17-07-39
CB2-AU/17-07-22
PAU/17-07-41
PAU/17-07-42
PAU/17-07-44
PAU/17-07-43
CS2-AU/17-07-19
PAU/17-07-47
VS2-AU/17-07-18
PAU/17-07-46
CS2-AU/17-07-11
S2-AU/17-07-12
ARG07HA2
P2-AU/17-07-16
AGR07HA1
VS2-AU/17-07-21
VS2-AU/17-07-20
VS2-AU/17-07-17
AGR07HA3
PAU/17-07-45

AGR07-SC4D
AGR07-SC4A
AGR07-SC4C
AGR07-SC4E
AGR07-SC4B

17-10

17-07

Area Shown
Boeing Auburn Facility Map

Sources: AGI Technologies, Figure 4, 1996; ©Bing, 2019

N

0 20 40
Scale in Feet

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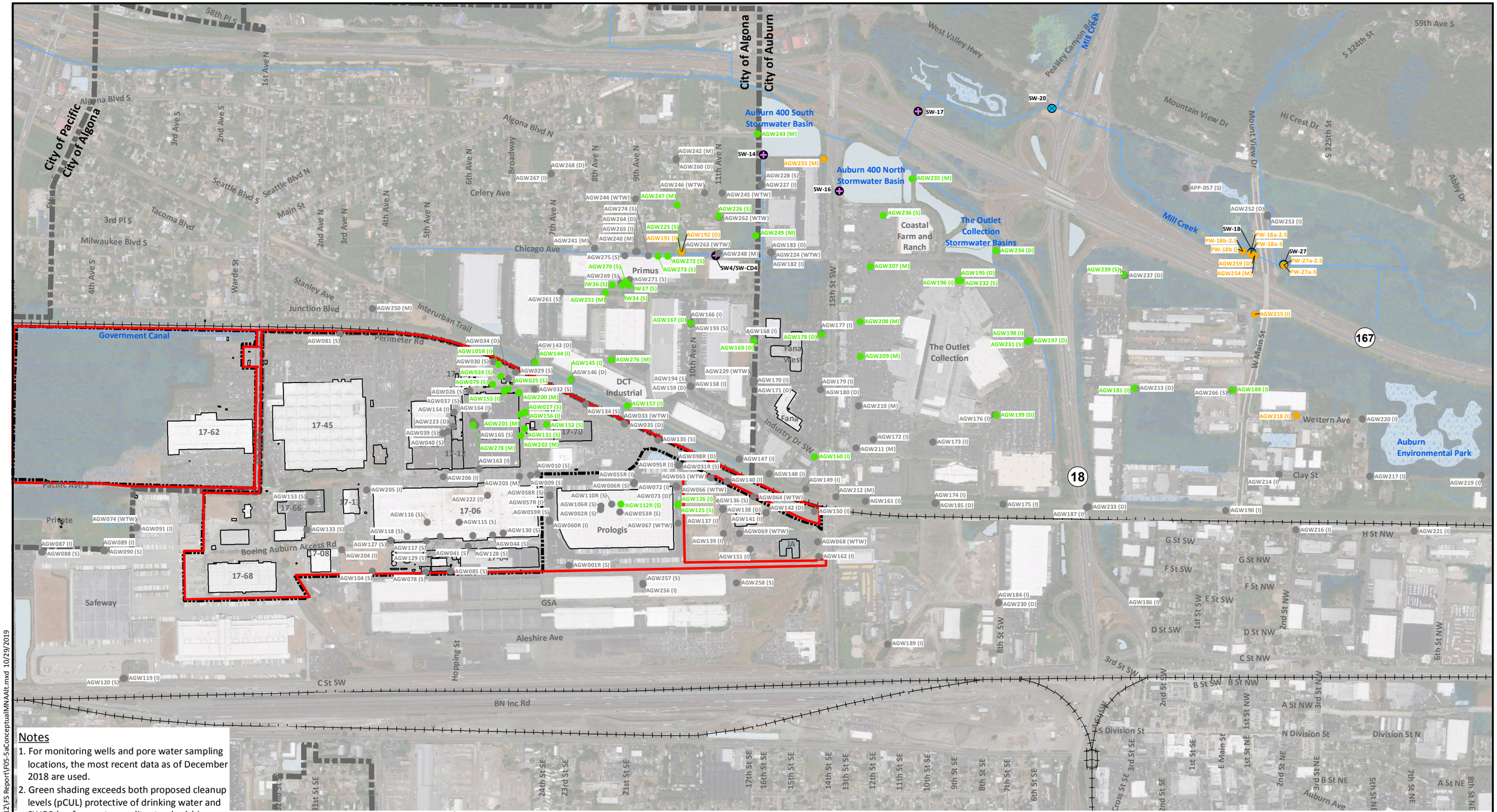
Feasibility Study
Auburn, Washington

AOC A-09: Conceptual Future Excavation Alternative (Alternative B3)

Figure 5-4



Notes

1. For monitoring wells and pore water sampling locations, the most recent data as of December 2018 are used.
2. Green shading exceeds both proposed cleanup levels (pCUL) protective of drinking water and SWQS (surface water quality standards) in groundwater.
3. Exceedances shown at multilevel wells reflect an exceedance in any channel.
4. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Legend

- AGW192 (D) — Boundary Well
- AGW234 (D) — Exceedance of Groundwater pCUL (Protective of Drinking Water) (TCE>4 µg/L and/or VC>0.29 µg/L)
- AGW260 (D) — No Exceedance
- SW-17 — Ongoing Stormwater Sample Location
- SW-20 — Ongoing Surface Water Sample Location

- Facility Boundary
- City Limits
- Boeing Property
- Wetland Areas
- Water Bodies
- Waterways

0 1,000 2,000

Scale in Feet

N

Base map source: Geometrix 2003; Aerial Photo Source: Esri World Imagery; Parcel Data Source: King County GIS 2012

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Boeing Auburn Feasibility Study Auburn, Washington	**AOC A-14: Conceptual Monitored Natural Attenuation - pCULs Protective of Drinking Water (Alternative D1)**	Figure 5-5a

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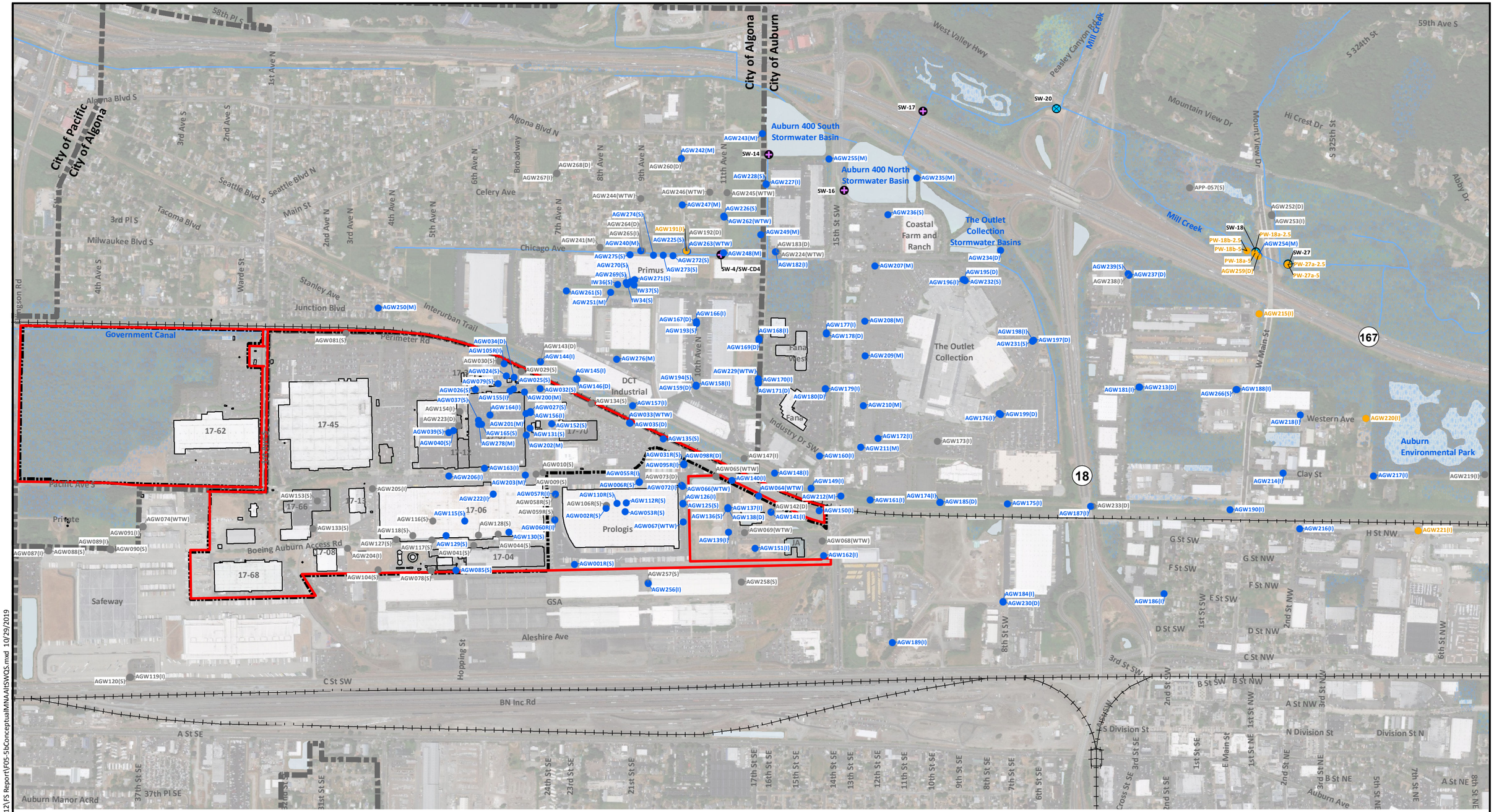

Notes

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Legend

- AGW191 (I) — Boundary Well
- AGW234 (D) — Monitoring Well (Exceedance of SWQS in Groundwater)
- AGW260 (D) — Well Removed from Monitoring Well Network
- SW-17 — Ongoing Stormwater Sample Location
- SW-20 — Ongoing Surface Water Sample Location
- Facility Boundary
- City Limits
- Boeing Property
- Wetland Areas
- Water Bodies
- Waterways

0 1,000 2,000

Scale in Feet

N

Base map source: Geometrix 2003; Aerial Photo Source: Esri World Imagery; Parcel Data Source: King County GIS 2012

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Boeing Auburn Feasibility Study Auburn, Washington	**AOC A-14: Conceptual Monitored Natural Attenuation - SWQS in Groundwater (Alternative D1)**	Figure 5-5b

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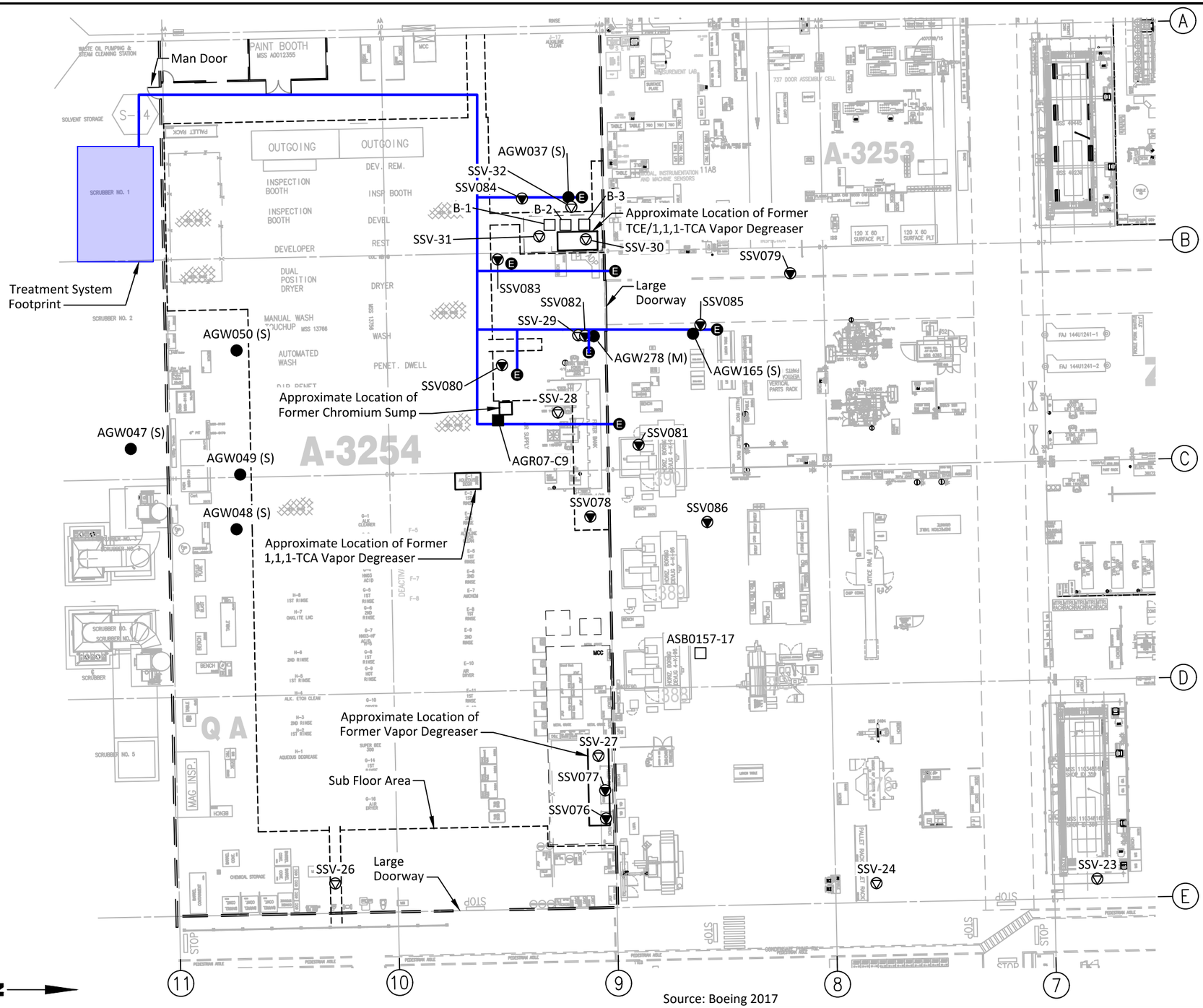
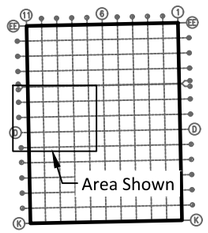
Legend

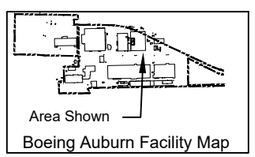
- Conceptual SVE Wellpoint Location
- AGW050 (S) — Monitoring Well Location
- AGR07-C9 — FS Boring Location
- B-1 — Pre-FS Boring Location
- SSV084 — FS Sub-slab Vapor Sampling Location
- SSV-31 — Pre-FS Sub-slab Vapor Sampling Location
- Conceptual SVE Piping
- Tank Line Area
- D / 7 — Building 17-07 Column Designations

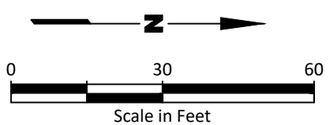
Notes

1. Groundwater wells are identified by the AGW prefix. The designations behind the identifications indicate the zone. (S) = shallow zone, (I) = intermediate zone, (D) = deep zone, (M) = multi-level well; screens in multiple groundwater zones.
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.









Source: Boeing 2017

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Boeing Auburn Feasibility Study Auburn, Washington	**AOC A-14: Conceptual SVE Alternative Building 17-07 Release Area (Alternatives D2, D3, and D5)**	Figure 5-6

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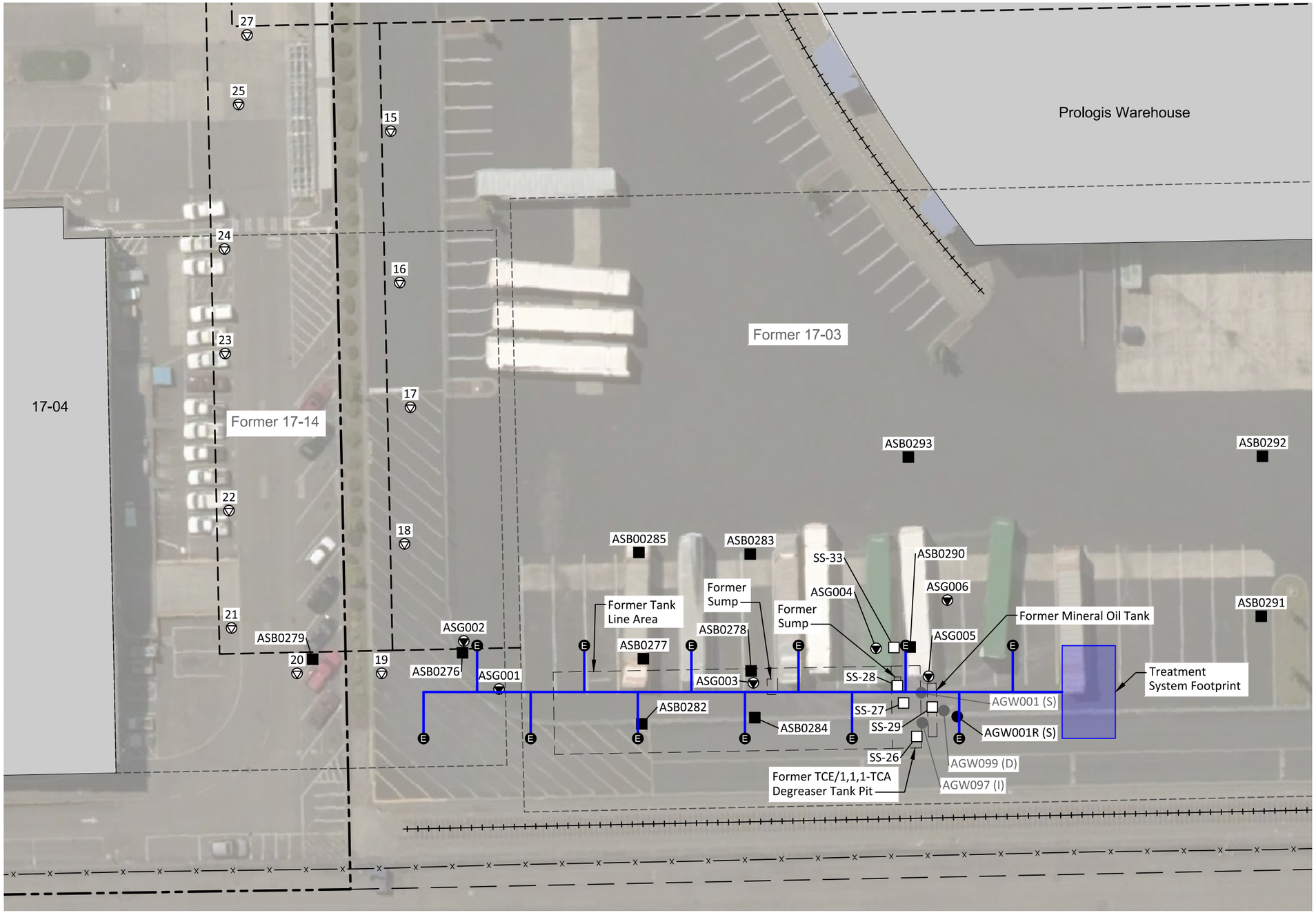
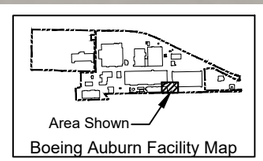
Legend

- Conceptual SVE Wellpoint
- ASB0280 — FS Boring Location
- SS-33 — Pre-FS Boring Location
- ASG001 — FS Soil Gas Sampling Location
- 18 — Pre-FS Soil Gas Location
- AGW001R (S) — Monitoring Well Location
- AGW001 (S) — Decommissioned Well Location
- 17-07 — Current Building and Number
- 17-14 — Former Building and Number
- Conceptual SVE Piping
- Boeing Property Line
- Adjacent Property Line
- Existing Fence Line
- Existing Railroad Track
- Chrome Waste Line



Notes

1. Groundwater monitoring wells are identified by the AGW prefix. The designations beside the identifications indicate the zone (S) = Shallow zone, (I) = Intermediate zone, (D) = deep zone.
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.



N

0 40 80

Scale in Feet

Base map source: Geomatrix 2003; Kennedy Jenks

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Boeing Auburn
Feasibility Study
Auburn, Washington

AOC A-14: Conceptual SVE Alternative Former Building 17-03 Release Area (Alternatives D2, D3, and D5)

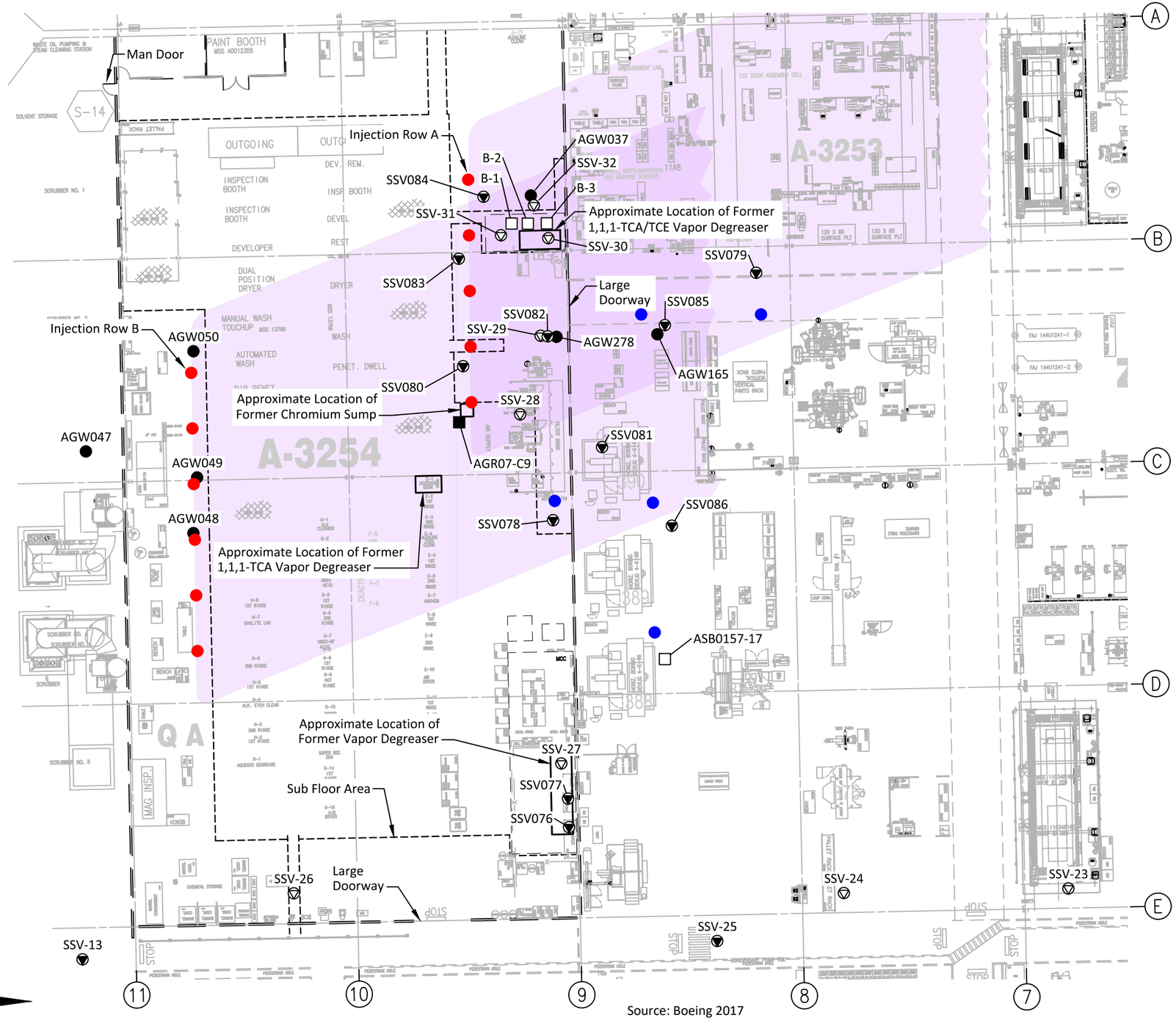
Figure 5-7

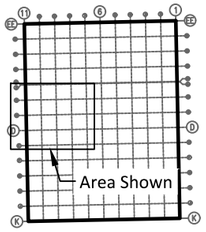
Legend

- Proposed Injection Well Location
- Proposed Monitoring Well Location
- AGW050 — Monitoring Well Location
- AGR07-C9 — FS Boring Location
- B-1 — Pre-FS Boring Location
- SSV084 — FS Sub-slab Vapor Sampling Location
- SSV-31 — Pre-FS Sub-slab Vapor Sampling Location
- Tank Line Area
- D / 7 — Building 17-07 Column Designations
- Approximate Expected Extent of Electron Donor from Enhanced *In Situ* Bioremediation (EISB) Injection Activities

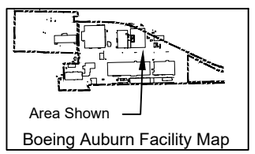
Notes

1. Groundwater wells are identified by the AGW prefix. The designations behind the identifications indicate the zone. (S) = shallow zone, (I) = intermediate zone, (D) = deep zone, (M) = multi-level well; screens in multiple groundwater zones.
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

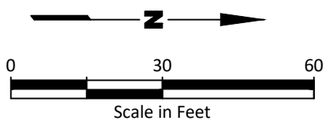




17-07 Building



Boeing Auburn Facility Map



Source: Boeing 2017

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Boeing Auburn Feasibility Study Auburn, Washington	**AOC A-14: Conceptual EISB Alternative, Building 17-07 Release Area (Alternatives D2 and D5)**	Figure 5-8

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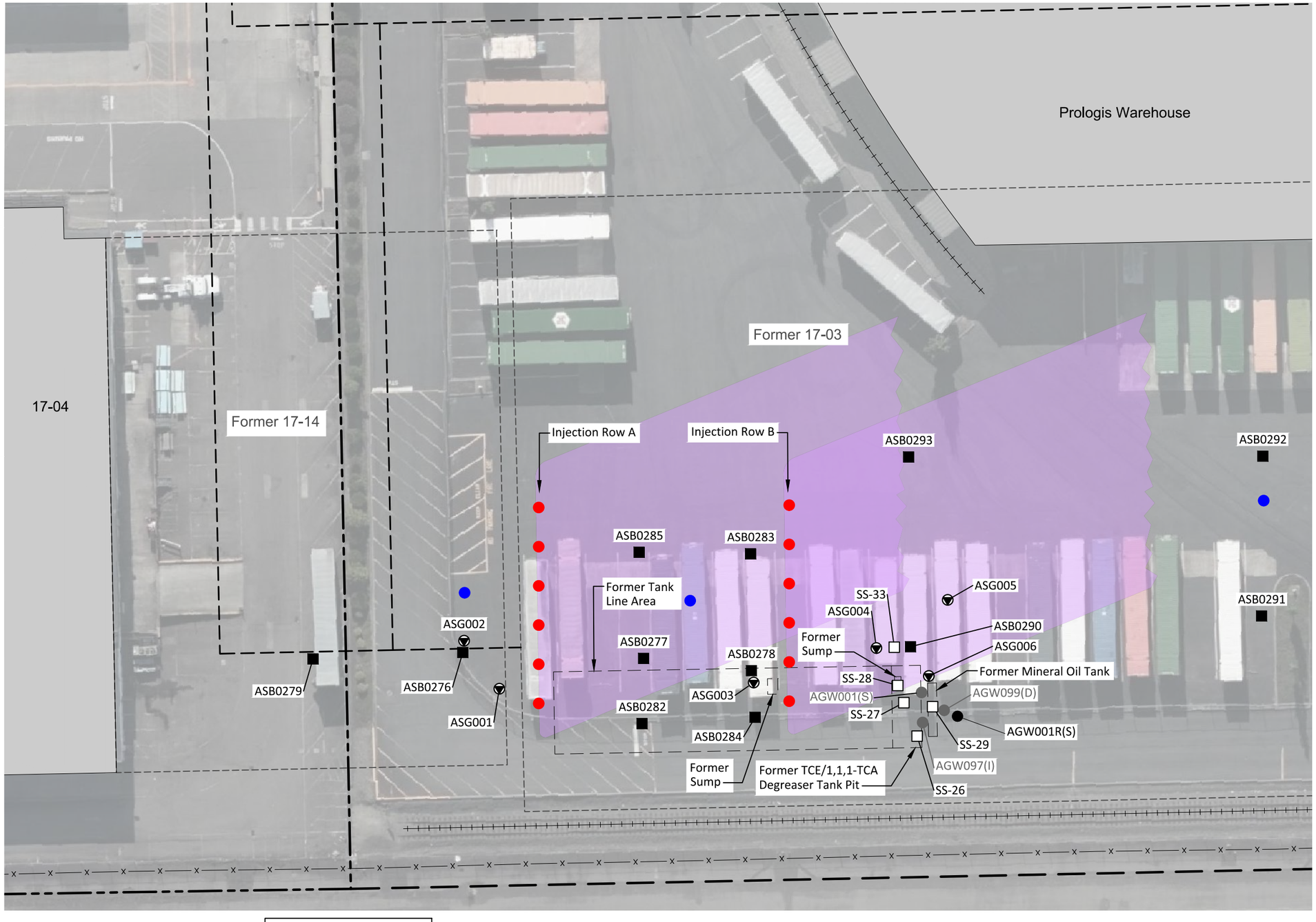
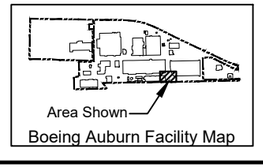
Legend

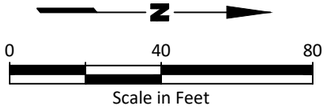
- Proposed Injection Well Location
- Proposed Monitoring Well Location
- ASG0285 — FS Boring Location
- SS-33 — Pre-FS Boring Location
- ASG001 — FS Soil Gas Sampling Location
- AGW001R — Well Location
- AGW001 — Decommissioned Well Location
- 17-07 — Current Building and Number
- 17-14 — Former Building and Number
- Boeing Property Line Adjacent
- Property Line
- Existing Fence Line
- Existing Railroad Track
- Former Chrome Waste Line
- Approximate Expected Extent of Electron Donor from Enhanced *In Situ* Bioremediation (EISB) Injection Activities



Notes

1. Groundwater borehole grab sample SS-33 was collected in October 1992.
2. Groundwater monitoring wells are identified by the AGW prefix. The designations beside the identifications indicate the zone (S) = Shallow zone, (I) = Intermediate zone, (D) = deep zone.
3. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.





Base map source: Geomatrix 2003; Kennedy Jenks

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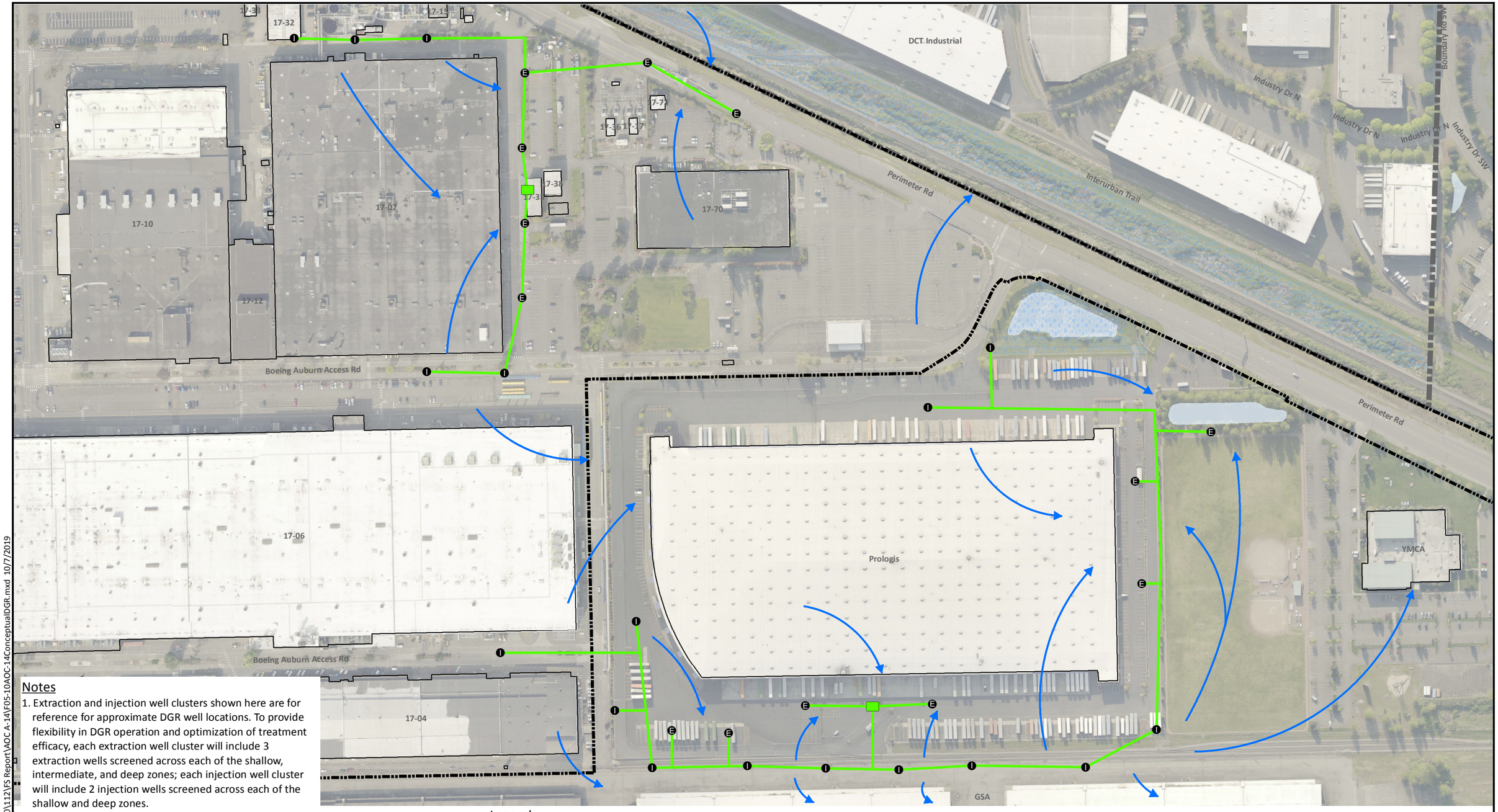
Feasibility Study
Auburn, Washington

AOC A-14: Conceptual EISB Alternative, Former Building 17-03 Release Area (Alternatives D2 and D5)

Figure 5-9



Notes

1. Extraction and injection well clusters shown here are for reference for approximate DGR well locations. To provide flexibility in DGR operation and optimization of treatment efficacy, each extraction well cluster will include 3 extraction wells screened across each of the shallow, intermediate, and deep zones; each injection well cluster will include 2 injection wells screened across each of the shallow and deep zones.
2. Extraction and injection wells are located to provide DGR treatment to known or presumed VOC source areas as well as to observed elevated VOC concentrations in groundwater.
3. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Legend

- Extraction Well Cluster
- Injection Well Cluster
- Treatment System Location
- Conveyance/Conduit Trench
- Generalized Groundwater Flow Lines
- Boeing Property
- City Limits
- Wetland Areas

N

0 250 500

Scale in Feet

Data Source: King County GIS.

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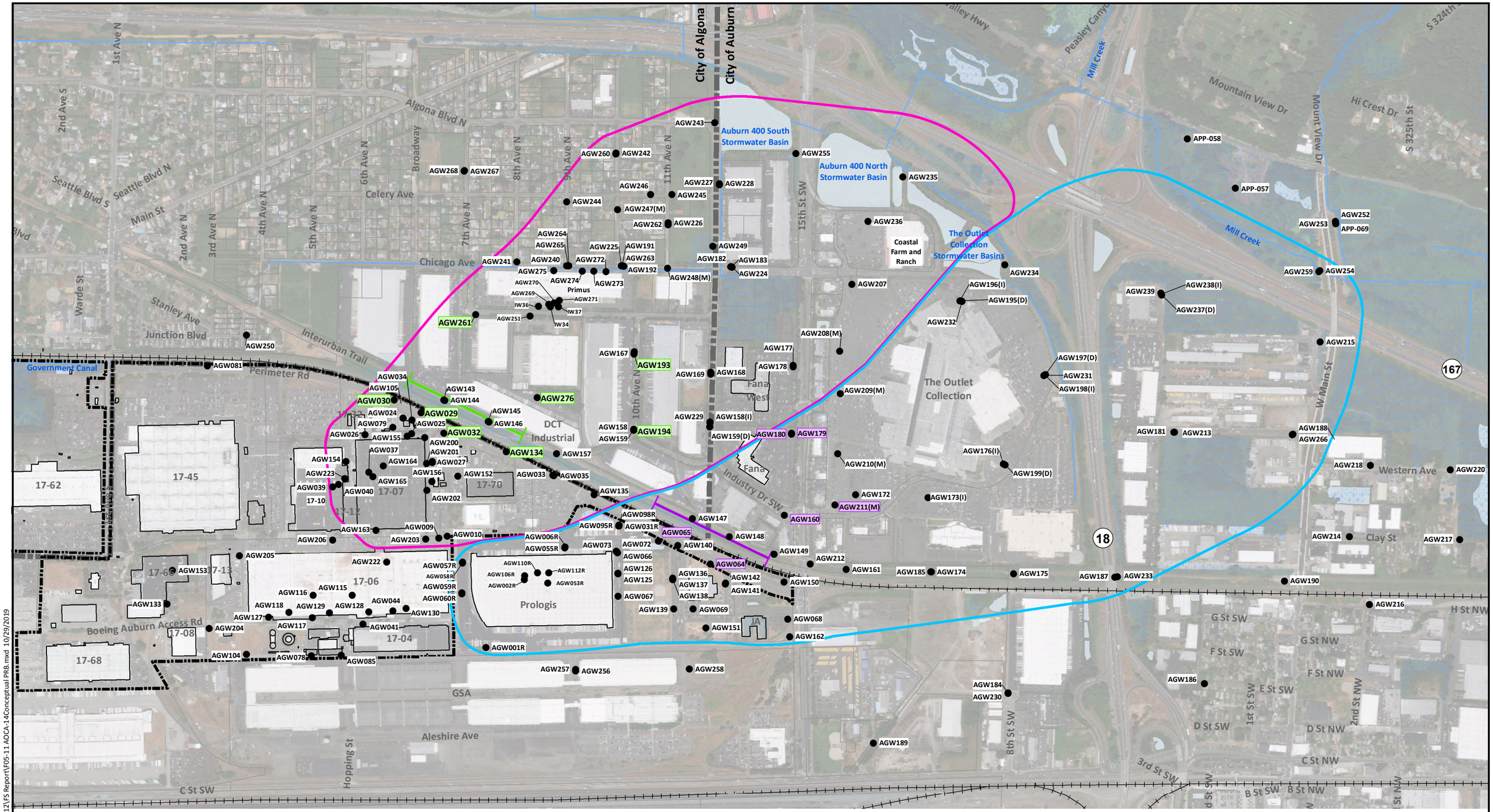
Boeing Auburn Feasibility Study Auburn, Washington	**AOC A-14: Conceptual Dynamic Groundwater Recirculation Alternative (Alternative D3)**	Figure 5-10

G:\Projects\025\164\170\112\FS Report\AOC A-14\F05-10AOC-14ConceptualDGR.mxd 10/7/2019



Notes

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Legend

- Monitoring Well
- Area 1 Plume
- Western Plume
- City Limits
- Boeing Property
- Wetland Areas
- Water Bodies
- Waterways
- Western Plume PRB Injection Row
- AGW134 — Western Plume PRB Monitoring Location
- Area 1 Plume PRB Injection Row
- AGW180 — Area 1 Plume PRB Monitoring Location

0 820 1,640

Scale in Feet

N

Base map source: Geometrix 2003; Aerial Photo Source: Esri World Imagery; Parcel Data Source: King County GIS 2012

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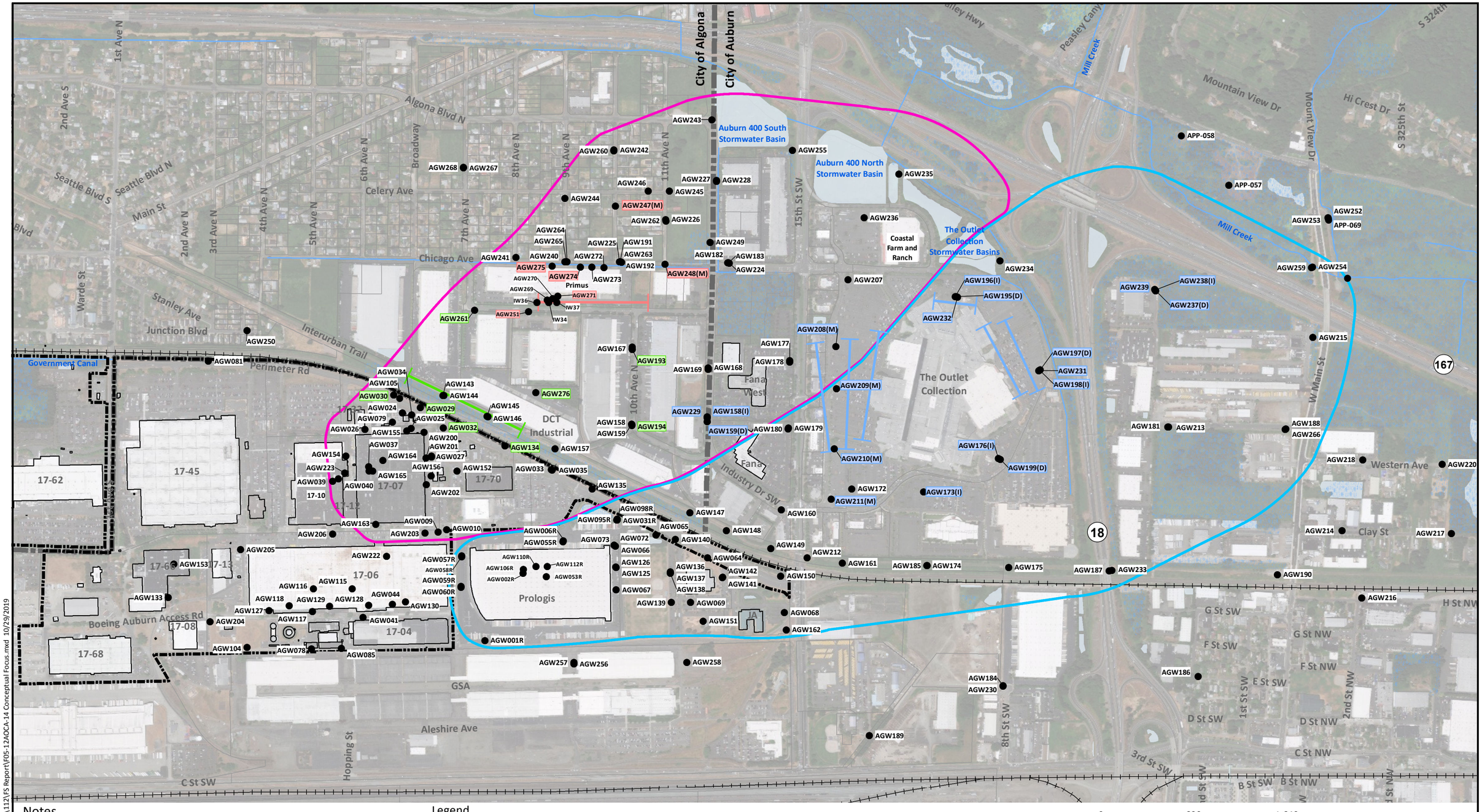
Feasibility Study
Auburn, Washington

AOC A-14: Conceptual Permeable Reactive Barrier Alternative (Alternative D4)

Figure 5-11



Notes

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Legend

- Monitoring Well
- Area 1 Plume
- Western Plume
- City Limits
- Boeing Property
- Wetland Areas
- Water Bodies
- Waterways
- Facility Boundary Injection Row
- AGW134 Facility Boundary Monitoring Location
- Algona Injection Row
- AGW251 Algona Monitoring Location
- The Outlet Collection Injection Row
- AGW229 The Outlet Collection Monitoring Location

0 820 1,640

Scale in Feet

N

Base map source: Geometrix 2003; Aerial Photo Source: Esri World Imagery; Parcel Data Source: King County GIS 2012

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Boeing Auburn Feasibility Study Auburn, Washington	**AOC A-14: Conceptual EISB Focus Areas Alternative (Alternative D5)**	Figure 5-12

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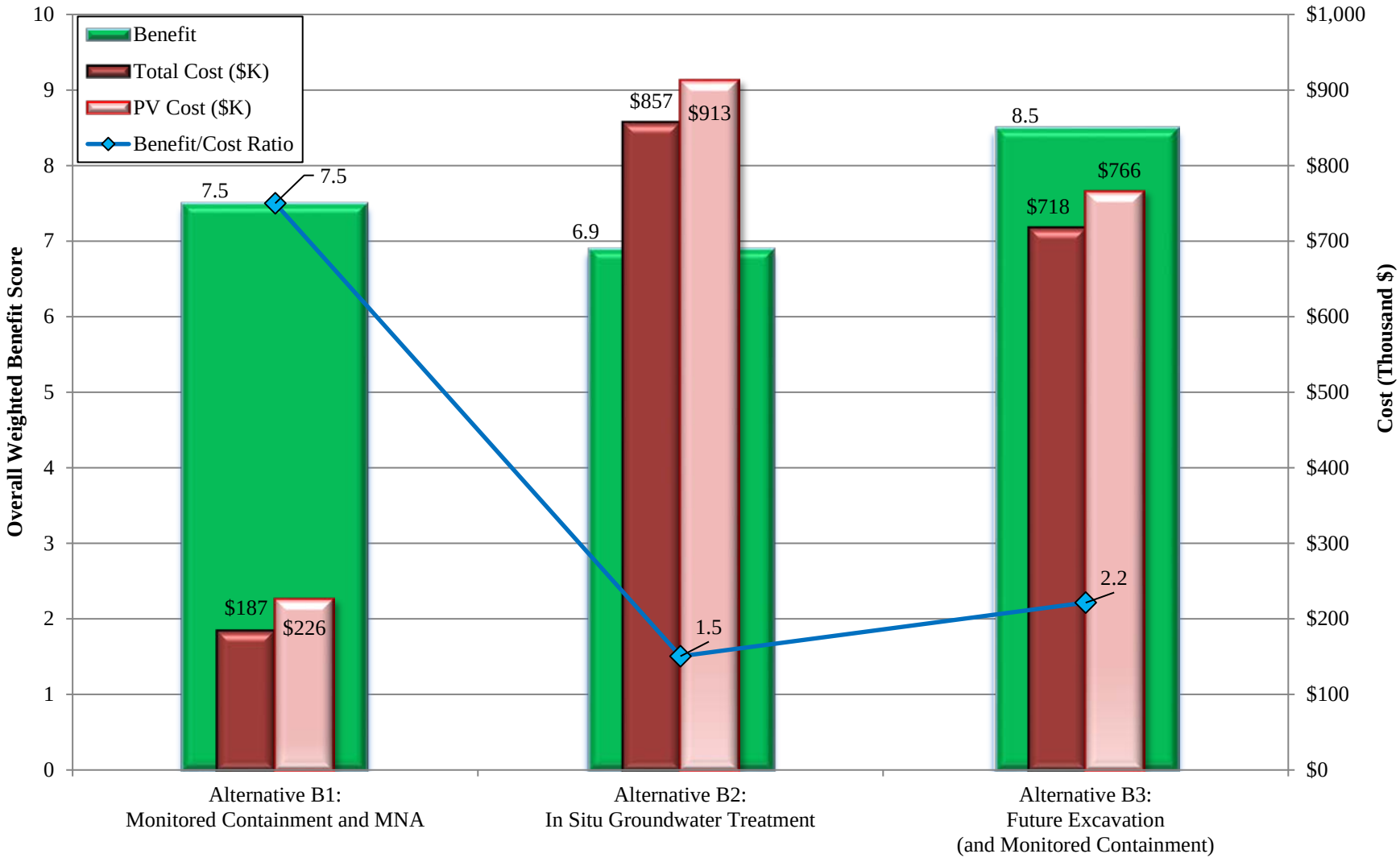

PV = Present Value
The Present Value Project Costs for long term operations, maintenance, and monitoring. (Assume 1.5% discount rate – real discount, 30-year note, Per Office of Management and Budget, Circular A-94 Appendix C, Revised Nov. 2018).

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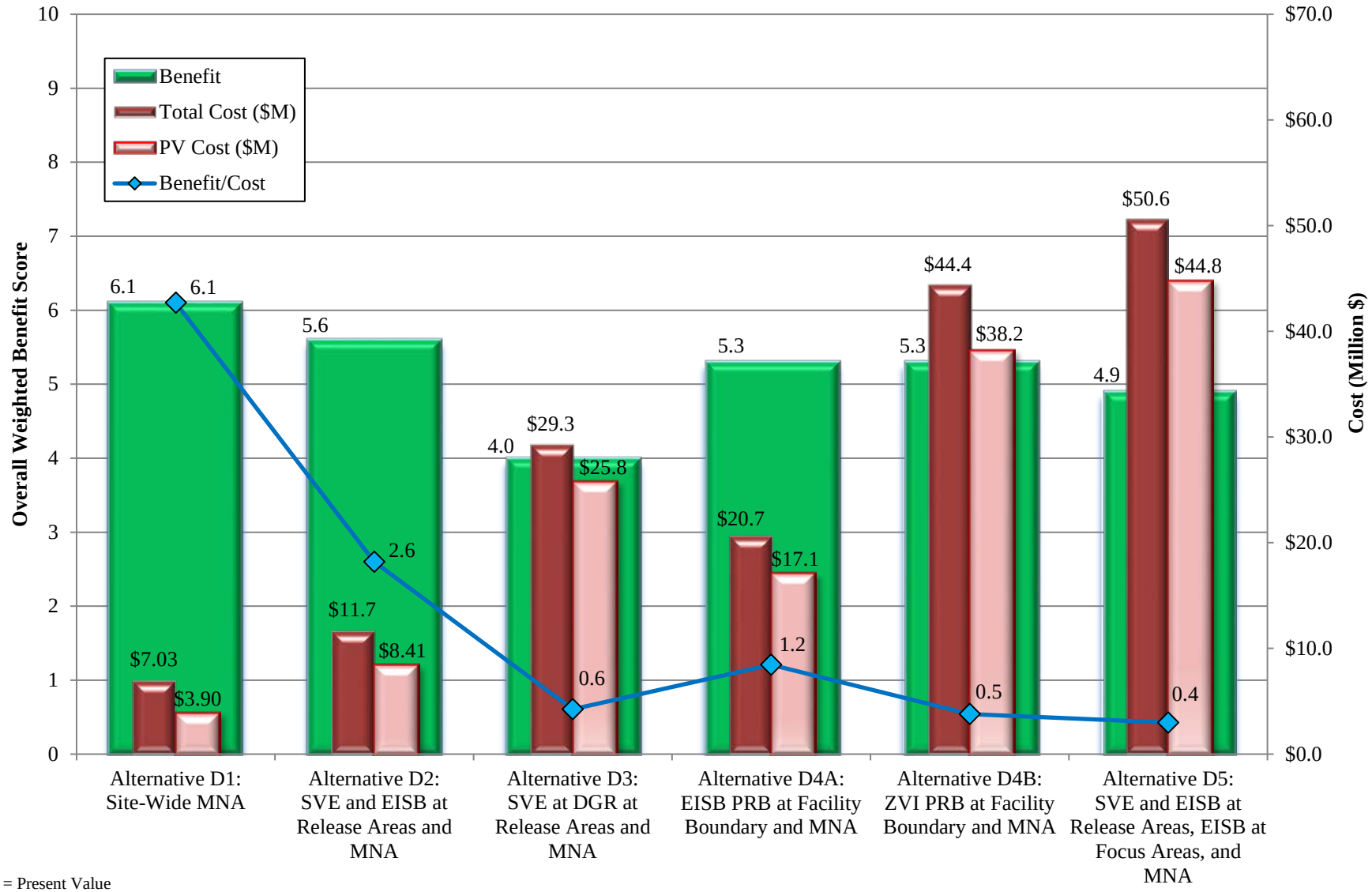
Boeing Auburn Feasibility Study Auburn, Washington	**AOC A-09: Summary of MTCA Alternatives Relative Benefits Ranking**	Figure 6-1



PV = Present Value
The Present Value Project Costs for long term operations, maintenance, and monitoring. (Assume 1.5% discount rate – real discount, 30-year note, Per Office of Management and Budget, Circular A-94 Appendix C, Revised Nov. 2018).

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AOC A-14: Summary of MTCA Alternatives Relative Benefits Ranking (Groundwater pCULs)

Figure
6-2

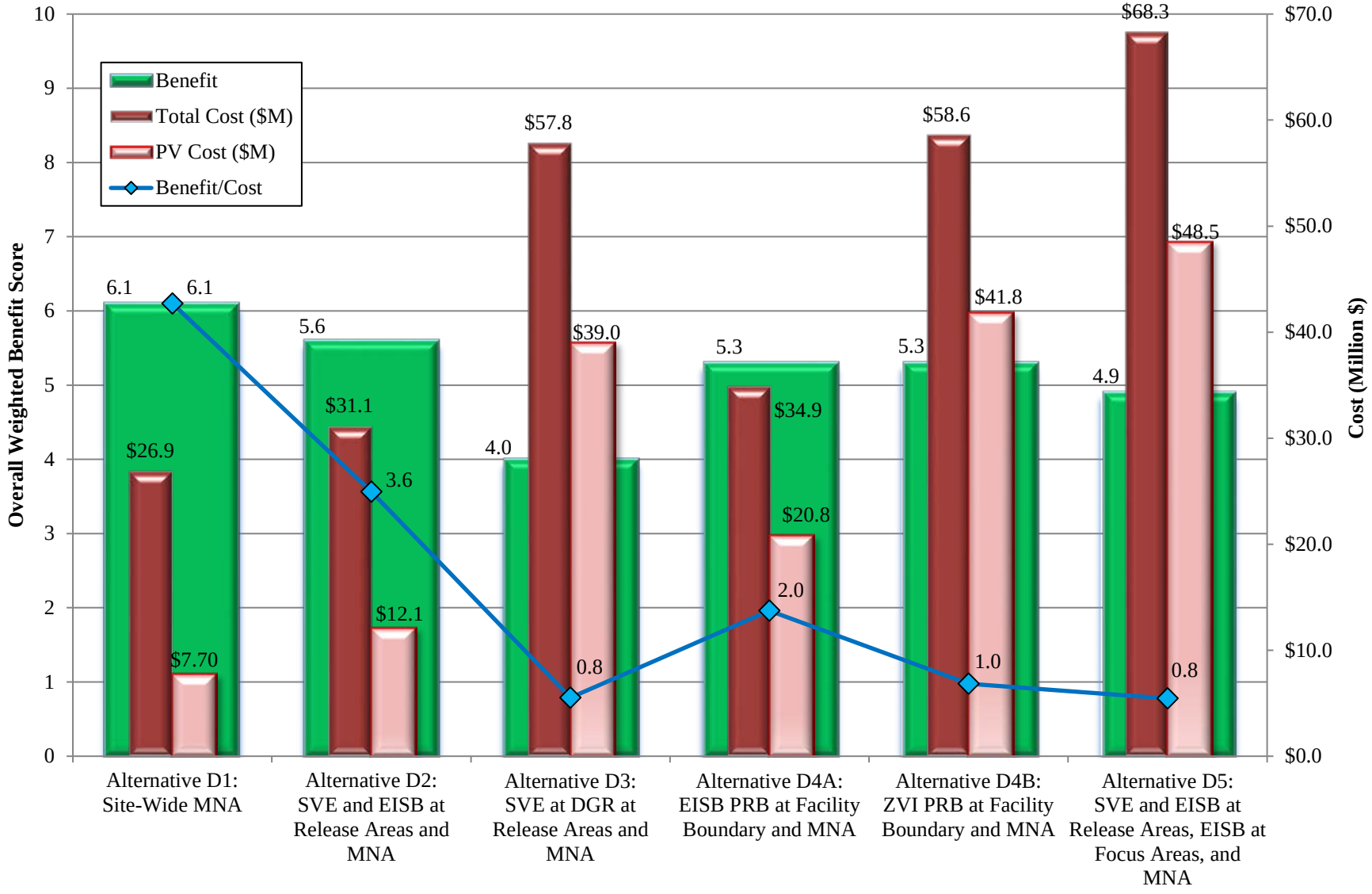

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Figure
6-3