## Cieslak, Douglas J - DNR

230000020

**From:** Wayne Fassbender <WFassbender@enviroforensics.com>
**Sent:** Wednesday, February 18, 2015 3:01 PM
**To:** Cieslak, Douglas J - DNR
**Cc:** Brian Kappen; Skwierawski, M. Andrew; Warpinski, Ted A.
**Subject:** Martino's 52nd Street Next Steps

Doug:

Thanks for taking the time yesterday to review the site investigative data we have to date, and to discuss next steps. Based on our communications, here are the action items we agreed are necessary:

- Install a sub-slab depressurization system (SSDS) at the 5231 40th Avenue residential property to mitigate vapor risk levels of PCE; Sulick
- Install a SSDS in a portion of the Martino's building slab that underlies the four westernmost commercial spaces to mitigate risk levels of TCE;
- Perform sub-slab vapor sampling and pressure field testing of the existing SSDS at the 5233 40th Avenue residential property to determine whether vapors have spread to this residence and to determine whether the existing SSDS is adequately designed to mitigate a vapor risk; Esperosa
- Re-sample sub-slab vapor in the commercial building located at 3907 52nd Street during the heating months;
- Expand the coverage area of our drawings to show neighboring residences across 39th and 40th Avenues, and 51st Street, and associated underground utilities;
- Abandon monitoring well MW-5;
- Install new water table monitoring wells MW-9 and MW-10 off the southeast corner of the vacant parcel of land located across the alleyway and located southeast of the Martino's building; and
- Install new piezometer PZ-1 to better determine the vertical extent of impacts in the area of groundwater impacts near water table well MW-5T.

We talked about the need for soil sampling and possibly soil gas sampling on the vacant property located to the southeast of Martino's. You have indicated that you will attempt to gain access for this sampling, since we have been refused.

We also talked about whether the extents of impacts in all media (soil, vapor, groundwater, utility lines) had been determined. You indicated that you would like more definition of the extent of soil impacts below the Martino commercial building. However, at this point, in our professional opinion, we have enough data that supports the likelihood that there is some residual groundwater and/or soil impact beneath the portion of the building not occupied by Martino's Cleaners, but does not support the existence of further soil sources in these areas. We feel that further efforts to fully define the extent of residual impacts beneath the building slab are not warranted due to the disruption to these businesses that this would cause, and the additional cost. We are planning to remediate the soil source area beneath the Martino's Cleaners space and in the alleyway, and install an SSDS to collect sub-slab vapors that appear limited beneath the commercial building slab. We feel these future actions will be adequate to protect the public health and welfare.

Again, thanks for taking the time to discuss our findings and provide your opinions. We will begin to implement the above action items upon receipt of stakeholder buy-in. Please keep us informed of your progress in gaining access to the vacant land parcel.

Best regards,

**Wayne Fassbender, PG, PMP**
Senior Project Manager

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- Monitoring of natural attenuation after active remediation for reduction of residuals. There is sufficient evidence given the obvious reducing environment and presence of degradation products, that natural attenuation is at work.

Take a look at the data provided, and let us know a good time to talk about these findings, future investigative needs, etc. Thanks, Doug!

**Wayne Fassbender, PG, PMP**
Senior Project Manager

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## Cieslak, Douglas J - DNR

**From:** Wayne Fassbender <WFassbender@enviroforensics.com>
**Sent:** Thursday, February 12, 2015 11:50 AM
**To:** Cieslak, Douglas J - DNR
**Cc:** Brian Kappen; Rob Hoverman
**Subject:** Results Summary for Martino's Cleaners 52nd, Kenosha; BRRTS: 02-30-552186
**Attachments:** Proposed Well Locations.pdf; 6190-0511-Fig.4 MW GW analytical map.pdf; 6190-0536-Fig.3 Total VI assessment analytical results.pdf; 6190-0535-Fig.2 Combined Soil analytical results map.pdf

Hi Doug:

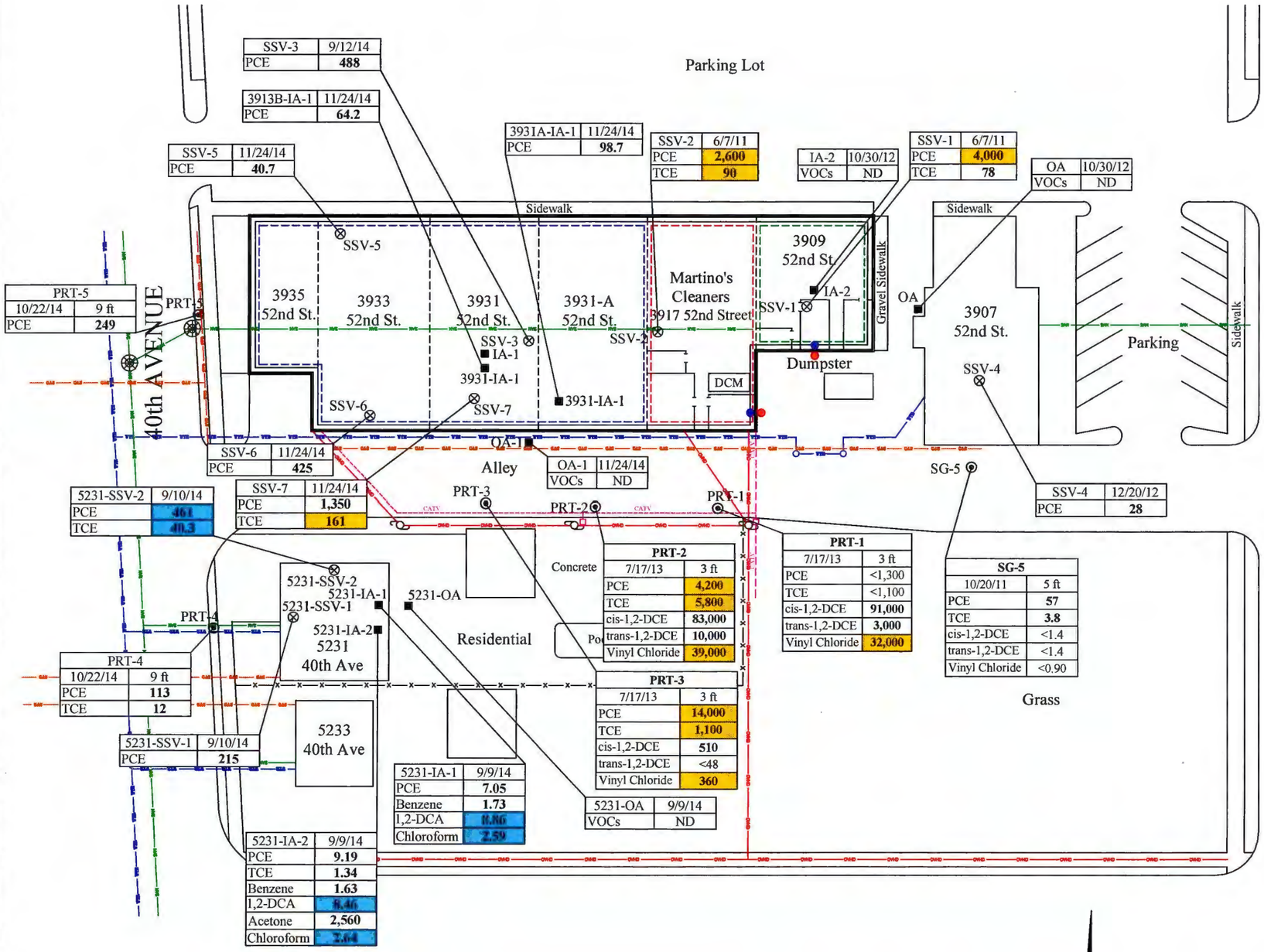
Brian and I would like to have a call with you to discuss the results of our latest site investigations and proposed next steps. Based on our review of the enclosed data figures, we have made the following key observations:

- Main soil source is confined below the slab of the Martino's space;
- In the alleyway (and possibly beneath the Martino's space) there is perched water in a 4-5 foot thick fill layer that overlies clay. Soil impacts have migrated outside the building footprint and mainly reside in the groundwater of this fill layer along the alleyway;
- Impacts along the alleyway have spread somewhat to the south to encroach private property. The migration of impact appears limited to the 5231 property and the undeveloped parcel due east of this property;
- We believe that the impacts are limited to the upper 6-8 feet of soil and associated shallow perched groundwater;
- We believe that the deeper groundwater impacts at MW-5 are due to short circuiting along the annular space seal because new well MW-5T shows only degradation products of PCE. If deeper groundwater impacts exist, then we would expect similar PCE concentrations in both of these wells. We would recommend abandoning MW-5;
- The sanitary sewer lateral exiting the building to the west does not appear to be a migration conduit based on the results of soil and soil gas samples collected; and
- PCE concentrations have consistently exceeded risk levels beneath the slab of the 5231 residential property and the slab of Antojito Bakery; however, there have been no concentrations of CVOC above vapor action levels in indoor air. The vapors are likely emanating from groundwater impacts.

We can assume that there are groundwater impacts on the undeveloped parcel of land (based on concentrations detected at MW-8) and that is why we are proposing two monitoring wells off the southeast corner of this property to evaluate whether groundwater impacts have migrated beyond this property. In addition, to evaluate whether impacts have migrated deeper in groundwater, we are proposing a piezometer near MW-5T. We have not had success gaining access to the undeveloped property but believe it wise to evaluate whether shallow soil impacts are present which may restrict or otherwise hinder future development. We need your assistance in gaining access.

At this point (without any pilot testing), we feel that the following remedial actions are likely:

- Excavation of the soil source beneath the slab of the Martino's space;
- Dual-phase extraction (perched groundwater and vapor) via horizontal recovery piping along the alleyway, or electrical resistivity heating. We will need to determine through future sub-slab sampling during remedial activities if this will eliminate the need to install an SSDS for the Antijito Bakery space;
- Installation of an SSDS at the 5231 residential property. Due to clay soil on this property, we do not feel that our remedial efforts will have a sufficient radius of influence to eliminate their risk; and




## Legend

- SSV-1 ⊗ Sub-slab vapor sample location
- PRT-1 ◉ Soil gas sample location
- SG-1 ◉ Soil gas sampling point
- IA-1 ■ Outdoor air sample location
- OA ■ Indoor air sample location
- ● SSDS Extraction point
- ● SSDS Fan

SSDS = Sub-Slab Depressurization System

- GAS Underground gas utility line
- WTR Underground water utility line
- SAN Underground sanitary utility line
- OHHS Over head electrical utility line
- Underground cable television utility line
- Slab foundation #1
- Slab foundation #2
- Slab foundation #3
- Fence line

| Indoor Air | | |
|---|---|---|
| Analyte | Residential Vapor Action Level | Non-Residential Vapor Action Level |
| PCE | 42 | 1,800 |
| TCE | 2.1 | 88 |
| Benzene | 9.6 | 390 |
| 1,2,-DCA | 1.1 | 440 |
| Acetone | 32,000 | 320,000 |
| Chloroform | 1.2 | 49 |

| Soil Gas and Sub-slab vapor | | |
|---|---|---|
| Analyte | Residential Vapor Action Level | Non-Residential Vapor Risk Screening Level |
| PCE | 420 | 1,800 |
| TCE | 11 | 88 |
| cis-1,2-DCE | NE | NE |
| trans-1,2-DCE | NE | NE |
| Vinyl Chloride | 16 | 280 |

Note:

1. Bolded and orange values exceed Non-Residential Vapor Risk Screening Levels
2. Bolded and blue values exceed Residential Vapor Risk Screening Levels
3. All results reported in micrograms per cubic meter (ug/m $^3$)
4. Vapor risk screening level = US EPA Regional Screening Levels with an attenuation factor of 0.1 for sub-slab vapor to indoor air, and a 0.1 adjustment for carcinogens as described in WDNR Publication RR-800
5. Bold values equal or exceed laboratory detection limits
6. PCE = Tetrachloroethylene
7. TCE = Trichloroethylene
8. 1,2-DCA = 1,2-Dichlorothane
9. cis-1,2-DCE = cis-1,2-Dichloroethene
10. trans-1,2-DCE = trans-1,2-Dichloroethene
11. VOCs = Volatile Organic Compounds
12. ND = Not detected

# VAPOR INTRUSION ASSESSMENT ANALYTICAL RESULTS

Martino's Cleaners
3917 52nd Street
Kenosha, Wisconsin

| | |
|---|---|
| Date: | 1/30/15 |
| Designed: | EB |
| Drawn: | AJ |
| Checked: | BK |
| DWG file: | 6190-0536 |

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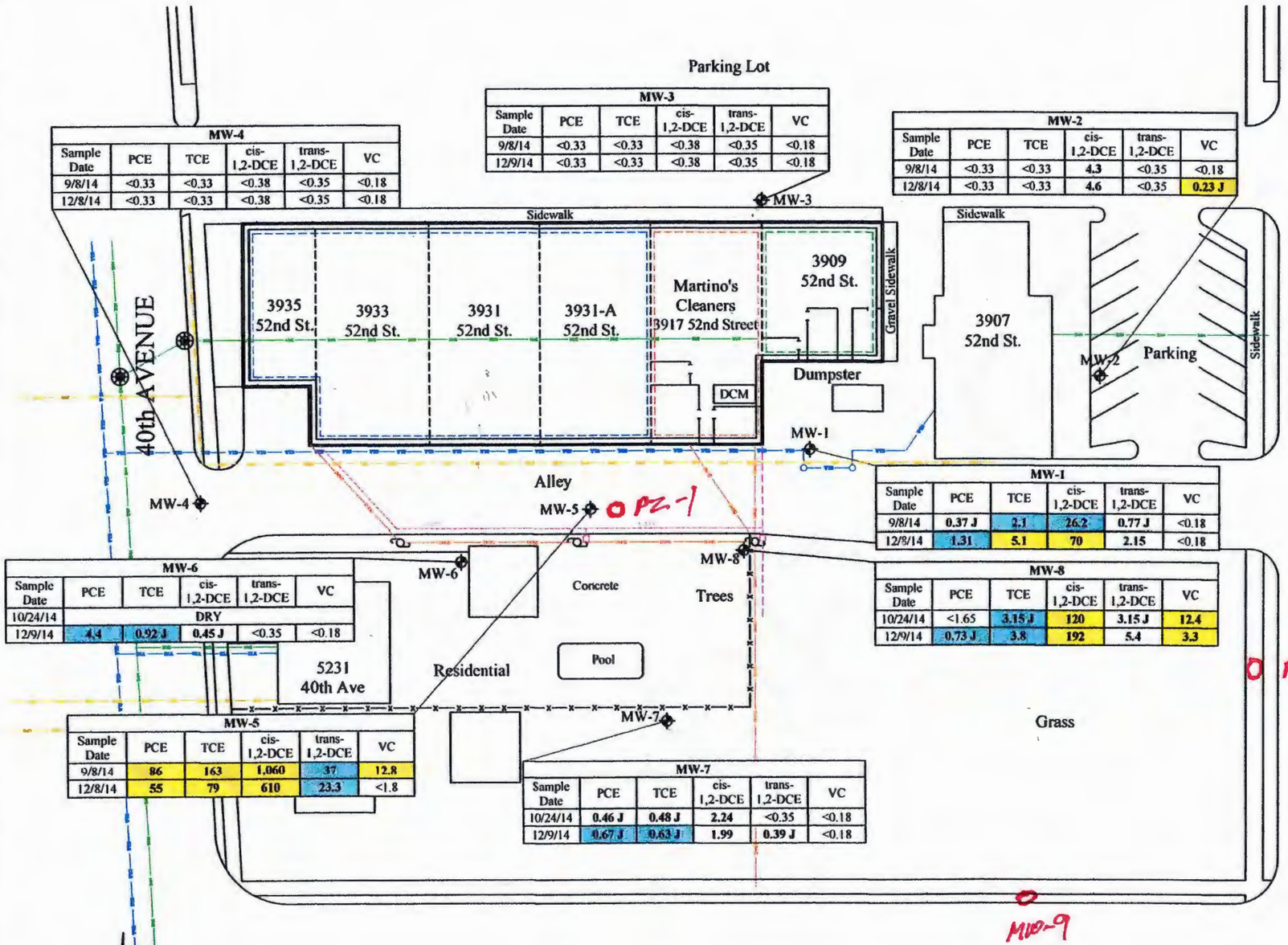


| MW-4 | | | | | |
|---|---|---|---|---|---|
| Sample Date | PCE | TCE | cis-1,2-DCE | trans-1,2-DCE | VC |
| 9/8/14 | <0.33 | <0.33 | <0.38 | <0.35 | <0.18 |
| 12/8/14 | <0.33 | <0.33 | <0.38 | <0.35 | <0.18 |

| MW-3 | | | | | |
|---|---|---|---|---|---|
| Sample Date | PCE | TCE | cis-1,2-DCE | trans-1,2-DCE | VC |
| 9/8/14 | <0.33 | <0.33 | <0.38 | <0.35 | <0.18 |
| 12/9/14 | <0.33 | <0.33 | <0.38 | <0.35 | <0.18 |

| MW-2 | | | | | |
|---|---|---|---|---|---|
| Sample Date | PCE | TCE | cis-1,2-DCE | trans-1,2-DCE | VC |
| 9/8/14 | <0.33 | <0.33 | 4.3 | <0.35 | <0.18 |
| 12/8/14 | <0.33 | <0.33 | 4.6 | <0.35 | 0.23 J |

| MW-1 | | | | | |
|---|---|---|---|---|---|
| Sample Date | PCE | TCE | cis-1,2-DCE | trans-1,2-DCE | VC |
| 9/8/14 | 0.37 J | 2.1 | 26.2 | 0.77 J | <0.18 |
| 12/8/14 | 1.31 | 5.1 | 70 | 2.15 | <0.18 |

| MW-8 | | | | | |
|---|---|---|---|---|---|
| Sample Date | PCE | TCE | cis-1,2-DCE | trans-1,2-DCE | VC |
| 10/24/14 | <1.65 | 3.15 J | 120 | 3.15 J | 12.4 |
| 12/9/14 | 0.73 J | 3.8 | 192 | 5.4 | 3.3 |

| MW-6 | | | | | |
|---|---|---|---|---|---|
| Sample Date | PCE | TCE | cis-1,2-DCE | trans-1,2-DCE | VC |
| 10/24/14 | DRY | | | | |
| 12/9/14 | 4.4 | 0.92 J | 0.45 J | <0.35 | <0.18 |

| MW-5 | | | | | |
|---|---|---|---|---|---|
| Sample Date | PCE | TCE | cis-1,2-DCE | trans-1,2-DCE | VC |
| 9/8/14 | 86 | 163 | 1,060 | 37 | 12.8 |
| 12/8/14 | 55 | 79 | 610 | 23.3 | <1.8 |

| MW-7 | | | | | |
|---|---|---|---|---|---|
| Sample Date | PCE | TCE | cis-1,2-DCE | trans-1,2-DCE | VC |
| 10/24/14 | 0.46 J | 0.48 J | 2.24 | <0.35 | <0.18 |
| 12/9/14 | 0.67 J | 0.63 J | 1.99 | 0.39 J | <0.18 |

## Legend

MW-1 ◆ Monitoring well location

Grab groundwater sample from soil gas sampling point

Slab foundation #1

Slab foundation #2

Slab foundation #3

| Analytes | Public Health | |
|---|---|---|
| | Preventive Action Limit | Enforcement Standard |
| PCE | 0.5 | 5 |
| TCE | 0.5 | 5 |
| cis-1,2-DCE | 7 | 70 |
| trans-1,2-DCE | 20 | 100 |
| VC | 0.02 | 0.2 |

Notes:

1. Bold, shaded orange values exceed Public Health Enforcement Standard
2. Bold, shaded blue values exceed Public Health Preventive Action Limit
3. Bold values equal or exceed laboratory detection limits
4. Only compounds exceeding public health standards are shown in this figure
5. Results reported in micrograms per liter (ug/L)
6. PCE = Tectrachloroethene
7. TCE = Trichloroethene
8. cis-1,2-DCE - cis-1,2-Dichloroethene
9. trans-1,2-DCE = trans-1,2-Dichloroethene
10. VC = Vinyl Chloride
11. J = Analyte concentration detected between the laboratory Reporting Limit and the laboratory Method Detection Limit
12. Samples analyzed for VOCs according to EPA Method 8260

# MONITORING WELL ANALYTICAL RESULTS MAP

Martino's Cleaners
3917 52nd Street
Kenosha, Wisconsin

| | |
|---|---|
| Date: | 1/6/15 |
| Designed: | EB |
| Drawn: | EB |
| Checked: | BK |
| DWG file: | 6190-0511 |

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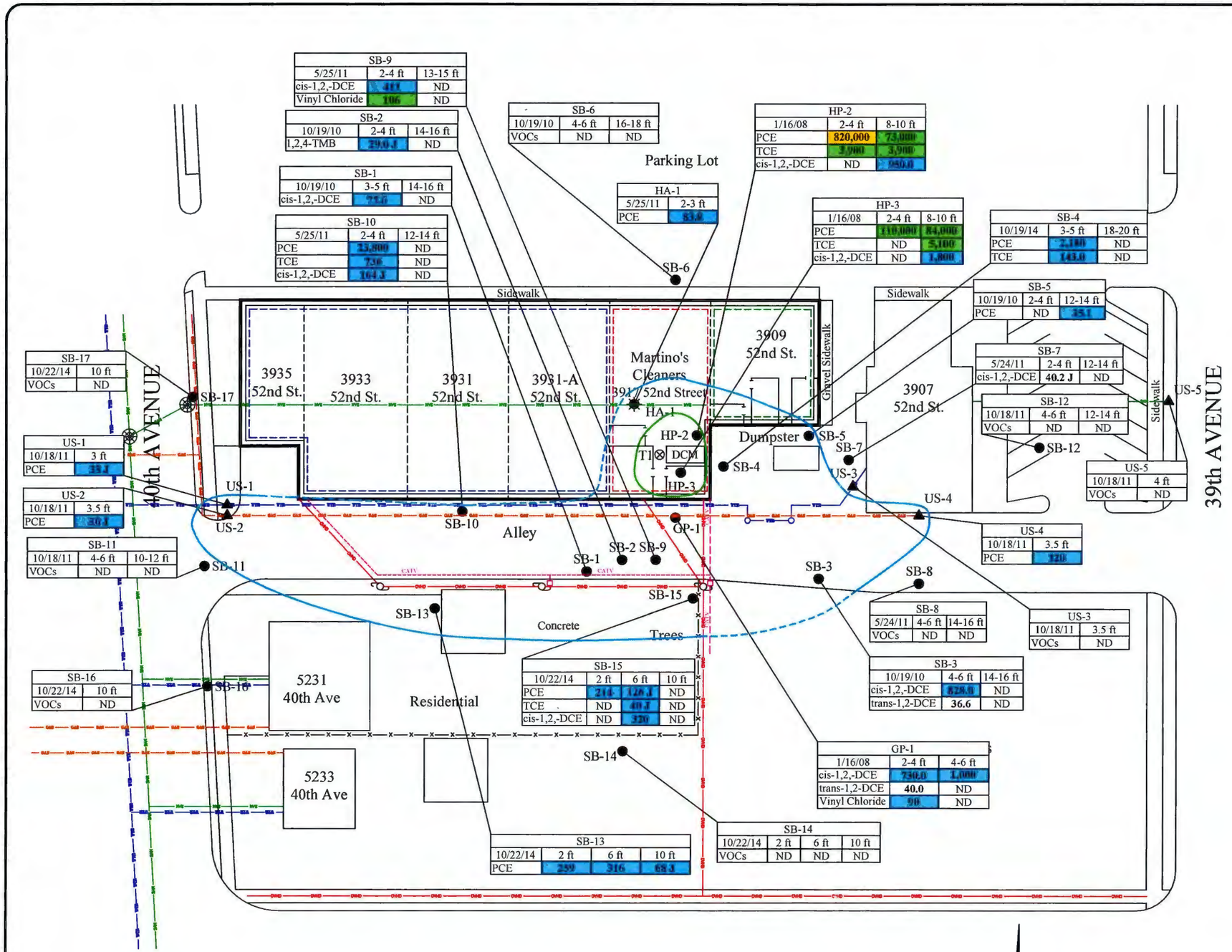


## Legend

- GP-1 ● Direct-Push soil boring (Giles)
- HP-2 ● Hand-auger soil boring (Giles)
- SB-1 ● Direct-Push soil boring
- HA-1 ✸ Hand-auger soil boring
- US-1 ▲ Utility corridor soil boring
- GAS Underground gas utility line
- WTR Underground water utility line
- SAN Underground sanitary utility line
- OVHD Over head electrical utility line
- CATV Underground cable television utility line
- Slab foundation #1
- Slab foundation #2
- Slab foundation #3
- Fence line

| Analyte | Soil to Groundwater Residual Contaminant Level | Residential Residual Contaminant Level | Industrial Residual Contaminant Level |
|---|---|---|---|
| PCE | **4.5** | **30,700** | **153,000** |
| TCE | **3.6** | **1,260** | **8,810** |
| cis-1,2,-DCE | **41.2** | **156,000** | **2,400,000** |
| trans-1,2-DCE | **58.0** | **211,000** | **976,000** |
| Vinyl Chloride | **0.1** | **67** | **2,030** |
| 1,2,4-TMB | **1,394** | **39,800** | **219,000** |

Note:

1. Bolded and blue shaded values exceed the Soil to Groundwater Residual Contaminant Level
2. Bolded and green shaded values exceed the Residential Residual Contaminant Level
3. Bolded and orange shaded values exceed the Industiral Residual Contaminant Level
4. Bolded values are above detection limits
5. J = Analyte concentration less that laboratory detection limits
6. Samples analyzed using EPA SW-846 Method 8260
7. All results reported in units of micrograms per kilogram (ug/kg)
8. PCE = Tetrachloroethene
9. TCE = Trichloroethene
10. cis-1,2-DCE = cis-1,2-Dichloroethene
11. trans-1,2-DCE = trans-1,2-Dichloroethene
12. 1,2,4-TMB = 1,2,4-Trimethylbenzene
13. ND = Not detected
14. VOCs = Violate Organic Compounds

Extent of CVOC concentrations exceeding the soil to groundwater RCL

Extent of CVOC concentrations exceeding the residential RCL

N

40 0 10 20 30 40

APPROXIMATE SCALE: 1" = 40'

# SOIL ANALYTICAL RESULTS MAP

Martino's Cleaners
3917 52nd Street
Kenosha, Wisconsin

| | |
|---|---|
| Date: | 1/30/15 |
| Designed: | EB |
| Drawn: | AJ |
| Checked: | BK |
| DWG file: | 6190-0535 |

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Figure 2

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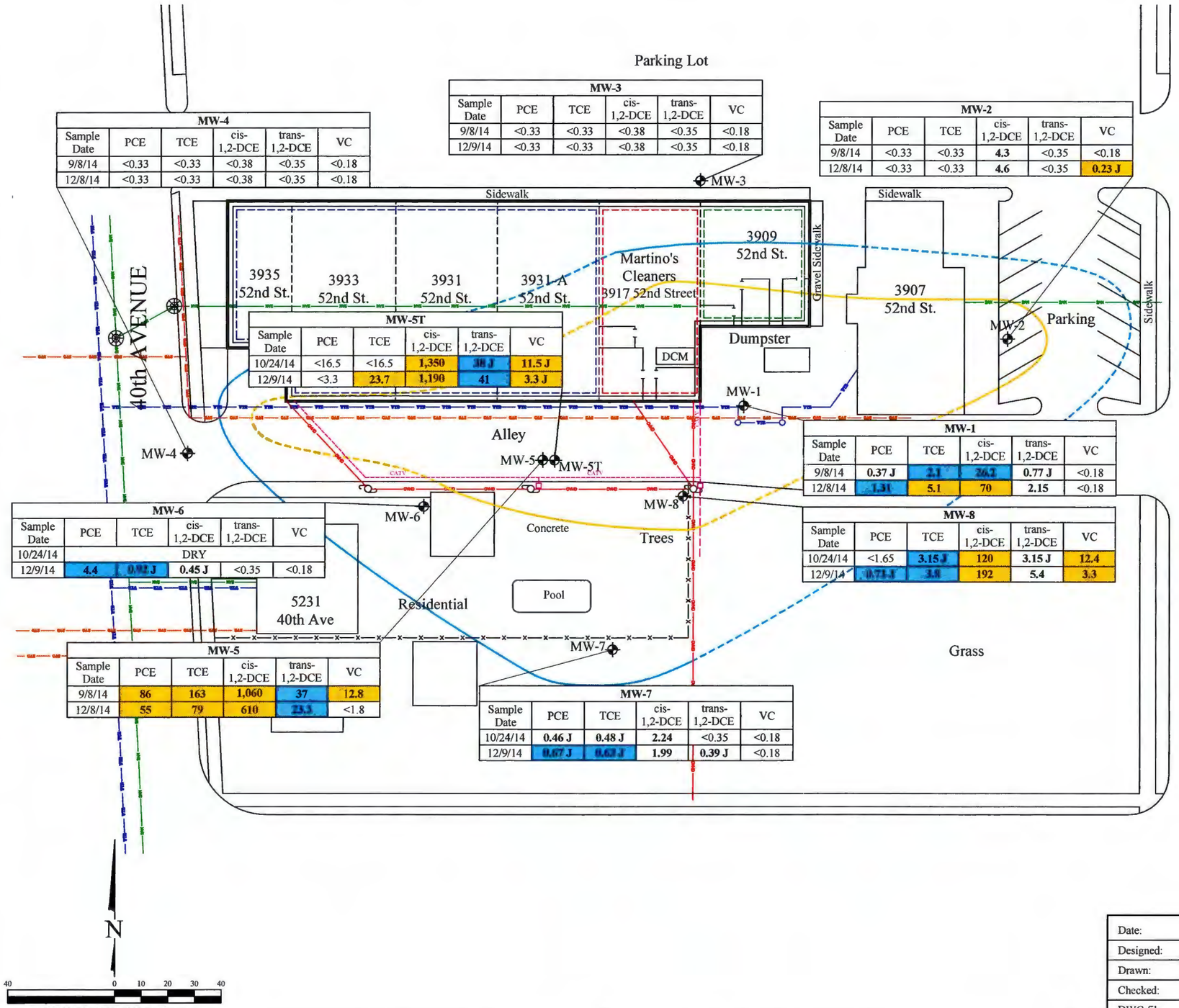


## Legend

MW-1 ⊕ Monitoring well location

Grab groundwater sample from soil gas sampling point

Slab foundation #1

Slab foundation #2

Slab foundation #3

| Analytes | Public Health | |
|---|---|---|
| | Preventive Action Limit | Enforcement Standard |
| PCE | 0.5 | 5 |
| TCE | 0.5 | 5 |
| cis-1,2-DCE | 7 | 70 |
| trans-1,2-DCE | 20 | 100 |
| VC | 0.02 | 0.2 |

Notes:

1. Bold, shaded orange values exceed Public Health Enforcement Standard
2. Bold, shaded blue values exceed Public Health Preventive Action Limit
3. Bold values equal or exceed laboratory detection limits
4. Only compounds exceeding public health standards are shown in this figure
5. Results reported in micrograms per liter (ug/L)
6. PCE = Tectrachloroethene
7. TCE = Trichloroethene
8. cis-1,2-DCE - cis-1,2-Dichloroethene
9. trans-1,2-DCE = trans-1,2-Dichloroethene
10. VC = Vinyl Chloride
11. J = Analyte concentration detected between the laboratory Reporting Limit and the laboratory Method Detection Limit
12. Samples analyzed for VOCs according to EPA Method 8260

Extent of CVOC groundwater impacts above enforcement standards (dashed where inferred)

Extent of CVOC groundwater impacts above preventive action limits (dashed where inferred)

# MONITORING WELL ANALYTICAL RESULTS MAP

Martino's Cleaners
3917 52nd Street
Kenosha, Wisconsin

| | |
|---|---|
| Date: | 1/16/15 |
| Designed: | EB |
| Drawn: | AJ |
| Checked: | BK |
| DWG file: | 6190-0511 |

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Figure 4

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