

Overview of the Prioritization Analysis Tool for All-Hazards / Analyzer for Wide-Area Restoration Effectiveness (PATH/AWARE)

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Albuquerque, NM ♦ Livermore, CA



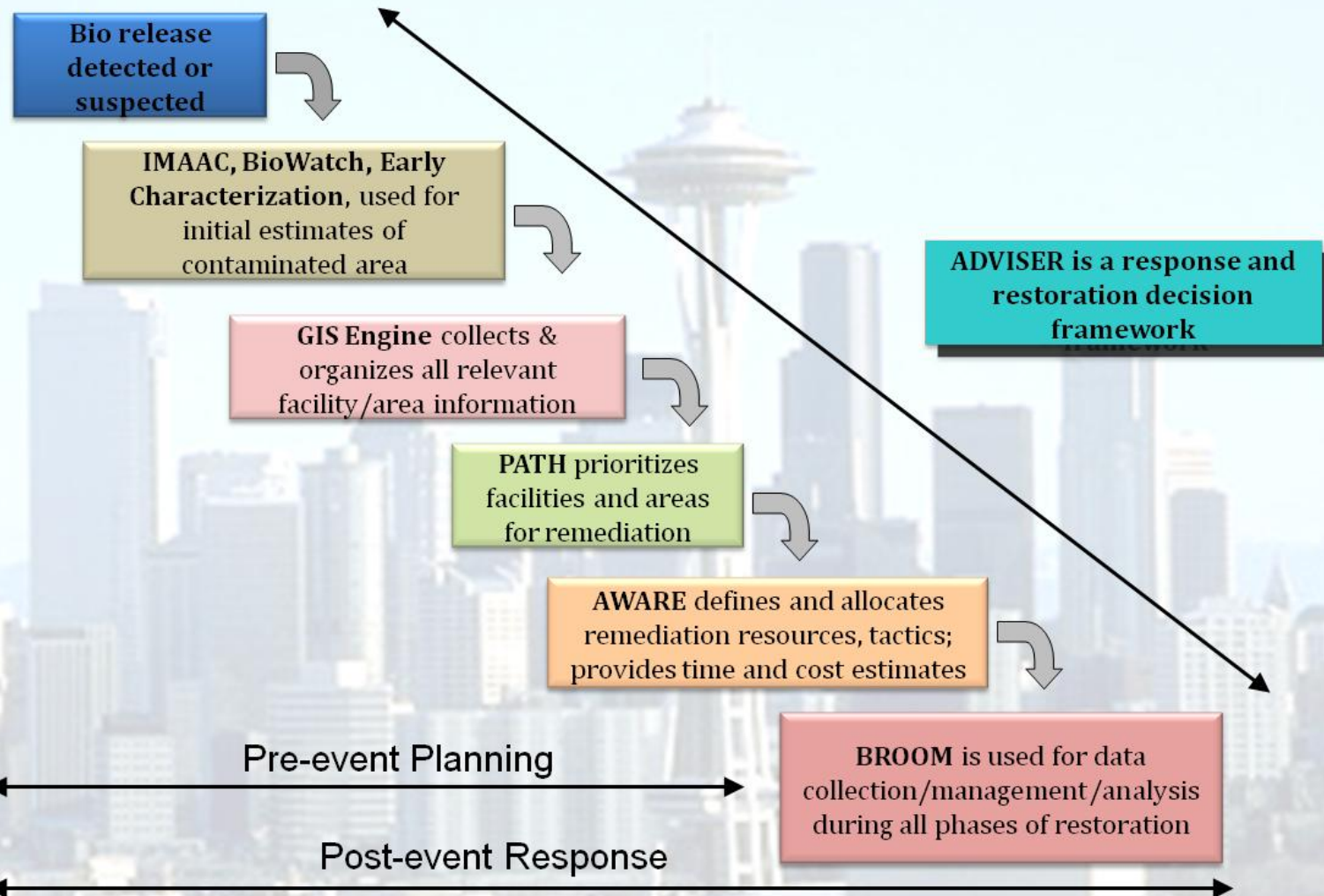
Sandia National Laboratories

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Problem Statement

The potential scope of bio-contamination in a wide-area event combined with a variety of characterization and cleanup options necessitates the development of a suite of decision analysis tools for pre-event planning and post-event response management.

A Suite of Decision Support Tools for Bio-remediation



- [illegible]

AWARE

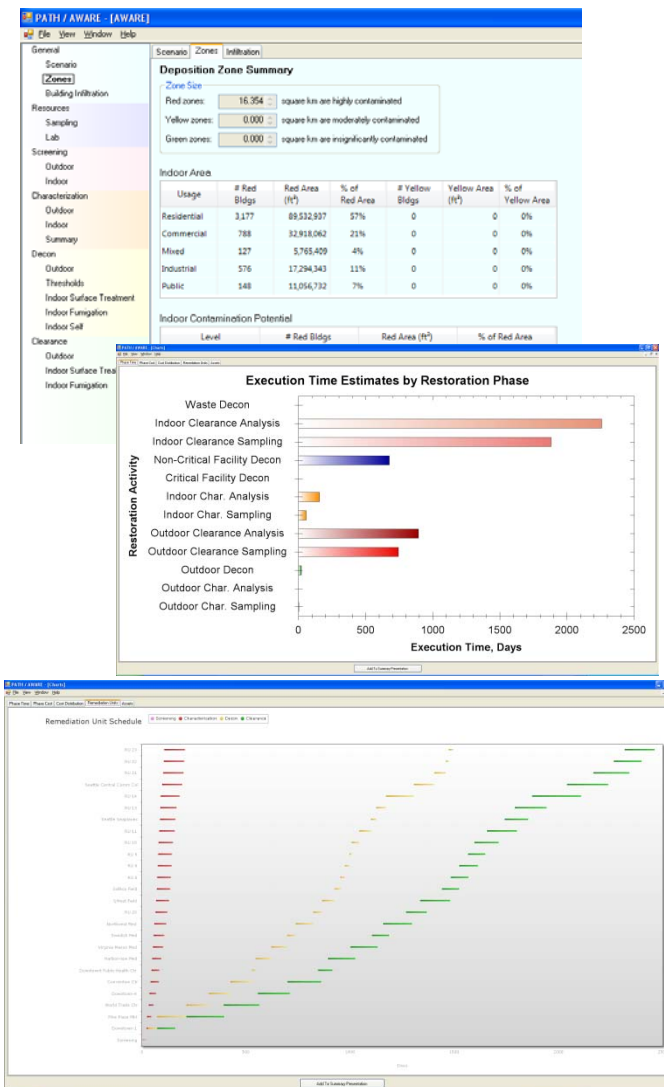
Analyzer for Wide-Area Restoration Effectiveness

A Software Tool for Bio-restoration Planning, Analysis, and Decision Support

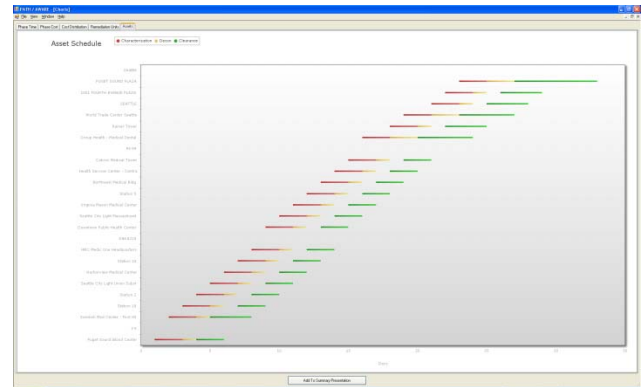
- Provides a systems planning view for evaluation of the overall impact of technical resources, technology insertions or changes, available manpower, etc. on total restoration time and cost
- Incorporates all major aspects of the remediation process:
 - *Wide-area characterization strategy*
 - *Sampling & analysis processes*
 - *Indoor and outdoor decontamination & waste handling*
 - *Post-decon outdoor area and indoor clearance*
- Developed in consultation with subject matter experts
- Incorporates Monte Carlo analyses to address impacts of input variable uncertainties on output results
- Enables identification of the most influential variables in the restoration process
- Configure with military and/or civilian asset contamination scenarios to plan/derive restoration timeline estimates along with other restoration process metrics (e.g. cost, critical path activities, diminishing returns, resource constraints, overall health risk of selected strategy...)

AWARE Capabilities

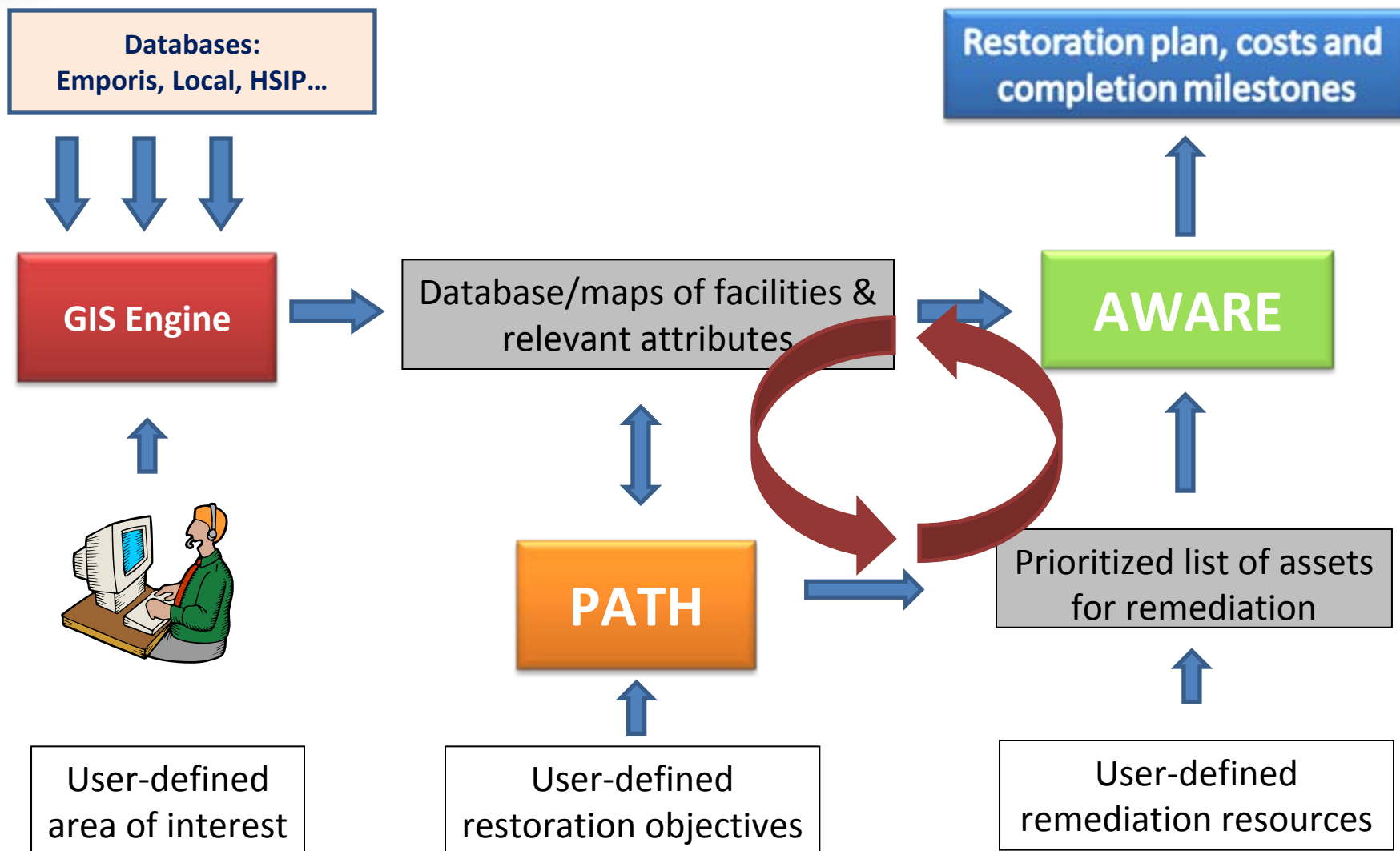
- **AWARE performs the core analysis functions within the toolset, including estimating:**
 - Timelines to complete activities
 - Characterization sampling
 - Decontamination & waste disposal
 - Clearance sampling
 - Cost to complete activities
- **Resource allocation is a key input, including:**
 - Sampling teams, #s and rates
 - Lab capacity/throughput
 - Decon options, e.g., # of fumigation units available
- **Analysis can account for many factors, such as:**
 - Judgmental and/or statistical sampling
 - Fumigation, surface treatment or self-decon
- **Reporting results in a number of formats, including:**
 - Graphical
 - Detailed input/output reports



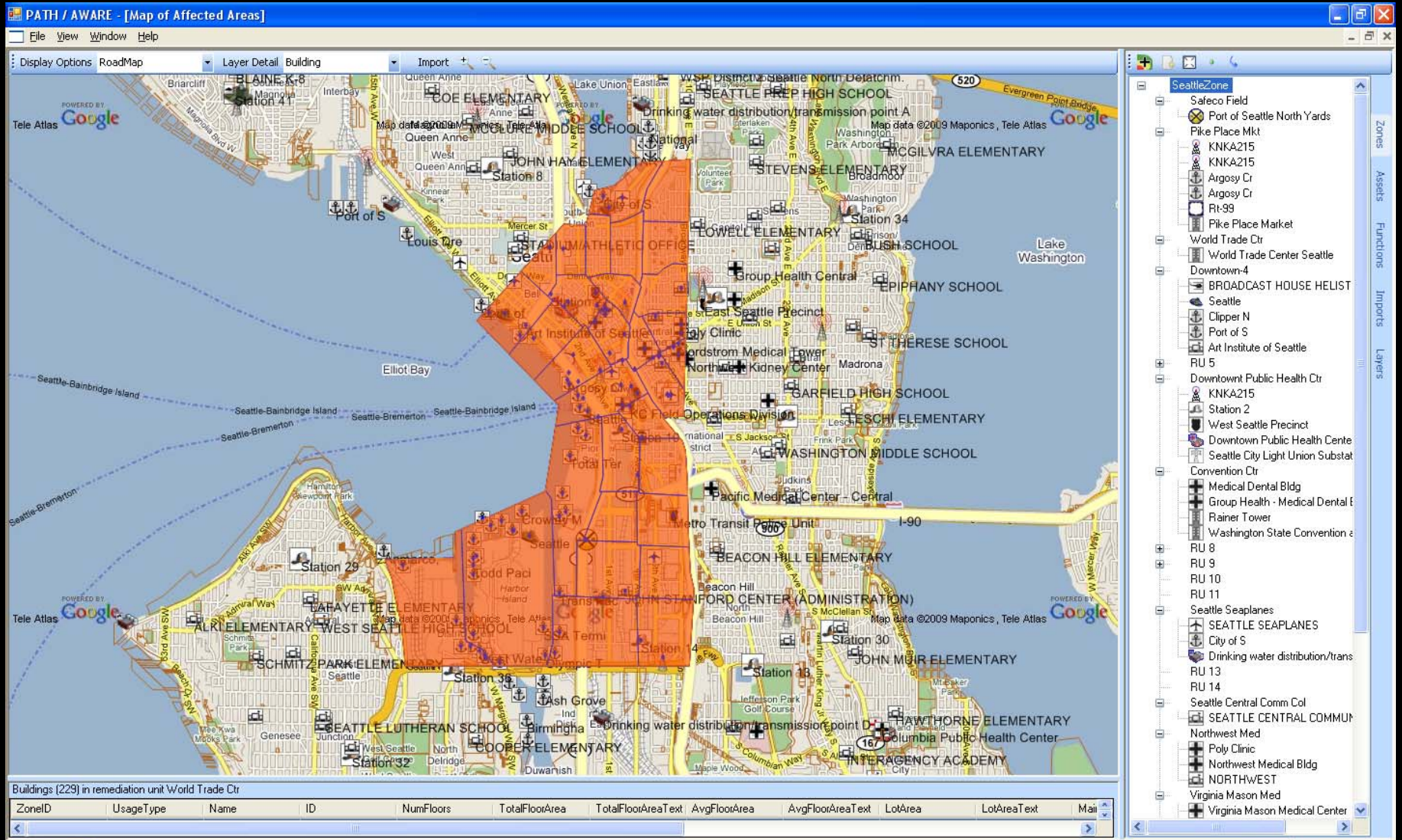
- Maintain public health
 - Maintain public safety
 - Maintain economy
 - Minimize environmental impact
 - Maintain national security
 - Protect property
- Prioritization is performed by weighting objectives and associated functions while considering dependencies and special conditions (e.g., work-arounds)
- Reporting results in a number of forms including:
- Graphical
 - Summary PowerPoint presentation



Integration of GIS Engine, PATH, and AWARE



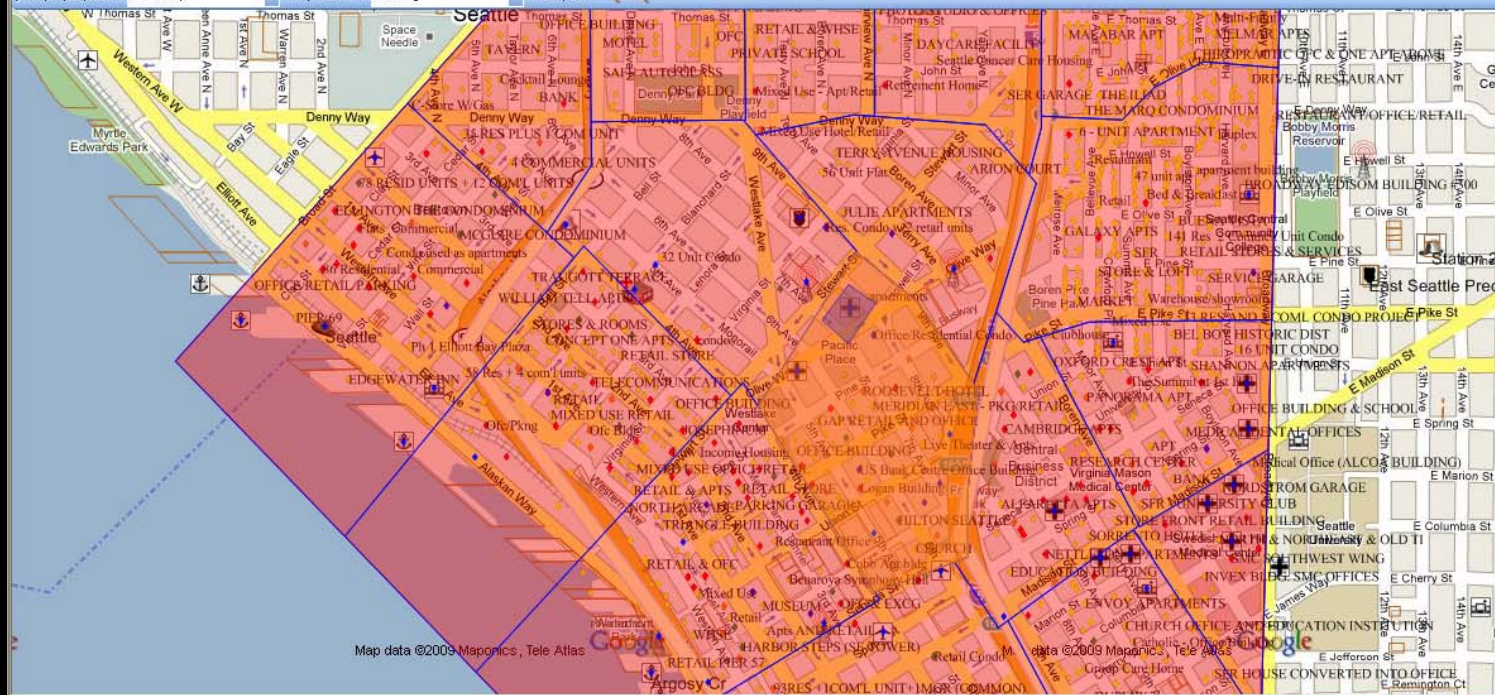
PATH\AWARE Functionality



PATH / AWARE - [Map of Affected Areas]

File View Window Help

Display Options RoadMap Layer Detail Building Import



Buildings (85) in remediation unit Convention Ctr

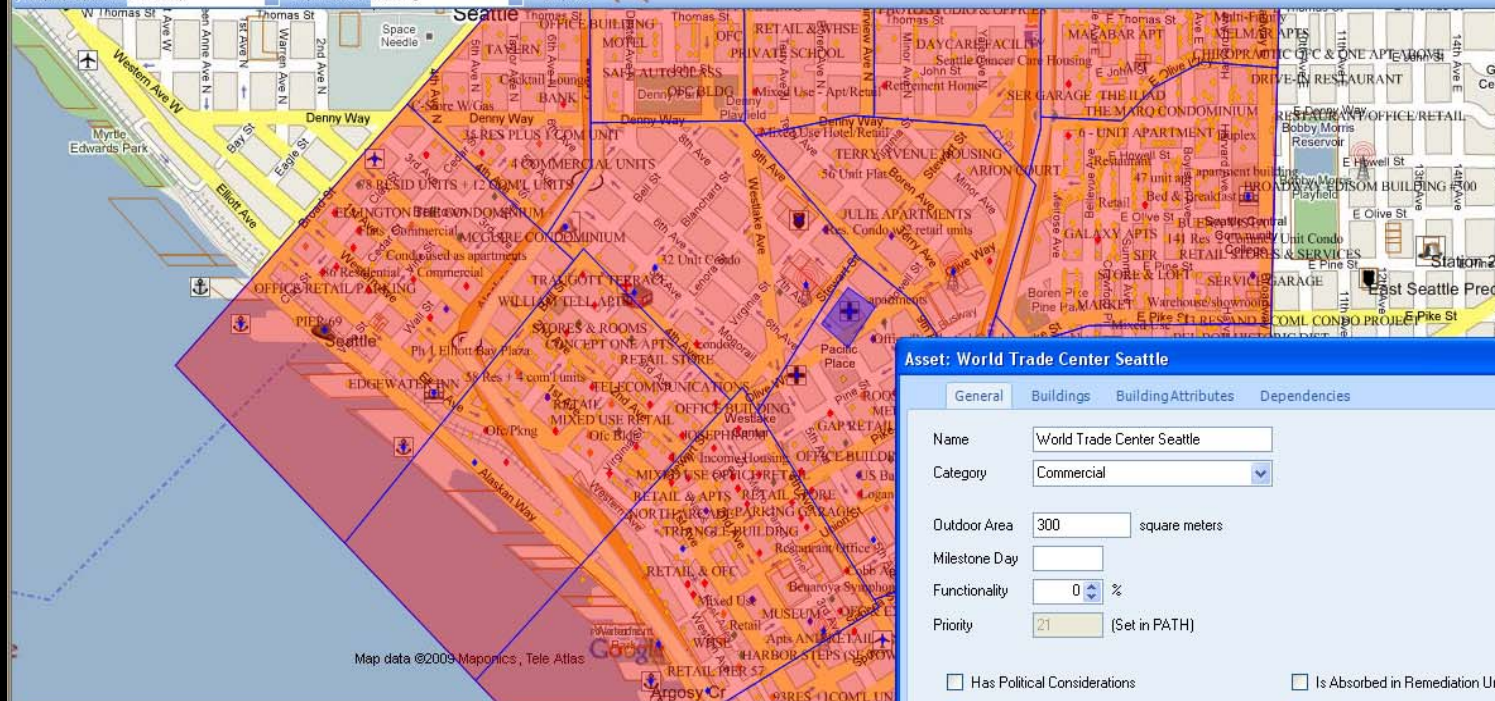
ZoneID	UsageType	Name	ID	NumFloors	TotalFloorArea	TotalFloorAreaText	AvgFloorArea	AvgFloorAreaText	LotArea	LotAreaText	MainUsage
259	residential	HILTON SEATTLE	576211	24	11728	11728 m ²	488.666666666666	489 m ²	2006.167465540...	2006 m ²	
259	commercial	Logan Building	576212	10	9912	9912 m ²	991.2	991 m ²	1263.050926352...	1263 m ²	
259	commercial	OFFICE BUILDING	576213	6	2842	2842 m ²	473.666666666666	474 m ²	448.7505546777...	449 m ²	
259	residential	ROOSEVELT H...	576220	20	8230	8230 m ²	411.5	412 m ²	775.3473817047...	775 m ²	
259	industrial	MERIDIAN EAS...	576221	4	24836	24836 m ²	6209	6209 m ²	3002.091105741...	3002 m ²	
259	mixed	GAP RETAIL AN...	576225	4	6077	6077 m ²	1519.25	1519 m ²	1275.977557438...	1276 m ²	
259	commercial	OFFICE/RETAIL ...	576226	5	6179	6179 m ²	1235.8	1236 m ²	1252.332239320...	1252 m ²	
259	residential	RED LION ON FL...	576227	19	25342	25342 m ²	1333.789473684...	1334 m ²	2749.887565215...	2750 m ²	
259	commercial	SUPERIOR US	576228	24	11728	11728 m ²	488.666666666666	489 m ²	2006.167465540...	2006 m ²	

- Safeco Field
- Port of Seattle North Ya
- Pike Place Mkt
- KNKA215
- KNKA215
- Argosy Cr
- Argosy Cr
- Rt-99
- Pike Place Market
- World Trade Ctr
- World Trade Center Sea
- Downtown-4
- BROADCAST HOUSE I
- Seattle
- Clipper N
- Port of S
- Art Institute of Seattle
- RU 5
- Downtown Public Health C
- KNKA215
- Station 2
- West Seattle Precinct
- Downtown Public Health
- Seattle City Light Union
- Convention Ctr
- Medical Dental Bldg
- Group Health - Medical
- Rainier Tower
- Washington State Conv
- RU 8
- RU 9
- RU 10
- RU 11
- Seattle Seaplanes
- SEATTLE SEAPLANES
- City of S
- Drinking water distribuc
- RU 13
- RU 14
- Seattle Central Comm Col
- SEATTLE CENTRAL C
- Northwest Med
- Poly Clinic
- Northwest Medical Bldg
- NORTHWEST
- Virginia Mason Med
- Virginia Mason Medical
- I-5

PATH / AWARE - [Map of Affected Areas]

File View Window Help

Display Options RoadMap Layer Detail Building Import



Buildings (85) in remediation unit Convention Ctr

ZoneID	UsageType	Name	ID	NumFloors	TotalFloorArea	TotalFloorAreaText							
259	residential	HILTON SEATTLE	576211	24	11728	11728 m²							
259	commercial	Logan Building	576212	10	9912	9912 m²							
259	commercial	OFFICE BUILDING	576213	6	2842	2842 m²							
259	residential	ROOSEVELT H...	576220	20	8230	8230 m²	411.5	412 m²	775.3473817047...	775 m²			
259	industrial	MERIDIAN EAS...	576221	4	24836	24836 m²	6209	6209 m²	3002.091105741...	3002 m²			
259	mixed	GAP RETAIL AN...	576225	4	6077	6077 m²	1519.25	1519 m²	1275.977567438...	1276 m²			
259	commercial	OFFICE/RETAIL ...	576226	5	6179	6179 m²	1235.8	1236 m²	1252.332239320...	1252 m²			
259	residential	RED LION ON FL...	576227	19	25342	25342 m²	1333.789473684...	1334 m²	2749.887565215...	2750 m²			

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- World Trade Center Sea
- Downtown-4
- BROADCAST HOUSE I
- Seattle
- Clipper N
- Port of S

Asset: World Trade Center Seattle

General Buildings BuildingAttributes Dependencies

Name: World Trade Center Seattle

Category: Commercial

Outdoor Area: 300 square meters

Milestone Day:

Functionality: 0 %

Priority: 21 (Set in PATH)

☐ Has Political Considerations ☐ Is Absorbed in Remediation Unit

☐ Is Unique ☐ Has Workaround

☐ Is Health Risk

OK Cancel

- Northwest Med
- Poly Clinic
- Northwest Medical Bldg
- NORTHWEST
- Virginia Mason Med
- Virginia Mason Medical
- I-5

PATH / AWARE - [AWARE]

FileViewWindowHelp

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Scenario

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Infiltration

Deposition Zone Summary

Zone Size

Red zones: 16.354 square km are highly contaminated

Yellow zones: 0.000 square km are moderately contaminated

Green zones: 0.000 square km are insignificantly contaminated

Indoor Area

Usage	# Red Bldgs	Red Area (ft²)	% of Red Area	# Yellow Bldgs	Yellow Area (ft²)	% of Yellow Area
Residential	3,177	89,532,937	57%	0	0	0%
Commercial	788	32,918,062	21%	0	0	0%
Mixed	127	5,765,409	4%	0	0	0%
Industrial	576	17,294,343	11%	0	0	0%
Public	148	11,056,732	7%	0	0	0%

Indoor Contamination Potential

Level	# Red Bldgs	Red Area (ft²)	% of Red Area
Very High	37	2,900,260	2%
High	966	28,984,735	19%
Moderate	2,702	85,784,028	55%
Low	1,088	38,237,478	24%
Very Low	23	660,979	0%

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Sampling Lab

Sampling Teams

Team size: 3 persons per team

Working day length: 8.0 hours

Labor rate: 50.00 \$/hr per person


Number of teams: 50 teams

Sampling labor cost: 60,000 dollars per day

Each team collects: 10 samples per hour

Total sampling rate: 4,000 samples per day

[Phase weighting](#)

Characterization 70.0%  30.0% Clearance

PATH / AWARE - [AWARE]

File View Window Help

General Sampling Lab

Lab Capacity

PCR throughput: 500 samples per day

Culture throughput: 500 samples per day

Biological indicator throughput: 0 samples per day

Number of analysis teams: 6 teams

Team size: 2 persons per team

Labor rate: 50.00 \$/hr per person

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Outdoor Screening Assessment

Red Zone

Outdoor area: 8,281,491 sq meters

One sample per 10,000 sq meters

828 samples

Yellow Zone

Outdoor area: 0 sq meters

One sample per 100 sq meters

0 samples

Green Zone

Outdoor area: 0 sq meters

One sample per 100 sq meters

0 samples

Total: 828 samples

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Indoor Screening Assessment

Red Zone

4,816	buildings
4	samples per building
19,264	samples

Yellow Zone

0	buildings
100	samples per building
0	samples

Green Zone

0	buildings
100	samples per building
0	samples

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Outdoor Indoor Summary

Outdoor Characterization

☒ Judgmental sampling

Red Zone: Area: 8,281,491 sq meters

One sample per 10,000 sq meters

828 samples

Yellow Zone: Area: 0 sq meters

One sample per 1,000 sq meters

0 samples

☒ Statistical sampling

95% confidence that 95% of the area has been characterized

will require 86,770 samples.

Outdoor characterization total: 87,598 samples

PATH / AWARE - [AWARE]

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Outdoor Indoor Summary

Indoor Characterization

☒ Judgmental sampling

Residential Commercial Mixed Industrial Public

89,532,937 sq feet of floor space

100 samples per 100,000 sq feet

89,533 samples

☒ Statistical sampling

Residential Commercial Mixed Industrial Public

89,532,937 sq feet of floor space.

95% confidence that 95% of the area has been characterized

will require 1,307,270 samples.

Indoor characterization total: 2,442,608 samples

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General Outdoor Indoor **Summary**

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Characterization Summary

Outdoor

Sample count:	87,598	samples
Collection duration:	32	days
Collection labor cost:	145,950	dollars
Analysis duration:	87	days
Analysis labor cost:	208,800	dollars
Total labor cost:	354,750	dollars

Indoor

Sample count:	2,442,608	samples
Collection duration:	873	days
Collection labor cost:	36,639,000	dollars
Analysis duration:	2,442	days
Analysis labor cost:	5,860,800	dollars
Total labor cost:	42,499,800	dollars

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Outdoor Thresholds Surface Fumigation Self

Outdoor Decon

One unit can fumigate 20,000 square meters per day

10 outdoor fumigation units are available

50 % of outdoor area is soil to be fumigated

4,140,745 square meters of outdoor area are suitable for fumigation.

Outdoor fumigation will take 21 days.

PATH / AWARE - [AWARE]

File View Window Help

General Outdoor **Thresholds** Surface Fumigation Self

Decon Thresholds

Building Sizes

Small buildings: less than 5,000 sq feet

Medium buildings: 5,000 sq feet and greater

Large buildings: 100,000 sq feet and greater

Methods

Residential Commercial Mixed Industrial Public

No cleaning when contamination is below the surface treatment threshold.

Surface treatment when contamination is at least very low

Otherwise fumigate when contamination is at least moderate

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General Outdoor Thresholds **Surface** Fumigation Self

Indoor Surface Treatment

Treatment rate: 5,000 sq feet per day per unit

Number of units: 10 surface treatment units

Unit manpower: 3 persons per unit

Treatment cost: 1 dollars per sq foot

Treatment percentage: 50 percent of area will be treated

Residential Commercial Mixed Industrial Public

	Duration	Cost
Critical:	0 days	0 dollars
Noncritical:	19 days	959,866 dollars
Subtotal:	19 days	959,866 dollars

Indoor Surface Treatment

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General Outdoor Thresholds Surface Fumigation Self

Indoor Fumigation

Duration

One unit takes 3 days to fumigate a small building.

One unit takes 4 days to fumigate a medium building.

One unit takes 6 days to fumigate a large building.

Cost

Small building fumigation cost: 10,000 dollars

Medium building fumigation cost: 50,000 dollars

Large building fumigation cost: 100,000 dollars

Units

20 small fumigation units are available for use.

10 medium fumigation units are available for use.

3 large fumigation units are available for use.

Manpower

Small unit manpower: 3 people

Medium unit manpower: 6 people

Large unit manpower: 10 people

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General Outdoor Thresholds Surface Fumigation **Self**

Indoor Residential Self Decon

Self Decon

80 % of residential space will be self-decontaminated.

Self decon can clean 10,000 sq meters per day.

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Outdoor Indoor Surface Treatment Indoor Fumigation

Outdoor Clearance

☒ Judgmental sampling

1 samples per 100,000 sq feet

891 samples

☒ Statistical sampling

95% confidence that at least 95% of the area is clean

will require 891,412 samples.

Outdoor clearance total: 892,303 samples

PATH / AWARE - [AWARE]

File View Window Help

General Outdoor Indoor Surface Treatment Indoor Fumigation

Indoor Surface Treatment Clearance

☒ Judgmental sampling

Residential Commercial Mixed Industrial Public

1,919,732 sq feet of floor space treated

5 samples per 100,000 sq feet

96 samples

Subtotal: 231 samples

☒ Statistical sampling

Residential Commercial Mixed Industrial Public

1,919,732 sq feet of floor space treated.

95% confidence that 95% of the area has been characterized

will require 38,395 samples.

Subtotal: 97,039 samples

Surface Treatment clearance total: 97,270 samples

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Indoor Fumigation Clearance

☒ Judgmental sampling

Residential Commercial Mixed Industrial Public

70,335,621 sq feet of floor space

1 samples per 100,000 sq feet

703 samples

Subtotal: 1,080 samples

☒ Statistical sampling

Residential Commercial Mixed Industrial Public

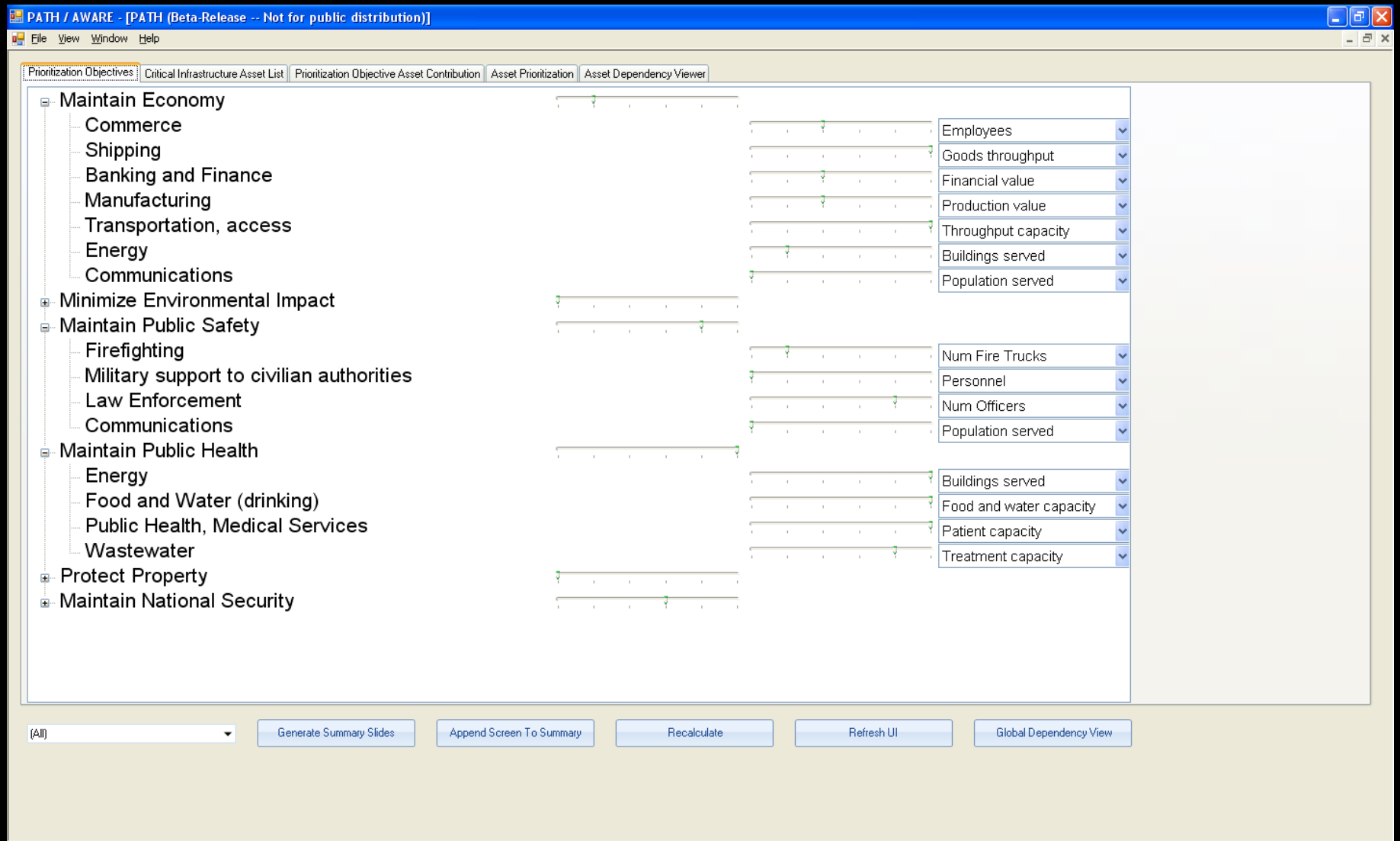
70,335,621 sq feet of floor space.

95% confidence that 95% of the area has been characterized

will require 1,406,712 samples.

Subtotal: 2,158,818 samples

Fumigation clearance total: 2,159,898 samples



Drag a column here to group by this column.

Name	Category	Functionality Level	Milestone	Has Workaround	Is Unique	Is Health Risk	Has Political Considerations
SEATTLE SEAPLANES	Airport	0.000	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
BROADCAST HOUSE HELISTOP	Heliport	0.000	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
KOMO TV	Heliport	0.000	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HARBORVIEW MEDICAL CENTER	Heliport	0.000	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1001 FOURTH AVENUE PLAZA	Heliport	0.000	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SEATTLE PRIVATE NUMBER ONE	Heliport	0.000	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PARK 90	Heliport	0.000	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PUGET SOUND PLAZA	Heliport	0.000	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SEATTLE	Amtrak	0.000	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
KNKA215	CellularTowers	0.000	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
KNKA215	CellularTowers	0.000	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
KNKA215	CellularTowers	0.000	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
KNKA215	CellularTowers	0.000	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
KNKA215	CellularTowers	0.000	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
KNKA215	CellularTowers	0.000	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
KNKA215	CellularTowers	0.000	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Seattle	Ferries	0.000	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Seattle	Ferries	0.000	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Seattle	Ferries	0.000	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clipper N	Ports	0.000	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Port of S	Ports	0.000	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Argosy Cr	Ports	0.000	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Argosy Cr	Ports	0.000	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
City of S	Ports	0.000	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(All)

Generate Summary Slides

Append Screen To Summary

Recalculate

Refresh UI

Global Dependency View

Maintain Economy

Name	Category	Normalized Obj...	Overall Obj Score	Commerce	Shipping	Banking and Fin...	Manufacturing	Transportation,...	Energy	Communications
▶ SEATTLE SEAPLA...	Airport	0.00	0.00	10	0	0	0	32	0	0
BROADCAST HO...	Heliport	0.00	0.00	50	0	0	0	128	0	0
KOMO TV	Heliport	0.00	0.00	200	0	0	0	0	0	0
HARBORVIEW M...	Heliport	0.00	0.00	0	0	0	0	0	0	0
1001 FOURTH AV...	Heliport	0.00	0.05	5000	0	0	0	0	0	0
SEATTLE PRIVATE...	Heliport	0.00	0.00	10	0	0	0	32	0	0
PARK 90	Heliport	0.00	0.00	500	0	0	0	0	0	0
PUGET SOUND P...	Heliport	0.00	0.04	4000	0	0	0	0	0	0
SEATTLE	Amtrak	0.01	0.06	200	0	0	0	500000	0	0
KNKA215	CellularTowers	0.00	0.00	0	0	0	0	0	0	10000
KNKA215	CellularTowers	0.00	0.00	0	0	0	0	0	0	10000
KNKA215	CellularTowers	0.00	0.00	0	0	0	0	0	0	10000
KNKA215	CellularTowers	0.00	0.00	0	0	0	0	0	0	10000
KNKA215	CellularTowers	0.00	0.00	0	0	0	0	0	0	10000
KNKA215	CellularTowers	0.00	0.00	0	0	0	0	0	0	10000
KNKA215	CellularTowers	0.00	0.00	0	0	0	0	0	0	10000
Seattle	Ferries	0.00	0.01	100	0	0	0	50000	0	0
Seattle	Ferries	0.00	0.01	100	0	0	0	50000	0	0
Seattle	Ferries	0.00	0.01	100	0	0	0	50000	0	0
Clipper N	Ports	0.00	0.00	0	0	0	0	0	0	0
Port of S	Ports	0.00	0.00	0	0	0	0	0	0	0
Argosy Cr	Ports	0.00	0.00	0	0	0	0	0	0	0
Argosy Cr	Ports	0.00	0.00	0	0	0	0	0	0	0

(All)

Generate Summary Slides

Append Screen To Summary

Recalculate

Refresh UI

Global Dependency View

Drag a column here to group by this column.

Priority	Name	Category	SpecialIndicator	Overall	Restoration...	Maintain Economy	Minimize Environm...	Maintain Public Saf...	Maintain Public Hea...	Protect Property	Maintain National...
1	Puget Sound Blood C...	Hospital	EA	0.11	0.88	0.00	0.00	0.00	0.00	0.00	0.00
2	I-5	Highways	EA	0.11	0.97	0.00	0.00	0.00	0.00	0.00	0.00
3	Swedish Med Center ~...	Hospital		0.11	0.00	0.00	0.00	0.99	0.00	0.00	0.00
4	Station 10	Fire		0.11	0.00	0.00	0.98	0.00	0.98	0.00	0.00
5	Station 2	Fire		0.11	0.00	0.00	0.98	0.00	0.98	0.00	0.00
6	Seattle City Light Unio...	Power		0.10	0.95	0.00	0.00	0.98	0.00	0.00	0.00
7	Harborview Medical C...	Hospital	EA	0.07	0.92	0.00	0.00	0.97	0.00	0.00	0.00
8	Station 14	Fire		0.07	0.00	0.00	0.96	0.00	0.96	0.00	0.00
9	HMC Medic One Hea...	Fire		0.07	0.00	0.00	0.96	0.00	0.96	0.00	0.00
10	KNKA215	CellularTowers	EA	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	Downtown Public Hea...	PublicHealth	EA	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Seattle City Light Mas...	Power		0.06	0.90	0.00	0.00	0.96	0.00	0.00	0.00
13	Virginia Mason Medic...	Hospital		0.05	0.81	0.00	0.00	0.95	0.00	0.00	0.00
14	Station 5	Fire		0.04	0.00	0.00	0.95	0.00	0.95	0.00	0.00
15	Northwest Medical Bl...	Hospital		0.03	0.89	0.00	0.00	0.92	0.00	0.00	0.00
16	Health Service Center...	Hospital		0.03	0.00	0.00	0.00	0.93	0.00	0.00	0.00
17	Cabrini Medical Tower	Hospital		0.03	0.00	0.00	0.00	0.93	0.00	0.00	0.00
18	Rt-99	Highways		0.03	0.99	0.00	0.00	0.00	0.00	0.00	0.00
19	Group Health - Medic...	Hospital		0.02	0.75	0.00	0.00	0.91	0.00	0.00	0.00
20	Rainier Tower	Commercial		0.01	0.98	0.00	0.00	0.00	0.00	0.00	0.00
21	World Trade Center S...	Commercial		0.01	0.96	0.00	0.00	0.00	0.00	0.00	0.00
22	SEATTLE	Amtrak		0.01	0.94	0.00	0.00	0.00	0.00	0.00	0.00
23	1001 FOURTH AVENU...	Helipoint		0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00
24	PUGET SOUND PLAZA	Helipoint		0.00	0.91	0.00	0.00	0.00	0.00	0.00	0.00

(All)

Generate Summary Slides

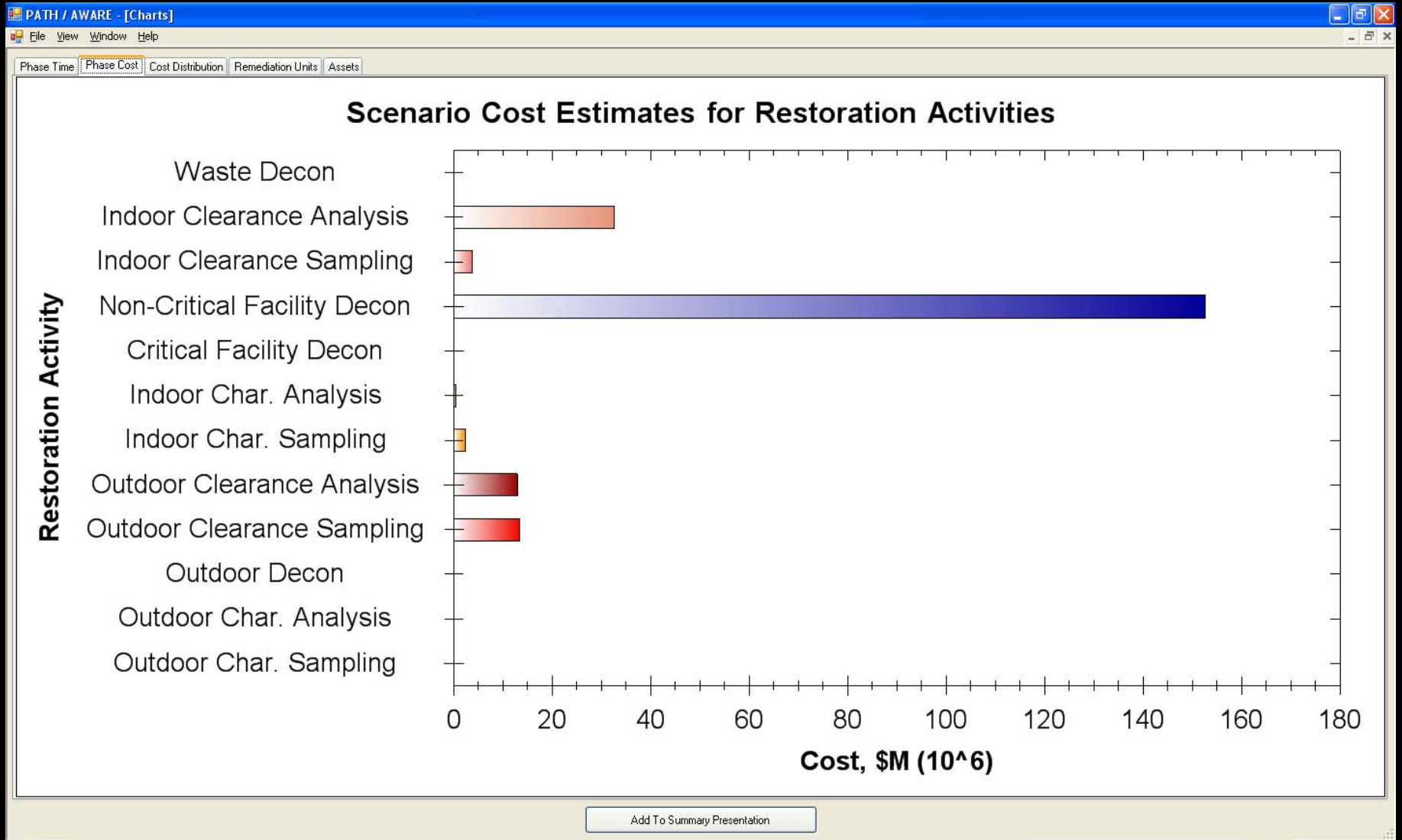
Append Screen To Summary

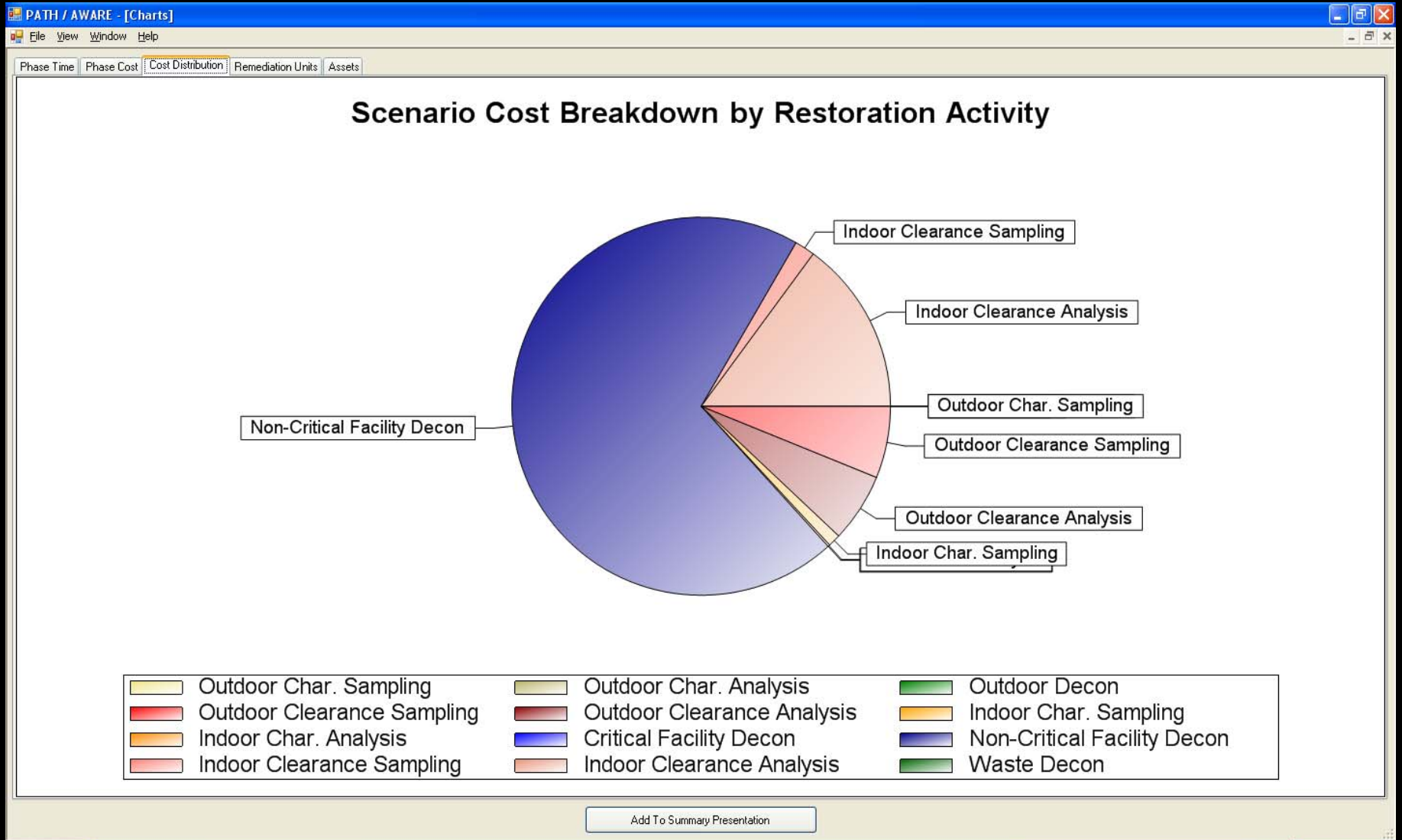
Recalculate

Refresh UI

Global Dependency View



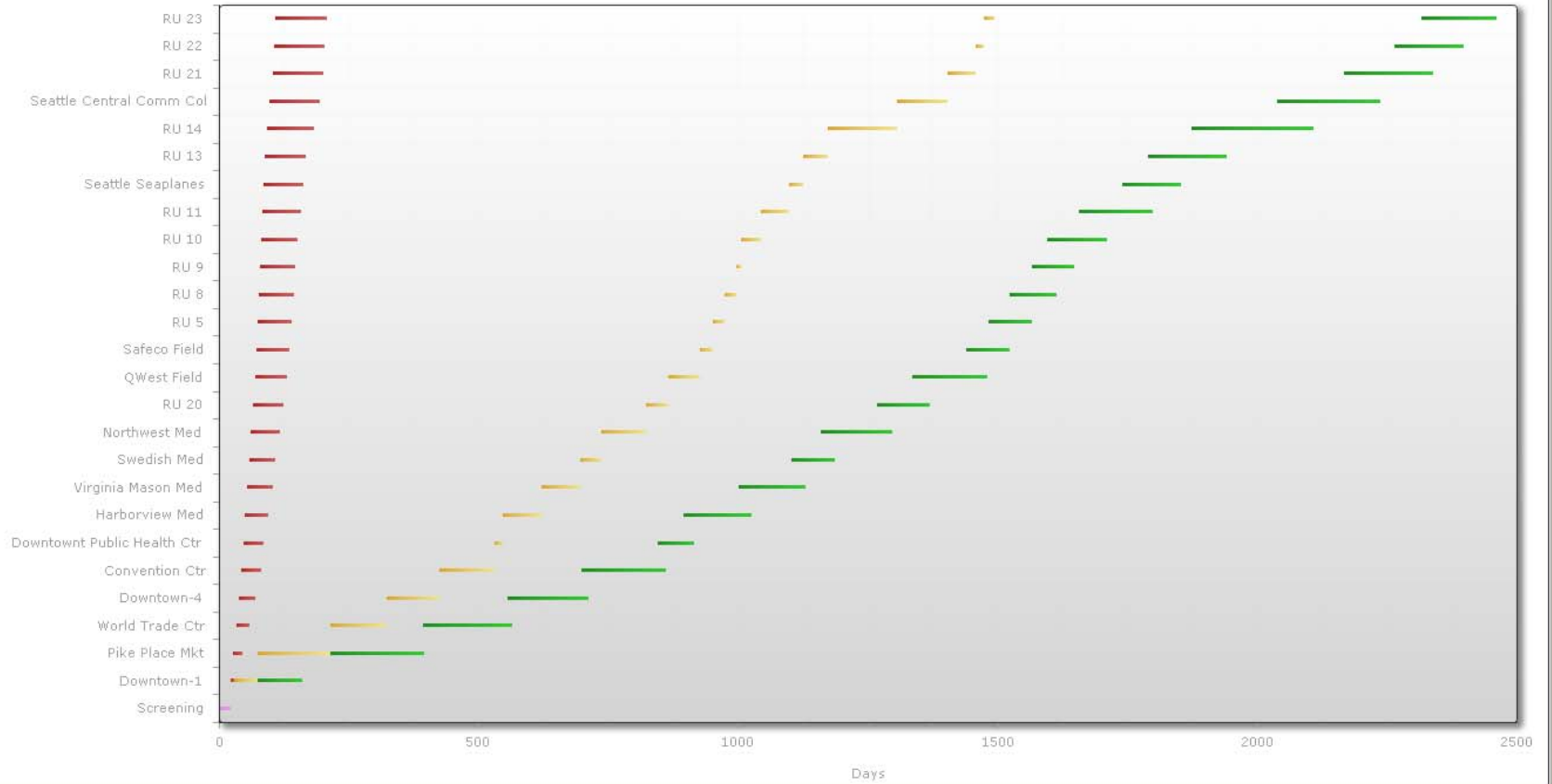




Phase Time Phase Cost Cost Distribution Remediation Units Assets

Remediation Unit Schedule

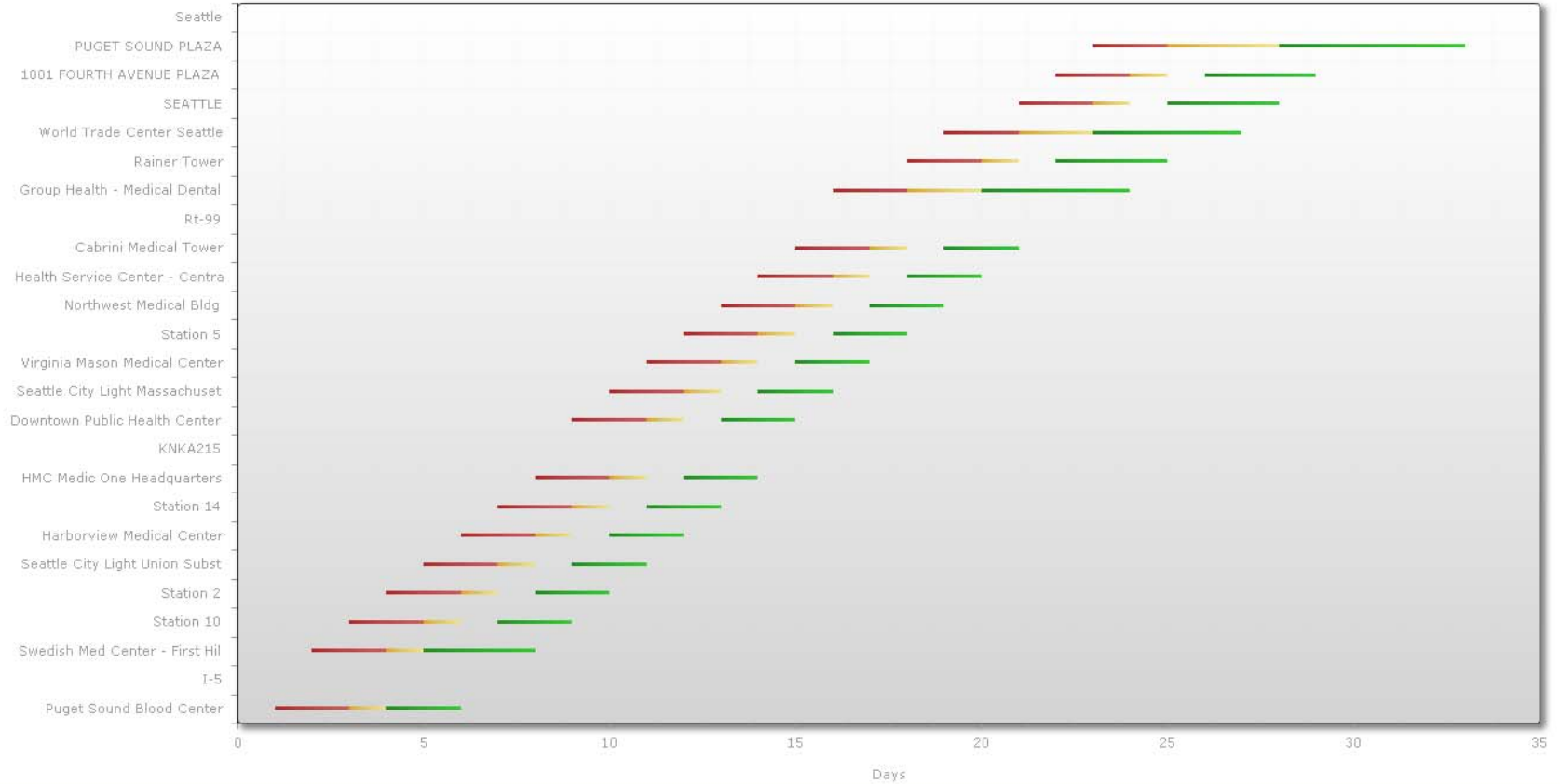
● Screening ● Characterization ● Decon ● Clearance



Add To Summary Presentation

Asset Schedule

● Characterization ● Decon ● Clearance



Add To Summary Presentation

PATH / AWARE - [ReportViewerForm]

File View Window Help

1 of 4 100%

Inputs Summary

Scenario: TTX scenario-Seattle

Affected Area	
Red zone:	16.354 sq km
Yellow zone:	0 sq km
Green zone:	0 sq km

Area Details for Red and Yellow Zones	
Building Count:	4,816
Building Square Footage:	156,567,481 sq ft
Outdoor Area:	8.28 sq km

Lab	
PCR Throughput:	500 samples per day
Culture Throughput:	500 samples per day
Number of Analysis Teams:	6 teams
Team Size:	2 persons per team
Labor Rate:	\$50.00/hr per person

Sampling	
Team Size:	3 persons per team
Working Day Length:	8.0 hours
Labor Rate:	\$50.00/hr per person
Number of Sampling Teams:	50 teams
Samples Collected/Hour:	10 samples per hour

PATH / AWARE - [ReportViewerForm]					
File View Window Help					
1 of 3 100%					
Results Summary					
Screening					
Outdoor Red zone: 828 samples					
Outdoor Yellow zone: 0 samples					
Outdoor Green zone: 0 samples					
Outdoor total: 828 samples					
Indoor Red zone: 19,264 samples					
Indoor Yellow zone: 0 samples					
Indoor Green zone: 0 samples					
Indoor total: 19,264 samples					
Characterization					
Judgmental					
Outdoor Red zone: 828 samples					
Outdoor Yellow zone: 0 samples					
Outdoor total: 828 samples					
Indoor Red and Yellow:					
	Samples	Duration	Labor	Analysis Duration	Analysis Labor
Residential:	89,533	32 days	\$1,342,950	90 days	\$1,296,000
Commercial:	32,918	12 days	\$493,650	33 days	\$475,200
Mixed:	5,765	3 days	\$86,400	6 days	\$86,400
Industrial:	17,294	7 days	\$259,350	18 days	\$259,200
Public:	11,057	4 days	\$165,750	12 days	\$172,800
Total:	156,567	58 days	\$2,348,100	159 days	\$2,289,600

Summary

- Wide-area release scenarios can be analyzed with the PATH/AWARE toolset
- Planning estimates can be made for the overall consequence management process, including characterization, decon and clearance
- Prioritization of critical functions and assets can be established
- Timelines and costs can be derived for the overall process, as well as for critical assets and functions