



Florida Department of Environmental Protection

Petroleum Restoration Program

Conditional Closure Technical Review

December 12, 2016





Agenda

- Technical Review
 - Evaluating Soil and Groundwater Data and Exposure
 - Plume Stability
- The Process
 - Exercise: Walking through the Steps
- Case Studies



Florida Department of Environmental Protection

Technical Review:

**Evaluating Soil and Groundwater Data &
Exposure Plume Stability**

Chris Bayliss, Chief P.G.
Mike Pennington, P.E. II





Definitions

- **Stable Groundwater Plume:** a groundwater plume is “stable” when data representative of the entirety of the plume demonstrates that the plume is not expanding and that, overall, concentrations of Chemicals of Concern (COC) are not increasing
- **Shrinking Groundwater Plume:** a groundwater plume is “shrinking” when data demonstrates that the areal extent of the plume is decreasing and concentrations of COCs, overall, are decreasing



Definitions

- **Institutional Control:** a legal mechanism that places “restriction on use or access to a site to eliminate or minimize exposure to petroleum products’ COCs”
- Examples:
 - Restrictive Covenant
 - Deed Note
 - FDOT Memorandum of Understanding
 - Well Permitting Restrictions



Definitions

- **Engineering Control:** a physical process/barrier to prevent migration of petroleum products' COCs, and to prevent exposure to impacted soil or groundwater by the public
- Examples
 - Soil cap with a minimum of two feet of clean fill
 - Impermeable Cap (asphalt, concrete, plastic)
 - Sheet Piling
 - Slurry Wall



RMO- I Closure Sampling Requirements

	Groundwater Sampling	Soil Sampling
Site has had active remediation (other than a source removal)	at least four quarters of Sampling, last two quarters must be below CTLs	as needed based on initial site assessment
Sites that had an interim source removal	one sampling event if groundwater contamination WAS NOT present before source removal	only if results of site assessment and excavation sampling indicate soil impacts remain
	two sampling events if groundwater contamination WAS present before the source removal	only if results of site assessment and excavation sampling indicate soil impacts remain
Assessment only, or no active remediation within the last two years	two consecutive quarterly monitoring events below CTLs	as needed based on initial site assessment
	only one sampling event below CTLs if no previous lab-verified contamination was present	as needed based on initial site assessment
Parked site	only one sampling event below CTLs if last historic sampling event was below CTLs	as needed based on initial site assessment, or if only OVA data was previously collected



Technical Review

Conditional Closure

- If closure criteria are not met for No Further Action (NFA)/Risk Management Option (RMO I), then you can consider Conditional Closure for the site



Technical Review

- Conditional Closure (NFA with Conditions/RMO II) requires:
 - Groundwater contamination is within property boundaries
 - Plume is less than $\frac{1}{4}$ acre in area
 - Plume is limited to the immediate vicinity of the source area
 - 1 year of monitoring data demonstrates that plume is shrinking or stable
 - Free product may remain if it is not feasible to remove
 - An institutional and/or engineering control is put in place



Technical Review

- Conditional Closure (NFA with Conditions/RMO III) requires:
 - Groundwater contamination does not exceed established Alternative CTLs
 - No plume size limit
 - Requires a risk assessment to evaluate site specific conditions
 - 1 year of monitoring data demonstrates that plume is shrinking or stable
 - Free product may remain if it is not feasible to remove
 - An institutional and/or engineering control is put in place



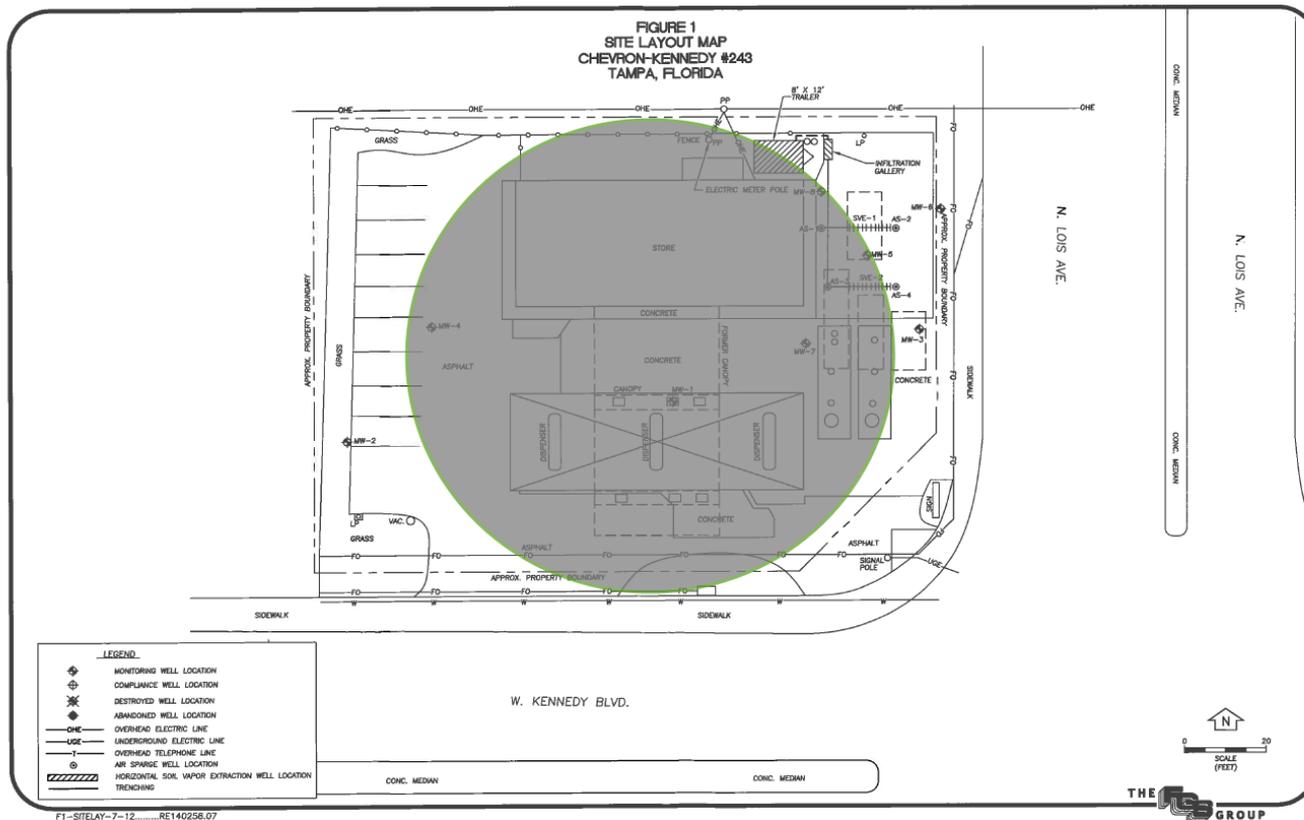
Technical Review

- Within Property Boundaries
 - Consideration should be given to possible external influences on the groundwater
 - For example, a neighboring property could install a private well for irrigation that could cause plume migration off the property. If this is a possibility, then modeling may be done to show that there is no concern of plume migration



Technical Review

Example of 1/4 Acre:





Soil Assessment

- Closure assessment should identify all contaminated soil that exceeds Direct Exposure and Leachability Criteria
- Contaminated soil should be within property boundaries or below a transportation facility with an agreement for institutional controls or using DOT MOU
- Soil contaminant concentrations do not exceed the alternative leachability-based SCTLs established pursuant to Ch. 62-777, F.A.C., Figure 8



Soil Assessment

- Direct leachability testing (e.g., SPLP or TCLP) or other acceptable approach was used to meet rule criteria; please refer to guidance at <http://www.floridadep.gov/waste/district-business-support/documents/guidance-determining-leachability-analysis-splp-results>
- The soil meets alternative SCTLs using site-specific soil properties
- Soil concentrations of the site-specific fractions of TRPHs do not exceed the alternative leachability-based SCTLs for the TRPH fractions
- May calculate average soil concentrations



Soil Assessment

- One year of clean groundwater data may be used to allow soil exceeding leachability if the soil has been exposed to the elements for at least two years
 - No ground cover may be present
 - Shows that contaminated soil is not leaching into the groundwater or at a rate that increases COC concentrations



Soil Assessment

- If contaminated soil exists within the top two (2) feet, the soil must either be removed or have an impervious cap
- If contaminated soil exists between 2 and 12 feet exceeding commercial/industrial Direct Exposure SCTLs, further controls or actions may be necessary
- Where contaminated soil remains at depths only below 12 feet, a deed notice is not required but documentation of the extent of contaminated soil remaining should be included in the SRCOC



Control Criteria - Soil

- Institutional Controls
 - Land use restriction may be used:
 - When soil exceeds residential CTLs but is below commercial/industrial CTLs
 - If the top two feet are not impacted
 - If soil assessment as noted above indicates that soil contamination is not a threat to health and human safety or will not leach into the groundwater



Control Criteria - Soil

- Engineering Controls
 - A solid cap or excavating the top two feet of soil if direct exposure CTLs are exceeded
 - An impervious cap to prevent infiltration if soil exceeds leachability
 - Engineering controls must be certified by a professional engineer
 - Engineering control plan must include maintenance requirements, inspection frequency, and criteria for evaluating engineering control (i.e. “*define potential failures*”)



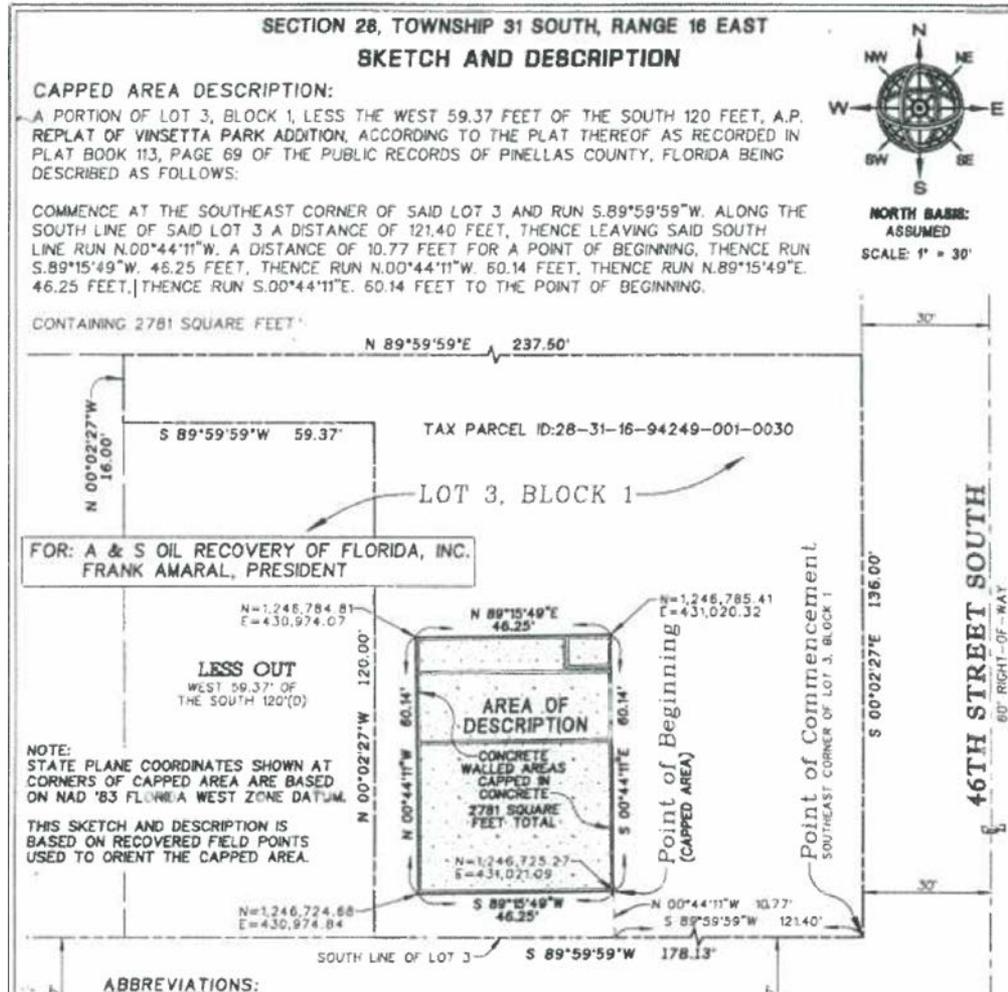
Control Criteria - Soil

- Engineering Controls
 - If an Engineering Control (EC) is used to address either Direct Exposure or Leachability for soil contamination, it must be in place and PE-certified, and it should be identified on an exhibit to be referenced in the CSRCO or, if applicable, on an exhibit to the Restrictive Covenant (usually Exhibit B) that is a Survey showing the size and location of the EC and including State Plane Coordinates or geographical coordinates for four corners



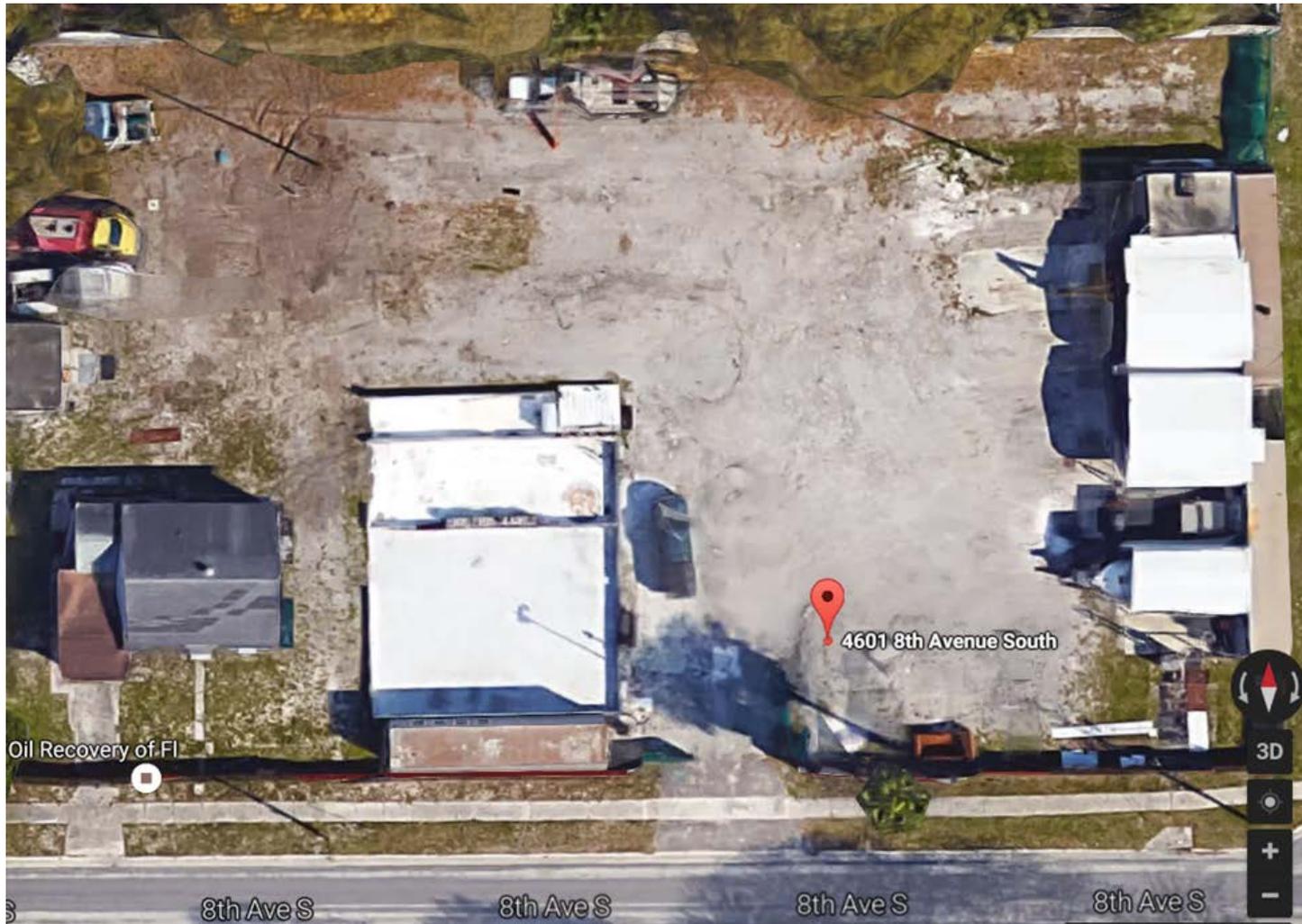
EC Examples

EXHIBIT B – CAPPED AREA DESCRIPTION





EC Examples





Groundwater Assessment

- Shrinking or Stable
 - At least 1 year of monitoring is required
 - Does not have to be 4 straight quarters
 - Contaminated wells can increase in concentrations to some degree
 - Clean wells stay clean
 - If there are concerns about the data feel free to:
 - Ask for more sampling to be done
 - Continue remediation



Control Criteria- Groundwater

- Institutional Controls

- Groundwater Use Restriction:

- There shall be no use of the groundwater under the Restricted Property
- There shall be no drilling for water conducted on the Restricted Property nor shall any wells be installed on the Restricted Property other than monitoring wells or other wells pre-approved in writing by FDEP's Division of Waste Management (DWM), in addition to any authorizations required by the Division of Water Resource Management and the Water Management Districts



Control Criteria - Groundwater

- Institutional Controls

- Additionally, there shall be no stormwater swales, stormwater detention or retention facilities, or ditches on the Restricted Property
- For any dewatering activities, a plan approved by FDEP's DWM must be in place to address and ensure the appropriate handling, treatment, and disposal of any extracted groundwater that may be contaminated



Control Criteria - Groundwater

- Engineering Controls
 - Slurry Wall: Must continue to sample groundwater beyond the wall at a specified interval to ensure that the wall is working
 - Alternate CTLs for low yield or poor quality



Questions?



Florida Department of Environmental Protection

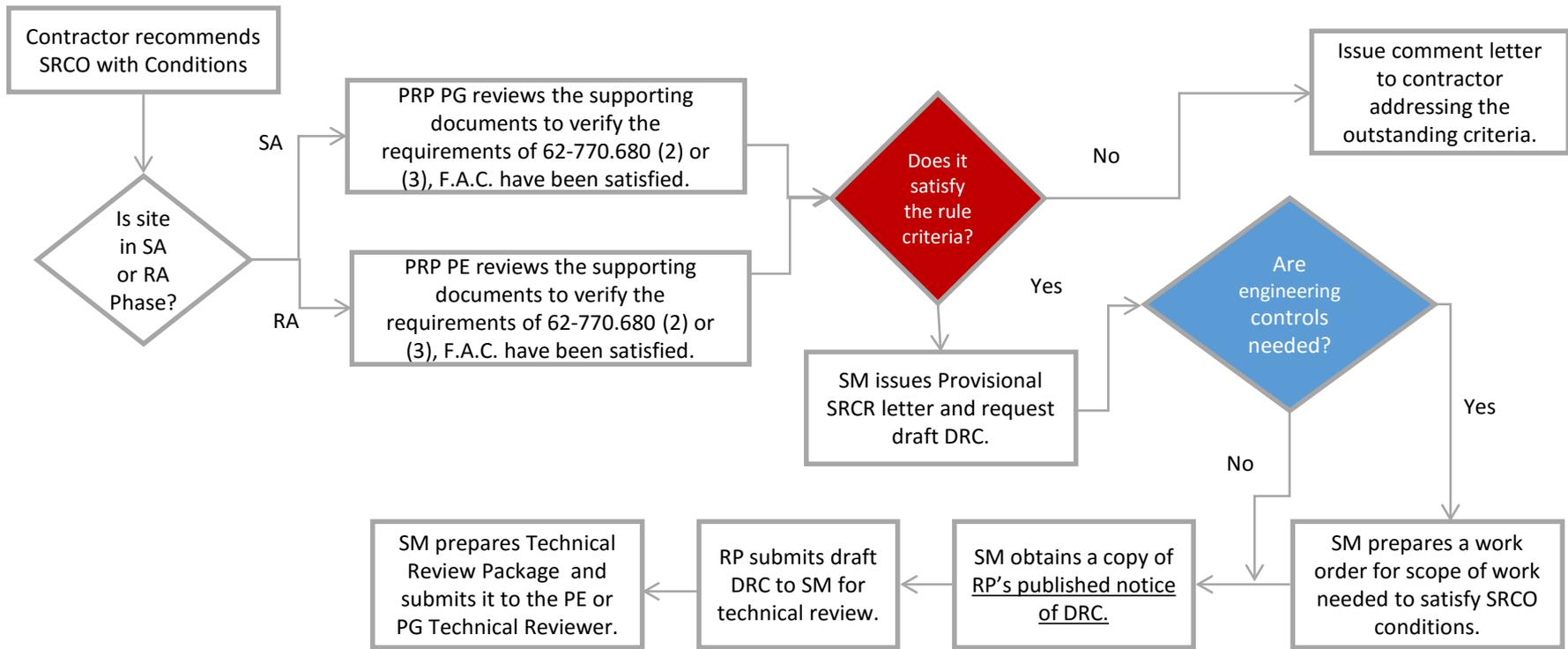
The Step-by-Step Process for Site Managers

Jackie Brooks, P.E.





FLOW CHART – Technical Steps



Key: PRP – Bureau of Petroleum Storage Systems
 FDEP – FL Dept of Environmental Protection
 PE – Professional Engineer
 RP – Responsible Party
 SRCR – Site Rehabilitation Completion Report

DRC – Declaration of Restrictive Covenant
 ICRS – Institutional Control Registry Sheet
 PG – Professional Geologist
 SA – Site Assessment

F.A.C. – Florida Administrative Code
 OGC – Office of General Counsel
 RA – Remedial Action
 SM – Site Manager



NFAC Proposal

- Recommendation for “No Further Action with Conditions” (NFAC) in SSA/NAM/PARM Report
- Justification must be provided in the Report
 - How does the site qualify for the NFAC criteria?
 - 62-780.680(2), FAC or 62-780.680(3), F.A.C.
- Team PE/PG must review/concur with NFAC Proposal
 - Use IC Checklist – ICPG, Attachment 5



Next Steps

- Once Report is approved concurring with NFAC,
 - Step 1: Issue Deliverable Review Letter
 - Step 2: Issue Provisional Site Rehabilitation Completion Report Letter (ICPG, Attachment 7)
 - Step 3: Attach a copy of the ICPG for reference
 - Step 4: Request IC documents (e.g. draft of Restrictive Covenant (DRC), copies of ordinances with explanations, copies of existing deed restrictions)
 - Step 5: Prepare Purchase Order



Allowable Costs for PRP Funding

Florida Statute 376.3071(b)4 Inland Protection Trust Fund

Professional Land Survey

- Entire or Partial property for restrictions.

Title Search

- Must be performed within 180 days of the DRC review
- Affidavit of Title (ICPG, Attachment 8)

Recording Fees

- Restrictions are recorded in county public records where the restricted property is located.

Engineering Control Design & Installation

- Unless an engineering control already exists.



Allowable Costs for PRP Funding

Engineering Certification Report including:

- Use SPI Line Item #19-13 to fund this report
- P.E. Certification of design sufficiency (SPI Line Item #21-9 through #21-12)
- Level of Effort (LOE) equivalent to Level 1 Limited Scope RAP.

Costs Not Allowed for PRP Funding

- Legal Representation (fees)
- Constructive Noticing for Publication

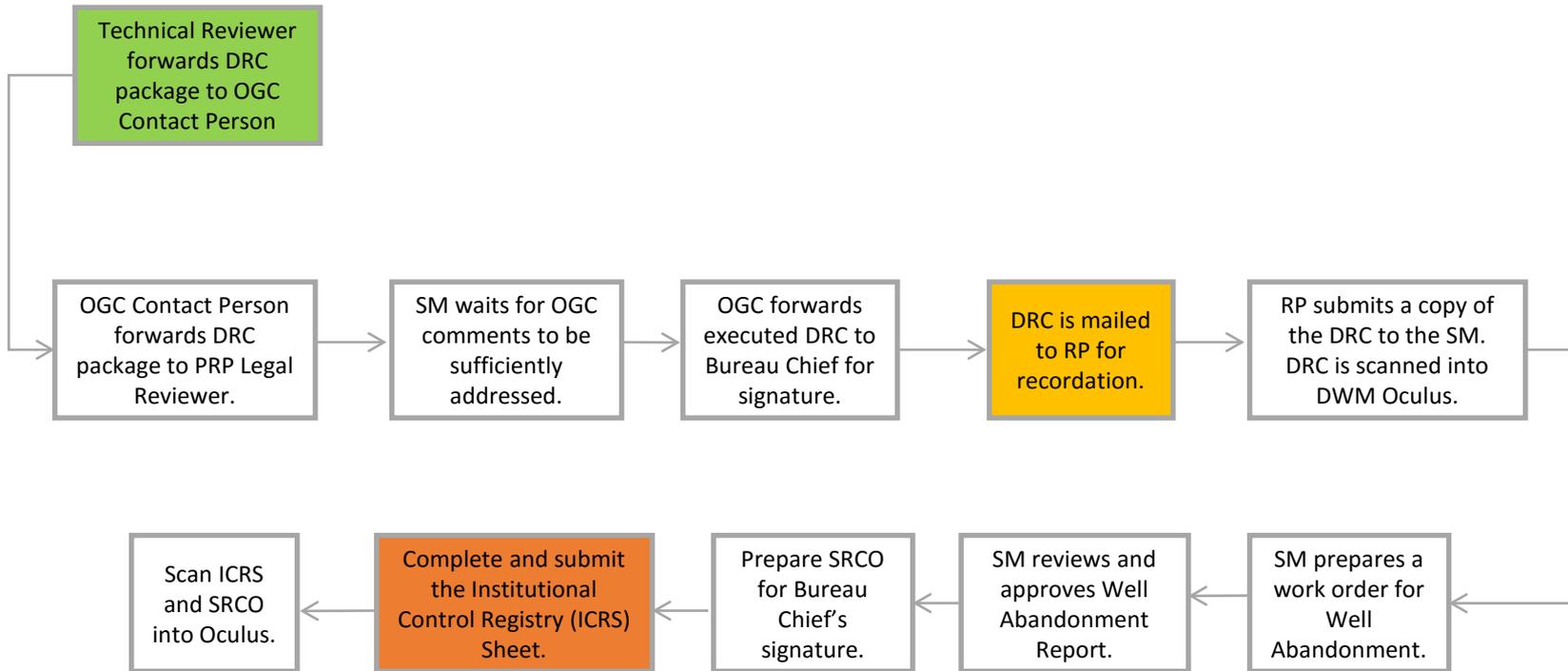


Wait For IC Completion

(This could take up to 6 months!!!)



FLOW CHART – Legal Steps



Key: PRP – Petroleum Restoration Program
 FDEP – FL Dept of Environmental Protection
 PE – Professional Engineer
 RP – Responsible Party
 SRCR – Site Rehabilitation Completion Report

DRC – Declaration of Restrictive Covenant
 ICRS – Institutional Control Registry Sheet
 PG – Professional Geologist
 SA – Site Assessment

F.A.C. – Florida Administrative Code
 OGC – Office of General Counsel
 RA – Remedial Action
 SM – Site Manager



Next Steps

- Step 6: Site Manager verifies that IC Package is Complete.
- Step 7: Team PG/PE reviews and approves IC for technical completeness.
- Step 8: Site Manager prepares IC Packet for Lead PRP PG/PE Technical Review.

NOTES

- The IC Package should be scanned into Oculus as a single pdf document.
- Label the file "Draft IC" in Oculus to make it easier for others to identify it.



DRC Packet

IC Packet Should Include:

- DRC Checklist
- Form A or B
- Engineering Certification Report (P.E. Sealed) & PRP Approval Letter
- Map of Encumbrances and Restricted Area, and List of Encumbrances
- Legal Description of the entire property
- Specific Purpose Survey (if only a portion of the site is being restricted)
- Notices of Intent
- Title Report
- Actual notice letters and proofs of dates of receipt, or,
- Joinder and Consent Of Tenants And Lessees
- Proof of Publication (see ICPG, Attachment 23)



Transmittal Form to OGC

- Step 9: Site Manager Prepares the Transmittal Form - ICPG, Attachment 6
- Memo includes:
 - Summary of the Site
 - Any Proposed Restrictions
 - Identify all Affected Media (Soil and/or GW)
 - Cite any Special Circumstances
 - Contact information for the ATC, Legal Representative, Site Owner & RP (if different)
- Send Transmittal Form & IC Packet to PE Technical Reviewer
- After approval, PE forwards the IC Packet to OGC



Next Steps

- Step 10: Site Manager sends electronic copy of IC Packet to PRP PG/PE Technical Reviewer

Team 5, 6 and Local Programs

❖ IC Technical Reviewer – James Treadwell, P.E.

Teams 1 & 2

❖ PG IC Technical Reviewer – Team PE/PG

- Step 11: Following PG/PE review, IC packet should be:
 - 1) Scanned into Oculus
 - 2) Emailed to: Lea Crandall for OGC Tracking #
OGC Agency Clerk, Agency_Clerk@dep.state.fl.us

Note: Email should contain the web link to the DRC Package in Oculus.



Legal Review

The DRC is downloaded from Oculus by OGC for Legal review:

- Dan Blackwell - Paralegal tasked with initial review of ICs
- 1st point of contact for IC questions
- Responsible for tracking all IC packages in OGC
- Can answer many of the questions you may have, including which attorney is assigned to the IC file
- Dan.Blackwell@dep.state.fl.us or at 850-245-2287



Wait For Legal Review

(This usually takes 30-60 days)



Next Steps

- Step 12: Site Manager waits for OGC comments to be sufficiently addressed.

This could become a lengthy process (3 months – 9 year).

If an owner's response takes more than 60 days, SM should inquire in writing as to the delay.

If delay is unwarranted, then impose a deadline with alternative of entering active remediation.

- Step 13: OGC forwards recommendation that Program Administrator accept the IC as sufficient to warrant a CSRCO (and sign the document in the case of a DRC as an IC)
- Step 14: In the case of a DRC as the IC, Site Manager mails DRC to RP for signature and recordation.



Recordation

This is the stamp applied when the Restrictive Covenant is recorded into public record.

You will need this

Book _____ Page _____

for the final ICRS form Tab 18.

GADSDEN COUNTY NICHOLAS THOMAS
Instrument: 130001150 Recorded: 02/14/2013 10:38 AM

OFFICIAL RECORDS: 1 of 11
Book: 771 Page: 172

Recording Fee: \$95.00

This instrument prepared by:
Amanda H. Anderson, Esq.
Gardner, Bist, Wiener, Wadsworth,
Bowden, Bush, Dec, LaVia & Wright, P.A.
1300 Thomaswood Drive
Tallahassee, Florida 32308
Matter No. ~~120277~~ 12.2272

DECLARATION OF RESTRICTIVE COVENANT



Next Steps

- Step 15: SM scans signed final IC into DWM Oculus.
- Step 16: Prepare Well Abandonment PO → Approve WA Report
- Step 17: Prepare SRCO with Conditions. In the case of a non-DRC IC, OGC should be involved in drafting the CSRCO
- Step 18: Complete and submit the Institutional Control Registry Sheet (ICRS).
- Step 19: Scan ICRS and signed SRCO into Oculus.



ICRS

Institutional Control Registry Data Sheet

For further information please see: <http://www.dep.state.fl.us/waste/categories/brownfields/pages/ICR.htm>

Jacquelyn R. Brooks
Site/Project Manager *

(850) 877-1133
Site/Project Manager Phone # *

GADSDEN
County *

208519577
Facility ID or other DEP Tracking #*

ONE STOP
Facility Name *

208 South Main Street
Facility Address *

Havana
City *

32333
Zip *

34
Section *

3 North
Township *

2 West
Range *

771
Book Number **

172
Page Number **

2-34-3N-2W-0000-00113-0700
Parcel ID *

30
Lat DD *

37
Lat MM *

14.8900
Lat SS *

84
Long DD *

24
Long MM *

55.7713
Long SS *

DPHO
Lat/Long Acquisition Method *

RESTRICTIVE COVENANT
Institutional Control Mechanism *

02/14/2013
Date Recorded *

PETROLEUM
Program Area *

04/09/2013
Date Order Issued

Date IC Removed



Registry Confirmation

From: Williams, Christopher A.
Sent: Thursday, April 11, 2013 10:39 AM
To: Brooks, Jackie R.
Cc: DWM_ICR
Subject: One Stop STCM # 8519577

Jacquelyn, [We have updated your ICR site to our database.](#) If you have any questions, please feel free to call me at anytime.

INSTITUTIONAL CONTROL MECHANISM		DATE IC RECORDED	PROGRAM AREA	DATE ORDER ISSUED
RESTRICTIVE COVENANT		02/14/2013	PETROLEUM	4/9/2013
Save Site				
Add	▶	IC MECHANISM	DATE IC RECORDED	PROGRAM AREA
Remove	*	RESTRICTIVE COVENANT	02/14/2013	PETROLEUM
Clear				
Amend	Record: [Navigation icons] 1 of 1			
INSTITUTIONAL CONTROL TYPE			ENGINEERING CONTROL TYPE	
DIGGING RESTRICTION			IMPERVIOUS CAP	



Common IC Problems

- Title Search Missing or Out of Date
- Poor Contact Information on IC Transmittal Form (i.e., ATC, Legal representative)
- Engineering Control Not Surveyed or Not Certified
- Engineering Control Maintenance Plan Not Prepared or not adequate
- No Proof of Notice of FDEPs Intent To Use Institutional Engineering Control



Quiz !!!!!

1) Who is our PRP OGC Contact?

2) Who is our Legal Reviewer?

3) How long should the Site Manager wait before checking DRC status at OGC?

4) What docs should be included in the Engineering Certification Report?

5) Who sends the IC to OGC?

6) Which form of DRC should be used for restricting the entire property?

7) What is Recordation?

8) Which 2 activities should take place concurrently?

9) What are some of the common errors made with this process?



Questions?



Florida Department of Environmental Protection

Case Studies

Jane Williams

Elena Compton

Eric Meyers

Melissa Brock





Florida Department of Environmental Protection



BP Randy's Hilltop

501 N Broad St, Brooksville

FAC ID#27 8508821

Score : 60

Discharge Date: 7/3/2001

Eligibility: PCPP (25% cost share)

Closure: RMO II by owner request

Site Manager: Jane A. Williams

P.E. : Thomas W. Conrardy





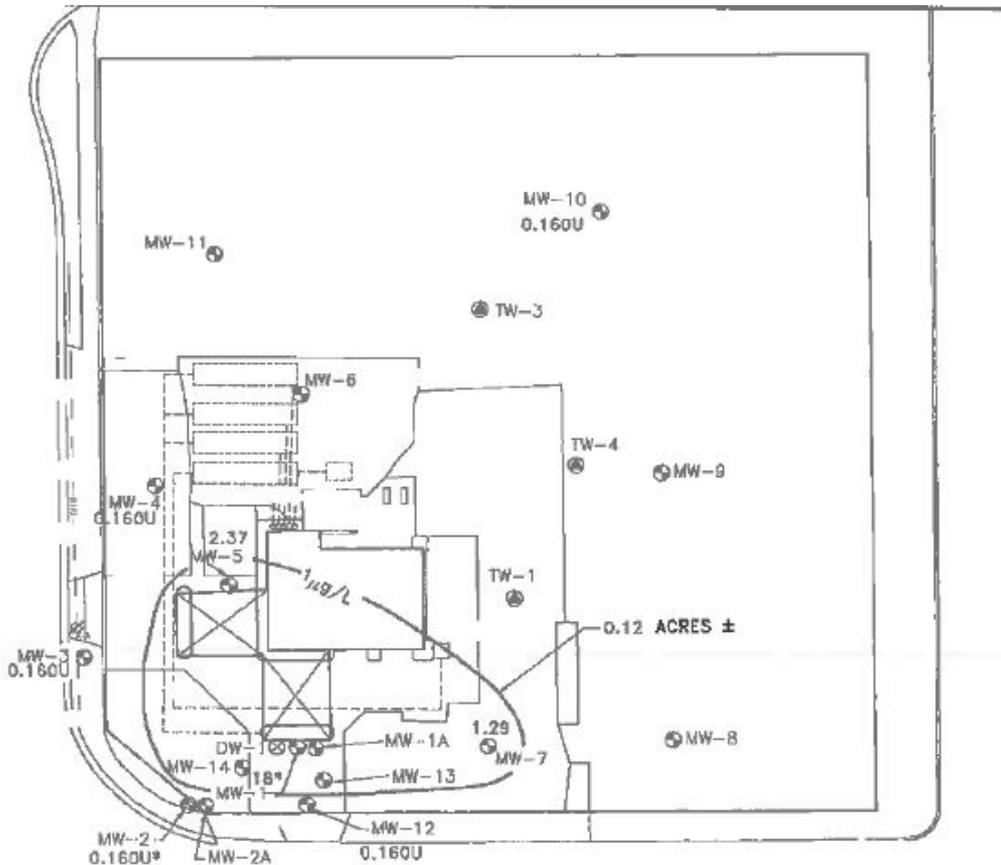
RMO II Case Study

Example 1:

Groundwater Contamination

1. Plume is on site.
2. Size of plume is 0.12 Acre
3. No potable wells on site.
4. Plume is stable and shrinking.
5. No free product is on site.

**Groundwater qualifies
for RMO II**





RMO II Case Study

Restrictive Covenant:

1. Restricts water use.

- No drilling for water or use of any wells

2. Restricts land use.

- No storm water swales, detection, retention, or ditches

3. Establishes Engineering Control.

- Includes Engineering Control maintenance plan.
- Defines in GPS coordinates the boundaries of the engineering control.





RMO II Case Study

Engineering Control:



1. Maintenance Plan

- a. Inspected biannually by a Florida Certified Professional Engineer.
- b. Engineering Control Failure
 - Defined as crack in pavement larger than 2-inches across and/or area greater than 1 square foot.
 - Must be repaired within 30 days of discovery
- c. Pavement must be resealed at least every five years.



Florida Department of Environmental Protection



SITE CLOSURE





CASE # 1

FAC ID # 379601298, Porta-Phone

Timeline/ Costs are Not Applicable

- **Discharge: 3/10/96** **ATRP: No Funding Cap**
- **Assessment: 1997 – 2001**
 - Two soil samples exceeded Leachability SCTLs collected at 7 & 24 ft bls
 - DTW at 43 – 53 ft bls
 - Groundwater is Not Impacted
 - Existing Surface Cover (concrete and asphalt)
- **NFA w/ Institutional Controls was Initiated : 2001**
- **Changed NFA w/ Institutional Controls to NFA w/ Conditions due to change in restrictions: 2003**
- **SRCO with Conditions Issued: 06/23/2004**



CASE # 1

FAC ID # 379601298, Porta-Phone

NFA w/ Conditions Restrictions

- a. There shall be no drilling for water on the Property nor shall any wells be installed on the Property other than monitoring wells pre-approved by the FDEP. There shall be no use of the groundwater on the Property.
- b. Excavation and construction is not prohibited on the Property provided that any contaminated soils that are excavated are removed and properly disposed of pursuant to Chapter 62-770, F.A.C. (or subsequent contamination site cleanup criteria rule(s)). Reasonable construction methods and techniques shall be employed to minimize risk of exposure.



CASE # 2

FAC ID # 358840357, Montverde Academy

Timeline/ Costs

- **Discharge: 3/10/97** **PLIRP: \$150,000 cap**
 - discovered during excavation of two USTs
- **Assessment: 2000 – 2001**
- **RAP design & approval: 2002** **\$69,847 available**
 - Phase I: free product removal via SVE/ DPE
 - Phase II: dissolved phase treatment via AS/SVE
- **Phase I implementation: 2007 – 2008**
 - \$0 available under initial cap**
 - PLIRP funding increased to \$300,000 cap in 2008**
- **Prior to approval of Phase II Remediation, RP's participation in cleanup decision was initiated: 2009**
- **RP concurred w/ NFA w/ Conditions: 12/20/2010**
- **NFA with Conditions Package to OGC: 5/29/2012**
- **SRCO with Conditions Issued: 11/13/2012**



CASE # 2

FAC ID # 358840357, Montverde

FDEP's Letter to the RP in 2009

On July 10, 2008, the Department issued a letter indicating that the Petroleum Liability Insurance Restoration Program (PLIRP) was increased to \$300,000.00. The original \$150,000.00 CAP amount was exhausted prior to the 2008 funding program increase. Taking into account the amount of funds allocated in the above referenced work order, approximately \$129,850.00 is the present amount remaining to remediate the groundwater contamination at this site.

Please ensure that the responsible party (Mr. Kasey Kesselring) provides a written response to the Department to confirm his understanding of the limited remaining funds available in the PLIRP program for future cleanup at this site. He must also be made aware of all the associated costs to add Air Sparge (AS) technology - remedial design recommended by Ardaman & Associates on page 3 of the above referenced report. A separate letter will be sent directly to Mr. Kesselring addressing this situation "Owner/Responsible Party Participation in Cleanup Decision".

RP's Response in 2009

We would like to request a full clean up with the option to change to no further actions with conditions when funding has been exhausted.



FDEP's July 20, 2010, RAPM Review Comments (excerpt)

Due to the site being subject to a funding cap (the maximum funds which may be expended from the Inland Protection Trust Fund) of \$300,000, this means that the Responsible Party (RP) will have to pay the remainder of the cleanup costs when the funding cap is reached. Approximately \$121,810.00 remains for cleanup purposes of the March 10, 1997, petroleum discharge.

The January 26, 2010, RP's letter stated understanding of the limited funds remaining for clean up purposes. The RP also agreed with the AS technology to be added to the existing SVE system. Additionally, the RP requested a full cleanup with the option to change to an NFA with conditions when funding has been exhausted

However, there is a problem with this concept. The subject RAPM estimates that it will cost \$210,381.24 to remediate this site. Due to the estimated costs exceed the remaining funds, the RP needs to submit a letter stating either that they are willing to pay the remainder of the cleanup costs when the funding cap is reached, or define new final cleanup goals, or discuss other options, so the RAPM could be modified accordingly. The RP must be aware that when (and if) they select the NFA with conditions (and if the site qualifies), there are additional costs involved for all system and monitoring well abandonment with the site restoration.

Additionally, the RAPM's estimate of the cleanup costs is likely underestimated due to varying geological and environmental conditions, human factor, and other inherent difficulties to estimate with precision. However, the construction costs could be estimated with better precision if Bids and Solicitations for system installation activities were conducted prior to the RP's letter and, consequently, prior to the RAPM Approval Order.



CASE #2

FAC ID # 358840357, Montverde Academy

RP's Response in December 2010

The Academy has reviewed the costs associated with groundwater remediation with Ardaman & Associates. It is our understanding that the \$121,810.00 remaining under the funding cap will not be sufficient to complete remediation and may not even be enough to reduce contaminant levels to default levels that can be monitored for natural attenuation. Based on the projected costs and available funds under the cap, the Academy prefers that a No Further Action with Conditions (CNFA) be approved for the site.



CASE # 2

FAC ID # 358840357, Montverde Academy

NFA w/ Conditions Restrictions

There shall be no use of the groundwater on the Property. There shall be no drilling for water conducted on the Property nor shall any wells be installed on the Property other than monitoring wells pre-approved in writing by FDEP's Division of Waste Management (DWM) in addition to any authorizations required by the FDEP Division of Water Resources Management and the Florida Water Management District.

Additionally, there shall be no stormwater swales, stormwater detention or retention facilities or ditches on the Property. For any dewatering activities, a plan pre-approved by the FDEP DWM must be in place to address and ensure the appropriate handling, treatment, and disposal of any extracted groundwater that may be contaminated.



Florida Department of Environmental Protection

Jackson Hospital (former Compagni Property)

4250 Hospital Drive, Marianna

FAC ID# COM_306705

Score : 60

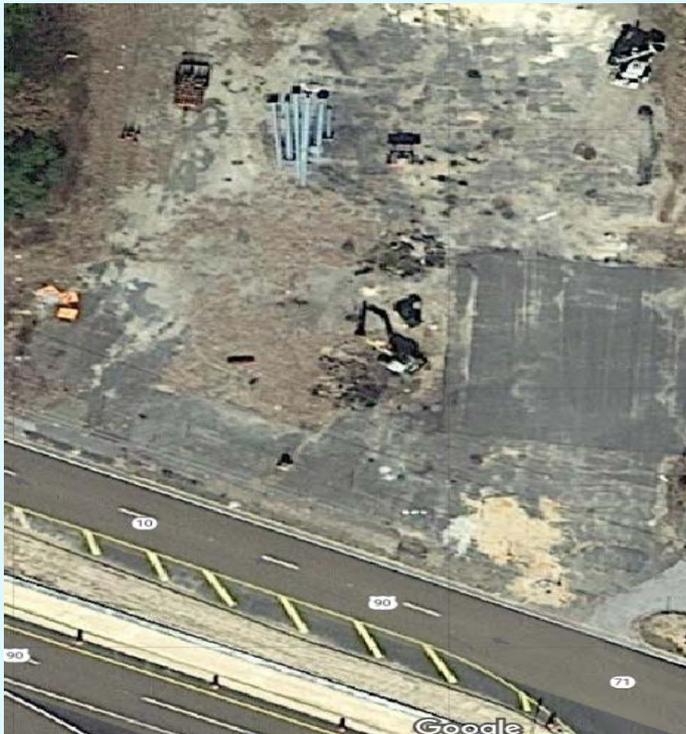
Discharge Date: March 17, 2011

Eligibility: Non-program

Closure: RMO III w/ FDOT MOU

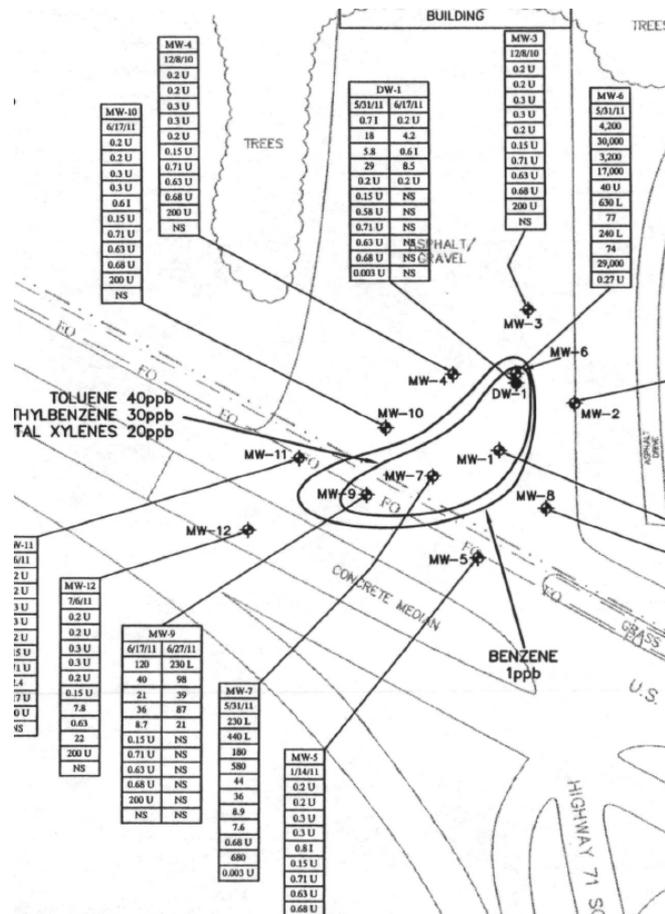
Site Manager: Sally Coeey

P.G. : Alex Webster





RMO III with FDOT MOU Case Study



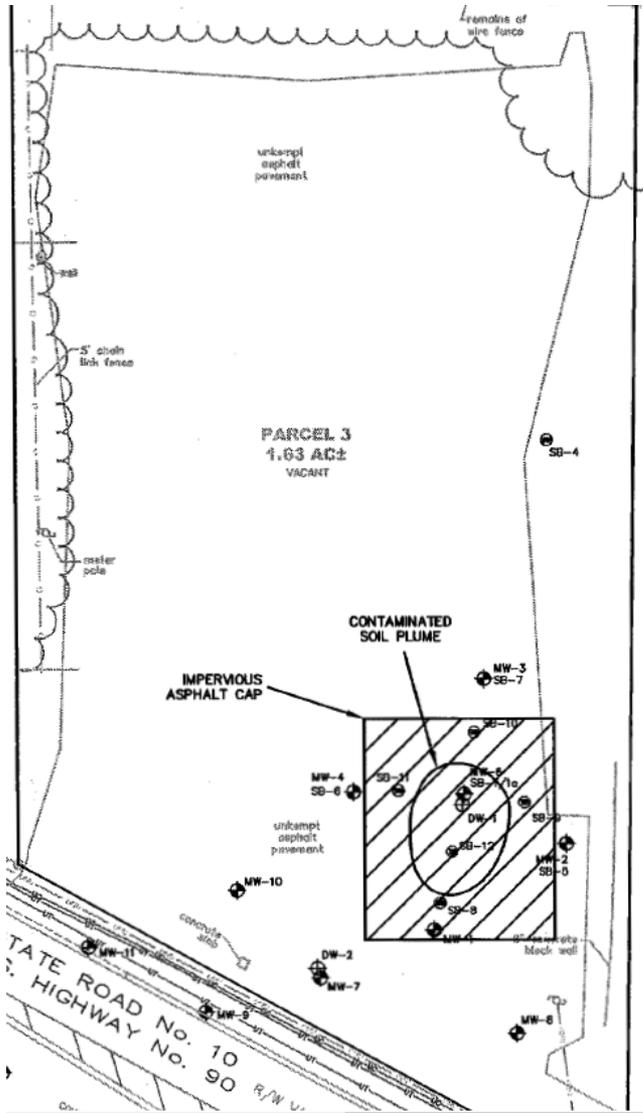
Groundwater Contamination

1. Size of plume is <0.25 Acre.
2. Plume not migrating.
3. Plume extends on FDOT ROW.
4. No free product is on site.
5. FDOT agreeable to MOU usage.

Groundwater qualifies for RMO III



RMO III with FDOT MOU Case Study



Soil Contamination

1. Plume is on site.
2. 1,923 cy of contaminated soil in vadose; 757 cy of contaminated soil in smear.
3. Owner wishes to place urgent care center on property.

Soil qualifies for RMO III with Engineering Control

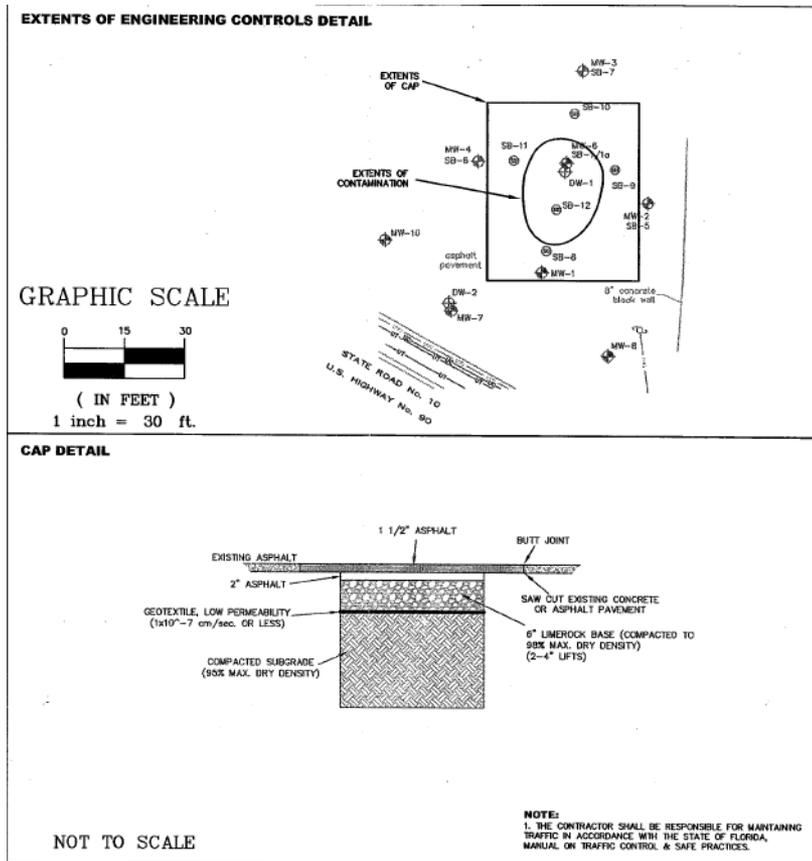


RMO III with FDOT MOU Case Study

Engineering Control:

1. Control
 - a. Asphalt cap of 3.5 inches
 - b. 6-inch limerock base.

2. Maintenance Plan
 - a. Inspected once a year to verify impervious properties.





RMO III with FDOT MOU Case Study

Restrictive Covenant:

1. Restricts water use.

- No drilling for water or use of any wells
- No storm water swales, detention or retention facilities, or ditches.
- Any dewatering, a plan must be in place.

2. Restricts land use.

- Area of soil shall be permanently covered.
- Soils must properly be disposed of if excavation is to occur.

3. Establishes Engineering Control.

- Includes Engineering Control maintenance plan.
- Defines in GPS coordinates the boundaries of the engineering control.



Florida Department of Environmental Protection

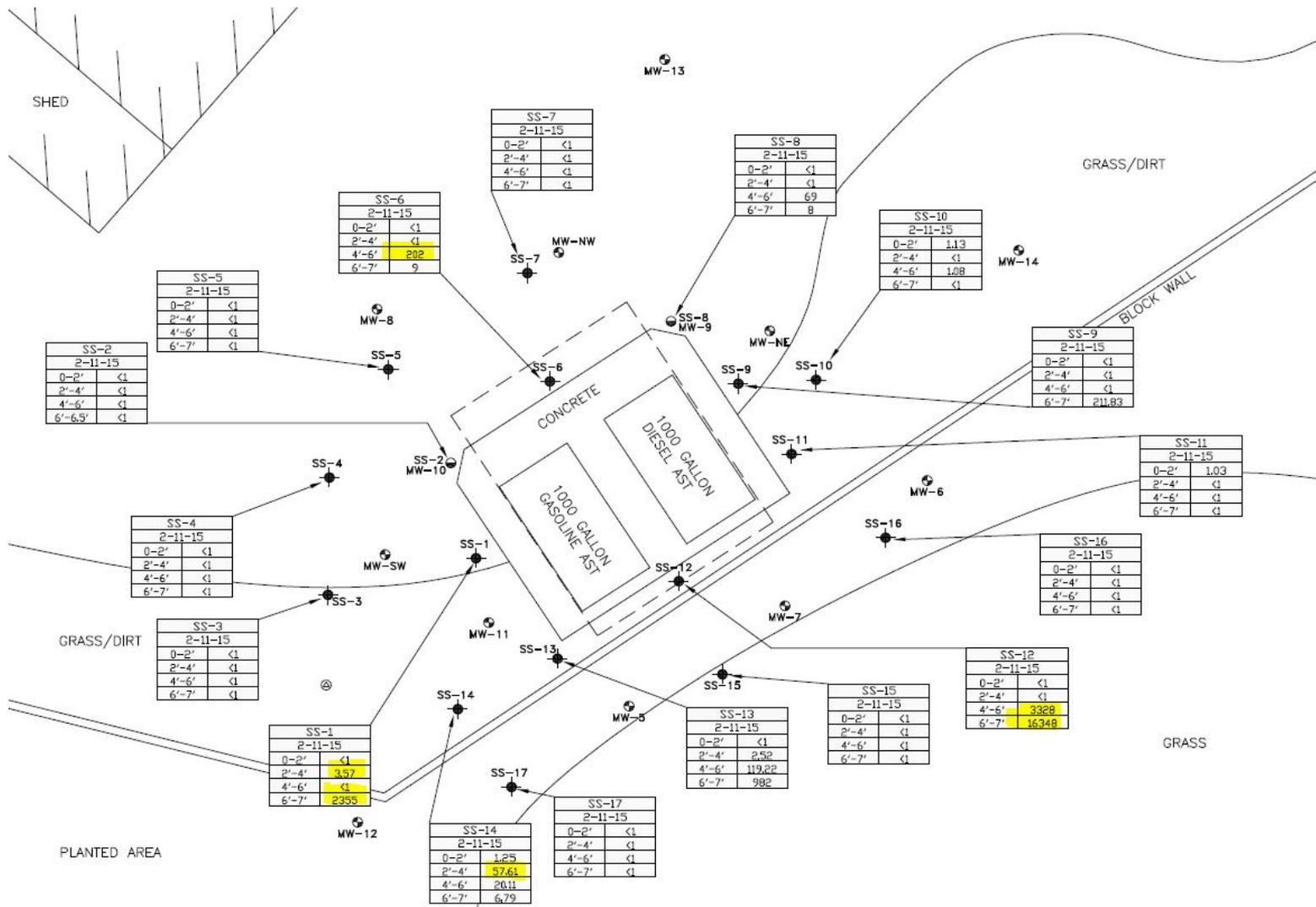
LSSI

No Further Action



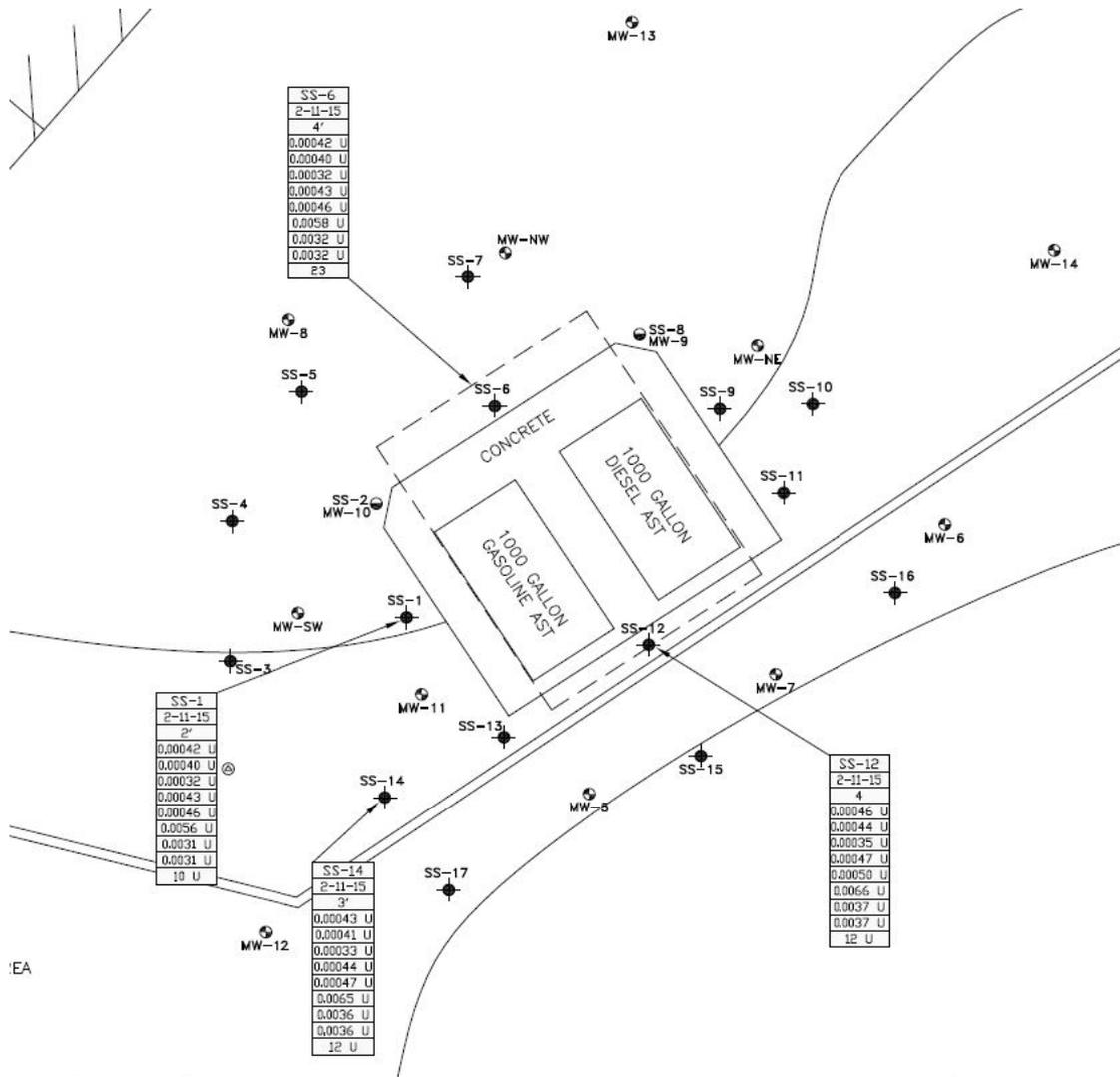


Case #1: Atlantic Golf Club (50/8839091)



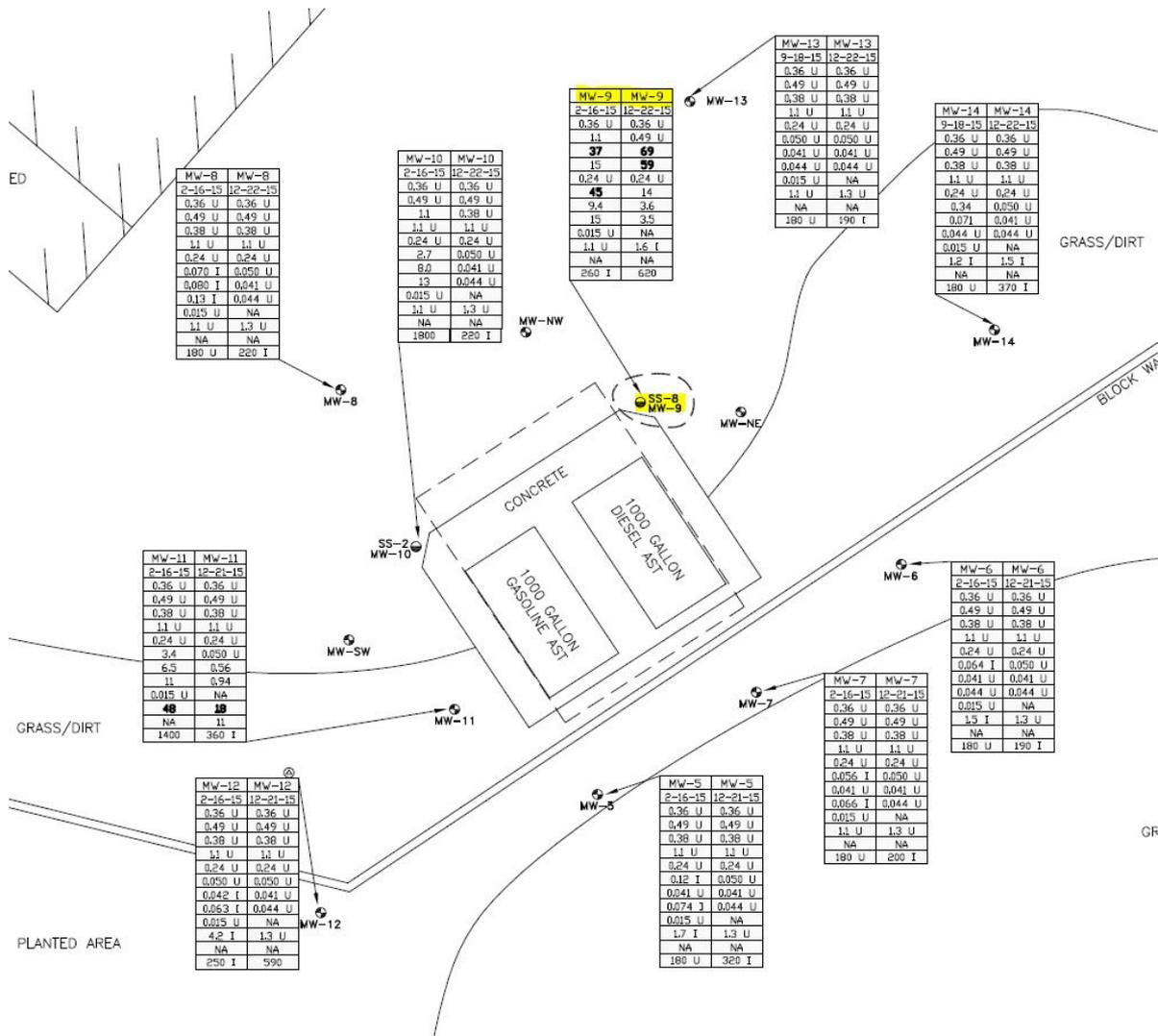


Case #1: Atlantic Golf Club (50/8839091)



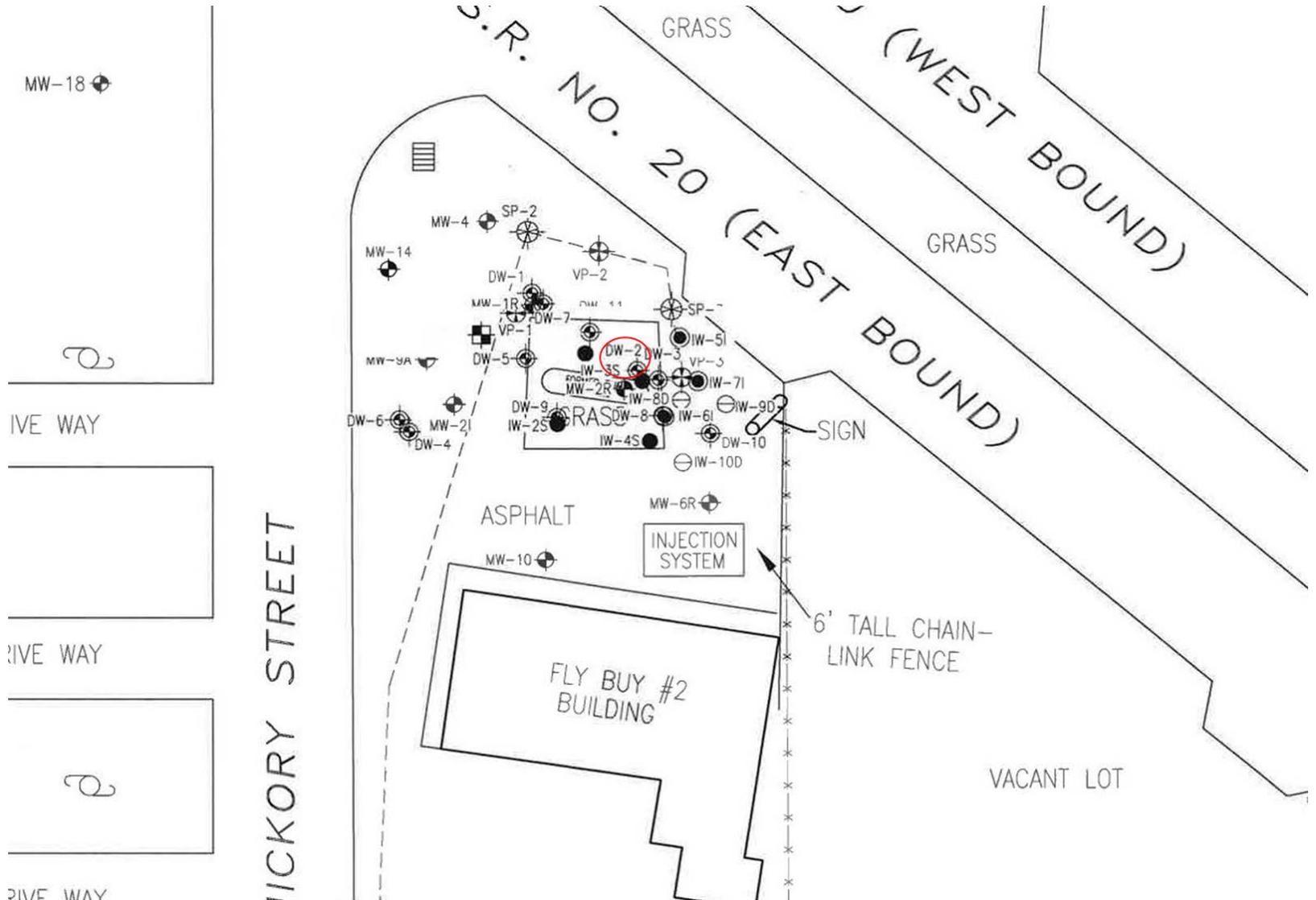


Case #1: Atlantic Golf Club (50/8839091)





Case #2: Fly Buy #2 (46/8512291)





Case #2: Fly Buy #2 (46/8512291)

TABLE 2: GROUNDWATER MONITORING WELL ANALYTICAL SUMMARY

Facility Name: Fly Buy #2
 4612 Highway 20
 Niceville, FL
 Okaloosa County

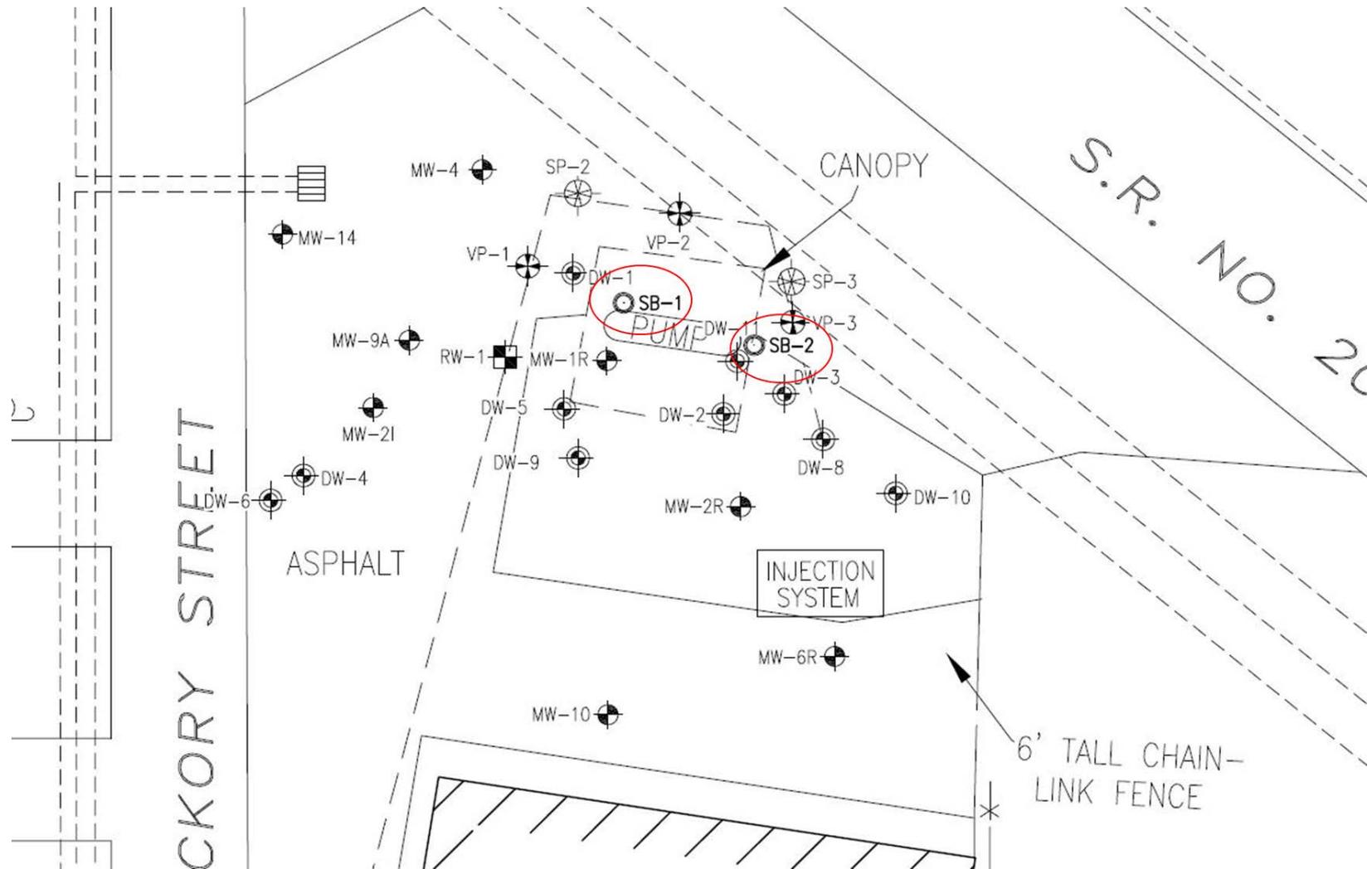
Analytical Results = µg/L
 MTBE = Methyl-tert-butyl-ether
 EDB = Ethylene dibromide
 -- = Not Analyzed or No Data
 Bold = Above FDEP GCTL
 ND(0.32) = Non Detect (Below Method Detection)

Facility ID#: 46 8512291

Sample		Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	Naphthalene	1-Methyl Naphthalene	2-Methyl Naphthalene	TRPH	Total Lead	Sodium	Chloride
Location	Date												
FDEP Groundwater Cleanup Target Levels for Groundwater Criteria (ug/l)		1	40	30	20	20	14	28	28	5,000	15	160 mg/L	250 mg/L
Natural Attenuation Default Concentrations (ug/L)		100	400	300	200	200	140	280	280	50,000	150	NA	NA
DW-2	11/13/2007	85	24,000	4,500	22,000	ND (6.2)	480	53 l	99	22000			
	12/20/2007	54	15,000	3,100	15,000	27 l	530	80	140	27000			
	04/09/2009	39	25,000	5,500	26,000	33	550	80	140	29000			
	02/17/2010	5.9	901	1,620	9,300	ND (0.50)	537	90.9	160	23400			
	11/02/2010	ND (0.50)	470	2,750	13,600	ND (0.50)	787	86.4	188				
	01/27/2011	ND (25.0)	3,480	4,160	20,700	ND (25.0)	833	106	196				
	02/06/2013	ND (0.34)	ND (0.35)	ND (0.34)	ND (1.1)	ND (0.27)	ND (0.60)	ND (0.62)	ND (0.60)	ND (64)		5.3	6.9
	08/15/2013	10	3.0	120	94	4.6	110	23	27	2,200		12	6.7
	02/20/2014	ND (0.34)	9.6	270	420	ND (0.27)	0.84 l	ND (0.62)	ND (0.60)	900		5.6	20
	08/31/2015	6.7 l	26	1,000	4,700	ND (1.0)	310	84	120	14,000		5.3	6.7
05/13/2016	0.52 U	2.4	120	330	0.49 U	120	94	130	4,600				



Case #2: Fly Buy #2 (46/8512291)





Case #2: Fly Buy #2 (46/8512291)

TABLE 2: SOIL ANALYTICAL SUMMARY

Facility Name: Fly Buy #2
 4612 Highway 20
 Niceville, FL
 Okaloosa County

FBLs = Feet Below Land Surface
 ppm = Parts per Million
 Analytical Results = mg/kg

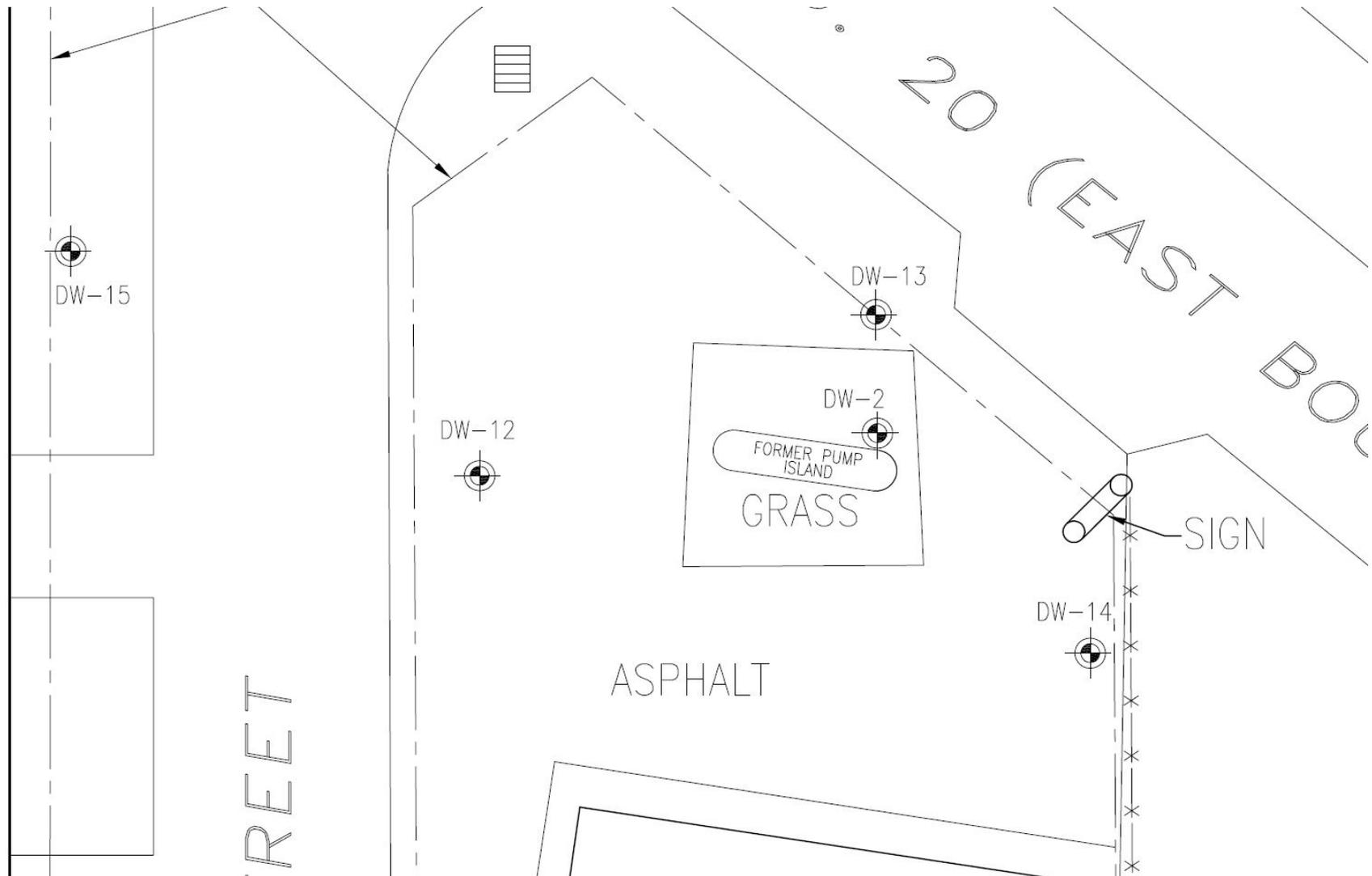
U = Compound was analyzed for but not detected
 I = The reported value is b/w the laboratory method detection limit and the laboratory practical quantitation limit
 T = Value reported is less than the laboratory method detection limit

Facility ID: 46 8512291

¹ FDEP's Soil Cleanup Target Levels For Direct Exposure Residential (mg/kg)				1.2	7500	1,500	130	NA	4,400	55	200	210	460
¹ FDEP's Soil Cleanup Target Levels For Leachability Based on Groundwater Criteria (mg/kg)				0.007	0.5	0.6	0.2	NA	0.09	1.2	3.1	8.5	340
Sample				Benzene	Toluene	Ethyl-benzene	Total Xylenes	Total BTEX	MTBE	Naphthalene	1-Methyl-Naphthalene	2-Methyl-Naphthalene	TRPH (FL-PRO)
Boring No.	Sample Interval (FBLs)	Date Collected	Net OVA Reading (ppm)										
SB-1	0 - 2	2/11/2016	0	0.0017 U	0.0016 U	0.0017 U	0.0047 U	<0.0097	0.0017 U	0.022 U	0.023 U	0.023 U	2.3 U
SB-2	0 - 2	2/11/2016	0	0.0018 U	0.0017 U	0.0018 U	0.0051 U	<0.0104	0.0019 U	0.026 U	0.027 U	0.027 U	2.7 U

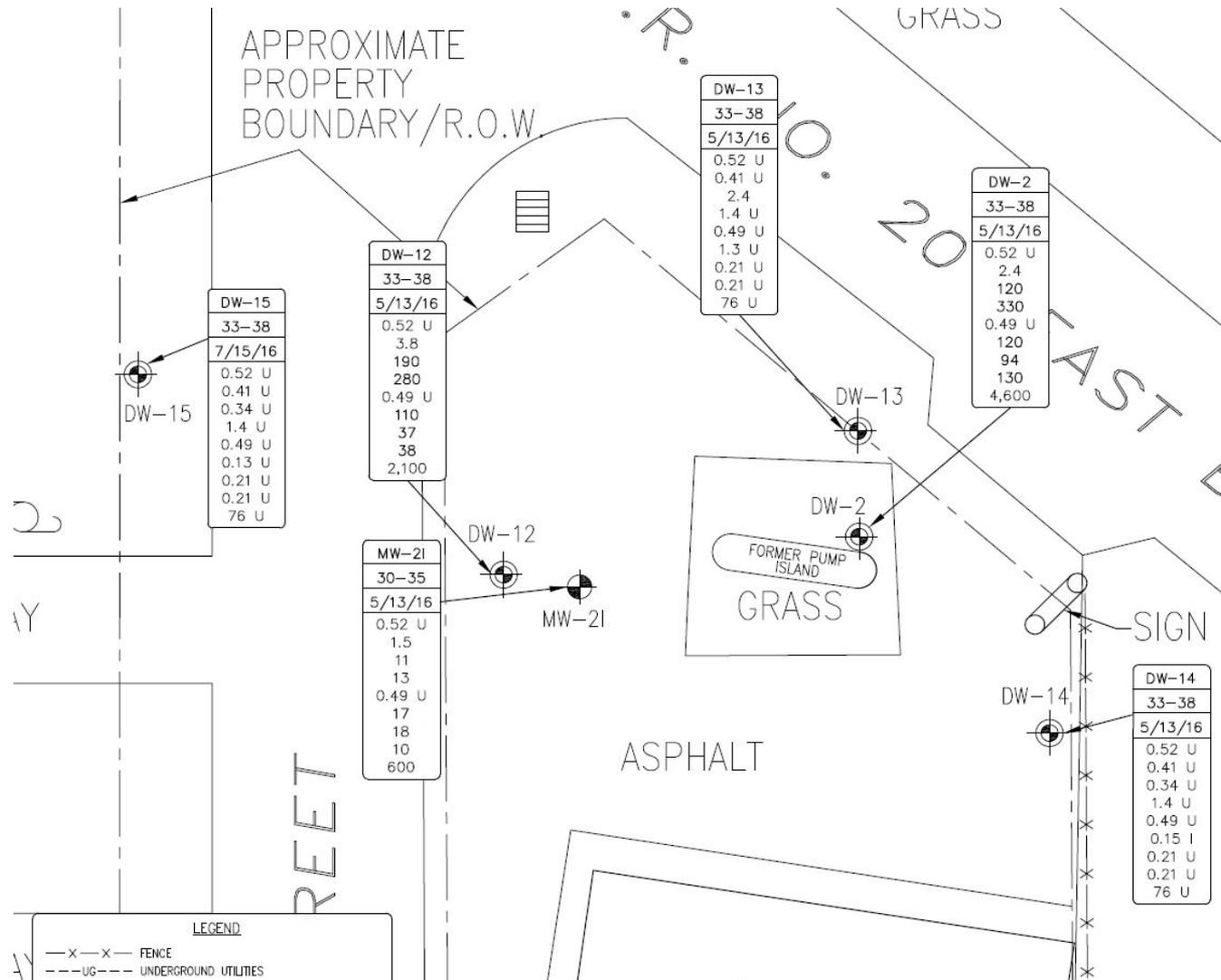


Case #2: Fly Buy #2 (46/8512291)



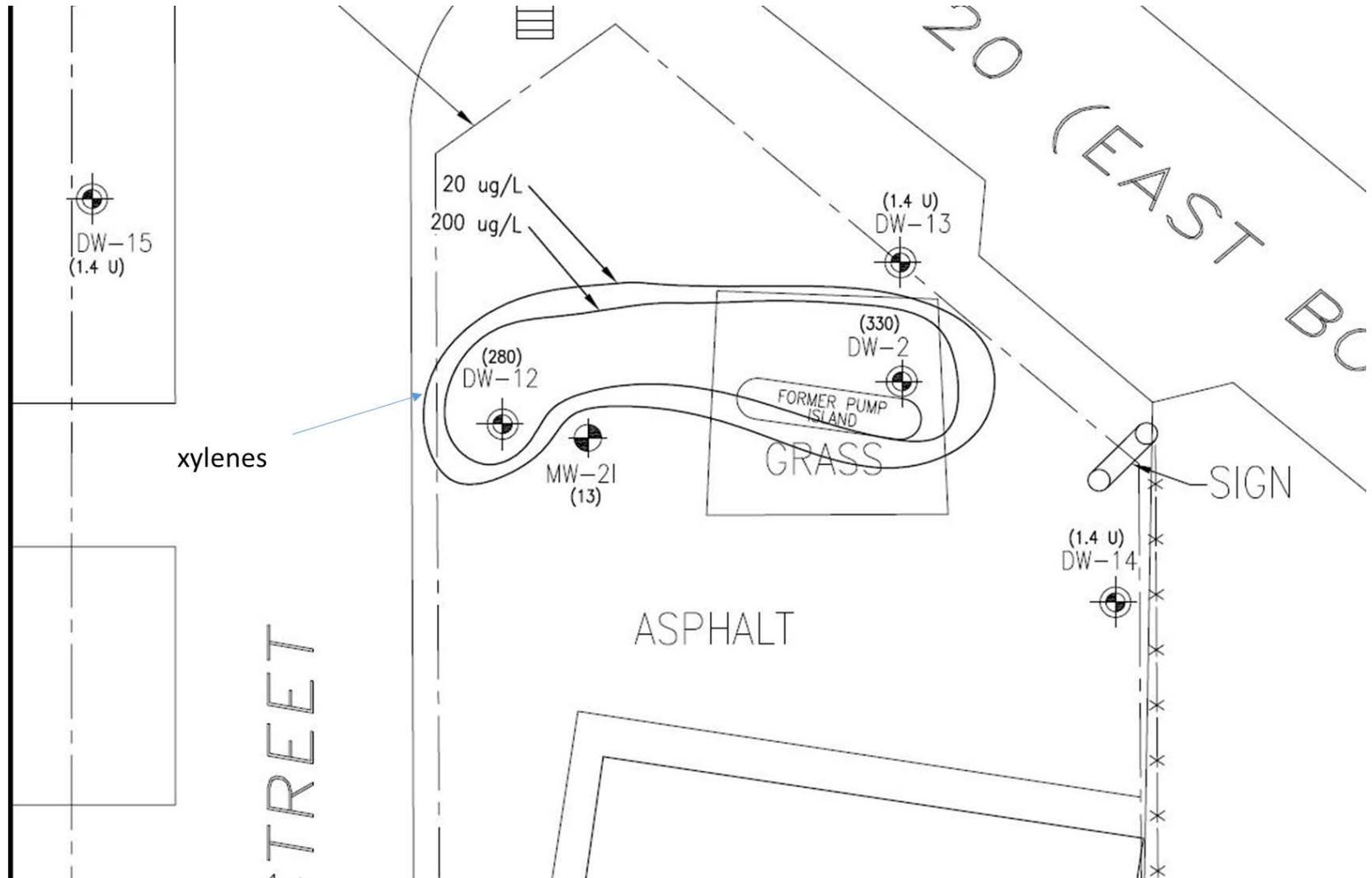


Case #2: Fly Buy #2 (46/8512291)





Case #2: Fly Buy #2 (46/8512291)





Questions?