Project Management

Communication Breakdown

It's Always the Same

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August 6, 2019

Agenda

- Introduction
- Poll and Experience
- Administrative PM Topics
  - The “Business”
- Technical PM Topics
  - The “Science”
- Fundamental Traits of Great PMs
- Wrap-up

Introduction

Why is this important?

It's Business and Science.

Poll and Experience

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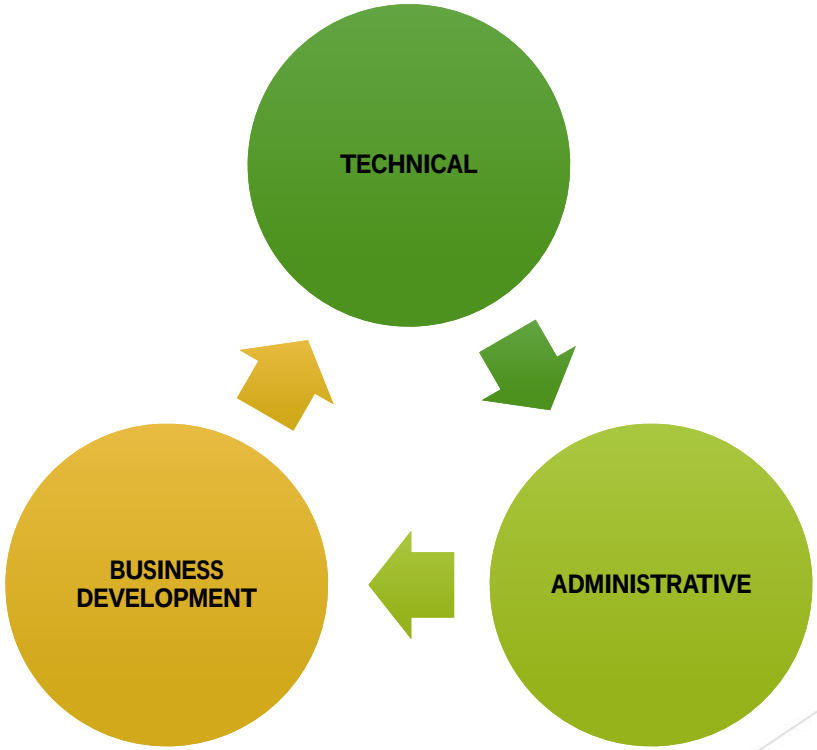
Successful Project Management

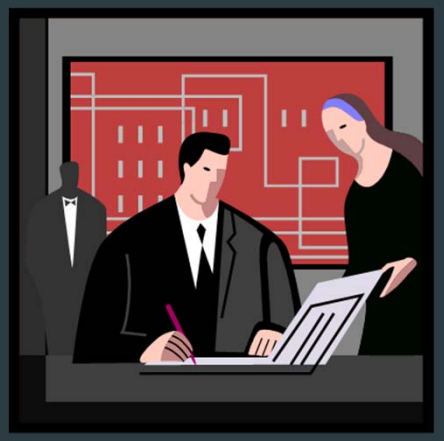


Business Side of Project Management

- Proposals & contracts
- Project documentation
- Invoicing & collections
- High profile projects
- Business Development
- Other Common Administrative Challenges

The Business Side of Project Management
Proposals & Contracts

- Proposals
  - Typically contain the following elements:
    - Scope
    - Assumptions
    - Exclusions
    - Schedule
    - Fee
    - Terms & conditions



The Business Side of Project Management
Proposals & Contracts

Contracts

Three aspects impact risk –

1. Contract type
2. Terms & Conditions
3. Specific wording of the T&C, proposal & marketing materials

Four primary types of contracts –

1. Cost plus
2. Time & materials
3. Lump sum
4. Performance-based

The Business Side of Project Management
Proposals & Contracts

Typical Terms & Conditions

Scope
Fee
Invoices & payment
Schedule
Change orders
Documents
Accuracy & reliability of information
Limitation of liability
Indemnification
Enforcement costs
Assignment
Suspension, termination
Entirety of agreement
Term of agreement
Waiver
Limited copyright license
Intellectual property
Notices
Governing law
Severability
Signature & date

The Business Side of Project Management
Project Documentation

- How do you organize information in the lab?
- Does a standardized format exist for your master files?
- PM should take charge of the project master file and periodically audit contents.
- How do you document telephone calls, in-person meetings and file e-mail correspondence?

The Business Side of Project Management
Invoicing & Collections

Different rate schedules?

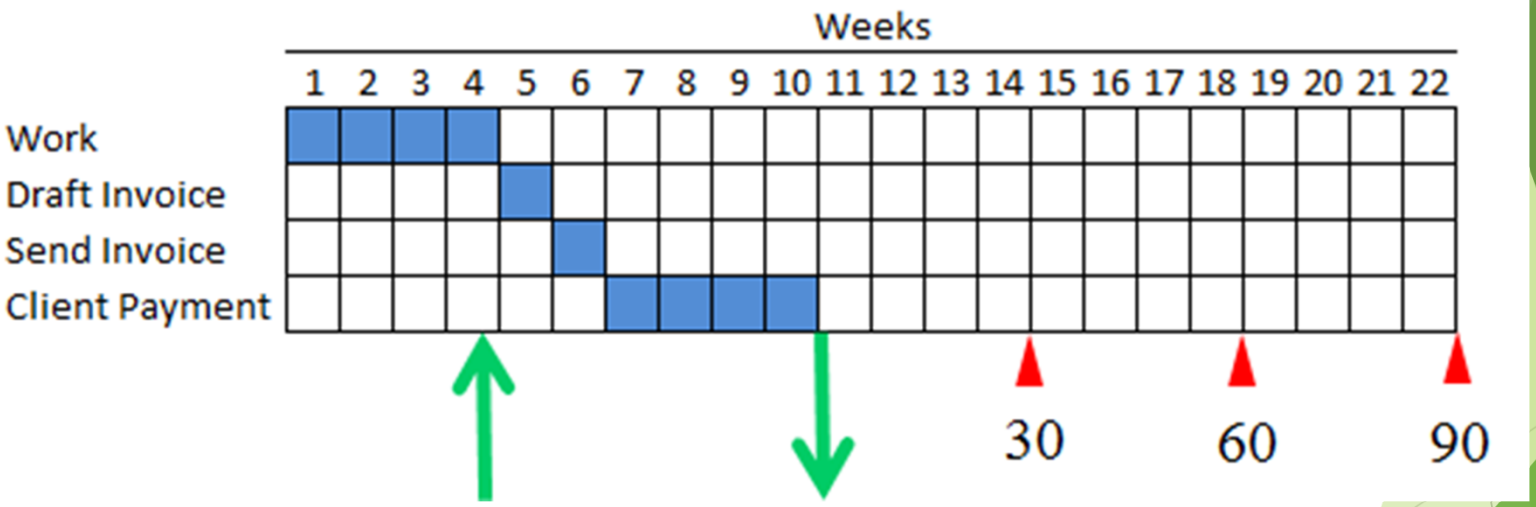
Follow Client requirements to promote timely payment.

What about changes to scope of analyses?

Timing of invoicing & payment is critical to your organization's success.

August 5, 2019

Effect of Invoicing on Cash Flow



The Business Side of Project Management

High Profile Projects

- PM should be in control of communications.
- Instruct team members they are not authorized to speak with anyone external to the team regarding the project.
- Media inquiries should be directed to the appropriate representative.

The Business Side of Project Management

Business Development

PM's responsibilities should include -

- Expanding contacts vertically and horizontally within an organization;
- Cross-selling other capabilities; and,
- Leveraging the relationship to obtain referrals to other prospective Clients.

The easiest way to do these things -

- Be Smart.
- Be Efficient.
- Be Attentive to every detail.
- Be a Resource and be Resourceful.

SEAR your way into the List of Indispensable Contacts.

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Other Challenges PMs Face

- Underperforming team members
- Scope creep
- Unanticipated conditions
- Difficult clients
- Insufficient time
- Insufficient budget
- Project handoffs

Technical Side of Project Management

- Appropriate Methods
- Dilutions & Detection Limits
- Sample Preservation & Containers
- Holding Times & Contingent Analyses
- Sample Preparation
- Assumed versus Actual Target Analytes
- Accreditation Requirements
- Variable Contaminant Criteria

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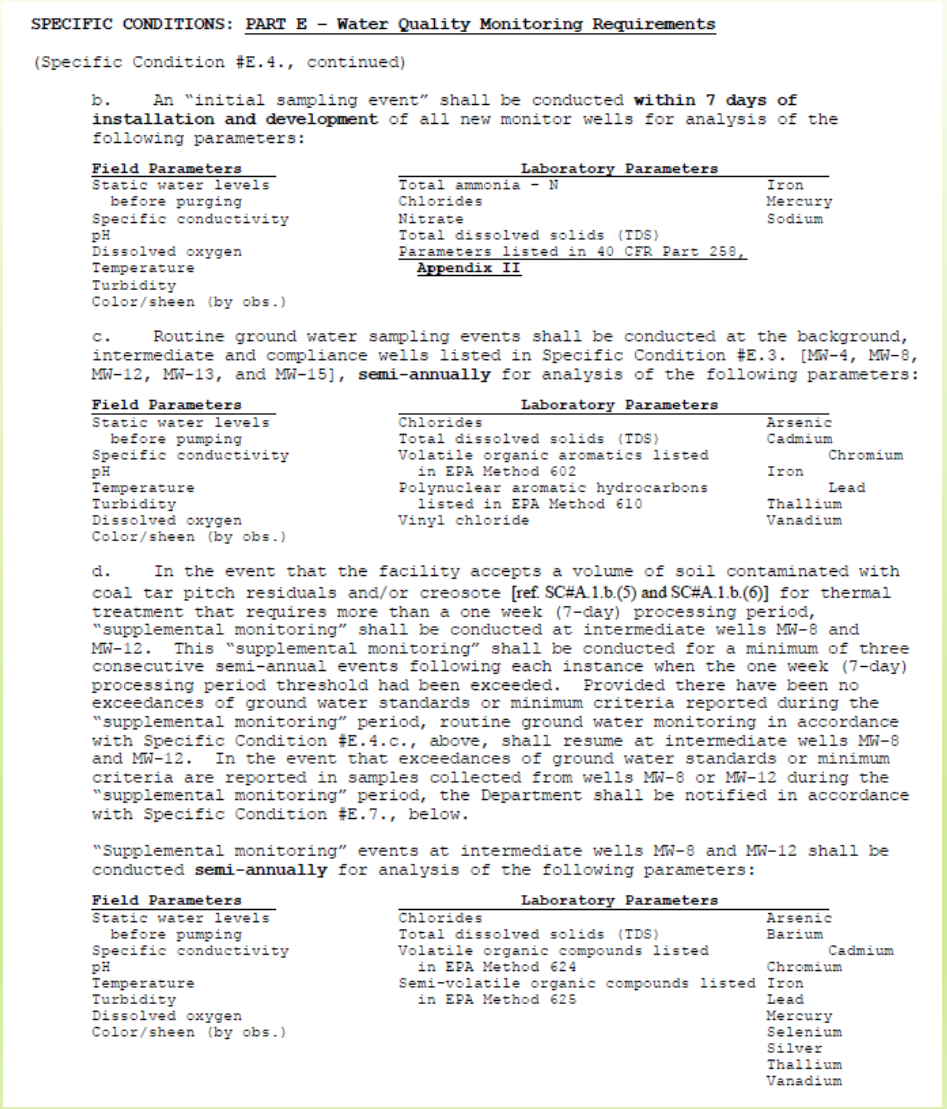
The Technical Side of PM
Appropriate Methods

- WQ Monitoring Permit Specific Conditions
  - Method numbers not specified in "initial sampling event", but Parameters listed in 40 CFR 258 Appendix II are indicated.
  - Method numbers are specified, but not prescribed, for "routine sampling events".
  - Different method numbers are specified, but not prescribed, in "supplemental monitoring events".
- Other examples?
  - "low-level" mercury for NPDES



SPECIFIC CONDITIONS: PART E – Water Quality Monitoring Requirements

(Specific Condition #E.4., continued)

b. An "initial sampling event" shall be conducted **within 7 days of installation and development** of all new monitor wells for analysis of the following parameters:

Field Parameters	Laboratory Parameters	
Static water levels before purging	Total ammonia – N	Iron
Specific conductivity	Chlorides	Mercury
pH	Nitrate	Sodium
Dissolved oxygen	Total dissolved solids (TDS)	
Temperature	Parameters listed in 40 CFR Part 258, **Appendix II**	
Turbidity		
Color/sheen (by obs.)		

c. Routine ground water sampling events shall be conducted at the background, intermediate and compliance wells listed in Specific Condition #E.3. [MW-4, MW-8, MW-12, MW-13, and MW-15], **semi-annually** for analysis of the following parameters:

Field Parameters	Laboratory Parameters	
Static water levels before pumping	Chlorides	Arsenic
Specific conductivity	Total dissolved solids (TDS)	Cadmium
pH	Volatile organic aromatics listed in EPA Method 602	Chromium
Temperature	Polynuclear aromatic hydrocarbons listed in EPA Method 610	Iron
Turbidity	Vinyl chloride	Lead
Dissolved oxygen		Thallium
Color/sheen (by obs.)		Vanadium

d. In the event that the facility accepts a volume of soil contaminated with coal tar pitch residuals and/or creosote [ref. SC#A.1.b.(5) and SC#A.1.b.(6)] for thermal treatment that requires more than a one week (7-day) processing period, "supplemental monitoring" shall be conducted at intermediate wells MW-8 and MW-12. This "supplemental monitoring" shall be conducted for a minimum of three consecutive semi-annual events following each instance when the one week (7-day) processing period threshold had been exceeded. Provided there have been no exceedances of ground water standards or minimum criteria reported during the "supplemental monitoring" period, routine ground water monitoring in accordance with Specific Condition #E.4.c., above, shall resume at intermediate wells MW-8 and MW-12. In the event that exceedances of ground water standards or minimum criteria are reported in samples collected from wells MW-8 or MW-12 during the "supplemental monitoring" period, the Department shall be notified in accordance with Specific Condition #E.7., below.

"Supplemental monitoring" events at intermediate wells MW-8 and MW-12 shall be conducted **semi-annually** for analysis of the following parameters:

Field Parameters	Laboratory Parameters	
Static water levels before pumping	Chlorides	Arsenic
Specific conductivity	Total dissolved solids (TDS)	Barium
pH	Volatile organic compounds listed in EPA Method 624	Cadmium
Temperature	Semi-volatile organic compounds listed in EPA Method 625	Chromium
Turbidity		Iron
Dissolved oxygen		Lead
Color/sheen (by obs.)		Mercury
		Selenium
		Silver
		Thallium
		Vanadium

The Technical Side of Project Management

Sample Dilutions

- Is your lab capable of meeting MCLs on difficult matrices?
- Example -
  - Aerosol can residue waste at times requires dilutions of 50,000-100,000:1 for volatiles analysis by 8260.
- How does this impact your ability to report meaningful limits for all target analytes?

Target Analyte	Result	Qualifier	Dilution	MDL	PQL	Units	TCLP MCL
1,1-Dichloroethylene	14.9	U	50000	14.9	50	mg/L	0.7
1,2-Dichloroethane	30.3	U	50000	30.3	50	mg/L	0.5
1,4-Dichlorobenzene	45.7	U	50000	45.7	50	mg/L	7.5
2-Butanone (MEK)	**3000**	**I**	100000	2200	5000	mg/L	200
Benzene	24.2	U	50000	24.2	50	mg/L	0.5
Carbon Tetrachloride	17.1	U	50000	17.1	50	mg/L	0.5
Chlorobenzene	44	U	50000	44	50	mg/L	100
Chloroform	51.7	U	50000	51.7	50	mg/L	6
Tetrachloroethylene (PCE)	**600**		50000	36.3	50	mg/L	0.7
Trichloroethylene (TCE)	38	U	50000	38	50	mg/L	0.5
Vinyl Chloride	9.35	U	50000	9.35	50	mg/L	0.2

Reported concentration exceeds TCLP MCL.

Reported MDL exceeds TCLP MCL.

The Technical Side of PM
Detection Limits

Total Metals - ICP Spectroscopy by EPA Method 200.7

Batch: B9F1112 - Metals - 200.7

Blank (B9F1112-BLK1)

Analyte	Result	Qual	MDL	PQL	Units	Spik Lev
Cadmium	0.00200	U	0.00200	0.00500	mg/L	
Lead	0.00250	U	0.00250	0.00500	mg/L	
Arsenic	0.00740	I	0.00586	0.0100	mg/L	
Vanadium	0.00900	U	0.00900	0.0100	mg/L	
Chromium	0.00100	U	0.00100	0.00500	mg/L	
Iron	0.0257	I	0.00400	0.0500	mg/L	

Diss. Metals - ICP Spectroscopy by EPA Method 200.7

Batch: B9F1214 - Metals - 200.7

Blank (B9F1214-BLK1)

Analyte	Result	Qual	MDL	PQL	Units	Spike Level
Iron	0.0359	I	0.00400	0.0500	mg/L	
Cadmium	0.00200	U	0.00200	0.00500	mg/L	
Chromium	0.00800	U	0.00800	0.0100	mg/L	
Lead	0.00500	U	0.00500	0.0100	mg/L	
Vanadium	0.00900	U	0.00900	0.0100	mg/L	
Arsenic	0.00800	U	0.00800	0.0100	mg/L	

Total Metals - ICP Spectroscopy by EPA Method 200.7 (Continued)

Batch: B9G0510 - Metals - 200.7

Blank (B9G0510-BLK1)

Analyte	Result	Qual	MDL	PQL	Units	Spike Level
Arsenic	0.00586	U	0.00586	0.0100	mg/L	

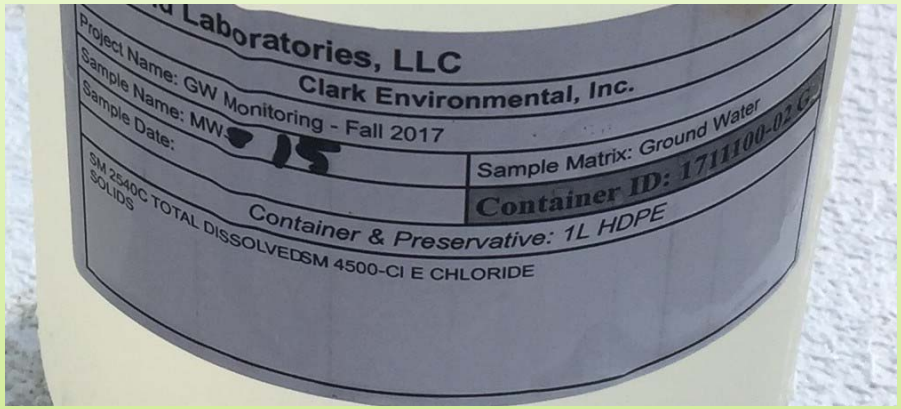
	Initial Result		Re-Analyzed Result	
	Total As (µg/L)	Dissolved As (µg/L)	Total As (µg/L)	Dissolved As (µg/L)
MW-4	<5.86	<8.00	---	---
MW-8	<5.86	<8.00	---	---
MW-12	**10.4V**	**8.90**	<5.86	---
MW-13	**7.80V**	<8.00	<5.86	---
MW-15	**11.0V**	<8.00	<5.86	---
Method Blank	**7.40**	<8.00	<5.86	---
Batch	B9F1112	B9F1214	B9G0510	---

- Labs are under pressure to drive DLs lower.
- This can result in reporting dilemmas.
- How does this impact your ability to report meaningful results?

The Technical Side of Project Management

Sample Containers

- How does your sample-receiving department handle this?
- In your records, do you change the Client Sample ID or the Lab Sample ID?
- Who's responsible for notifying the Client?
- Do you even get involved?






August 6, 2019

The Technical Side of Project Management

Responsibilities for Sample Preparation

The Technical Side of PM

Sample Preservation

Hazardous Waste Characterization

- Preservation of “concentrated waste samples”?
- What constitutes a “concentrated waste sample”?
- Who makes the call?
- Do results get qualified?
- How does that impact decision-making?

Table FS 1000-6
Recommended Sample Containers, Sample Volumes, Preservation Techniques and Holding Times for Residuals, Soil and Sediment Samples

Analyte	Methods	References*	Container	Preservation	Maximum Holding Times
Sulfite, Nitrate, Nitrite, & o-phosphate	-	-	Glass or plastic	Cool ≤6°C[1]	48 hours
Elemental Phorsphorus	-	-	Glass or plastic	Cool ≤6°C[1]	48 hours

The term “residuals” include: (1) sludges of domestic origin having no specific requirements in Tables FS-1000-4 or FS-1000-9; (2) sludges of industrial origin; and (3) concentrated waste samples.

[1] Keep soils, sediments and sludges cool at ≤6°C from collection time until analysis. No preservation is required for concentrated waste samples.

[2] Storage Temperature is 4°C, ±2°C

* Reference method numbers are listed for informational purposes only and are found in SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (http://www.epa.gov/epawaste/hazard/testmethods/sw846/online/index.htm), except for the additional informational method sources listed below:

FL-PRO - Method for Determination of Petroleum Range Organics, Revision 1, November 1, 1995, Florida Department of Environmental Protection

MADEP – Method for the Determination of Extractable Petroleum Hydrocarbons (EPH), Revision 1.1, May 2004, Massachusetts Department of Environmental Protection

MPN – Microbiological test methods utilizing Most Probable Number procedures

TPHWG - TPH Working Group Series

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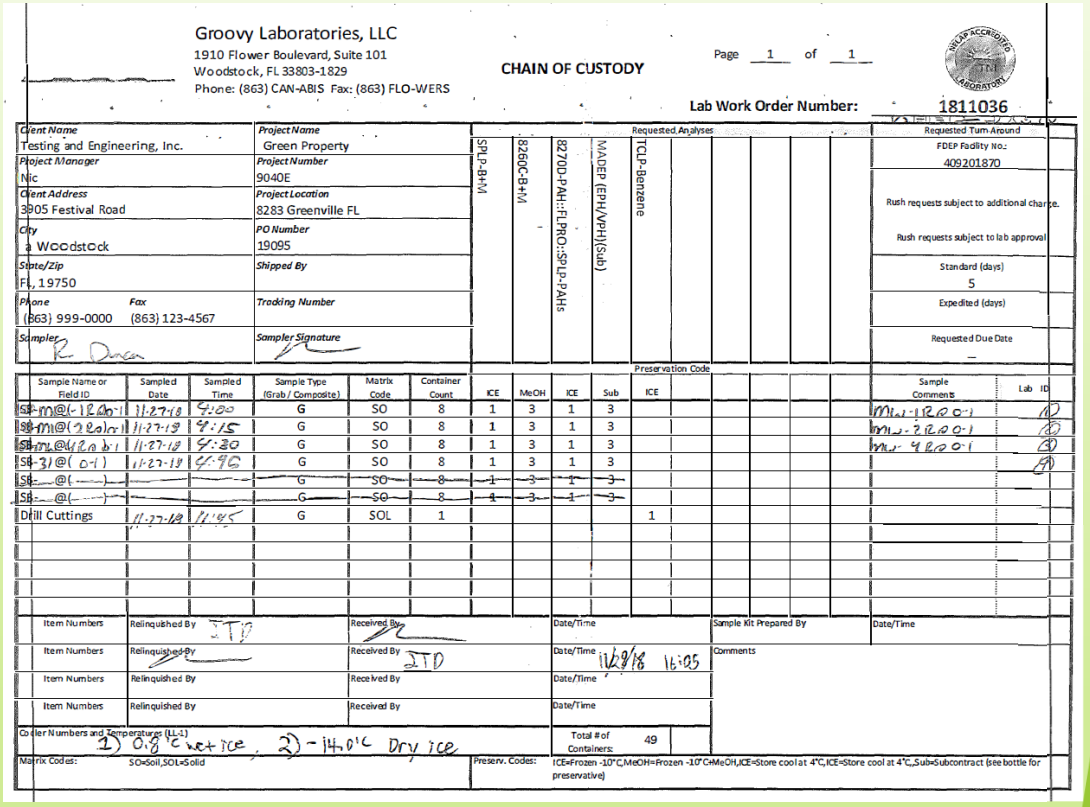
Holding Time Accommodations & Contingent Analyses

- Anticipate challenges associated with sample collection time and receipt time.
- Anticipate challenges associated with sample preparation time and analysis time.
- What accommodations are you making for contingent analyses?
- Example –
  - SPLP if the SCTL is exceeded?
  - Who makes that call?
  - Is formal authorization required?
  - In what format?



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1910 Flower Boulevard, Suite 101
Woodstock, FL 33803-1829
Phone: (863) CAN-ABIS Fax: (863) FLO-WERS

CHAIN OF CUSTODY

Page 1 of 1

Lab Work Order Number: 1811036

Client Name	Project Name
Testing and Engineering, Inc.	Green Property
Project Manager	Project Number
Nic	9040E
Client Address	Project Location
3905 Festival Road	8283 Greenville FL
City	PO Number
a Woodstock	19095
State/Zip	Shipped By
FL, 19750	
Phone (863) 999-0000 Fax (863) 123-4567	Tracking Number
Sampler R. Duran	Sampler Signature

Requested Analyses: SPLP-8+M; 8260C-8+M; 8270D-PAH::FLPRO::SPLP-PAHs; MADEP (EPH/VPH)(Sub); TCLP-Benzene

Requested Turn Around
FDEP Facility No.: 409201870
Rush requests subject to additional charge.
Rush requests subject to lab approval
Standard (days): 5
Expedited (days)
Requested Due Date: –

Sample Name or Field ID	Sampled Date	Sampled Time	Sample Type (Grab / Composite)	Matrix Code	Container Count	Preservation Code: ICE	MeOH	ICE	Sub	ICE	Sample Comments	Lab ID
SB-M@(-1200-1	11-27-18	9:00	G	SO	8	1	3	1	3		MW-1 1200-1	19
SB-M@(1200-1	11-27-18	9:15	G	SO	8	1	3	1	3		MW-2 1200-1	20
SB-M@(1200-1	11-27-18	9:30	G	SO	8	1	3	1	3		MW-4 1200-1	21
SB-31@(0-1)	11-27-18	9:45	G	SO	8	1	3	1	3			22
SB-__@(__)			G	SO	8	1	3	1	3			
SB-__@(__)			G	SO	8	1	3	1	3			
Drill Cuttings	11-27-18	11:45	G	SOL	1					1		

Item Numbers	Relinquished By	Received By	Date/Time	Sample Kit Prepared By	Date/Time
Item Numbers	JTD				
Item Numbers		JTD	11/28/18 16:05	Comments	
Item Numbers	Relinquished By	Received By	Date/Time		
Item Numbers	Relinquished By	Received By	Date/Time		

Cooler Numbers and Temperatures (LL-1): 1) 0.8°C wet ice, 2) -14.0°C Dry ice

Total # of Containers: 49

Matrix Codes: SO=Soil,SOL=Solid

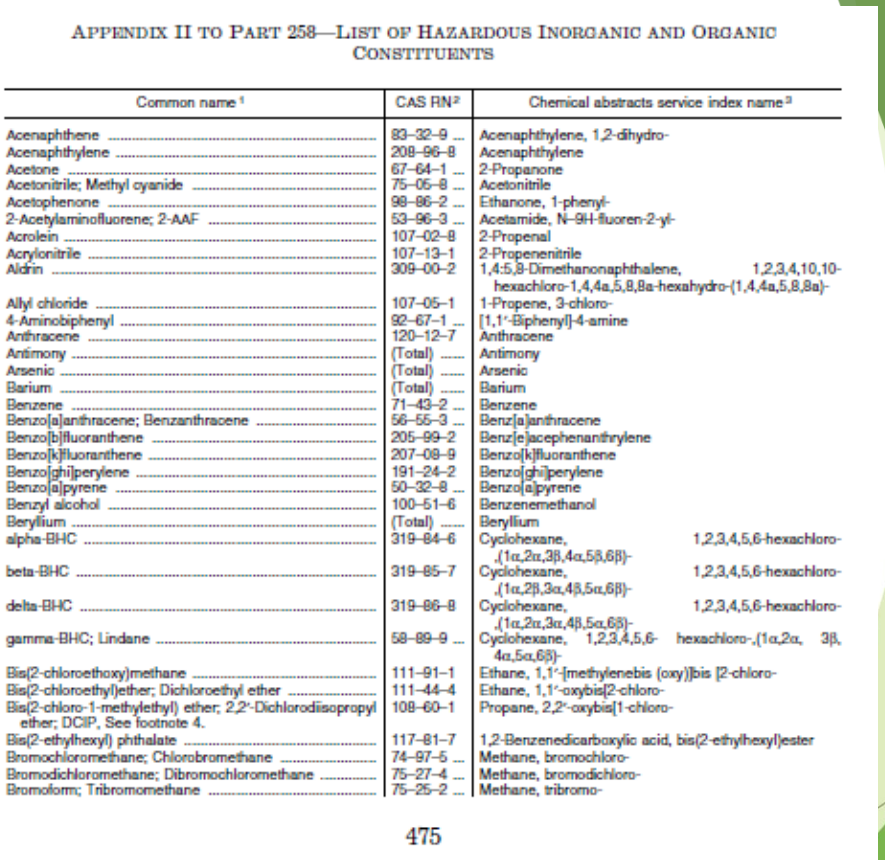
Preserv. Codes: ICE=Frozen -10°C,MeOH=Frozen -10°C+MeOH,ICE=Store cool at 4°C,ICE=Store cool at 4°C,,Sub=Subcontract (see bottle for preservative)

The Technical Side of Project Management

Assumed & Actual Target Analytes

Example -

- Your Client tells you he needs to analyze " a water sample" for those parameters in 40 CFR 258 Appendix II. What methods are appropriate?
- Is your lab capable of analyzing for all these parameters?
- What are the applicable CTLs and can your lab meet these required CTLs?
- What is excluded and/or needs to be subcontracted?



APPENDIX II TO PART 258—LIST OF HAZARDOUS INORGANIC AND ORGANIC CONSTITUENTS

Common name [1]	CAS RN [2]	Chemical abstracts service index name [3]
Acenaphthene	83–32–9	Acenaphthylene, 1,2-dihydro-
Acenaphthylene	208–96–8	Acenaphthylene
Acetone	67–64–1	2-Propanone
Acetonitrile; Methyl cyanide	75–05–8	Acetonitrile
Acetophenone	98–86–2	Ethanone, 1-phenyl-
2-Acetylaminofluorene; 2-AAF	53–96–3	Acetamide, N–9H-fluoren-2-yl-
Acrolein	107–02–8	2-Propenal
Acrylonitrile	107–13–1	2-Propenenitrile
Aldrin	309–00–2	1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-(1,4,4a,5,8,8a)-
Allyl chloride	107–05–1	1-Propene, 3-chloro-
4-Aminobiphenyl	92–67–1	[1,1'-Biphenyl]-4-amine
Anthracene	120–12–7	Anthracene
Antimony	(Total)	Antimony
Arsenic	(Total)	Arsenic
Barium	(Total)	Barium
Benzene	71–43–2	Benzene
Benzo[a]anthracene; Benzanthracene	56–55–3	Benz[a]anthracene
Benzo[b]fluoranthene	205–99–2	Benz[e]acephenanthrylene
Benzo[k]fluoranthene	207–08–9	Benzo[k]fluoranthene
Benzo[ghi]perylene	191–24–2	Benzo[ghi]perylene
Benzo[a]pyrene	50–32–8	Benzo[a]pyrene
Benzyl alcohol	100–51–6	Benzenemethanol
Beryllium	(Total)	Beryllium
alpha-BHC	319–84–6	Cyclohexane, 1,2,3,4,5,6-hexachloro-,(1α,2α,3β,4α,5β,6β)-
beta-BHC	319–85–7	Cyclohexane, 1,2,3,4,5,6-hexachloro-,(1α,2β,3α,4β,5α,6β)-
delta-BHC	319–86–8	Cyclohexane, 1,2,3,4,5,6-hexachloro-,(1α,2α,3α,4β,5α,6β)-
gamma-BHC; Lindane	58–89–9	Cyclohexane, 1,2,3,4,5,6-hexachloro-,(1α,2α, 3β, 4α,5α,6β)-
Bis(2-chloroethoxy)methane	111–91–1	Ethane, 1,1'-[methylenebis (oxy)]bis [2-chloro-
Bis(2-chloroethyl)ether; Dichloroethyl ether	111–44–4	Ethane, 1,1'-oxybis[2-chloro-
Bis(2-chloro-1-methylethyl) ether; 2,2'-Dichlorodiisopropyl ether; DCIP, See footnote 4.	108–60–1	Propane, 2,2'-oxybis[1-chloro-
Bis(2-ethylhexyl) phthalate	117–81–7	1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl)ester
Bromochloromethane; Chlorobromethane	74–97–5	Methane, bromochloro-
Bromodichloromethane; Dibromochloromethane	75–27–4	Methane, bromodichloro-
Bromoform; Tribromomethane	75–25–2	Methane, tribromo-

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The Technical Side of Project Management

Accreditation Requirements

- Is TNI accreditation required for the analyses requested?
- Will data be reported to FDEP and/or EPA for compliance or other regulatory purposes?
- Example -
  - Per 62-160.300(1)(c), F.A.C., - The lab may be able to report benzene by 624 in non-potable water if accredited for benzene by 8260 in non-potable water.

62-160.300 Laboratory Certification.

(1) Except as provided in subsections 62-160.300(2) through (8), F.A.C., all laboratories generating environmental data for submission to the Department or for use in Department-regulated or Department-sponsored activities shall hold certification from the Florida Department of Health, Environmental Laboratory Certification Program (DOH ELCP). Such certification shall be for all matrix/test method/analyte(s) combinations being measured. The matrix of a sample is defined to be the condition under which the laboratory originally receives the sample, and shall be classified according to the Field of Accreditation Matrix groups defined by subsection 62-160.120(18), F.A.C.

(a) Certification shall be based on the matrix of the sample. The matrix of a sample is defined to be the condition under which the laboratory originally receives the sample, and shall be classified according to the Field of Accreditation Matrix groups defined by subsection 62-160.120(18), F.A.C.

(b) For laboratories reporting data for drinking water compliance, certification shall be for all matrix/text method/analyte(s) combinations being reported.

(c) For the non-potable water matrix, laboratories shall apply for and receive DOH ELCP certification in at least one method for each analytical technology/analyte combination being measured. The Department will accept any of the combinations certified by the DOH ELCP, according to Rule 64E-1.102, F.A.C., dated 1-24-05.

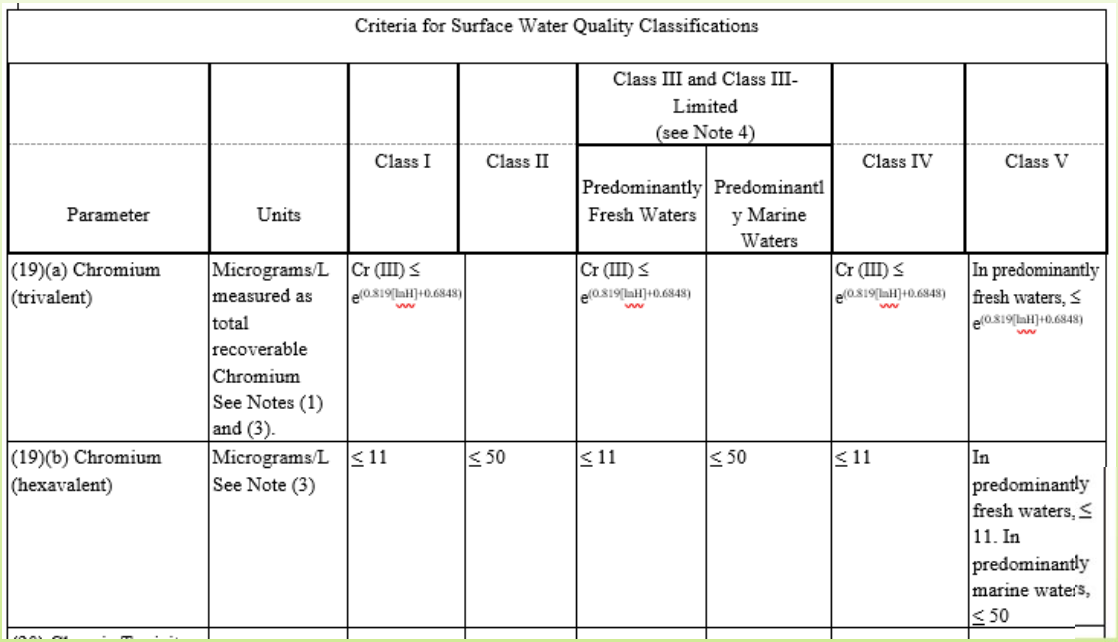
1. When a Department contract, order, permit or Title 62 rules requires a specific method to be reported, laboratories shall

The Technical Side of PM

Variable Contaminant Criteria

- What are the applicable contaminant cleanup criteria?
- For lead, cadmium and chromium in surface water, per Chapter 62-302.530, F.A.C., the allowable concentrations are a function of the hardness.
- For example:
  - $Cr(III) \leq e^{(0.819[\ln H]+0.6848)}$

    where [lnH] represents the natural logarithm of the total hardness.



Criteria for Surface Water Quality Classifications

Parameter	Units	Class I	Class II	Class III and Class III-Limited (see Note 4)		Class IV	Class V
				Predominantly Fresh Waters	Predominantly Marine Waters		
(19)(a) Chromium (trivalent)	Micrograms/L measured as total recoverable Chromium See Notes (1) and (3).	Cr (III) $\leq e^{(0.819[\ln H]+0.6848)}$		Cr (III) $\leq e^{(0.819[\ln H]+0.6848)}$		Cr (III) $\leq e^{(0.819[\ln H]+0.6848)}$	In predominantly fresh waters, $\leq e^{(0.819[\ln H]+0.6848)}$
(19)(b) Chromium (hexavalent)	Micrograms/L See Note (3)	≤ 11	≤ 50	≤ 11	≤ 50	≤ 11	In predominantly fresh waters, ≤ 11. In predominantly marine waters, ≤ 50

Fundamental Traits of Great PMs

- Make things happen.
- Anticipate challenges and issues.
- Reject the thought that someone else will handle the details.
- Keep in touch with your Client.
- Always keep up-to-date with requirements and regulations.
- You are a key contributor to your lab's success or failure.

Fundamental Traits of Great PMs

Make things happen.

Anticipate challenges and issues.

Reject the thought that someone else will handle the details.

Keep in touch with your Client.

Always keep up-to-date with requirements and regulations.

You are a key contributor to your lab's success or failure.

August 6, 2019

Markay Consulting Group

- Litigation Support
  - Field & Laboratory Data Assessment
- Laboratory Support
  - Accreditation Support
  - Internal & External Audits
  - Data Integrity Training
  - Project Manager Training
  - SOP Development
  - Lab Waste Management

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  - Sampling Services
- Consultant Support
  - Identifying Contaminants of Concern
  - Specifying Appropriate Sampling & Analytical Methods
  - Selecting the Right Laboratory
  - Analytical Coordination
  - Data Assessment

Project Management

Communication Breakdown

It's Always the Same

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