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PITT-04-1-067

April 27, 2001

Project 0039

Commander, Southern Division
Naval Facilities Engineering Command
Attn: Mr. Mark Davidson (Code 1879)
2155 Eagle Drive
North Charleston, South Carolina 29406

Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order 0078

Subject: Indoor Air Evaluation
Naval Air Station Cecil Field
Jacksonville, Florida

Dear Mr. Davidson:

Please find enclosed a copy of the Potential Indoor Air Evaluation Locations Due to Underlying Contaminated Groundwater presentation report. This report was presented to the RAB during the April meeting.

Copies have also been distributed to the Partnering Team Members as indicated below.

If you have any questions, please contact Mark Jonnet at (412) 921-8622 or me at (412) 921-8916.

Sincerely,

Mark P. Speranza

Mark P. Speranza, P.E.
Task Order Manager

MPS/kf

Enclosure

cc: S. Glass, SOUTHDIV (1 copy)
D. Vaughn-Wright, U.S. EPA (1 copy)
D. Grabka, FEDP (1 copy)
S. Ross, J.A. Jones (1 copy)
C. Grossess, ATSDR (1 copy)
D. Wroblewski (Cover Letter Only)
Mark Perry/File 0039 (1 copy unbound)

bcc: J. Johnson, Tetra Tech NUS, Inc. (2 copies)
R. Simcik Tetra Tech NUS, Inc. (1 copy)
M. Jonnet Tetra Tech NUS, Inc. (1 copy)
B. Davis, Tetra Tech NUS, Inc. (1 copy)
R. Miller, Tetra Tech NUS, Inc. (1 copy)
J. Logan, Tetra Tech NUS, Inc. (1 copy)

Potential Indoor Air Evaluation Locations

due to underlying contaminated groundwater at NAS Cecil Field (February 2001)

Purpose

- To determine if human exposure from all media including soil, groundwater, surface water and ***air*** are controlled per GPRA (RCRA) criteria.
- To determine if current and future building occupants could be exposed to indoor air contamination resulting from groundwater contamination.

Potential Indoor Air Areas of Concern

- Criteria used to identify areas
  - Connecticut Groundwater Standards for Protection of Indoor Air
  - Used most recent groundwater sample
  - Selected any result within 100 feet of building

Potential Indoor Air Sample Locations

- Step One
  - Select most recent groundwater analysis of parameters that corresponded to State of Connecticut Table provided by EPA in December 11, 2000 email
  - The State of Connecticut has implemented numeric groundwater standards for protection of indoor air since 1996.
  - The State of Florida has not developed a similar table to date.
  - Most recent groundwater analytical results were judged to be most representative of current and future conditions.

CT State GW Std for (ug/l)			
Volatile Organic Substances	Volatilization Residential	Drinking (GA/GAA GP)	X times Factor*
1,1-Dichloroethylene (1,1-DCE)	1	7	0.14
Vinyl Chloride	2	2	1
Ethylene dibromide (EDB)	4	0.05	80
4-1,3-Dicholoropropane	6	0.5	12
1,1,1,2-Tetrachloroethane	12	1	12
1,2-Dichloropropane	14	5	3
Carbon Tetrachloride	16	5	3
1,2-Dichloroethane (1,2-DCA)	21	1	21
1,1,2,2-Tetrachloroethane	23	0.5	46
Trichloroehylene (TCE)	210	5	42
Benzene	215	1	215
Chloroform	287	6	48
Styrene	580	100	6
Bromoform	980	4	245
Tetrachloroethylene (PCE)	1,500	5	300
chlorobenzene	1,800	100	18
1,1,2-Trichloroethane	8,000	5	1,600
1,1,1-Trichoroethane (TCA)	20,400	200	102
Xylenes	21,300	530	40
Toluene	23,500	1,000	23
1,3-Dichlorobenzene (3 DCB)	24,200	600	40
1,2-Dichlorobenzene (2 DCB)	30,500	600	51
1,1-Dichloroethane (1,1 DCA)	34,500	70	493
Acetone	50,000	700	71
2-Butanone (MEK)	50,000	400	125
1,4-Dichlorobenzene (4 DCB)	50,000	75	667
Ethylbenzene	50,000	700	71
Methyl-tert-butyl-ether (MTBE)	50,000	100	500
Methyl isobutyl ketone (MIBK)	50,000	350	143
Acrylonitrile	Not Established	0.5	-
Dibromochloromethane	Not Established	0.5	-
cis-1,2-Dichloroethylene	Not Established	70	-
trans-1,2-Dichloroethylene	Not Established	100	-
Total Petroleum Hydrocarbons	Not Established	500	-

* - Not from CT table, created here to show how many times the volatilazation standard is above the drinking water ingestion standard.

Potential Indoor Air Sample Locations

- Step Two

  Compared the results of Step One to the criteria. Resulted in 64 instances where an exceedance occurred.

  The 65 instances correspond to 55 locations across the facility.

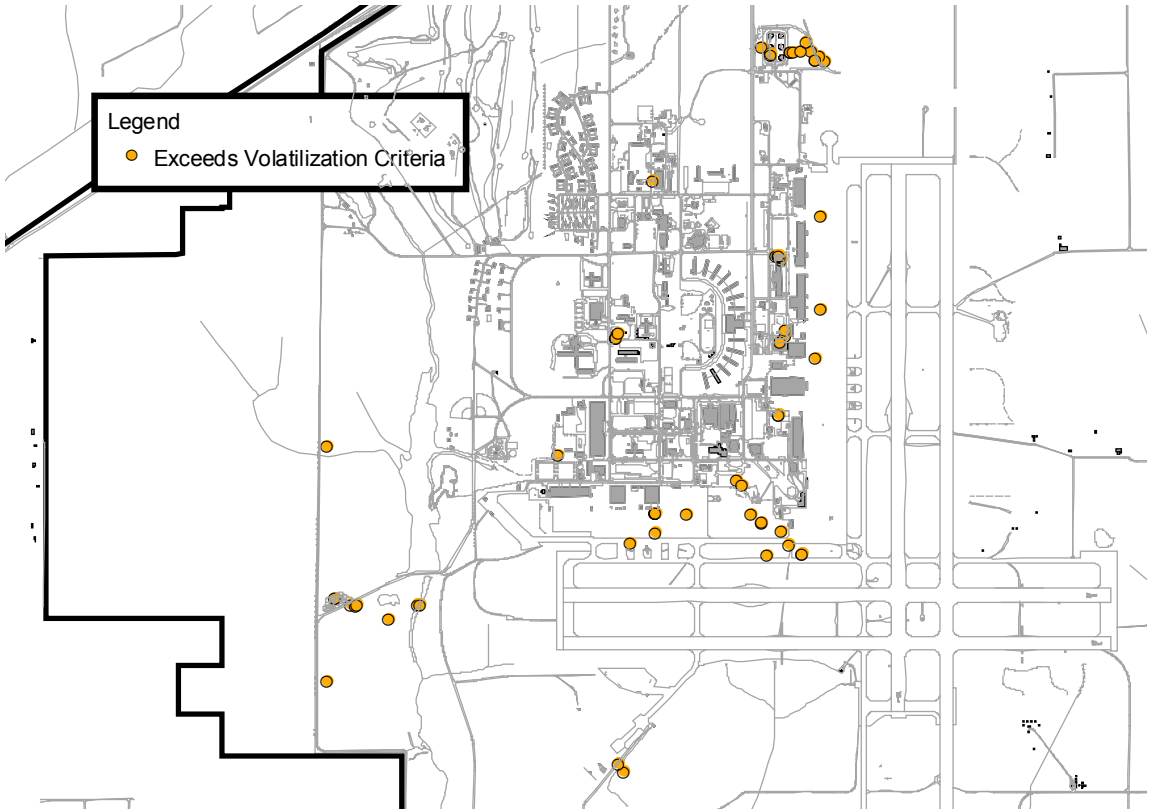
Location
85Q052
85Q053
85Q067
CEF-003-07S
CEF-003-18S
CEF-003-31S
CEF-003-36S
CEF-003-38S
CEF-003-39I
CEF-003-WP
CEF-005-LTM04
CEF-008-07S
CEF-008-10S
CEF-013-05S
CEF-013-06I
CEF-013-08S
CEF-016-06S
CEF-016-07S
CEF-016-32S
CEF-016-IW-01
CEF-016-IW-02
CEF-017-LTM2S
CEF-043-05N
CEF-043-06N
CEF-046-01S
CEF-046-02S
CEF-046-05I
CEF-046-07I
CEF-076-28D
CEF-076-38
CEF-076-39D
CEF-076-40D
CEF-076-50I
CEF-076-52I
CEF-076-58I
CEF-076-64I
CEF-076-65D
CEF-076-70I
CEF-076-73I
CEF-076-75S
CEF-076-76I
CEF-081-06S
CEF-293-02
CEF-293-09
CEF-342-03I
CEF-342-07I
CEF-342-14D
CEF-824A-04S
CEF-B312-3S
CEF-I033-01
CEF-M18-01S
DPT-10
DPT15
DPT4
DPT5

LOCATION	GIS_DATE	PARAMETER	RESULT	QUALIFIER	UNITS	CRITERIA
85Q052	19960416	1,1-DICHLOROETHENE	6200.0		UG/L	1.0
85Q053	19960415	1,1-DICHLOROETHENE	40.0		UG/L	1.0
85Q067	19960414	1,1-DICHLOROETHENE	19.0		UG/L	1.0
CEF-003-07S	19980723	1,1-DICHLOROETHENE	260.0		UG/L	1.0
CEF-003-07S	19980723	TRICHLOROETHENE	480.0		UG/L	210.0
CEF-003-18S	19970617	1,1-DICHLOROETHENE	5.8		UG/L	1.0
CEF-003-31S	19980730	1,1-DICHLOROETHENE	21.0		UG/L	1.0
CEF-003-36S	19981209	1,1-DICHLOROETHENE	1.7	J	UG/L	1.0
CEF-003-38S	20000720	1,1-DICHLOROETHENE	29.7		UG/L	1.0
CEF-003-39I	20000720	1,1-DICHLOROETHENE	15.3		UG/L	1.0
CEF-003-WP	20001102	VINYL CHLORIDE	38.5		UG/L	2.0
CEF-005-LTM04	20000204	VINYL CHLORIDE	4.3	J	UG/L	2.0
CEF-008-07S	19980805	1,1-DICHLOROETHENE	8.2		UG/L	1.0
CEF-008-10S	19970624	1,1-DICHLOROETHENE	84.0		UG/L	1.0
CEF-013-05S	19981116	1,1-DICHLOROETHENE	1.4		UG/L	1.0
CEF-013-05S	19981116	BENZENE	7340.0		UG/L	215.0
CEF-013-06I	19981116	1,1-DICHLOROETHENE	3640.0		UG/L	1.0
CEF-013-06I	19981116	1,2-DICHLOROETHANE	35.6		UG/L	21.0
CEF-013-06I	19981116	VINYL CHLORIDE	27.4		UG/L	2.0
CEF-013-08S	19981114	BENZENE	4070.0		UG/L	215.0
CEF-016-06S	19911120	TRICHLOROETHENE	2700.0		UG/L	210.0
CEF-016-07S	19940810	TRICHLOROETHENE	629.0		UG/L	210.0
CEF-016-32S	19970829	TRICHLOROETHENE	220.0		UG/L	210.0
CEF-016-IW-01	19980831	1,1-DICHLOROETHENE	3.5	J	UG/L	1.0
CEF-016-IW-01	19980831	TRICHLOROETHENE	10600.0	J	UG/L	210.0
CEF-016-IW-02	19980831	1,1-DICHLOROETHENE	26.3	J	UG/L	1.0
CEF-016-IW-02	19980831	TRICHLOROETHENE	1400.0	J	UG/L	210.0
CEF-017-LTM2S	19971124	VINYL CHLORIDE	3.0		UG/L	2.0
CEF-043-05N	19950607	BENZENE	460.0		UG/L	215.0
CEF-043-06N	19950601	BENZENE	380.0		UG/L	215.0
CEF-046-01S	19980603	BENZENE	13000.0		UG/L	215.0
CEF-046-01S	19980603	TOLUENE	45000.0		UG/L	23500.0
CEF-046-02S	19980603	BENZENE	1200.0		UG/L	215.0
CEF-046-05I	19980602	BENZENE	250.0		UG/L	215.0
CEF-046-07I	19980602	BENZENE	8700.0		UG/L	215.0
CEF-076-28D	19950629	BENZENE	1500.0		UG/L	215.0
CEF-076-38	19940518	BENZENE	250.0		UG/L	215.0
CEF-076-39D	19970902	BENZENE	6200.0		UG/L	215.0
CEF-076-40D	19970902	BENZENE	7600.0		UG/L	215.0
CEF-076-50I	19950512	BENZENE	690.0		UG/L	215.0
CEF-076-52I	19950726	BENZENE	3600.0		UG/L	215.0
CEF-076-58I	19970903	BENZENE	1100.0		UG/L	215.0
CEF-076-64I	19970904	BENZENE	2900.0		UG/L	215.0
CEF-076-65D	19970904	BENZENE	1100.0		UG/L	215.0
CEF-076-70I	19970902	BENZENE	5200.0		UG/L	215.0
CEF-076-73I	19950430	BENZENE	370.0		UG/L	215.0
CEF-076-75S	19970904	BENZENE	1500.0		UG/L	215.0
CEF-076-76I	19970903	BENZENE	3100.0		UG/L	215.0
CEF-081-06S	19980617	1,1-DICHLOROETHENE	1.1		UG/L	1.0
CEF-293-02	19960911	BENZENE	520.0		UG/L	215.0
CEF-293-09	19960911	BENZENE	240.0		UG/L	215.0
CEF-342-03I	19980826	BENZENE	1400.0		UG/L	215.0
CEF-342-07I	19980825	1,2-DICHLOROPROPANE	10.0		UG/L	6.0
CEF-342-14D	19980826	BENZENE	280.0		UG/L	215.0
CEF-342-14D	19980826	TRICHLOROETHENE	930.0		UG/L	210.0
CEF-824A-04S	20000915	BENZENE	259.0		UG/L	215.0

Potential Indoor Air Sample Locations

- Step Three

The results of Step Two were displayed in ArcView.

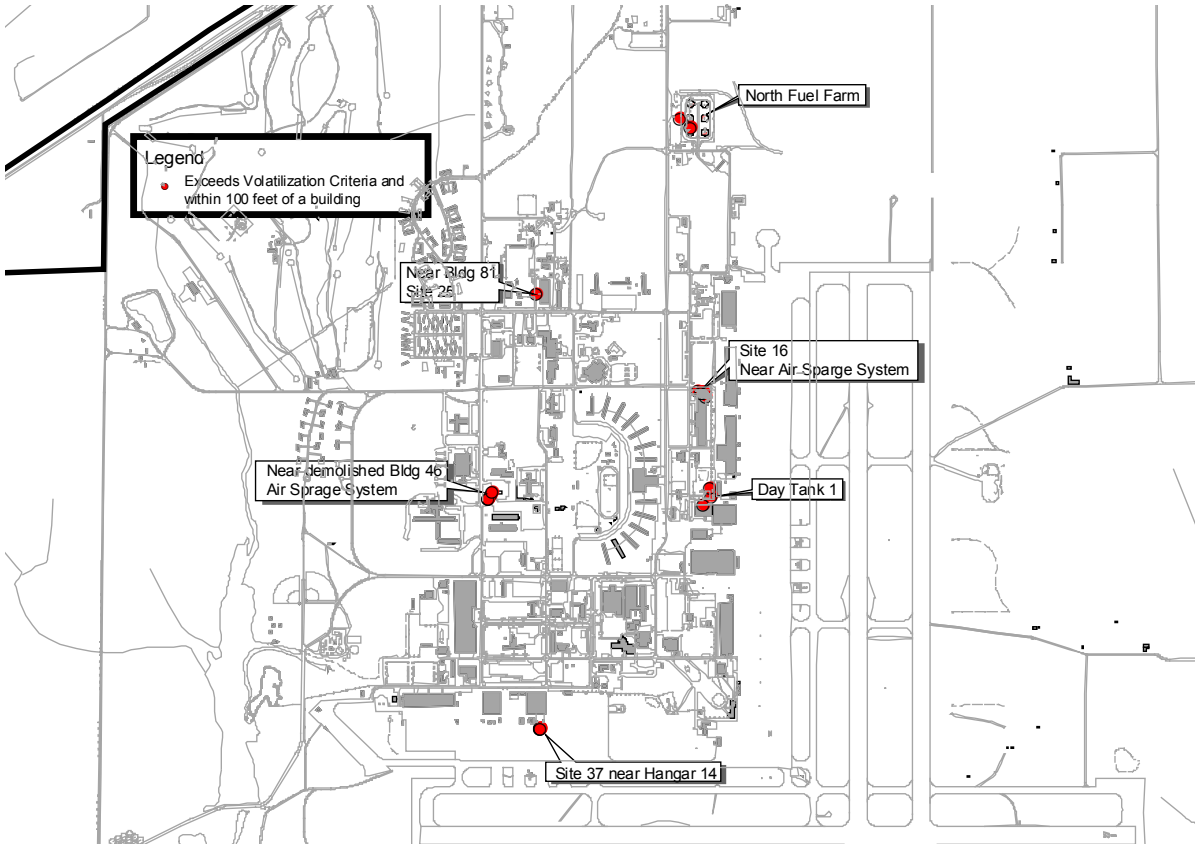


Potential Indoor Air Sample Locations

- Step Four

  Select all locations within 100 feet of any building displayed in ArcView.

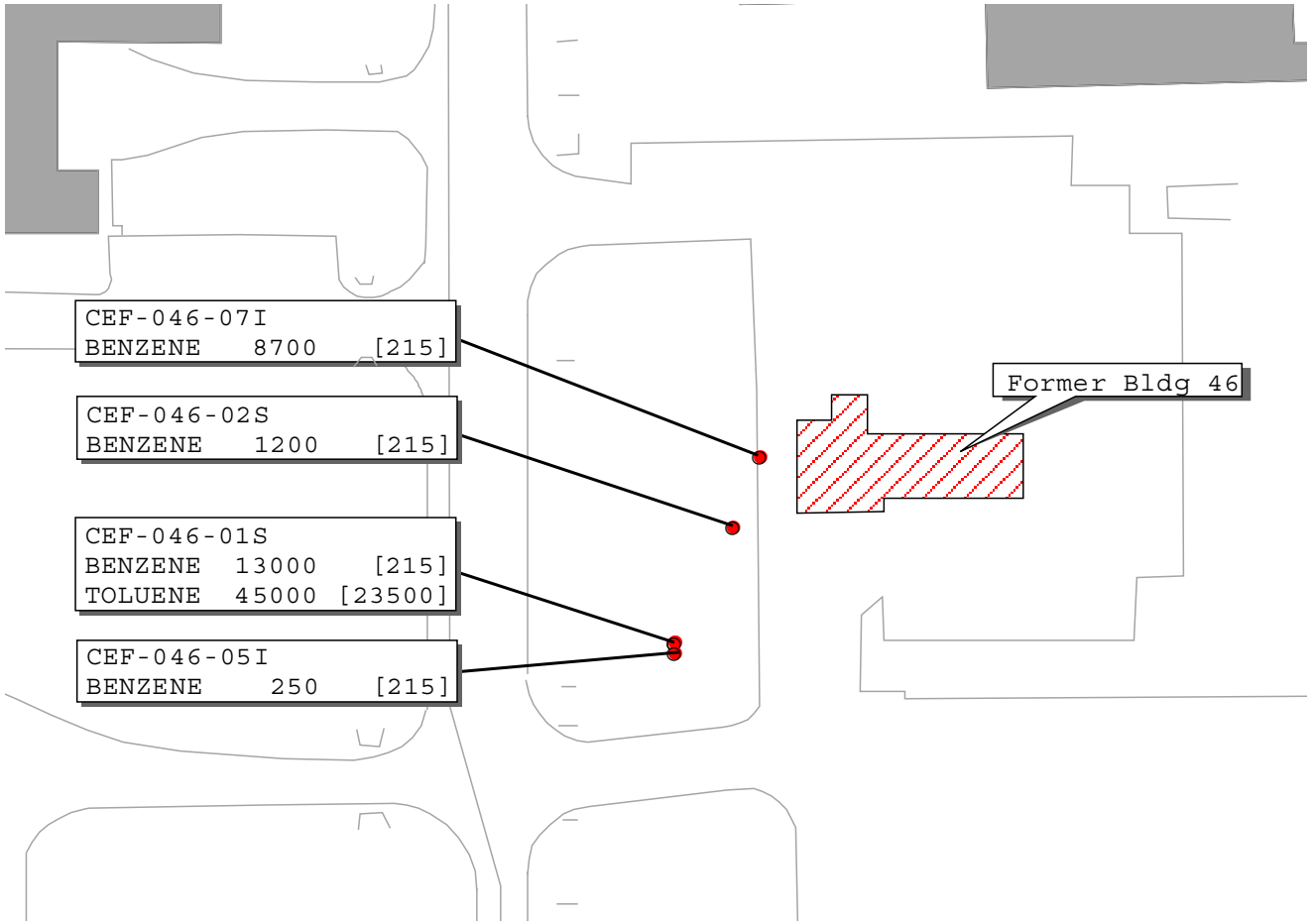
  Corresponds to 18 locations across the facility.



Potential Indoor Air Areas of Concern

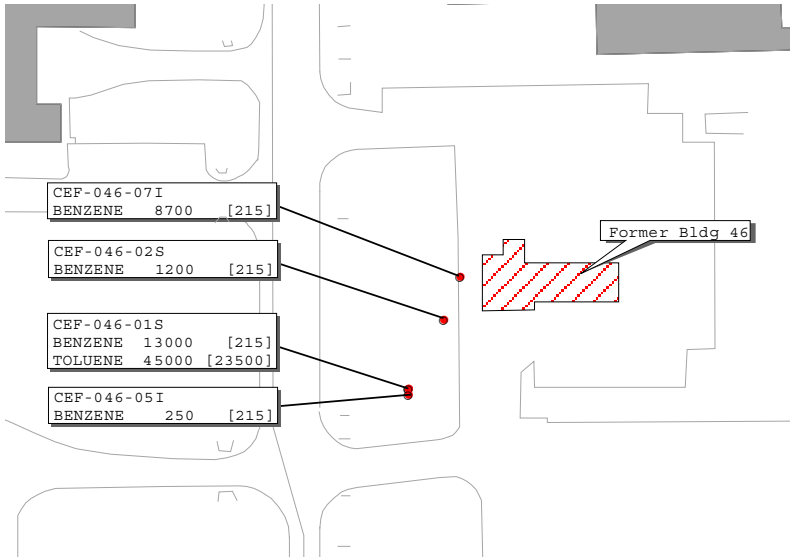
Area	Location	Date	Parameter	Result	Qualifier	Units	Criteria
Bldg 46	CEF-046-01S	19980603	BENZENE	13000.0		UG/L	215.0
Bldg 46	CEF-046-01S	19980603	TOLUENE	45000.0		UG/L	23500.0
Bldg 46	CEF-046-02S	19980603	BENZENE	1200.0		UG/L	215.0
Bldg 46	CEF-046-05I	19980602	BENZENE	250.0		UG/L	215.0
Bldg 46	CEF-046-07I	19980602	BENZENE	8700.0		UG/L	215.0
Bldg 81	CEF-081-06S	19980617	1,1-DICHLOROETHENE	1.1		UG/L	1.0
Day Tank 1	CEF-293-02	19960911	BENZENE	520.0		UG/L	215.0
Day Tank 1	CEF-293-09	19960911	BENZENE	240.0		UG/L	215.0
NFF	CEF-076-38	19940518	BENZENE	250.0		UG/L	215.0
NFF	CEF-076-75S	19970904	BENZENE	1500.0		UG/L	215.0
NFF	CEF-076-76I	19970903	BENZENE	3100.0		UG/L	215.0
Site 16	CEF-016-06S	19911120	TRICHLOROETHENE	2700.0		UG/L	210.0
Site 16	CEF-016-07S	20010115	TRICHLOROETHENE	629.0		UG/L	210.0
Site 16	CEF-016-IW-01	19980831	1,1-DICHLOROETHENE	3.5	J	UG/L	1.0
Site 16	CEF-016-IW-01	19980831	TRICHLOROETHENE	10600.0	J	UG/L	210.0
Site 16	CEF-016-IW-02	19980831	1,1-DICHLOROETHENE	26.3	J	UG/L	1.0
Site 16	CEF-016-IW-02	19980831	TRICHLOROETHENE	1400.0	J	UG/L	210.0
Site 37	85Q052	19960416	1,1-DICHLOROETHENE	6200.0		UG/L	1.0
Site 37	CEF-013-05S	19981116	1,1-DICHLOROETHENE	1.4		UG/L	1.0
Site 37	CEF-013-05S	19981116	BENZENE	7340.0		UG/L	215.0
Site 37	CEF-013-06I	19981116	1,1-DICHLOROETHENE	3640.0		UG/L	1.0
Site 37	CEF-013-06I	19981116	1,2-DICHLOROETHANE	35.6		UG/L	21.0
Site 37	CEF-013-06I	19981116	VINYL CHLORIDE	27.4		UG/L	2.0

Building 46 - Evaluation

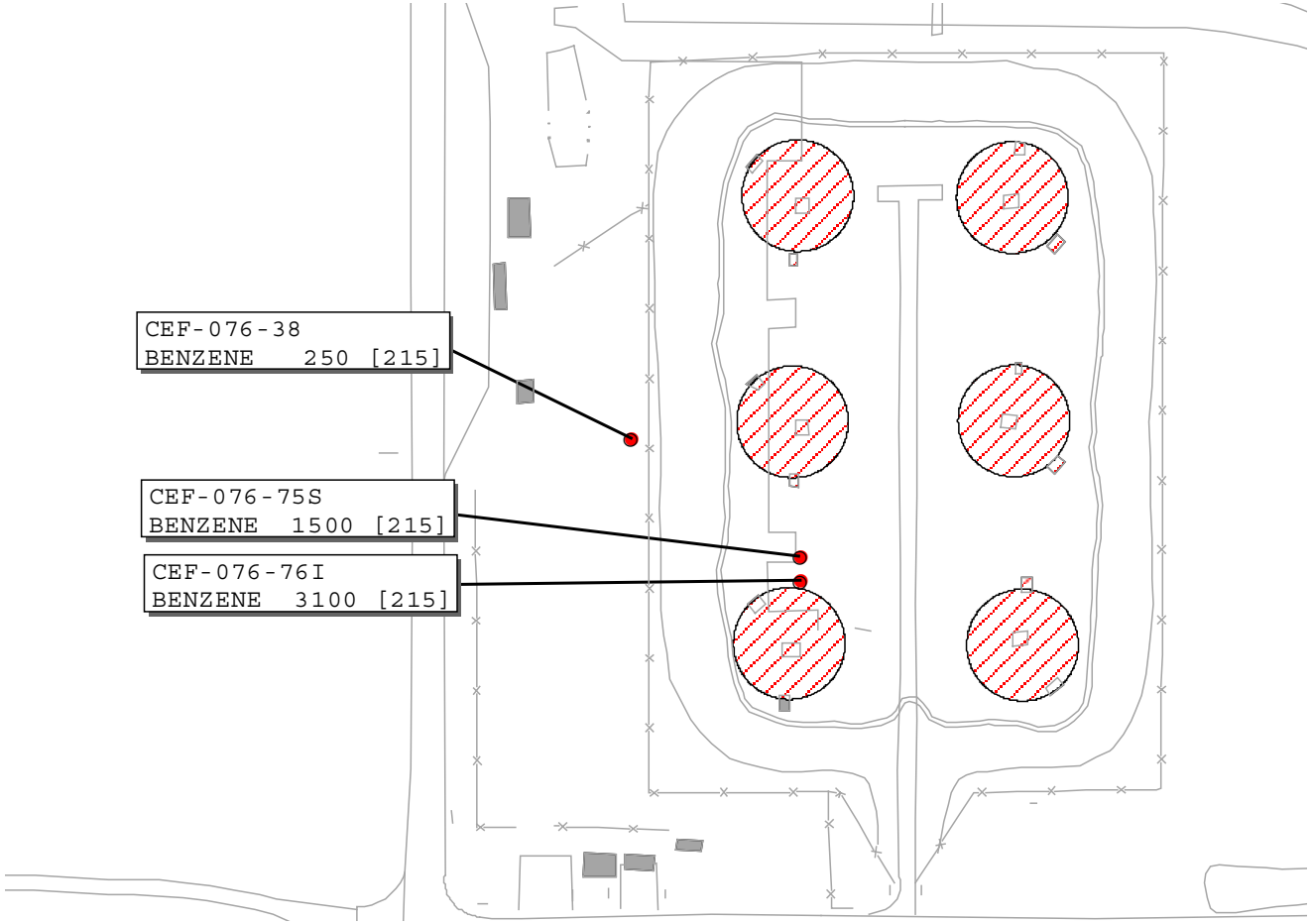


Building 46 - Evaluation

- Building 46 not longer exists
- Plume has an air sparging (AS) system in-place
- Future building construction is not anticipated due to road expansion.
- Institutional controls for groundwater will be implemented.
- Clean up goals should be reached by 2002.
- Indoor Air issues do not apply

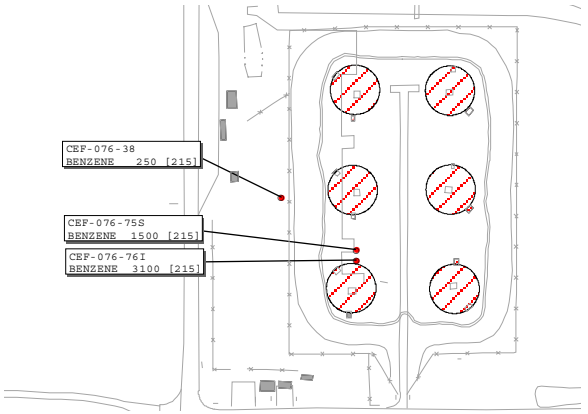


North Fuel Farm - Evaluation

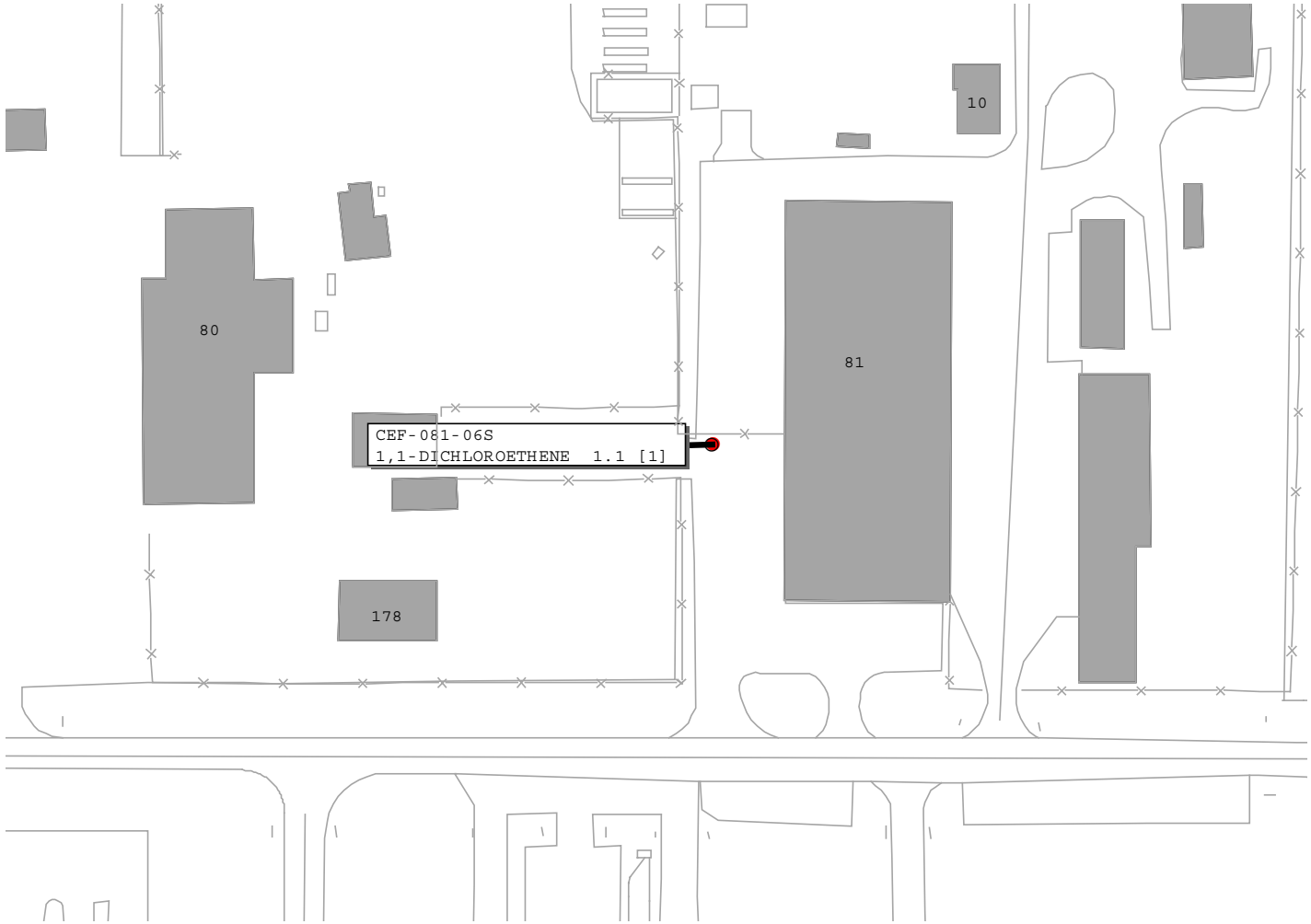


North Fuel Farm - Evaluation

- Contaminated soils have been removed.
- Former Fuel Tanks have been removed.
- All buildings were demolished during removal
- Institutional Controls will be implemented for groundwater.
  - Any future development will have to evaluate underlying contamination
  - Reuse is to develop an Aviation Commercial/Business Park
- Remedial actions for groundwater are under evaluation.
- Indoor Air issues do not apply

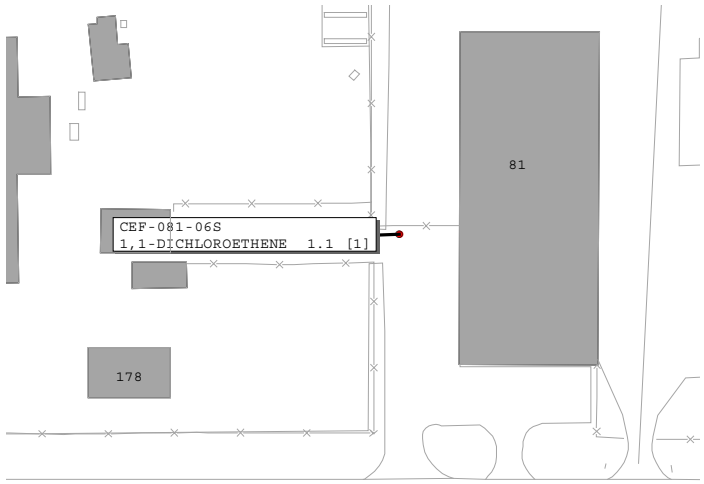


Building 81 - Evaluation

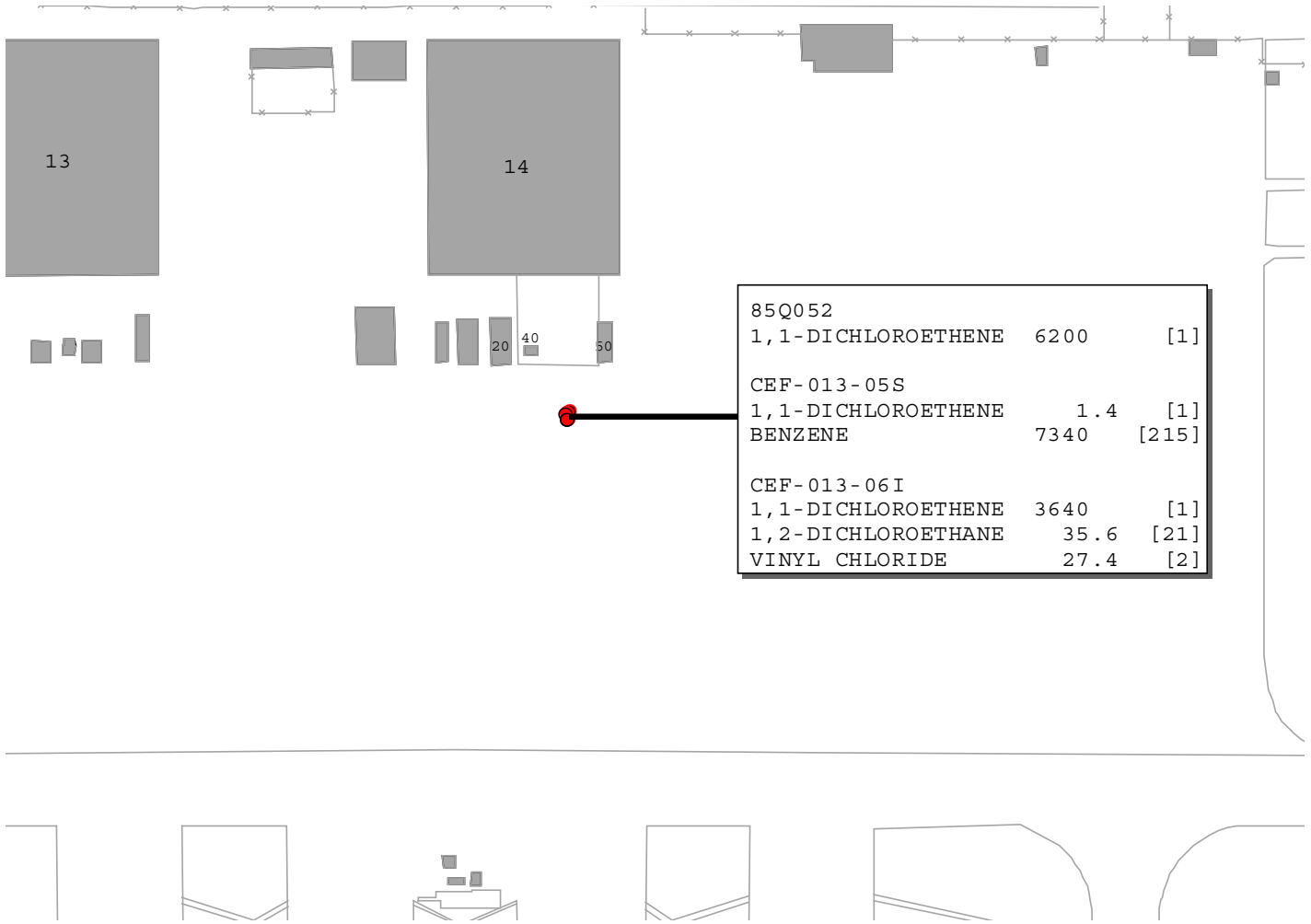


Building 81 - Evaluation

- 1,1-DICHLOROETHENE @ 1.1 criteria of 1.0
- Sample approximately 45 feet west of building
- No plume identified
- Building 81 is planned to be demolished
- Indoor Air issues do not apply

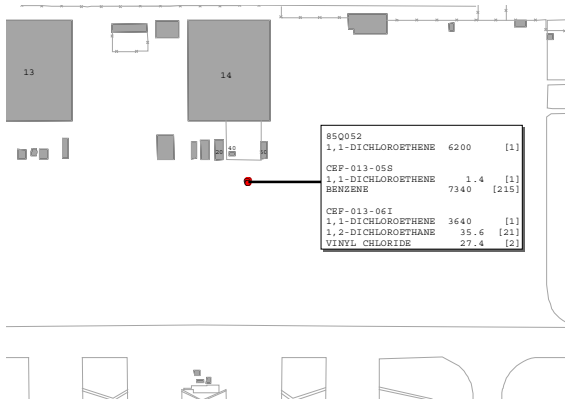


Site 37 - Evaluation

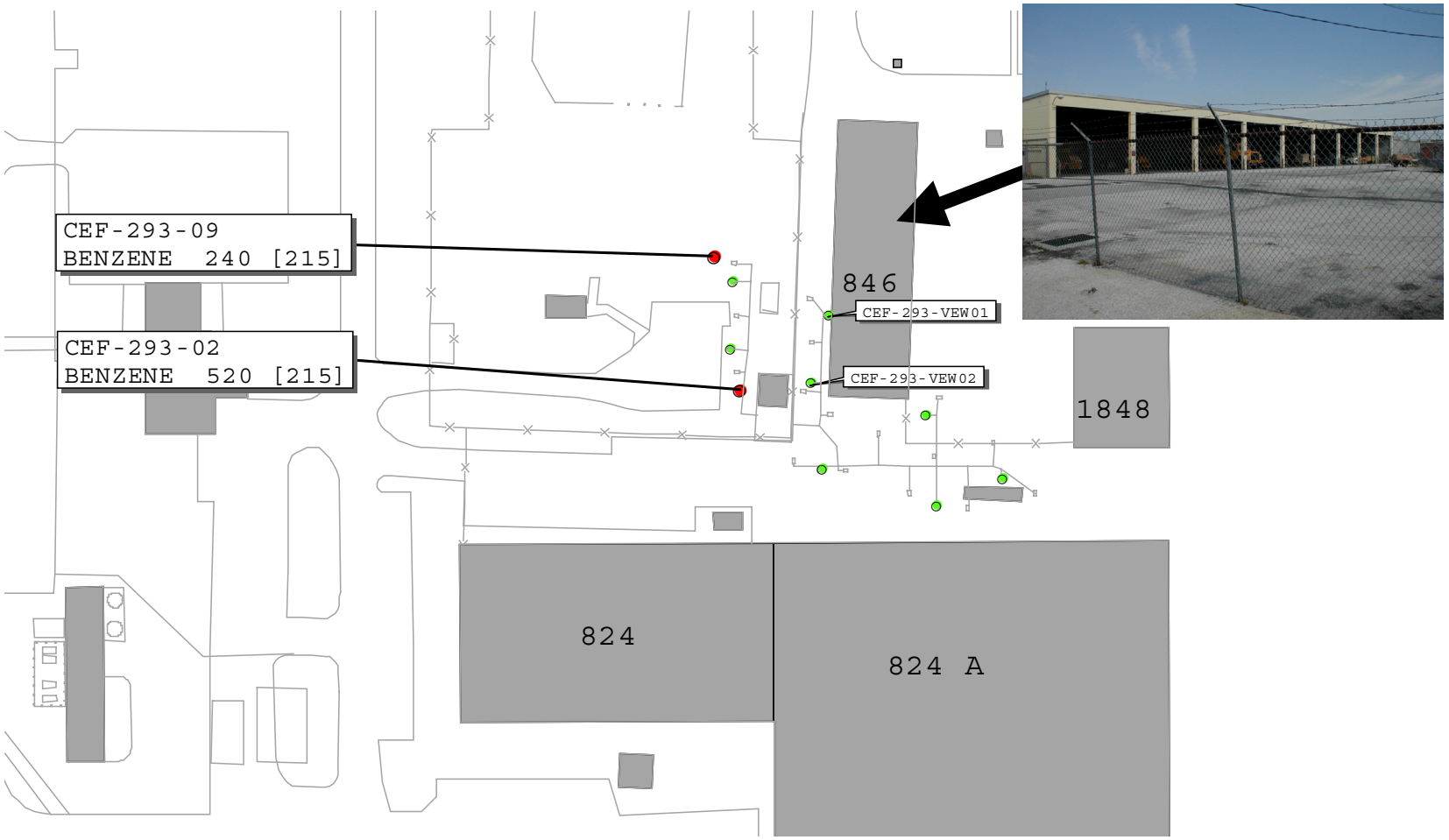


Site 37 - Evaluation

- Activities include: Air plane service and parking
- Closest buildings are 14,20, 40, and 50
  - Building 14 is a Aircraft Maintenance Hangar with open bay doors on the east and west sides
  - Building 20 is a skid mounted storage building - No direct pathway is present
  - Building 40 is to be removed during Site 36 soil excavation
  - Building 50 has been removed
- AS system to be put in-place
  - Institutional Controls will be implemented for groundwater exposure
- No utilities are present within the foot print of the groundwater plume
- Indoor Air contamination not expected due to groundwater contamination



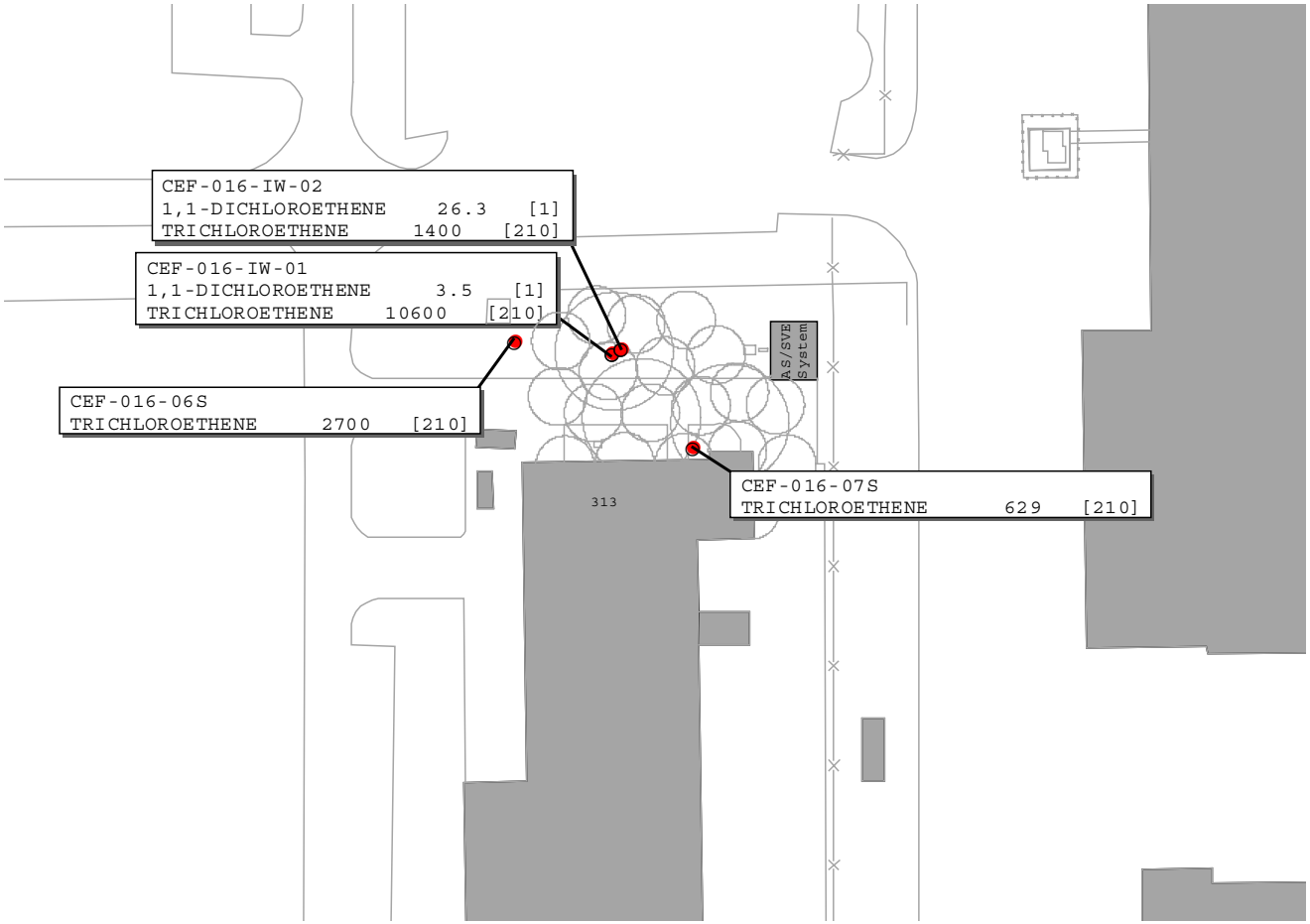
Day Tank One


CEF-293-09
BENZENE 240 [215]
CEF-293-02
BENZENE 520 [215]
846
CEF-293-VEW01
CEF-293-VEW02
1848
824
824 A

Day Tank One - Evaluation

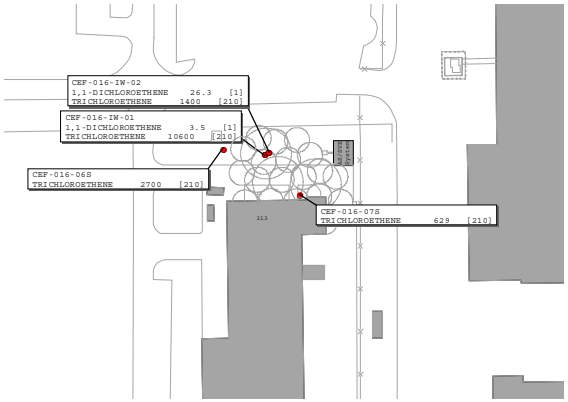
- Closest building is 846
  - 846 is a garage with the eastern side of the building constantly open. This building may have indoor air concerns due to the nature of the garage activities; but not expected from groundwater contamination plume.
- A Biosparge Vapor Collection system in-place
- Surrounding vapor extraction wells have been non detect
  - Vapor Extraction wells 1 & 2 have had free product
- Indoor Air is not anticipated to be an issue.

Site 16 - Evaluation



Site 16 - Evaluation

- Closest building 313
- 313 activities similar to prior occupants
  - storage and repairs to marine and power plant turbine engines
- AS/VS system in-place
  - System operation
    - continuously from 06/99 To 05/00
    - operation has been in pulse mode since
- Dated sample results due to AS/VE system operations
  - IW-01 & 02 were last sampled on 08/98
  - 6S last sampled 11/99, has been abandoned
- 7S last sampled 01/01
- Piezometers located around Building 313
  - Air data collected 12/99 was evaluated with SCREEN3 (USEPA approved air model) indicated that concentrations in the piezometers were below published criteria for worker exposure
- Utilities are present within the foot print of the groundwater plume
  - These underground pathways may present a pathway to the building
- May have Indoor air contamination due to nature of building activities, but not expected due to contaminated groundwater



Recommendations

Area	Recommendation	Rationale
Bldg 46	NFA	No Building Present and future reuse
NFF	NFA	No Building Present and future reuse
Site-25 / Bldg 81	NFA	Low level exceedance No plume identified
Bldg 14	NFA	Aircraft maintenance building Type of activity in building Building has bay doors on the east and west sides of the building that provide ventilation
Bldg 20	NFA	Aircraft storage building Type of activity in building Building is skid mounted which provides ventilation between bottom of building and groundsurface
Bldg 846	NFA	Building is open on east side allowing constant air exchanges
Bldg 313	NFA	Piezometer data and reuse

Conclusions

- Groundwater contamination was not identified above the Connecticut screening levels in any residential areas.
- Institutional Controls will be implemented to address groundwater usage, tampering with groundwater remedial systems, surface and subsurface soils. Therefore any future development of the contaminated area will require design to prevent indoor air contamination due to underlying contamination.