



Application for Approval of Municipal Setting Designation

**APPLICANT INFORMATION**

Applicant's Name: Dutch Line Properties II, Ltd  
 Individual  Private Entity  Public Entity  Non-Profit Entity  Other \_\_\_\_\_  
Address: 1500 Marina Bay Drive Clear Lake Shores Texas 77565  
(Street) (City) (State) (Zip)  
Phone No.: 281-334-4641 Fax No.: 281-538-2016  
Email: boschen@boschen.nl

**Contact Information**

Name of Contact: Michael F. Marcon (InControl Technologies)  
Title: Principal  
Address: 3845 FM 1960 W, Suite 195 Houston Texas 77068  
(Street) (City) (State) (Zip)  
Phone No.: 281-580-8892 Fax No.: 281-580-8853  
Email: Michael Marcon (mmarcon@incontroltech.com)

**SITE INFORMATION**

Site HCAD No(s): 0641690010001  
Site Name: Parking Lot – Rice Village Shopping Center  
Site Size: 0.176-acre  
Site Address: 2500 Shakespeare, Houston, TX

**(List all owners – additional sheet is attached, if needed)**

Owner: Dutch Line Properties II, Ltd.  
Owner Address: 1500 Marina Bay Drive Clear Lake Shores Texas 77565  
(Street) (City) (State) (Zip)  
Name of Contact: Harry Böschen, Robert Böschen  
Title: Owners  
Organization: Dutch Line Properties II, Ltd.  
Phone No.: 281-334-4641 Fax No.: 281-538-2016  
Email: boschen@boschen.nl

**CITY OF HOUSTON**



**PUBLIC WORKS AND  
ENGINEERING  
PLANNING & DEVELOPMENT  
DIVISION**

## **EXECUTIVE SUMMARY**

### **Project Overview**

InControl Technologies, Inc was retained by Dutch Line Properties II, Ltd. (the current property owner), to provide environmental consulting services at the parking lot property located at 2500 Shakespeare, Houston, Harris County, Texas. The subject property (the Site) consist of approximately 0.176 acre (7,686 square feet) of land located southwest of downtown Houston, Harris County, Texas (**Figure C1**). The subject property is currently a parking lot for Rice Village Shopping Center. The surrounding area is developed with a mixture of retail commercial and residential properties (**Figure B1**).

The Site is located within the Brays Bayou Watershed and is located outside the 0.2% annual chance (500 year) floodplain (**Figure C2**).

A VOC PCLE zone was identified on the subject property. The PCLE zones are depicted on **Figure C3**.

### **Historical Environmental Condition**

Originally, a Phase I Environmental Site Assessment (ESA) was conducted for the subject property as part of a refinancing package. The Phase I ESA identified the presence of a historical dry cleaner (circa 1950s) and a gasoline service station (circa 1940s).

In July 2012, a Limited Phase II ESA was completed at the Rice Village Shopping Center by Phase Engineering, Inc. The parcel addressed at 2500 Shakespeare was included in this ESA. The limited Phase II ESA was conducted on the subject property and adjacent north properties to determine if historic dry cleaners and gasoline service stations had impacted shallow groundwater. Groundwater samples were collected from temporary groundwater monitoring wells. The results were compared to the most conservative Tier 1 Protective Concentration Levels (PCLs) (**Table F1** and **Table F2**). **Figure C4** depicts the locations of the groundwater sampling points. In August 2012, InControl Technologies installed three permanent groundwater monitoring wells on the subject property. Groundwater samples were collected from these wells and the results compared to the most conservative Tier 1 Protective Concentration Levels (PCLs) (**Table F1** and **Table F2**). **Figure C4** depicts the locations of the groundwater sampling points.

The lateral extent of groundwater impact has been horizontally delineated to the greatest extent possible (**Figure C3**). Dry cleaner related compounds were present in groundwater at concentrations greater than

**InControl Technologies, Inc.**

the applicable Tier 1 PCLs. The dry cleaner related plume is approximately 60 years old. Because of the expected age of the plume, the area of groundwater impact is believed to be stable. A review of historic aerials indicated that the historic dry cleaner was present circa 1940s and the subject property appears to have been redeveloped as a parking lot sometime before the mid-1950s. Compound specific PCLE zones are depicted in **Figure C3**. The direction of groundwater flow is to the southwest (**Figure C5**).

One (1) water well was identified within a ½-mile radius of the proposed MSD boundary and is not listed as a domestic or public supply well. The nearest domestic or public supply well is located 0.52-miles from the subject property in the cross-gradient direction. According to the water well database, this well was installed in 1971, completed at a depth of 246-feet below ground surface (bgs) and is screened from 238-feet to 246-feet bgs. This zone is much deeper than the limit of impacted groundwater associated with the proposed MSD area. Within a 5-mile radius of the proposed MSD boundary, typical completion depths are greater than 200-ft bgs with the median completion depth of 400-ft bgs.

Brays Bayou is located approximately 1.2-miles south of the proposed MSD boundary. Due to the distance to this water body from the proposed MSD area, the bayou is not directly threatened by natural movement of the affected groundwater identified on the site (**Figure C2**).

## Appendix B

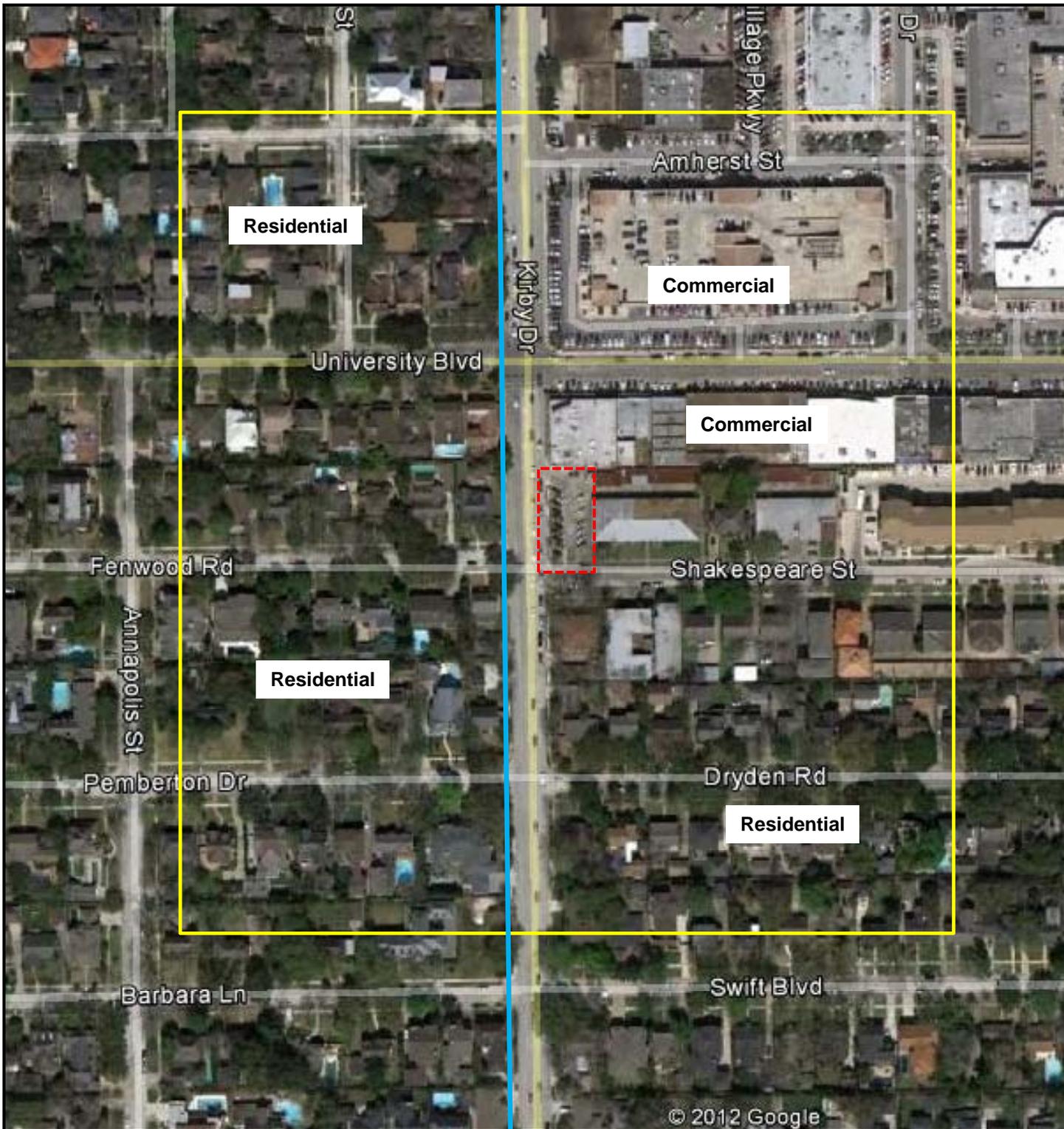
A description of the current use, and, to the extent known, the anticipated use(s), of the designated property and properties within 500 feet of the boundary of the designated property.

---

The proposed MSD area is approximately 0.176 acre (7,686 square feet) of land located southwest of downtown Houston, Harris County, Texas. The affected property is located in a mixture of residential and commercial development (**Figure B1**). **Figure B1** provides a description of the surrounding land use within 500-feet of the site.

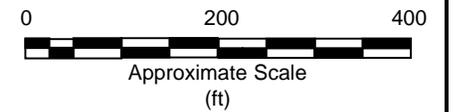
Historic property uses include dry cleaners and a gasoline service station. The property is currently used as a parking lot (**Figure B1**). Future use of the subject property is expected to remain the same.

- North – retail commercial followed by University Blvd.;
- East – a multi-tenant residential property followed by residential development;
- South – Shakespeare Street followed by residential development;
- West – Kirby Drive followed by residential development. Kirby Dr. is the corporate boundary between the City of Houston and West University Place.



**LEGEND**

- Property Boundary
- 500-ft Radius
- City of Houston corporate boundary



**InControl Technologies, Inc.**  
 3845 Cypress Creek Pkwy, Suite 195  
 Houston, Texas 77068  
 (281) 580-8892 FAX (281) 580-8853

**Surrounding Property Map**

CLIENT: Dutch Line Properties, Ltd		PM: MFM	
LOCATION: 2500 Shakespeare Houston, Texas 77030		CHECKED:	
DETAILED: MFM	DESIGNED: 1/16/13	PROJECT NO: 645-101	FIGURE: <b>B1</b>

## Appendix C

A site map showing:

- a. The location of the designated property.
- b. The topography of the designated property as indicated on publicly available sources, which must note the watershed including the nearest surface water body and whether the designated property is located in a floodplain or floodway, as those terms are defined in Chapter 19 of the Code of Ordinances.
- c. The detected area of groundwater contamination.
- d. The location of all soil sampling locations and all groundwater monitoring wells.
- e. Groundwater gradients, to the extent known, and direction of groundwater flow.
- f. The ingestion protective concentration level exceedence zone for each contaminant of concern, to the extent known.

---

The following is a listing of figures included in **Appendix C**.

Figure C1 – Topographic Map

Figure C2 – Flood Plain and Watershed Map

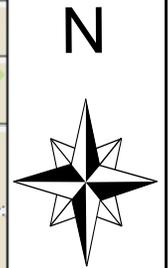
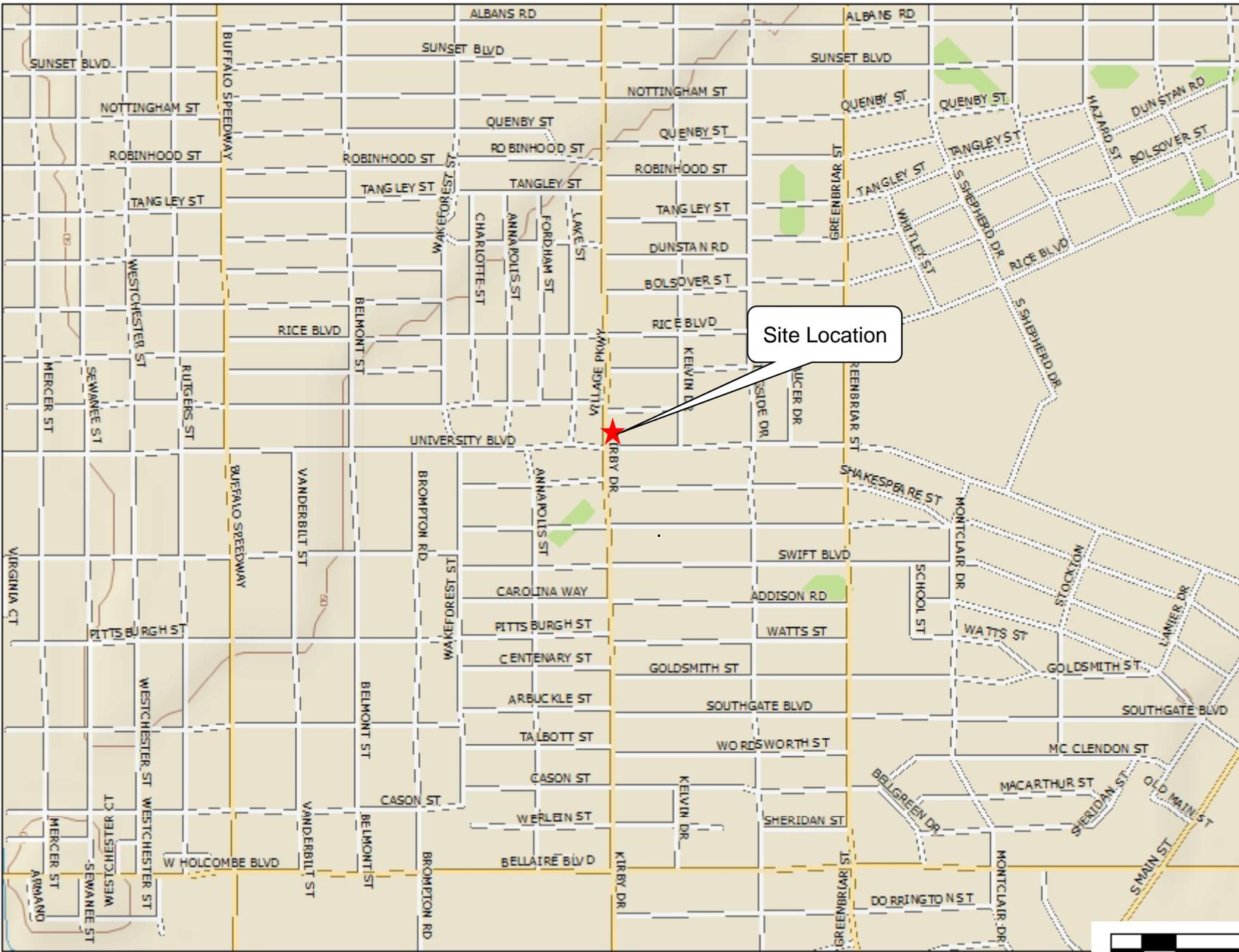
Figure C3 – Groundwater PCLE zones

Figure C4 – Sample Location Map

Figure C5 – Groundwater Gradient Map

The subject property is located within the Brays Bayou watershed and the property is not located within the 100-year floodplain (**Figure C2**).

**Figure C3** depicts all of the groundwater PCLE zones within the proposed MSD boundary. These zones were developed based on several environmental samples collected from both soil and groundwater. **Figure C4** shows the locations of the soil and groundwater samples. Groundwater in this area tends to flow towards Brays Bayou (**Figure C5**). The primary chemicals of concern (COCs) are PCE, TCE, cis-1,2-DCE, 1,1-DCE, and vinyl chloride (**Figure C3**).



**InControl Technologies, Inc.**  
 3845 Cypress Creek Parkway, Suite 195  
 Houston, Texas 77068  
 (281) 580-8892 FAX (281) 580-8853

Topographic Map

Dutch Line Properties II Ltd

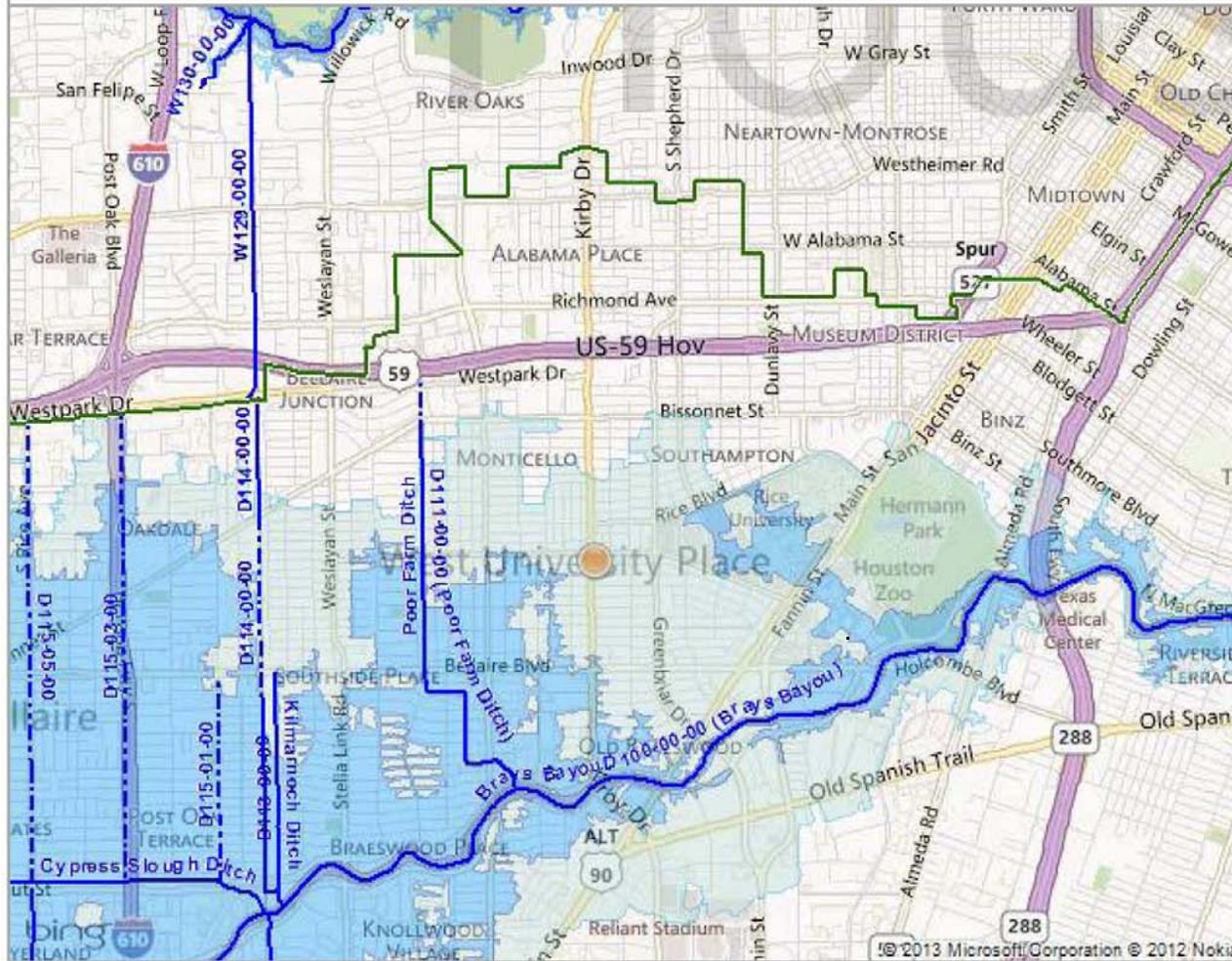
LOCATION: 2500 Shakespeare.  
Houston, TX 77005

DETAILED: 1/16/13    PM: CP    PROJECT NO: 645-101

CHECKED:

FIGURE: C1

## Flood Education Mapping Tool



### LEGEND

- Floodway
- 1% (100-year) Floodplain
- 0.2% (500-year) Floodplain
- 1% (100-year) Coastal Floodplain
- LOMR Boundary
- Open Channels
- Enclosed Channels
- Watershed Boundaries
- Harris County Boundary



**DISCLAIMER:** The Harris County Flood Control District's Flood Education Mapping Tool is for general information purposes only and may not be suitable for legal, engineering or surveying purposes. The floodplains shown on this mapping tool are those delineated on the Federal Emergency Management Agency's (FEMA) effective Flood Insurance Rate Map (FIRM or floodplain map) for Harris County that was adopted in 2007, as well as updates that have been made through a Letter of Map Revision (LOMR) since 2007. This mapping tool is not an effective FIRM. The effective FIRM is produced, maintained and published by FEMA and not by the Harris County Flood Control District. Please visit FEMA's Map Service Center at [www.msc.fema.gov](http://www.msc.fema.gov) to view the effective FIRM for Harris County. For an official floodplain determination, please contact an insurance agent or mortgage lender. This map is a representation and approximation of the relative location of geographic information, land marks and physical addresses.

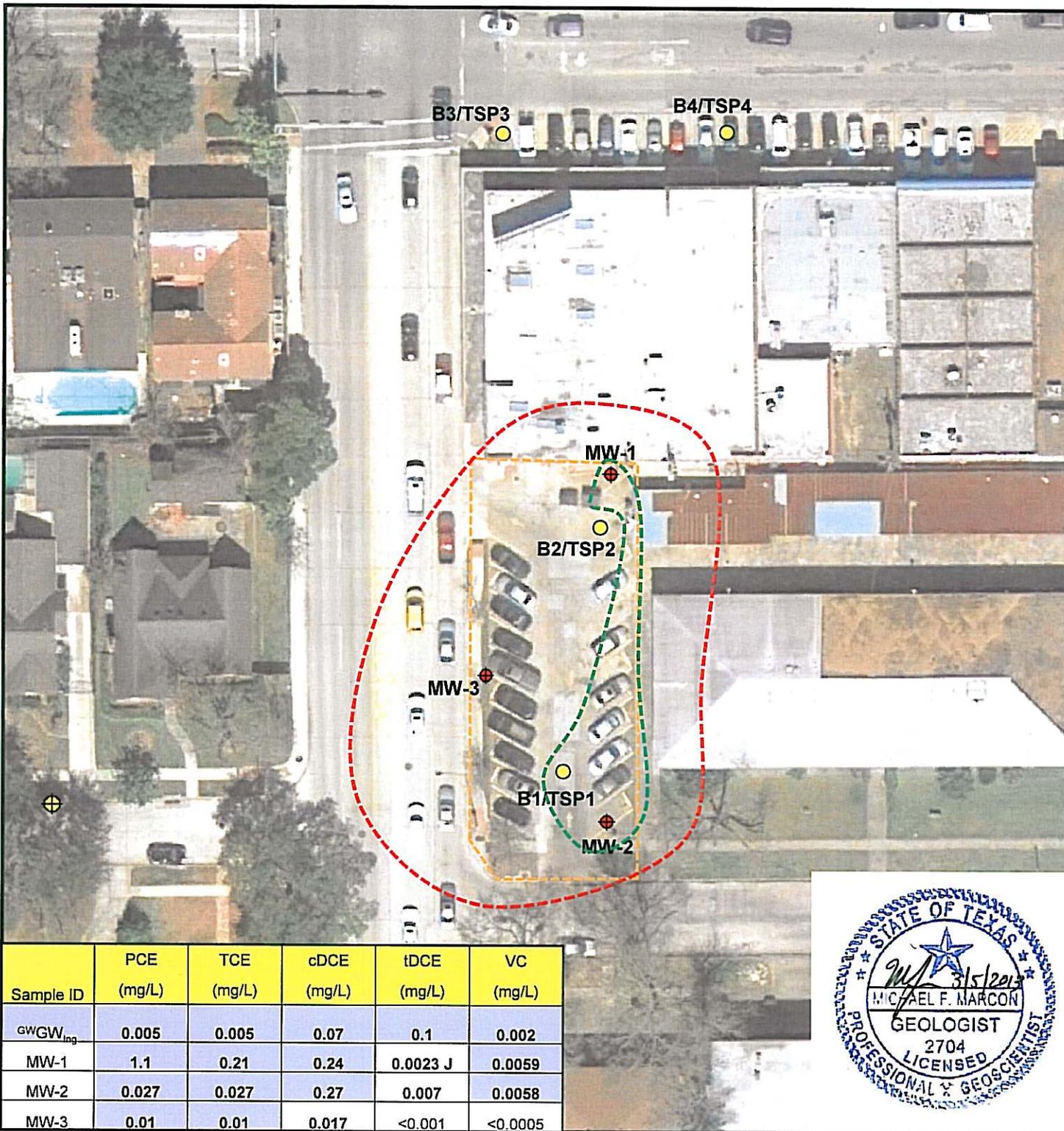
**InControl Technologies, Inc.**  
 3845 Cypress Creek Parkway, Suite 195  
 Houston, Texas 77068  
 (281) 580-8892 FAX (281) 580-8853

**Flood Plain and  
 Watershed Map**

Dutch Line Properties II Ltd

LOCATION: 2500 Shakespeare. Houston, TX 77005		CHECKED:
DETAILED: 1/16/13	PM: CP	PROJECT NO: 645-101
		FIGURE: C2

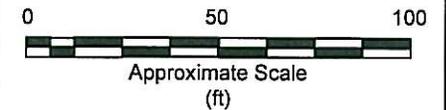
FIGURE: C2



### LEGEND

- Property Boundary
- Groundwater Monitoring Well
- Proposed Groundwater Monitoring Well
- Soil boring/ temporary groundwater monitoring well
- PCE/TCE PCLE Zone
- cDCE/VC PCLE Zone

N



**InControl Technologies, Inc.**  
 3845 Cypress Creek Pkwy, Suite 195  
 Houston, Texas 77068  
 (281) 580-8892 FAX (281) 580-8853

### Groundwater PCLE Zone Map September 2012

CLIENT:		PM:	
Dutch Line Properties, Ltd		MFM	
LOCATION:		CHECKED:	
2500 Shakespeare Houston, Texas 77030			
DETAILED:	DESIGNED:	PROJECT NO:	FIGURE:
1/17/13	CP	645-101	<b>C3-1</b>



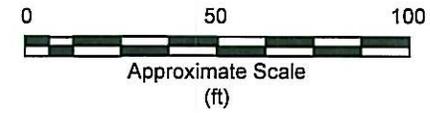
Sample ID	PCE (mg/L)	TCE (mg/L)	cDCE (mg/L)	tDCE (mg/L)	VC (mg/L)
GWGW <sub>mg</sub>	0.005	0.005	0.07	0.1	0.002
MW-1	1.1	0.21	0.24	0.0023 J	0.0059
MW-2	0.027	0.027	0.27	0.007	0.0058
MW-3	0.01	0.01	0.017	<0.001	<0.0005



### LEGEND

- Property Boundary
- Groundwater Monitoring Well
- Proposed Groundwater Monitoring Well
- Soil boring/ temporary groundwater monitoring well
- PCE/ TCE PCLE Zone
- cDCE/ VC PCLE Zone

N



**InControl Technologies, Inc.**  
 3845 Cypress Creek Pkwy, Suite 195  
 Houston, Texas 77068  
 (281) 580-8892 FAX (281) 580-8853

### Groundwater PCLE Zone Map January 2013

CLIENT:		PM:	
Dutch Line Properties, Ltd		MFM	
LOCATION:		CHECKED:	
2500 Shakespeare Houston, Texas 77030			
DETAILED:	DESIGNED:	PROJECT NO:	FIGURE:
1/17/13	CP	645-101	<b>C3-2</b>

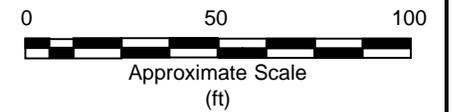
Sample ID	PCE (mg/L)	TCE (mg/L)	cDCE (mg/L)	tDCE (mg/L)	VC (mg/L)
gWGW <sub>log</sub>	0.005	0.005	0.07	0.1	0.002
MW-1	0.750	0.150	0.170	0.0015 J	0.0046
MW-2	0.096	0.092	0.230	0.0068	0.0044
MW-3	0.015	0.011	0.015	<0.001	0.00062 J





### LEGEND

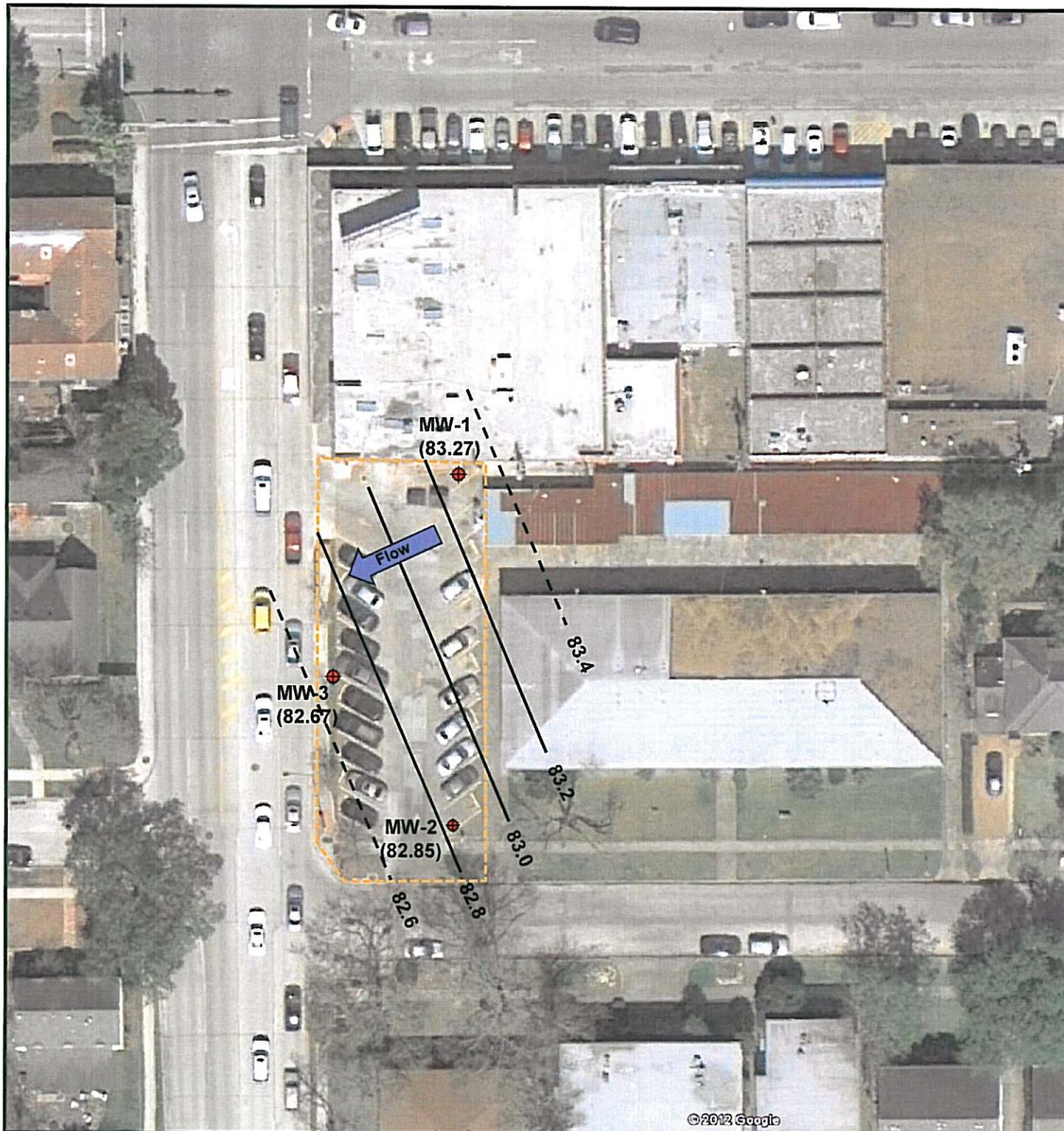
-  Property Boundary
-  Groundwater Monitoring Well
-  Soil boring/ temporary groundwater monitoring well



**InControl Technologies, Inc.**  
 3845 Cypress Creek Pkwy, Suite 195  
 Houston, Texas 77068  
 (281) 580-8892 FAX (281) 580-8853

### Sample Location Map

CLIENT: Dutch Line Properties, Ltd		PM: MFM	
LOCATION: 2500 Shakespeare Houston, Texas 77030		CHECKED:	
DETAILED: 11/17/13	DESIGNED: CP	PROJECT NO: 645-101	FIGURE: C4

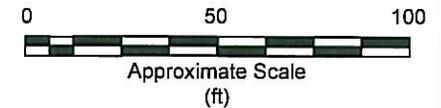


### LEGEND

- Property Boundary
- ◆ Groundwater Monitoring Well



N



**InControl Technologies, Inc.**  
 3845 Cypress Creek Pkwy, Suite 195  
 Houston, Texas 77068  
 (281) 580-8892 FAX (281) 580-8853

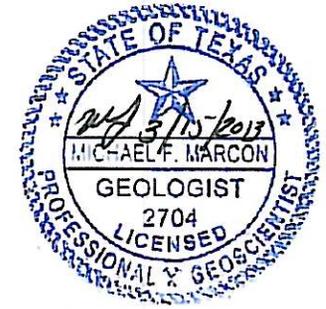
### Groundwater Gradient Map September 2012

CLIENT: Dutch Line Properties, Ltd		PM: MFM	
LOCATION: 2500 Shakespeare Houston, Texas 77030		CHECKED:	
DETAILED: 1/17/13	DESIGNED: CP	PROJECT NO: 645-101	FIGURE: C5-1

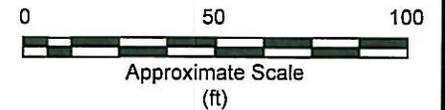


### LEGEND

- Property Boundary
- ⊕ Groundwater Monitoring Well



N



**InControl Technologies, Inc.**  
 3845 Cypress Creek Pkwy, Suite 195  
 Houston, Texas 77068  
 (281) 580-8892 FAX (281) 580-8853

### Groundwater Gradient Map January 2013

CLIENT:		Dutch Line Properties, Ltd		PM:	MFM
LOCATION:		2500 Shakespeare Houston, Texas 77030		CHECKED:	
DETAILED:	DESIGNED:	PROJECT NO:	FIGURE:		
1/17/13	CP	645-101	C5-2		

## Appendix D

For each contaminant of concern within the ingestion protective concentration level exceedance zone provide the following:

- a. A description of the ingestion protective concentration level exceedance zone and the non-ingestion protective concentration level exceedance zone, including a specification of the horizontal area and the minimum and maximum depth below ground surface.
- b. The level of contamination, the ingestion protective concentration level, and the non-ingestion protective concentration level, all expressed as mg/L units.
- c. Its basic geochemical properties (e.g. whether the contaminant of concern migrates with groundwater, floats, or is soluble in water).

---

**A) Groundwater PCLE Zone** – A review of recent groundwater sampling data indicates that the COCs that currently exceed the Tier 1  $^{GW}_{Ing}$  PCLs are tetrachloroethene (PCE), trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2-DCE), and vinyl chloride. PCLE zones are depicted on **Figure C3** and are discussed in more detail below. The area of affected groundwater has been delineated to the greatest extent possible (**Figure C3**). InControl Technologies made several attempts to get permission to install a groundwater monitoring well in the next reasonable downgradient location. This location is in the City of West University Place right-of-way along Fenwood Road. The City of West University Place has denied the permission to install a groundwater monitoring well. InControl Technologies has evaluated other potential locations including private residences but was denied access.

According to the most recent groundwater data, the plume appears to be stable. Groundwater data suggests a significant amount of natural attenuation, including bioattenuation, has occurred. The presence of the breakdown compounds (TCE, cis-1,2-DCE, and VC) indicate strong bioattenuation. In addition, the significant decline in concentration from the source area well (MW-1) to the attenuation monitoring well (MW-3) suggests that the plume quickly attenuates. The concentrations suggest an order of magnitude decrease in concentration every 75-feet. The well that was planned to be installed in Fenwood Road would have likely defined the downgradient edge of the plume. This is a reasonable conclusion because of the age of the plume and the rate of degradation observed in the groundwater monitoring data. A comparison of the groundwater sampling results with applicable non-ingestion protective concentration levels ( $^{Air}GW_{Inh-v}$ ) indicates that none of the groundwater samples reported a COC concentration above the  $^{Air}GW_{Inh-v}$  PCL. Therefore, based on the recent groundwater monitoring results, there is no non-ingestion protective concentration level exceedance zone within the proposed MSD boundary.

Based on a review of boring logs, the shallow groundwater is encountered at a depth of approximately 10 feet below ground surface (ft bgs). The bottom of the shallow groundwater bearing unit is estimated at approximately 25-ft bgs. The shallow groundwater bearing unit is underlain by a stiff sandy clay unit.

**B) Groundwater Data Ingestion PCL Exceedances** – The following table represents the groundwater ingestion PCL exceedances that were reported from the most recent monitoring event:

**Table D1 – Groundwater ingestion PCL Exceedances in First Groundwater Bearing Unit**

		PCE (mg/L)	TCE (mg/L)	Cis-1,2-DCE (mg/L)	VC (mg/L)
Tier 1 <sup>GW</sup> GW <sub>ing</sub> PCLs		0.005	0.005	0.07	0.002
Tier 1 <sup>Air</sup> GW <sub>Inh-v</sub> PCLs		500	24	1,200	3.8
Monitoring Well ID	Sample Date	Concentration (mg/L)			
MW-1	1/22/13	<b>0.75</b>	<b>0.15</b>	<b>0.17</b>	<b>0.0046</b>
MW-2	1/22/13	<b>0.096</b>	<b>0.092</b>	<b>0.230</b>	<b>0.0044</b>
MW-3	1/22/13	<b>0.015</b>	<b>0.011</b>	0.015	0.00062 J

Notes – Values in **Bold** exceed the <sup>GW</sup>GW<sub>ing</sub> PCL (ingestion PCLE)  
 Values in **Bold Italics** exceed the <sup>Air</sup>GW<sub>Inh-v</sub> PCL (non-ingestion PCLE)

Groundwater COC concentrations tabulated above are less than the <sup>Air</sup>GW<sub>Inh-v</sub> non-ingestion PCL. Therefore, based on the monitoring data there is no non-ingestion PCLE zone on the subject property.

**C) Groundwater COCs** – The chemicals of concern (COCs) detected in groundwater samples (PCE, TCE, cis-1,2-DCE, and vinyl chloride) are associated with the historic dry cleaner operations within the proposed MSD boundary.

Chlorinated solvents are characterized by their high volatilities, high densities, low viscosities, low interfacial tension, low absolute solubilities, high relative solubilities, low partitioning to soil materials and low degradability. Chlorinated solvents will dissolve in water at low concentrations but once the groundwater has reached the saturation limit for that compound, the chlorinated solvent will form a separate phase in equilibrium with the water. Because chlorinated solvents have higher densities relative to water, the separate phase will “sink”. These compounds are referred to as “dense non-aqueous phase liquids” (DNAPLs). In high concentrations DNAPLs will be able to penetrate the water table and form “pools” on the top of less permeable layers. Historically, DNAPL has not been identified in any of the monitor wells within the groundwater monitor well network and is not expected to be present at this site given the relatively low concentration of chlorinated solvents detected in groundwater.

Based on the field observations and laboratory results, it appears that the groundwater COCs on the subject property are primarily dissolved in the shallow groundwater.

## Appendix E

Provide for each contaminant of concern within the designated groundwater:

- a. A description of the ingestion protective concentration level exceedance zone and the non-ingestion protective concentration level exceedance zone, including a specification of the horizontal area and the minimum and maximum depth below ground surface.
- b. The level of contamination, the ingestion protective concentration level, and the non-ingestion protective concentration level, all expressed as mg/L units.
- c. Its basic geochemical properties (e.g. whether the contaminant of concern migrates with groundwater, floats, or is soluble in water).

---

Refer to **Appendix D** for a discussion of the chemicals of concern (COC) in the ingestion protective concentration level (PCL) exceedance zone. Current groundwater sampling results indicate that there are several identified COCs (PCE, TCE, cis-1,2-DCE, and vinyl chloride) that exceed the ingestion protective concentration levels on the subject property in the shallow groundwater bearing unit. **Figure C3** depicts the PCLE zones.

- A)** Refer to **Table D1** for a tabulated comparison of COC concentrations with the respective TRRP Protective Concentration Levels (PCLs)
- B)** Refer to **Appendix D** for a discussion of the basic geochemical properties of the contaminants of concern (COCs) in the ingestion PCL exceedance zone.

## Appendix F

A table displaying the following information for each contaminant of concern, to the extent known:

- a. The maximum concentration level for soil and groundwater, the ingestion protective concentration level, and the non-ingestion protective concentration level, all expressed as mg/L units.
- b. The critical protective concentration level without the municipal setting designation, highlighting any exceedences.

---

**Appendix F** contains tables summarizing the concentration levels for the primary chemicals of concern in soil and groundwater. The tables include the concentration level, the ingestion protective concentration limits ( $^{GW}Soil_{Ing}$  for soil and  $^{GW}GW_{Ing}$  for groundwater), the non-ingestion protective concentration limits for soil ( $^{Tot}Soil_{Comb}$  and  $^{Air}Soil_{Inh-V}$ ) and groundwater ( $^{Air}GW_{Inh-V}$ ), the critical protective concentration limits assuming no MSD is in place ( $^{GW}Soil_{Ing}$  for soil and  $^{GW}Soil_{Ing}$  for groundwater), and the critical PCLs assuming that an MSD is in place ( $^{Tot}Soil_{Comb}$  for soil and  $^{Air}GW_{Inh-V}$  for groundwater).

**Table F1** is a summary of Volatile Organic Compounds (VOCs) in Soil

**Table F2** is a summary of Volatile Organic Compounds (VOCs) in Groundwater

**Table F1**  
 Summary of Volatile Organic Compounds (VOCs) in Soil  
 2500 Shakespeare, Houston, Texas  
 VCP No. 2527

Sample ID	Sample Depth (ft)	Sample Date	PCE (mg/kg)	TCE (mg/kg)	cis-1,2-DCE (mg/kg)	trans-1,2-DCE (mg/kg)	VC (mg/kg)	1,1-DCE (mg/kg)
Residential	<sup>GW</sup> Soil <sub>Ing</sub>		<b>0.05</b>	<b>0.034</b>	<b>0.248</b>	<b>0.49</b>	<b>0.022</b>	<b>0.05</b>
Residential	<sup>Tot</sup> Soil <sub>Comb</sub>		450	18	250	590	3.7	2300
Residential	<sup>Air</sup> Soil <sub>Inh-V</sub>		940	31	920	920	43	5200
MW-1	2-3	8/27/2012	<0.0012	<0.0018	<0.0017	<0.001	<0.0012	<0.0017
	10-12.5	8/27/2012	<0.0012	<0.0019	<0.0018	<0.0011	<0.0012	<0.0018
MW-2	2-3	8/27/2012	<0.0012	<0.0019	<0.0018	<0.0011	<0.0012	<0.0018
	7.5-10	8/27/2012	<0.0012	<0.002	<0.0018	<0.0011	<0.0012	<0.0018
MW-3	2-3	8/27/2012	<0.0012	<0.0019	<0.0018	<0.0011	<0.0012	<0.0018
	7.5-10	8/27/2012	<0.0012	<0.0019	<0.0018	<0.0011	<0.0012	<0.0018

Notes:

- Concentration exceeds the critical Tier 1 PCL
- J Estimated value

**Table F2**  
 Summary of Volatile Organic Compounds (VOCs) in Groundwater  
 2500 Shakespeare, Houston, Texas  
 VCP No. 2527

Sample ID	Sample Date	PCE (mg/L)	TCE (mg/L)	cis-1,2-DCE (mg/L)	trans-1,2-DCE (mg/L)	VC (mg/L)	1,1-DCE (mg/L)
Residential	<sup>GW</sup> GW <sub>ing</sub>	<b>0.005</b>	<b>0.005</b>	<b>0.07</b>	<b>0.1</b>	<b>0.002</b>	<b>0.007</b>
Residential	<sup>GW</sup> Air <sub>Inh-v</sub>	<b>500</b>	<b>24</b>	<b>1200</b>	<b>770</b>	<b>3.8</b>	<b>1700</b>
TSP-1	7/26/2012	<b>0.57</b>	<b>0.4</b>	<b>0.84</b>	<b>0.019</b>	<b>0.033</b>	<b>0.0027 J</b>
TSP-2	7/26/2012	<b>0.17</b>	<b>0.047</b>	<b>0.067</b>	<0.001	<b>0.0019 J</b>	<0.0005
TSP-3	7/26/2012	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005
TSP-4	7/26/2012	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005
TSP-5	7/26/2012	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005
MW-1	9/5/2012	<b>1.100</b>	<b>0.210</b>	<b>0.240</b>	<b>0.0023 J</b>	<b>0.0059</b>	<0.0006
	1/22/2013	<b>0.750</b>	<b>0.150</b>	<b>0.170</b>	<b>0.0015 J</b>	<b>0.0046</b>	<0.0006
MW-2	9/5/2012	<b>0.027</b>	<b>0.027</b>	<b>0.270</b>	<b>0.007</b>	<b>0.0058</b>	<0.0006
	1/22/2013	<b>0.096</b>	<b>0.092</b>	<b>0.230</b>	<b>0.0068</b>	<b>0.0044</b>	<0.0006
MW-3	9/5/2012	<b>0.010</b>	<b>0.010</b>	<b>0.017</b>	<0.001	<0.0005	<0.0006
	1/22/2013	<b>0.015</b>	<b>0.011</b>	<b>0.015</b>	<0.001	<b>0.00062 J</b>	<0.0006

Notes:

Concentration exceeds the critical Tier 1 PCL

J Estimated value

## Appendix G

A statement as to whether the plume of contamination is stable (i.e. no change), or contracting, and delineated, **with the basis for that statement.** Please include historical sampling data.

---

Shallow groundwater has been affected by dissolved phase chemicals including PCE, TCE, cis-1,2-DCE, and vinyl chloride. These chemicals are believed to be associated with the historic operations conducted within the proposed MSD boundary which ceased over 50 years ago. These chemicals are no longer used at the site and are a result of historical activities. These chemicals tend to move rapidly in the sub-surface environment and quickly reach equilibrium as long as there is no ongoing contributing mass source. Several soil samples collected from the onsite property did not reported COCs at concentrations greater than the laboratory detection limits (**Table F1**). There is not believed to be a significant contributing source of mass to groundwater.

The lateral extent of groundwater impact in the shallow groundwater bearing unit has been delineated to the greatest extent possible. Several attempts were made to the City of West University Place to install a downgradient delineation well in the right-of-way along Fenwood Road, approximately 160-feet downgradient of groundwater monitoring well MW-3. This request was denied by the City of West University Place in December 2012. InControl Technologies has evaluated other potential locations including private residences but was denied access.

According to the most recent groundwater data, the plume appears to be stable (**Table F2**). Groundwater data suggests a significant amount of natural attenuation, including bioattenuation, has occurred. The presence of the breakdown compounds (TCE, cis-1,2-DCE, and VC) indicate strong bioattenuation. In addition, the significant decline in concentration from the source area well (MW-1) to the attenuation monitoring well (MW-3) suggests that the plume quickly attenuates. The concentrations suggest an order of magnitude decrease in concentration every 75-feet. The well that was planned to be installed in Fenwood Road would have likely defined the downgradient edge of the plume. This is a reasonable conclusion because of the age of the plume and the rate of degradation observed in the groundwater monitoring data. VOCs in shallow groundwater have been delineated in the upgradient direction by sample locations TSP-3 and TSP-4. **Figure C3** depicts the COC plume in shallow groundwater.

In summary, the groundwater data collected to date indicates that the area of affected groundwater is stable, and was the result of historic releases associated with past operations within the proposed MSD boundary. Given that these chemicals of concern are no longer used, there is no potential for further contribution.