United States Environmental Protection Agency

SDWARS for Laboratories (UCMR 4): Public Meeting and Webinar

Held November 8, 2017
USEPA, Office of Ground Water and Drinking Water

Office of Water (MLK 140) EPA 815-B-17-007 November 2017

SDWARS for Laboratories (UCMR 4)

Public Meeting and Webinar

November 8, 2017

1:00 p.m. ET

USEPA

Office of Ground Water and Drinking Water

Welcome

Brenda Parris, USEPA

Participating by Webinar

- Listen-only mode
- Click on "+" next to "Questions" in the control panel (Figure 1) to submit questions/comments
  - Type a question in the box; click send (Figure 2)
- Submit questions as soon as possible
  - Questions will be answered at the end of the presentations as time permits

Figure 1

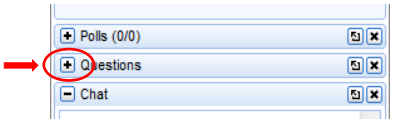
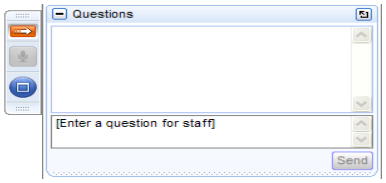


Figure 2



General Meeting Information

- Purpose
  - Describe the requirements of EPA's UCMR 4
  - Step-by-step instructions on how to use the Safe Drinking Water Accession and Review System (SDWARS) to register a client list, review inventory and schedule, upload/enter/review data and nominate users
- Schedule
  - Break at 2:40 p.m. ET for approximately 10 minutes
  - Resume around 2:50 p.m. ET
- Questions and discussion at the end of the meeting

Agenda for Laboratories

1:00 – 1:10	Welcome, Introduction, Agenda	(10 minutes)
1:10 – 1:25	Overview of the UCMR 4 Program	(15 minutes)
1:25 – 1:45	UCMR 4 Sample Collection & Frequency	(20 minutes)
1:45 – 1:55	UCMR 4 Laboratory Approval Process	(10 minutes)
1:55 – 2:40	Laboratory Functions in SDWARS	(45 minutes)
	Log in to CDX	
	Select SDWARS 4	
	Register Client List	
	Review Inventory/Schedule	
	Upload File	
	Edit Data	
	Enter TOC/Br Data (optional)	
	Review Data	
	Nominate Users	
	Receive Notifications	
2:40 – 2:50	**Break**	**(10 minutes)**
2:50 – 3:05	Reporting Requirements and Data Elements	(15 minutes)
3:05 – 3:15	Risk Communication & Closing Remarks	(10 minutes)
3:15 – 4:00	Questions	

Overview of the UCMR 4 Program

Brenda Parris, USEPA

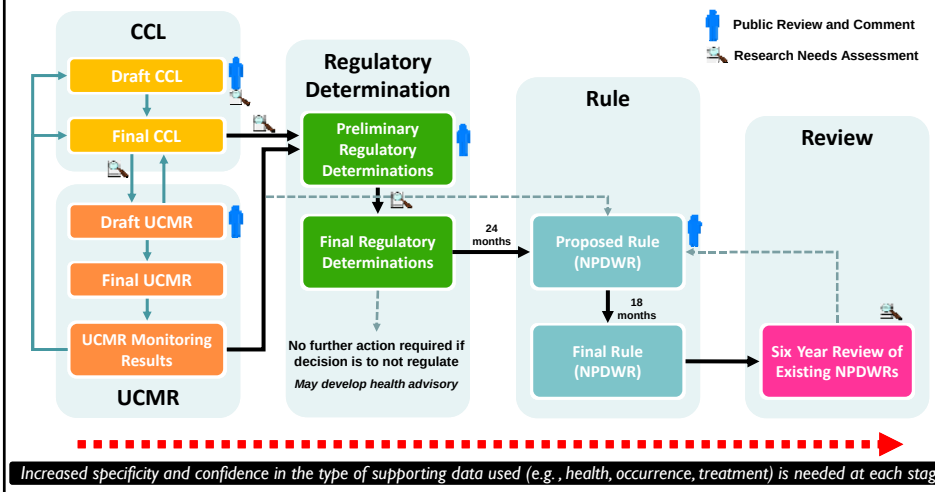
Overview

- Regulatory background for UCMR
  - SDWA authority
  - Relationships to:
    - Contaminant Candidate List (CCL)
    - Regulatory Determination
    - Six-Year Review
- UCMR
  - Objectives
  - Approach
  - Design
  - Applicability
  - Implementation
    - Roles
    - Timeline
  - Contaminants

SDWA

- Passed in 1974, SDWA authorized EPA to set enforceable health standards for contaminants in drinking water
  - National Primary Drinking Water Regulations (NPDWRs)
- 1986 SDWA amendments were the basis for the original UCMR
  - State drinking water programs managed the original UCM program
  - PWSs serving > 500 people were required to monitor
- 1996 SDWA amendments changed the process of developing and reviewing NPDWRs
  - CCL
  - UCMR
  - Regulatory Determination
  - Six-Year Review

General Flow of SDWA Regulatory Processes



UCMR

- SDWA section 1445(a)(2), established requirements for the UCMR Program:
  - Issue list of no more than 30 unregulated contaminants, once every 5 years
  - Require PWSs serving population >10,000 people as well as a nationally representative sample of PWSs serving ≤10,000 people to monitor
  - Store analytical results in the National Contaminant Occurrence Database for Drinking Water (NCOD)
  - EPA funds shipping/analytical costs for small PWSs
- EPA manages program in partnership with States

Objective of UCMR Program

- Collect nationally representative occurrence data for unregulated contaminants that may require regulation under the SDWA
  - Consider data collected as part of future EPA decisions on actions to protect public health
  - Provide data to States, local governments and to the public for their use in decisions regarding public health protection

National occurrence data publically available:
https://www.epa.gov/dwucmr/occurrence-data-unregulated-contaminant-monitoring-rule

UCMR Approach

- UCMR approach relies on using one or more of 3 monitoring tiers
  - Assessment Monitoring (List 1)
  - Screening Survey (List 2)
  - Pre-Screen Testing (List 3)
- Based on:
  - Availability and complexity of analytical methods
  - Laboratory capacity
  - Sampling frequency
  - Relevant universe of PWSs
  - Other considerations (e.g., cost/burden)
- UCMR 4 only involves Assessment Monitoring

General UCMR 4 Applicability

- UCMR 4 (2017-2021, 30 contaminants)
  - Published in the FR on December 20, 2016
  - PWSs monitor 2018-2020
- All large CWSs and NTNCWSs serving more than 10,000
- Nationally representative sample of small CWSs and NTNCWSs
- TNCWSs are not required to monitor

UCMR 4 Applicability to PWSs: Assessment Monitoring Design (List 1)

System Size (# of people served)	10 Cyanotoxins	20 Additional Chemicals*	Total # of Systems per Size Category
Small systems (25 – 10,000)	800 randomly selected SW or GWUDI systems	800 randomly selected SW, GWUDI and GW systems	1,600
Large systems** (10,001 and over)	All SW or GWUDI systems (1,987)	All SW, GWUDI and GW systems (4,292)	4,292
TOTAL	2,787	5,092	5,892

*Only systems subject to the Disinfectants and Disinfection Byproduct Rule (D/DBPR) need to monitor for the haloacetic acids (HAAs) and indicators

** Figures subject to change based on corrections to population served as of 12/31/15

EPA Implementation Roles

- Review, track and determine PWS applicability and monitor progress
- Coordinate Laboratory Approval Program
- Provide technical support to Regions, States, PWSs and laboratories
- Coordinate outreach
- Assist and support Regional compliance efforts

EPA Implementation Roles

- Small PWS support:
  - Fund small system testing including: kits, sample analysis and shipping
  - Manage sample kit distribution
  - Maintain lab and implementation contracts to support UCMR
  - Conduct data review
- Large and small PWS support:
  - Manage SDWARS reporting system and support users
- Post data to NCOD

States' Role in the UCMR Program

- Participation by States, tribes and territories (herein after referred to as "States") is voluntary
- State roles are documented via Partnership Agreements (PAs)
- States help EPA implement the UCMR program; help to ensure high data quality
- PA activities can include any/all of the following:
  - Review and revise State monitoring plans (SMPs)
  - Provide inventory for small and large systems (SSI & LSI)
  - Review and approve proposed ground water representative monitoring plans (GWRMPs)
  - Provide compliance assistance
  - Notify and instruct systems
  - Collect samples
  - Other activities

Timeline of UCMR 4 Implementation

2017	2018	2019	2020	2021
Pre-monitoring Implementation • Continuation of Lab Approval • PWS SDWARS registration/ notification/ inventory • PAs, SMPs, SSIs, LSIs • GWRMP submittal • Outreach/trainings	**Assessment Monitoring List 1 Contaminants** **Implementation Activities** • Assist PWSs with compliance • Implement small system monitoring • Post data quarterly to NCOD **Reporting and analysis of data** • All large systems serving more than 10,000 people • 800 SW and GWUDI small systems serving 10,000 or fewer people for cyanotoxins • 800 small systems serving 10,000 or fewer people for the 20 additional contaminants			**Post-monitoring Phase** • Complete resampling • Conclude data reporting • Finalize NCOD • Continued enforcement

UCMR 4 Contaminants

Cyanotoxins EPA Method 544 (LC MS/MS[1])	
microcystin-LA	microcystin-RR
microcystin-LF	microcystin-YR
microcystin-LR	nodularin
microcystin-LY	

Cyanotoxins EPA Method 546 (Adda ELISA[2])
"total microcystins"

Cyanotoxins EPA Method 545 (LC/ESI MS/MS[3])	
anatoxin-a	cylindrospermopsin

[1]Liquid Chromatography/Tandem Mass Spectrometry
[2](2S,3S,8S,9S,4E,6E)-3-amino-9-methoxy-2,6,8-trimethyl-10-phenyl-4,6-decadienoic acid enzyme-linked immunosorbent assay
[3]Liquid Chromatography Electrospray Ionization-Tandem Mass Spectrometry

UCMR 4 Contaminants

Pesticides EPA Method 525.3 (SPE GC/MS[1])	
alpha-hexachlorocyclohexane	profenofos
chlorpyrifos	tebuconazole
dimethipin	total permethrin (cis- & trans)
ethoprop	tribufos
oxyfluorfen	

Metals EPA Method 200.8 (ICP/MS[2]), SM[3] or ASTM[3]	
germanium	manganese

DBP[4,5,6] EPA Method 552.3 (GC/ECD[7]) or 557 (IC/ESI MS/MS[8])	
HAA5[7] (regulated)	HAA9
HAA6Br	

Alcohols EPA Method 541 (GC/MS[9])	
1-butanol	2-propen-1-ol
2-methoxyethanol	

Semivolatile Organics EPA Method 530 (GC/MS[9])	
butylated hydroxyanisole	quinolone
o-toluidine	

[1] Solid Phase Extraction and Capillary Column Gas Chromatography-Mass Spectrometry
[2] Inductively Coupled Plasma-Mass Spectrometry
[3] Metals can also be measured by alternate Standard Methods (SM) 3125 or SM 3125-09 or ASTM International D5673-10
[4] Disinfect Byproduct Information Collection Rule (DBP ICR) (1997-1998)
[5] The HAA5 group is currently regulated in drinking water at a maximum contaminant level (MCL) of 60 µg/L per D/DBPRs.
[6] PWSs are required to monitor for the indicators total organic carbon (TOC) and bromide in their source water at the same time as their HAA samples. Consecutive connections are not required to take TOC and bromide samples.
[7] Gas Chromatography with Electron Capture Detection
[8] Ion Chromatography Electrospray Ionization Tandem Mass Spectrometry
[9] Gas Chromatography-Mass Spectrometry

HAA Indicators

- TOC and bromide measured in conjunction with HAA monitoring
- Use the following methods:
  - **TOC:** SM 5310B, SM 5310C, SM 5310D, SM 5310B–00, SM 5310C–00, SM 5310D–00, EPA Method 415.3 (Rev. 1.1 or 1.2)
  - **Bromide:** EPA Methods 300.0 (Rev. 2.1), 300.1 (Rev. 1.0), 317.0 (Rev. 2.0), 326.0 (Rev. 1.0), ASTM D 6581–12

UCMR 4
Sample Collection & Frequency

Brenda Parris, USEPA

Overview

- Sampling:
  - Frequency and timing
  - Schedule
  - Locations, approach
    - Phased sample-analysis for microcystins
    - Haloacetic acid (HAA) groups
    - HAA indicators (TOC & bromide)
- Representative sampling
  - Ground water representative monitoring plans (GWRMPs)
  - Representative connections

Sampling Frequency and Timing

Contaminant Type	Water Source	Time Frame	Frequency
List 1 Contaminants - **Cyanotoxins**	SW or GWUDI	March – November*	Systems must monitor twice a month for 4 consecutive months (total of 8 sampling events) Sample events must occur 2 weeks apart
List 1 Contaminants – **Additional Chemicals**	SW or GWUDI	Year-Round	Systems must monitor 4 times during a consecutive 12-month monitoring period Sample events must occur 3 months apart
	GW		Systems must monitor 2 times during a consecutive 12-month monitoring period Sample events must occur 5-7 months apart

*Reflects the warmer months when harmful algal blooms are more likely to occur

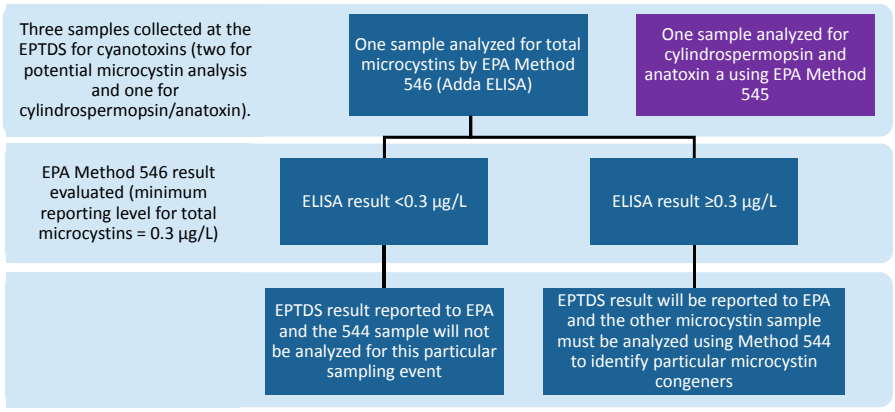
Sampling Schedules

- Large system schedules
  - EPA initially drafts schedule
  - Partnered state has opportunity to review and modify
  - PWS has opportunity to review and modify
    - Systems must NOT modify their schedules to avoid a suspected vulnerable period
- Small system schedules
  - EPA initially drafts schedule
  - Partnered state has opportunity to review and modify

Sampling Locations

- HAA Groups and Indicators
  - HAAs: collect UCMR 4 HAA samples at the D/DBPR locations where HAA5 is sampled in the distribution system (DS) for compliance monitoring
  - Indicators: source water (SR) influent locations representing untreated water
- Cyanotoxins & Remaining UCMR 4 Contaminants
  - Entry point to the distribution system (EPTDS) after treatment is applied

Sampling Locations – Cyanotoxins



Cyanotoxin Resampling

- If a sample is invalid, it should be resampled if it can be re-collected prior to the next scheduled sampling event (~2 weeks). In those cases, where it proves impractical to resample, PWSs should enter a comment in SDWARS outlining the circumstances of the missing result.
  - Example: A PWS sample has a 546 (ELISA) result ≥ 0.3 µg/L but method 544 is invalid. If re-collection cannot happen prior to the next scheduled sampling event, a resample for 544 is not required. The results for method 546 should be reported.
  - Example: A PWS sample for method 546 is invalid. If re-collection can happen prior to the next scheduled sampling event, it is recommended to resample both 546 and 544.

Sampling Locations - HAA Groups

- PWS HAA results will be reported for three groups (HAA5, HAA6Br and HAA9)
  - ALL individual HAAs must pass QC within a sample (same collection date) for summation
  - Resample only locations that did not produce valid results for all analytes

HAA Groups			
dichloroacetic acid (DCAA)	HAA5 (MCL 0.060 mg/L)		HAA9
monochloroacetic acid (MCAA)			
trichloroacetic acid (TCAA)			
monobromoacetic acid (MBAA)		HAA6Br	
dibromoacetic acid (DBAA)			
bromochloroacetic acid (BCAA)			
bromodichloroacetic acid (BDCAA)			
chlorodibromoacetic acid (CDBAA)			
tribromoacetic acid (TBAA)			

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Sampling Locations – HAA Groups

Source Water Type	Population	Number of UCMR 4 HAA Sampling Locations based on the Number of D/DBPR Locations where HAA5 is Sampled for Compliance	
		Routine Monitoring	Reduced Monitoring
SW and GWUDI (Subpart H)	< 500	1	1
	500 - 3,300	1	1
	3,301 - 9,999	2	2
	10,000 - 49,000	4	2
	50,000 - 249,999	8	4
	250,000 - 999,999	12	6
	1,000,000 -4,999,999	16	8
	≥ 5,000,000	20	10
Ground Water	< 500	1	1
	500-9,999	2	1
	10,000-99,999	4	2
	100,000-499,999	6	2
	≥ 500,000	8	4

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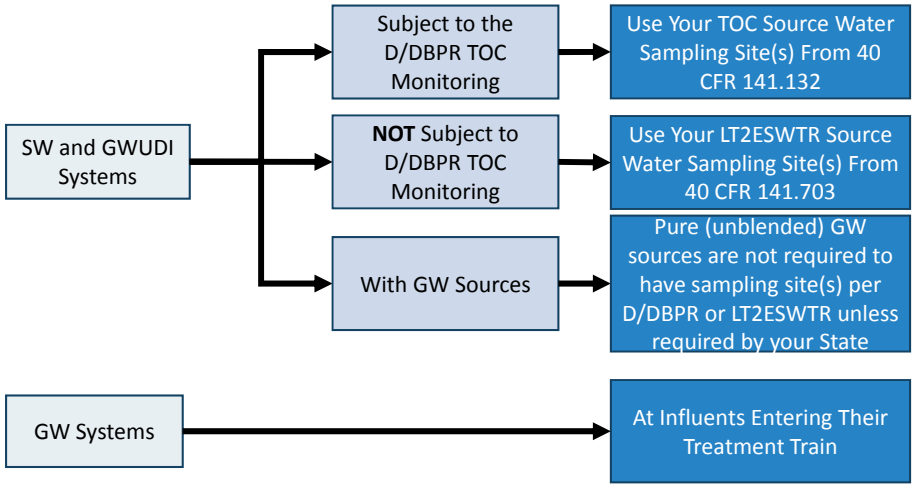
HAA Sampling Locations: Approach

- Systems must:
  - Input inventory into SDWARS based on current D/DBPR monitoring requirements and status (routine or reduced)
  - Use inventory from first sampling event for subsequent sampling events
  - Comply with the UCMR 4 frequency requirements even if on reduced D/DBPR monitoring
- Systems can:
  - Take UCMR 4 HAA/indicator samples and D/DBPR compliance samples at the same time
    - PWSs can change their sampling schedules in SDWARS without EPA approval prior to December 31, 2017. After that, you must contact UCMR_Sampling_Coordinator@epa.gov
  - Use one lab for UCMR 4 and D/DBPR analysis IF the UCMR 4 approved lab is also certified to analyze compliance samples (using EPA Method 552.3 or 557) in your State

HAA Indicator Sampling Locations: Approach

- Sample for TOC and bromide at:
  - Source water influent locations representing untreated water entering the water treatment plant (i.e., a location prior to any treatment)
  - The same time as HAA samples (or as close as is feasible)
  - Entry points associated with 100% purchased water (consecutive connections) do not need to be sampled for TOC and bromide

TOC and Bromide Monitoring



TOC and Bromide Sampling Locations

- SW and GWUDI (Subpart H systems) subject to D/DBPR TOC sampling requirements
  - Using conventional filtration
  - NOT using conventional filtration but taking TOC source samples to reduce their D/DBPR monitoring
- Take UCMR 4 indicator samples at D/DBPR source water TOC locations:
  - Prior to any treatment
  - One sample per surface water source

TOC and Bromide Sampling Locations

- SW and GWUDI (Subpart H systems) not subject to D/DBPR TOC sampling requirements
  - Not using conventional filtration or trying to reduce D/DBPR monitoring requirements
- Take UCMR 4 indicator samples at LT2 source water locations:
  - For each plant at a point prior to chemical treatment (applies to surface water sources)

TOC and Bromide Sampling Locations

- SW and GWUDI systems that have pure unblended GW sources
  - Are not required to have GW sampling site(s) per D/DBPR or LT2 unless required by your State

TOC and Bromide Sampling Locations

- GW Systems not subject to D/DBPR TOC sampling requirements
- Take UCMR 4 indicator samples at ALL influents entering treatment train
  - Can use combined taps prior to treatment
  - If have an approved GWRMP only need to take indicator samples representing those EPs
  - Only take indicator samples from active wells at time of collection
    - Add a comment in SDWARS for the non-active locations

HAA and Indicator (TOC & Br) Resampling

- HAAs: Resample only location(s) that did not produce valid results for all analytes
- TOC and Br: Resample only location(s) that did not produce valid results
- Example: A PWS has four HAA distribution system locations and two TOC and Br source water locations. One of the HAA locations is invalid and one of the TOC locations is invalid. Only resample those locations that are invalid.
  - The sampler should re-collect the HAA and TOC samples at the same time (or as close as is feasible).
- Example: The same PWS (described above) only has an invalid TOC sample at one location. Only resample that TOC location.

Analyzing TOC and Bromide Samples

- Laboratory Approval Registration closed **February 21, 2017** (except TOC and bromide)
  - Laboratories (including PWS labs) that only wish to analyze TOC and/or bromide may apply for authorization through **December 1, 2017**
  - These PWS laboratories must complete registration and submit documentation that they are authorized to analyze TOC and/or bromide compliance monitoring samples under the Stage 2 D/DBPR by **December 15, 2017**
  - These PWS laboratories will receive a CRK separately from their PWS CRK to enter their TOC and/or bromide data into SDWARS4
  - UCMR_Lab_Approval@epa.gov

Two Types of Representative Sampling

- All approved representative locations must be loaded into SDWARS by PWS no later than December 31, 2017
  - **Ground Water Representative Monitoring Plans (GWRMPs)** – large ground water systems with multiple EPTDSs can sample at representative sampling locations rather than at each EPTDS if prior approval is received
    - GWRMP sampling plans and renewals are due to UCMR_Sampling_Coordinator@epa.gov
  - **Representative Connections** - systems that purchase water with multiple connections from the same wholesaler may select one representative connection from that wholesaler

UCMR 4 Laboratory Approval Process

Brenda Parris, USEPA

UCMR 4 Laboratory Approval Program

- Started on December 11, 2015 with the publication of the proposal
  - Similar to the process used in all previous UCMR cycles
- Only UCMR 4 EPA-approved laboratories can analyze UCMR 4 samples collected at PWSs
  - Approval is by method and by individual laboratory locations
  - A laboratory may apply for approval for any method
- Laboratories need to meet:
  - UCMR 4 approval program criteria
  - Required equipment criteria
  - Laboratory performance criteria
  - Data reporting criteria

UCMR 4 Laboratory Approval Manual

- Procedures for obtaining UCMR 4 approval and procedures for revocation of approval
- Quality assurance (QA) and quality management requirements
- Initial demonstration of capability (IDC)
- Minimum reporting level (MRL) verification

UCMR 4 Laboratory Approval Manual

- Quality control (QC) requirements:
  - Extraction/Analysis Batch
  - Initial calibration of analytical instruments
  - Continuing calibration check (CCC)
  - Surrogate and internal standard
  - Laboratory reagent blank (LRB) and laboratory fortified blank (LFB)
  - Quality control sample (QCS)
  - Laboratory fortified sample matrix (LFSM)
  - % coefficent of variation (%CV) for method 546
- Sample handling requirements

Laboratory Approval General Procedure

- **Step 1: Request to Participate** – Done
- **Step 2: Registration** – Done except TOC & Bromide
- **Step 3: Application Package** – Done except TOC & Bromide
- **Step 4: EPA Review of Application Package** – Done except TOC & Bromide
- **Step 5: Proficiency Testing (PT)**
- **Step 6: Written EPA approval**

Step 5 – Proficiency Testing

- EPA provides method-specific PT samples
- Laboratories:
  - Analyze PT sample(s) for each analyte in the method
  - One successful PT per method
  - No PT studies after monitoring begins but audits on-going during monitoring
  - PT #5 will be the final PT

Step 6 – Written EPA Approval

- After successful participation in a PT study for a specific method, EPA will notify the laboratory in writing
- EPA will post a list of approved laboratories and associated methods at: https://www.epa.gov/dwucmr

Maintaining Approval

- Adhere to QA/QC measures in the methods, rule language and the UCMR 4 Laboratory Approval Manual
- Post analytical results and required QC data via SDWARS within 120 days of sample collection
- Successfully address audit findings (as needed) and meet all the other stated conditions

Laboratory Functions in SDWARS

Jillian Toothman, USEPA

Overview

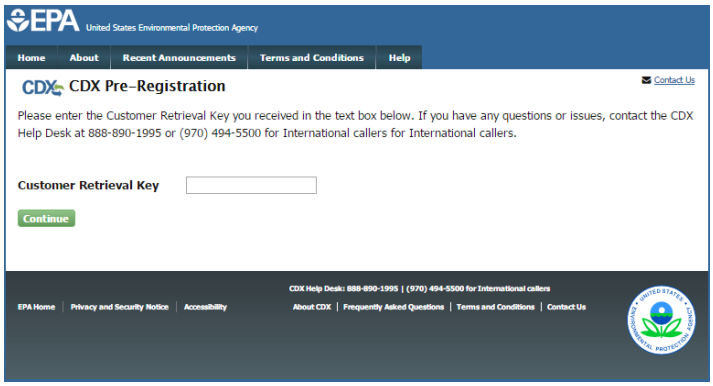
- Central Data Exchange (CDX) account
  - Customer retrieval keys (CRKs)
- SDWARS Laboratory workflow
- SDWARS tools
  - Instructions document
  - Sitemap

CDX

- EPA will again be using an internet-based electronic reporting system that utilizes a secure access portal, the CDX, to gain access to SDWARS
  - https://cdx.epa.gov/
  - https://www.epa.gov/dwucmr/reporting-requirements-fourth-unregulated-contaminant-monitoring-rule-ucmr-4

CDX

1. Go to http://cdx.epa.gov/preregistration/.
2. Enter the CRK you received by mail.
3. Follow the directions to complete registration (create your user ID and password).



Customer Retrieval Keys (CRKs)

- CRK letters were sent to PWSs January 2017
  - EPA resent PWS CRK letters to all the water systems who have not logged into their CDX accounts and accepted the notification letter
- Lab CRKs are mailed out after approval
- Contact the CDX Help Desk:
  - If you did not receive a CRK letter or misplaced it
  - Official contact has changed
  - Need help with log-in

(888) 890-1995
helpdesk@epacdx.net

Customer Retrieval Keys (CRKs)

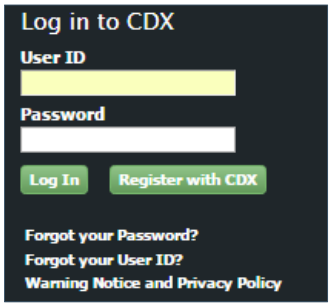
- Large and small water systems must to log into SDWARS
- This is our main way of communicating with water systems regarding:
  - Deadlines
  - Inventory
  - Changes/corrections
  - Sampling reminders
  - Availability of analytical results
  - Etc.

SDWARS Laboratory Workflow

1. Log in to CDX UCMR 4
2. Select SDWARS4 and then application profile settings
3. Register client list
4. Review inventory/schedule
5. Upload file
6. Edit data
7. Enter TOC/Br data (optional)
8. Review data
9. Nominate user for your laboratory (optional)
10. Receive notifications

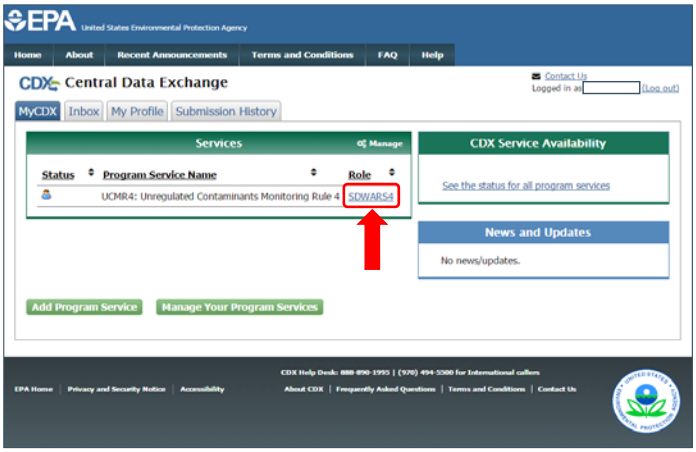
SDWARS is still under development and could be improved based on feedback. The screen shots may look different in the future.

Step 1: Log in to CDX UCMR 4

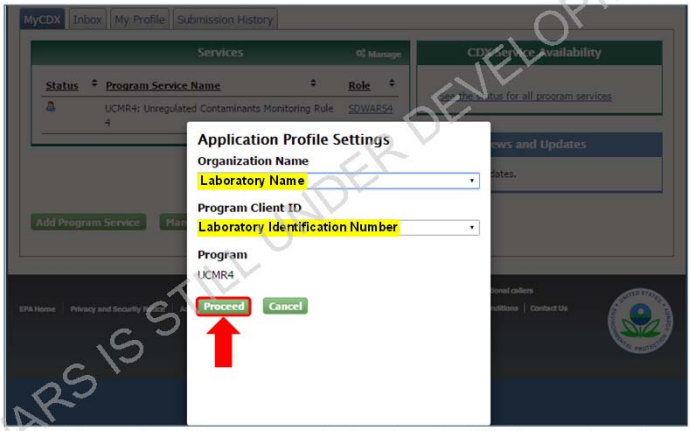


https://cdx.epa.gov/

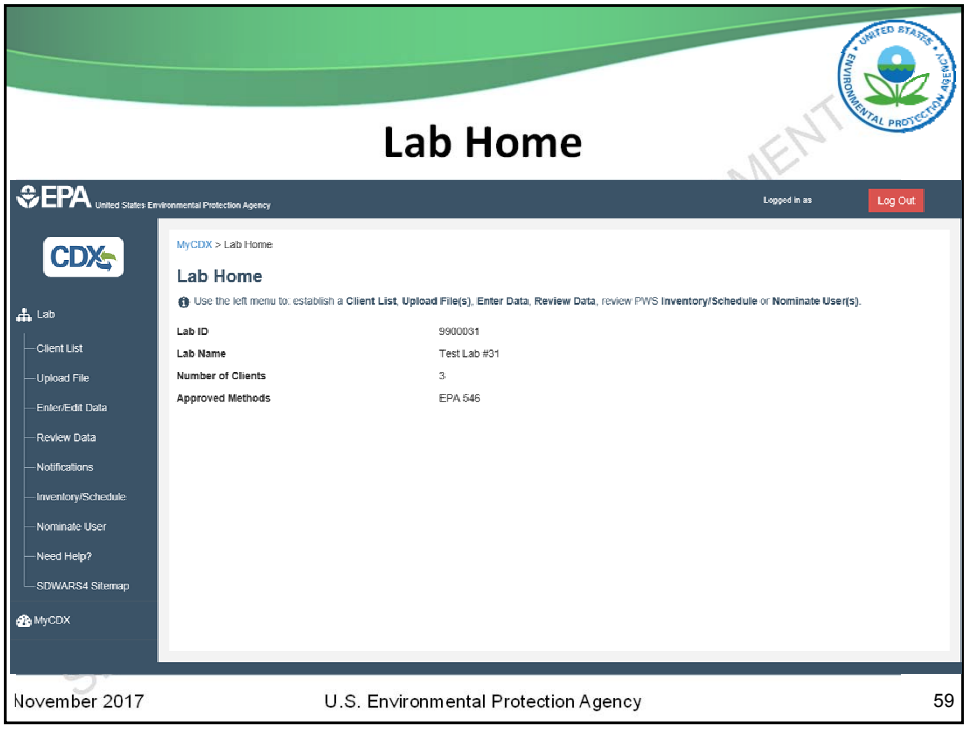
Step 2a: Select SDWARS4



Step 2b: Application Profile Settings



Once logged-in your laboratory name and Laboratory Identification number will appear in those sections marked in yellow above. Click "Proceed".



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Step 3a: Register Client List

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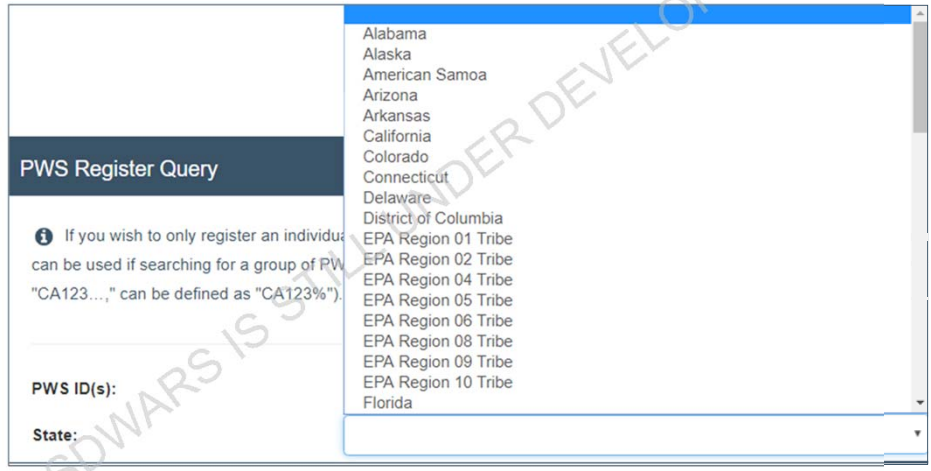
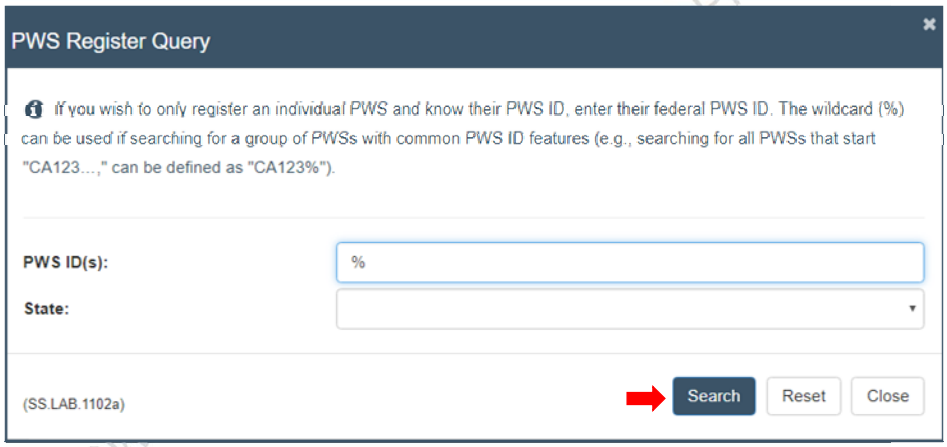
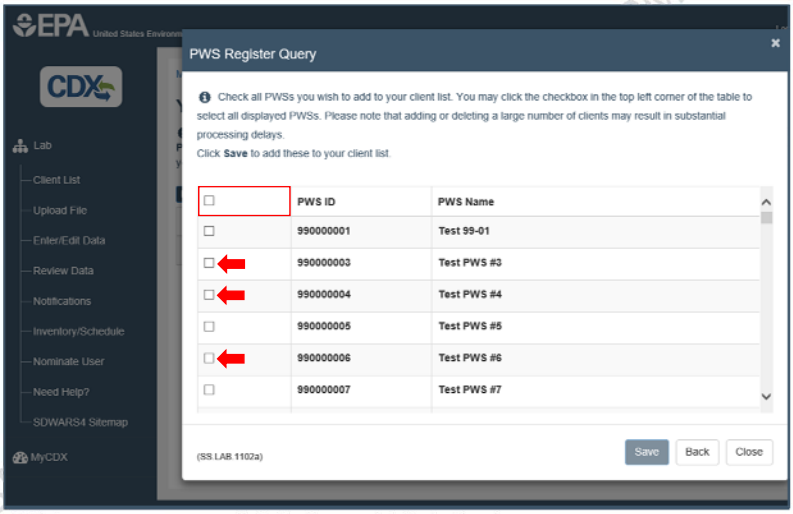


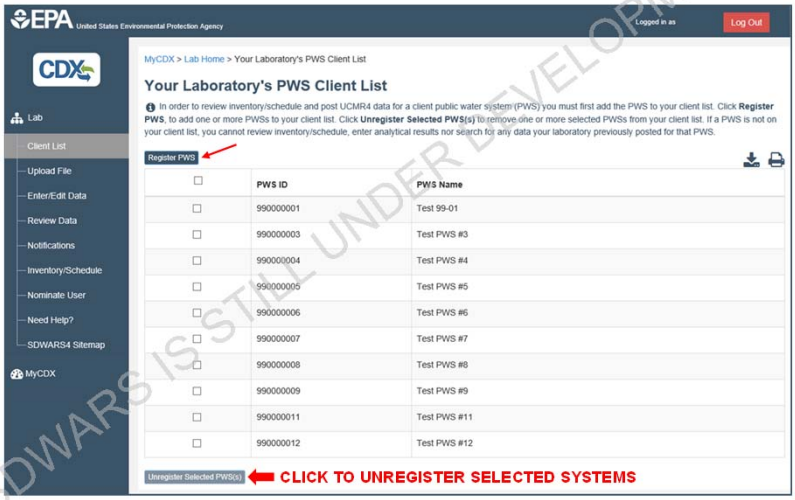
Step 3a: Register Client List



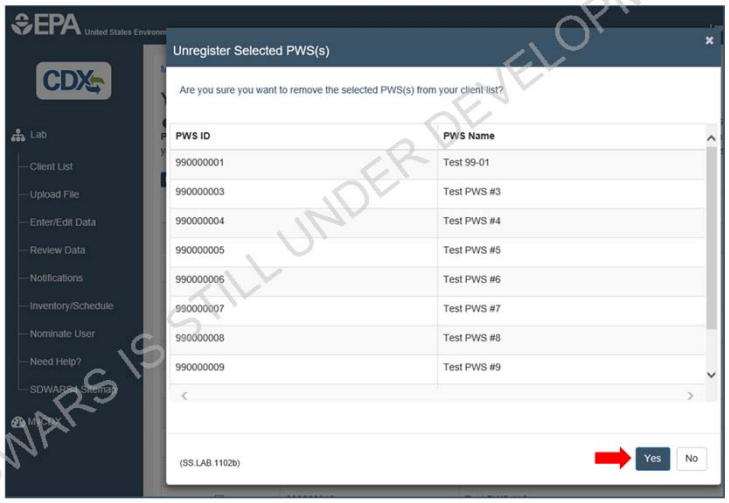
Step 3a: Register Client List



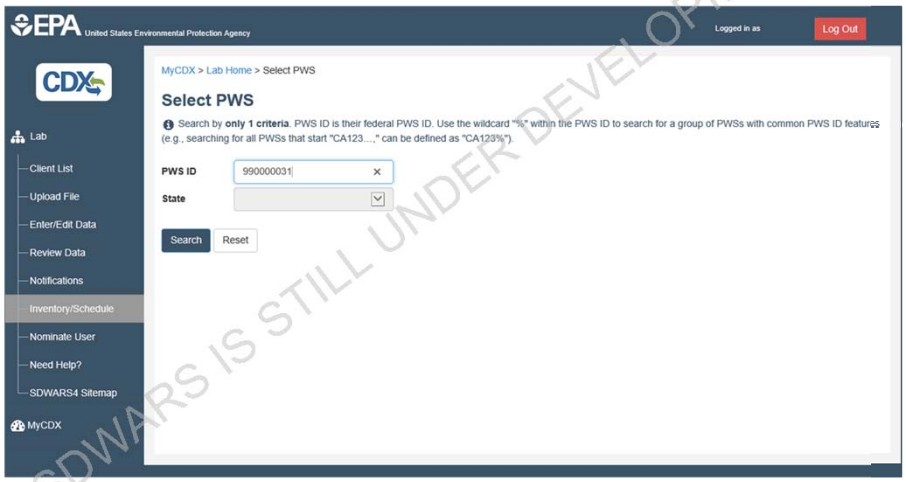
Step 3a: Register Client List



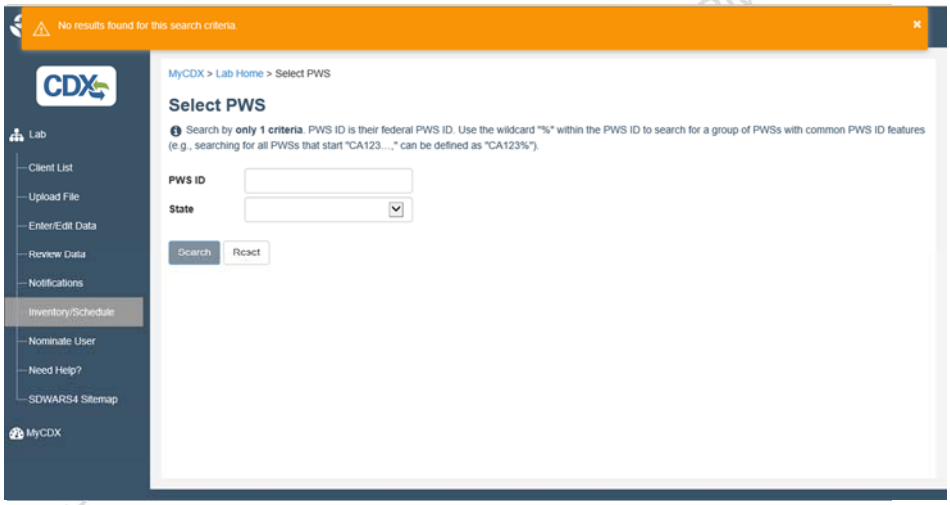
Step 3b: Unregister Client List



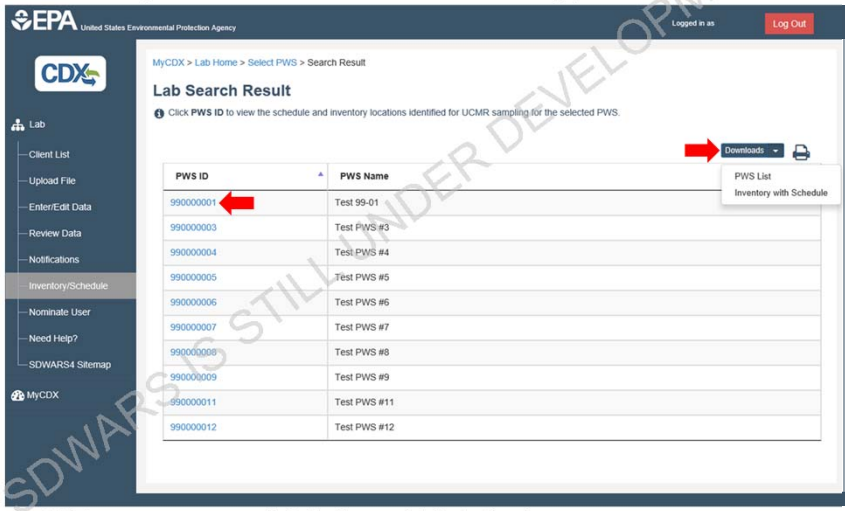
Step 4: Review Inventory/Schedule



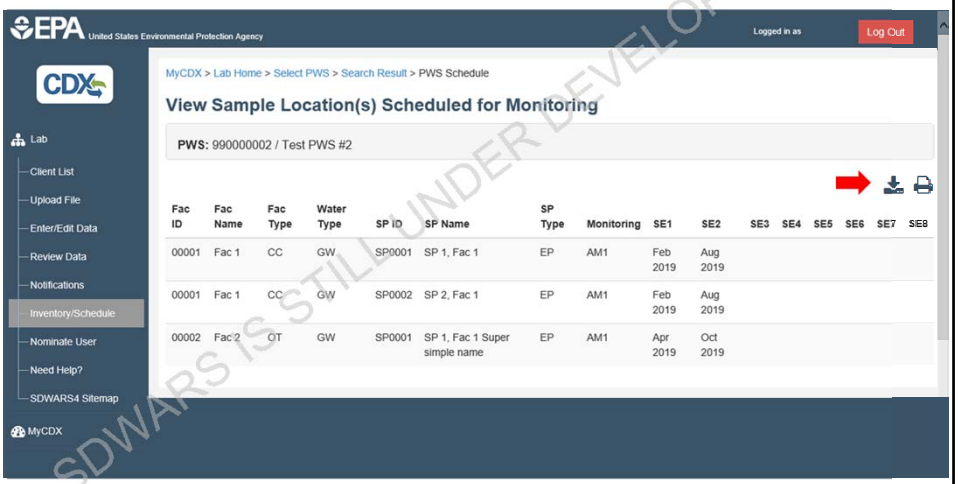
Step 4: Review Inventory/Schedule



Step 4: Review Inventory/Schedule



Step 4: Review Inventory/Schedule



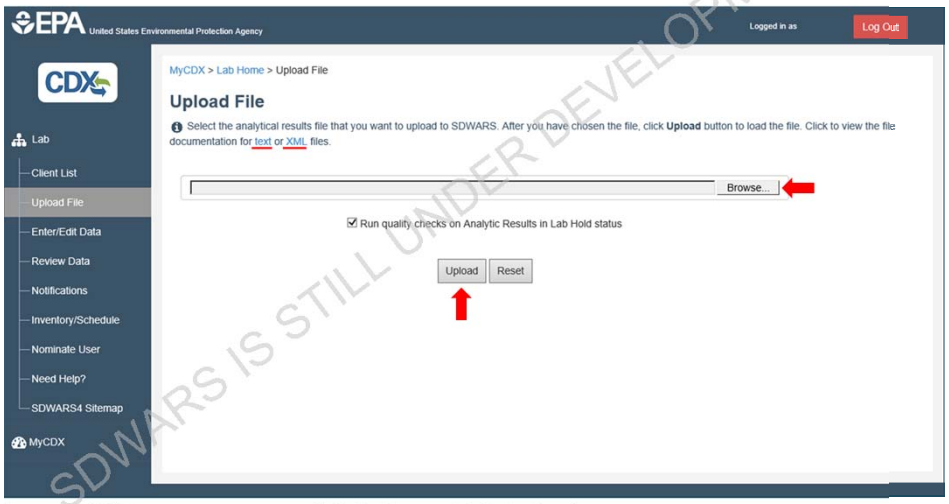
Step 4: Review Inventory/Schedule – Download

Schedule_PWS-990000031_2017-10-26.txt - Notepad

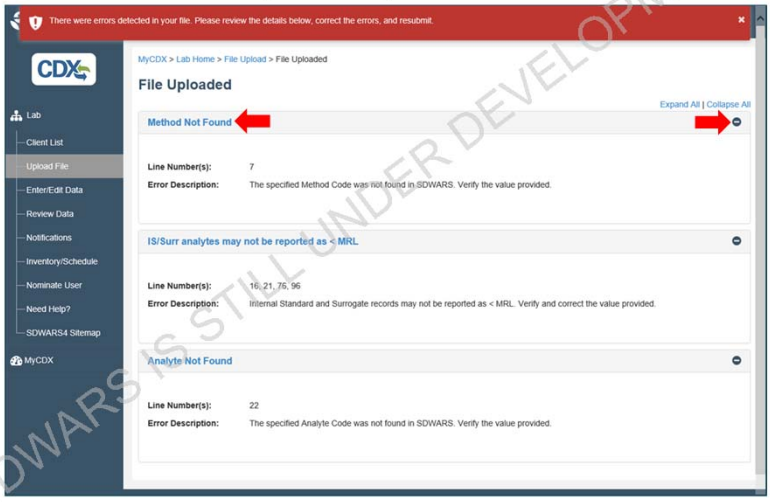
File Edit Format View Help

PWSCode	FacilityId	FacilityName	FacilityType	WaterType	SamplePointId	SamplePointName	SamplePointTypeCode	Mon
990000031	10055	Distribution System	55 DS	MX	001	DS001 DS	AM2 Jan 2018	SEH1 Apr 2018
990000031	14411	FacilityIN1	IN	GW	IN11	SPIN11 SR	AM2 Jan 2018	SEH1 Jul 2018	SEH
990000031	14412	FacilityIN1	IN	GW	IN21	SPIN21 SR	AM2 Jan 2018	SEH1 Jul 2018	SEH
990000031	14413	FacilityIN1	IN	GW	IN31	SPIN31 SR	AM2 Jan 2018	SEH1 Jul 2018	SEH
990000031	14414	FacilityIN2	IN	GW	IN12	SPIN11 SR	AM2 Jan 2018	SEH1 Jul 2018	SEH
990000031	14415	FacilityIN2	IN	GW	IN22	SPIN21 SR	AM2 Jan 2018	SEH1 Jul 2018	SEH
990000031	14416	FacilityIN2	IN	GW	IN32	SPIN31 SR	AM2 Jan 2018	SEH1 Jul 2018	SEH
990000031	24411	FacilityCC1	CC	GW	EP11	SPEP11 EP	AM1 Jan 2018	SEA1 Jul 2018	SEA
990000031	24412	FacilityCC1	CC	GW	EP21	SPEP21 EP	AM1 Jan 2018	SEA1 Jul 2018	SEA
990000031	24413	FacilityCC1	CC	GW	EP31	SPEP31 EP	AM1 Jan 2018	SEA1 Jul 2018	SEA
990000031	24414	FacilityCC2	CC	GW	EP12	SPEP12 EP	AM1 Jan 2018	SEA1 Jul 2018	SEA
990000031	24415	FacilityCC2	CC	GW	EP22	SPEP22 EP	AM1 Jan 2018	SEA1 Jul 2018	SEA
990000031	24416	FacilityCC2	CC	GW	EP32	SPEP32 EP	AM1 Jan 2018	SEA1 Jul 2018	SEA
990000031	34411	FacilityDS1	DS	GW	DS11	SPDS11 DS	AM2 Jan 2018	SEH1 Jul 2018	SEH
990000031	34412	FacilityDS1	DS	GW	DS21	SPDS21 DS	AM2 Jan 2018	SEH1 Jul 2018	SEH
990000031	34413	FacilityDS1	DS	GW	DS31	SPDS31 DS	AM2 Jan 2018	SEH1 Jul 2018	SEH
990000031	34414	FacilityDS2	DS	GW	DS12	SPDS12 DS	AM2 Jan 2018	SEH1 Jul 2018	SEH
990000031	34415	FacilityDS2	DS	GW	DS22	SPDS22 DS	AM2 Jan 2018	SEH1 Jul 2018	SEH
990000031	34416	FacilityDS2	DS	GW	DS32	SPDS32 DS	AM2 Jan 2018	SEH1 Jul 2018	SEH

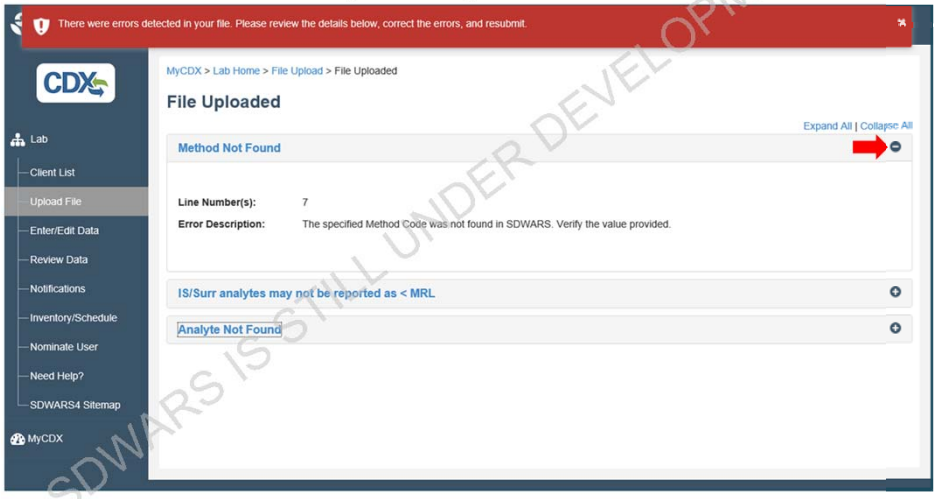
Step 5: Upload File



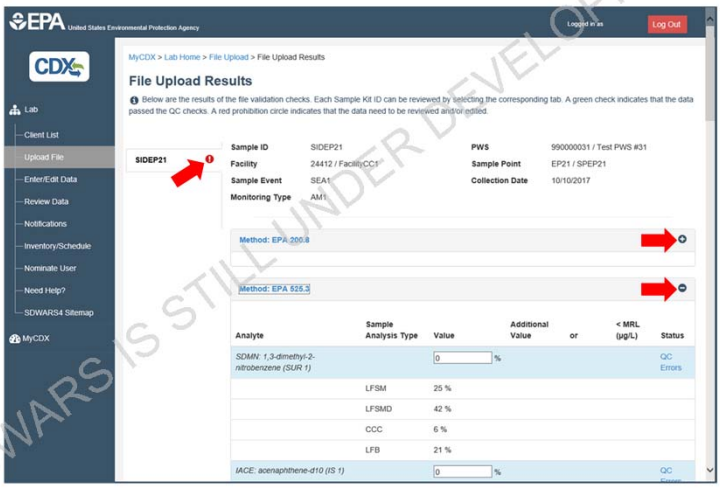
Step 5: Upload File



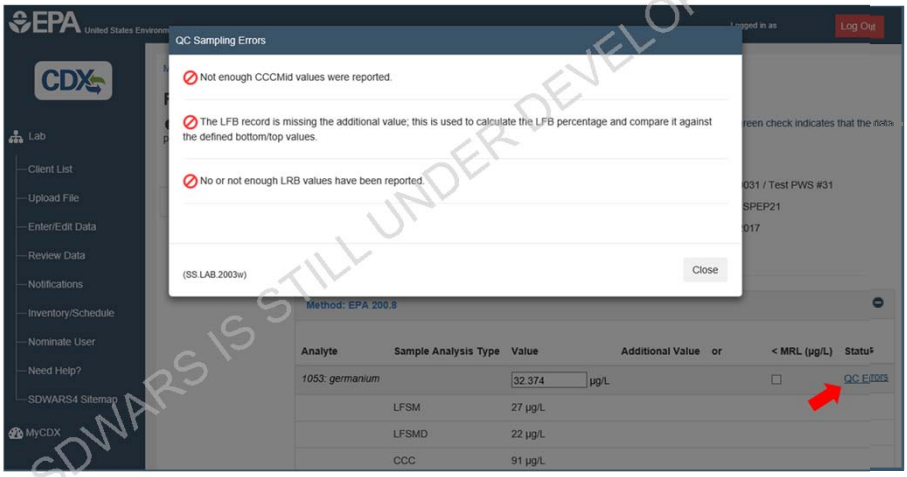
Step 5: Upload File



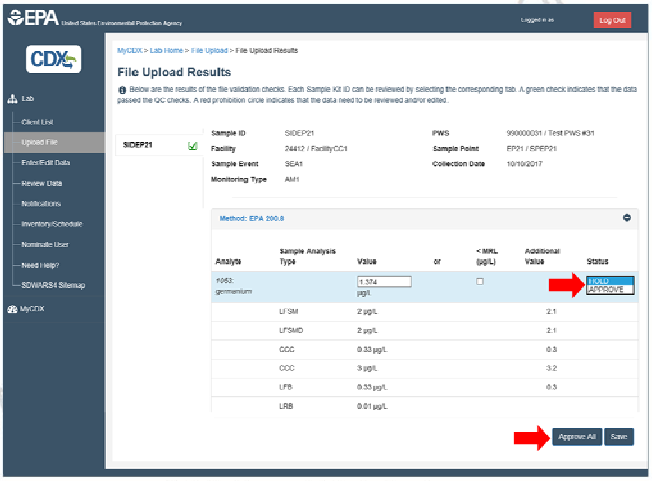
Step 5: Upload File



Step 5: Upload File



Step 5: Upload File



Step 5: Upload File

- If a flat file submission contains errors that prevent it from being parsed into SDWARS, CDX will notify you of the error by sending a notification to your "MyCDX" Inbox and your CDX registered e-mail address
- The SDWARS upload utility performs the following validation steps:
  - “Header”, “Collection”, and “Result” record type row(s) validation
  - Authorization validation
  - Extended data type validation
  - Data validation and loading

Step 5: Upload File

- If the SDWARS upload utility encounters errors in any of the above steps, the flat file is rejected and no data is loaded into SDWARS
  - For each step, up to 25 errors may be captured
- If 25 or more errors are encountered in any of the above validation steps, the SDWARS upload utility stops parsing the file and sends a notification of errors to your "MyCDX" Inbox, noting that the flat file may contain additional errors.

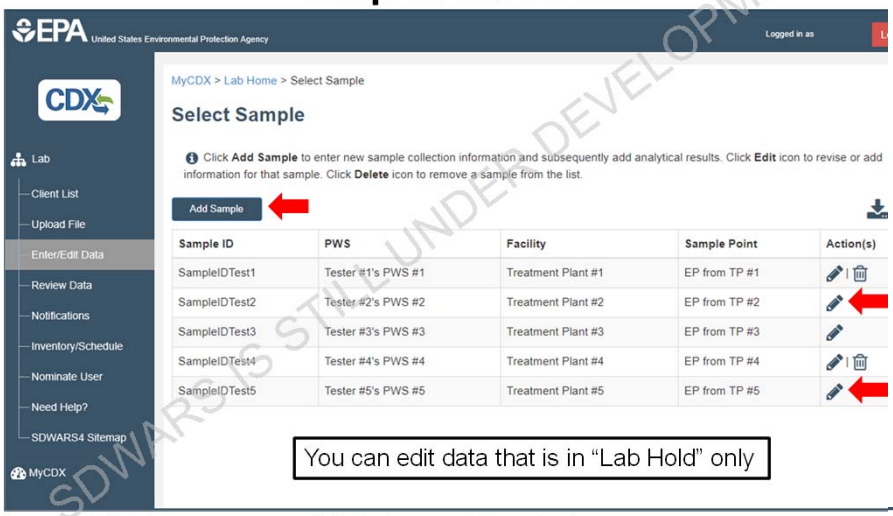
Step 5: Upload File

- Data can be loaded to approved status or lab hold status
- Data that does not pass method QC will only be loaded to lab hold status
- Method QC errors can be corrected by file upload or removal
- Smaller file sizes may be easier to troubleshoot
- No duplicate data is allowed
- QC samples that have previously passed and are associated with field samples in the Lab Approved status cannot be resubmitted

Step 5: Upload File

- **HAAs:** all Quality HAA Samples (QHS) must pass method QC at the same time from the same collection date; SDWARS will do the summing of the HAA groups (HAA5, HAA6Br and HAA9)
- **Methods 546 and 544:** method 544 can only be loaded if method 546 has been added w/ a result ≥ MRL, passed QC and approved. WAIT FOR 546 RESULT BEFORE RUNNING 544!

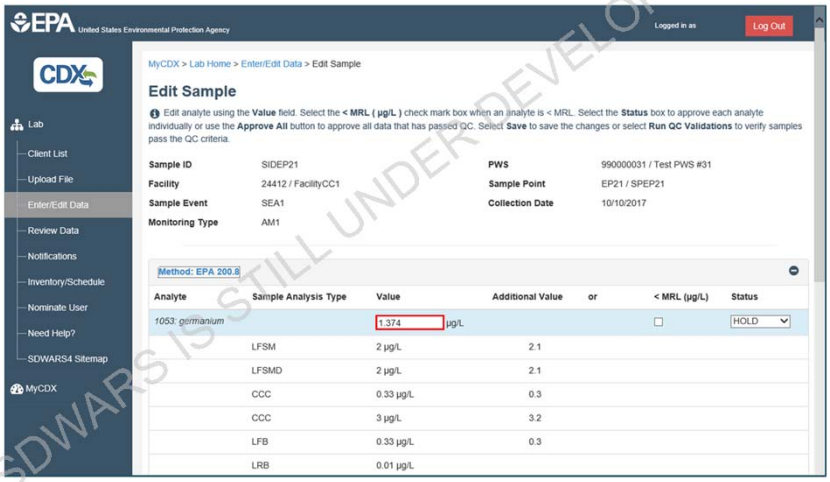
Step 6: Edit Data



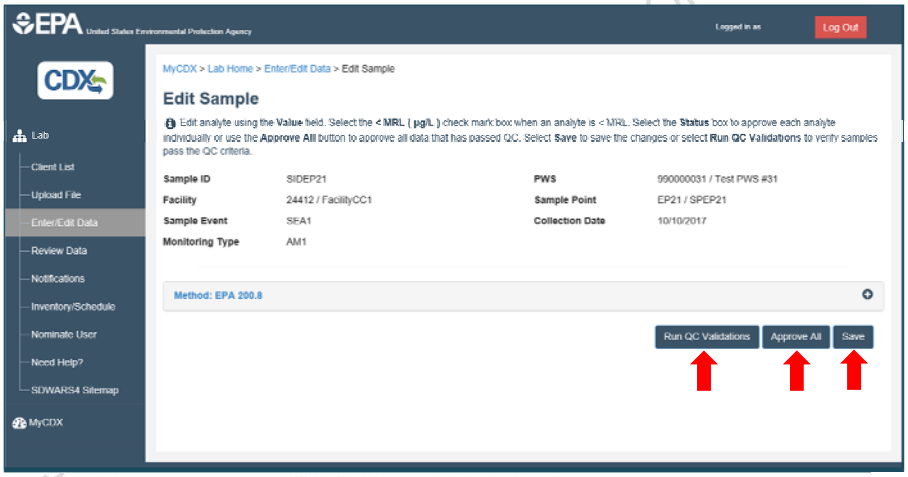
You can edit data that is in "Lab Hold" only

Step 6: Edit Data

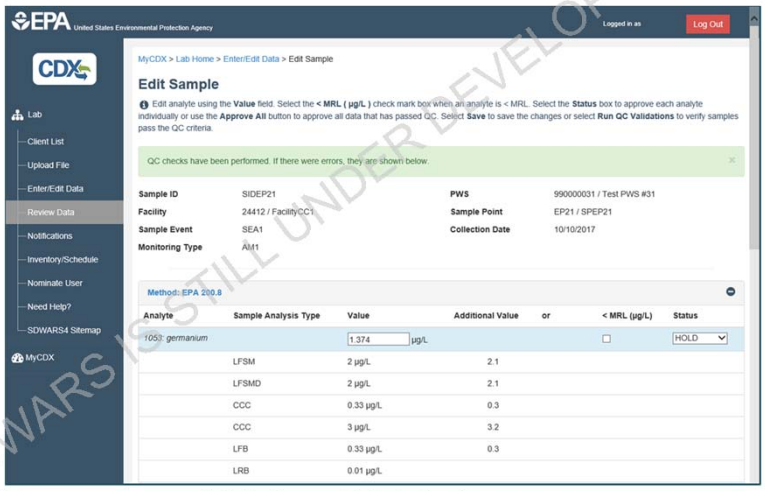
Step 6: Edit Data



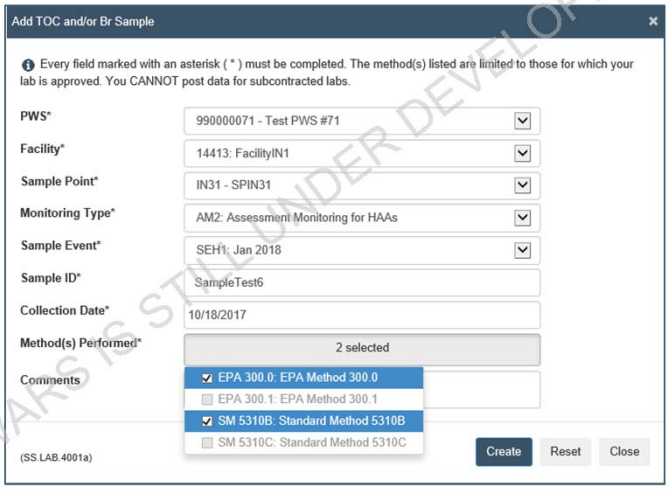
Step 6: Edit Data



Step 6: Edit Data



Step 7: Enter TOC/Br Data (optional)

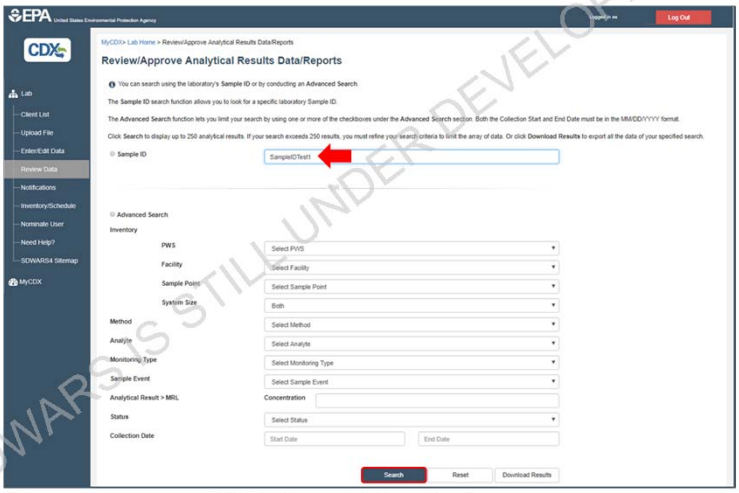


Step 7: Enter TOC/Br Data (optional)

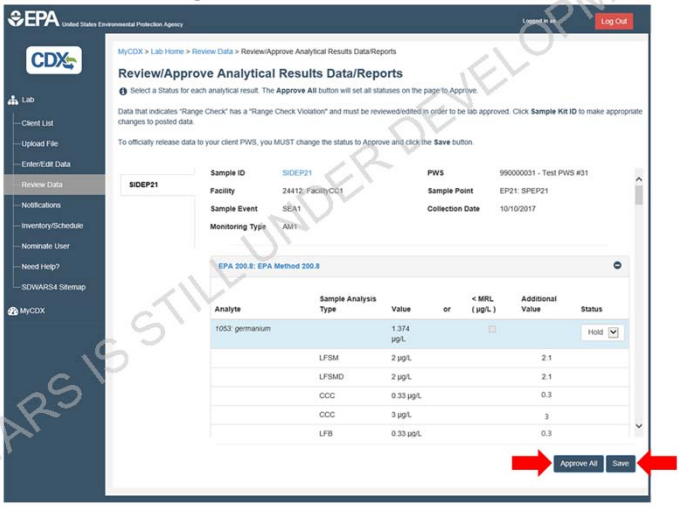
Steps for PWS Labs

Step 1: Log in as your lab, using the CRK mailed with your UCMR 4 Laboratory Approval Program authorization
Step 2: Add your PWS as a client
Step 3: Manually enter the TOC and/or Br result
Step 4: Review and approve the result(s)
Step 5: Log in as your PWS
Step 6: Review and approve the TOC and/or Br results you submitted while using your lab role

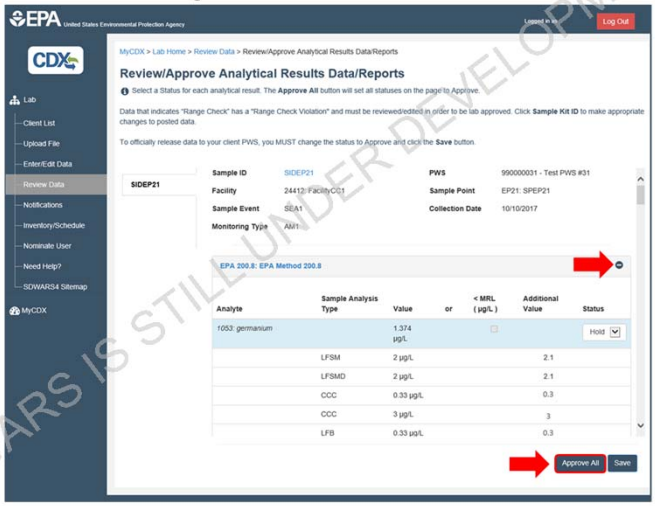
Step 8: Review Data



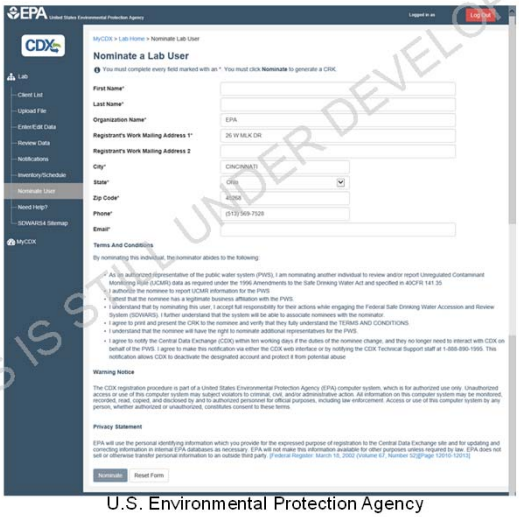
Step 8: Review Data



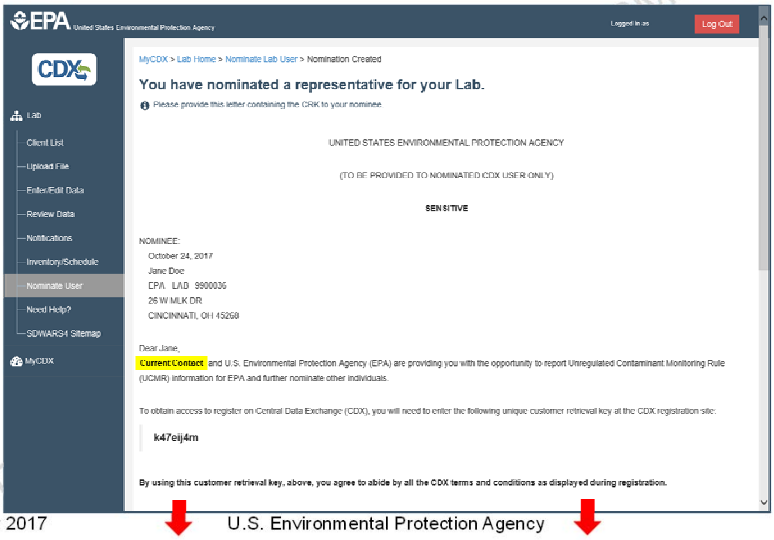
Step 8: Review Data



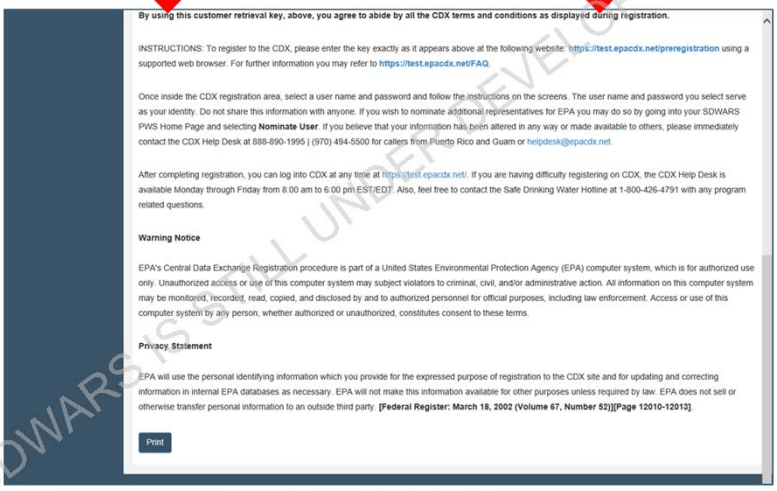
Step 9: Nominate User



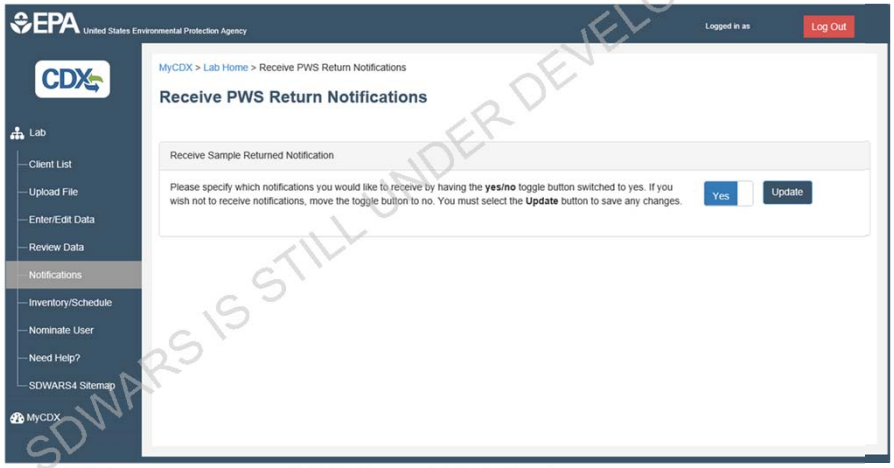
Step 9: Nominate User



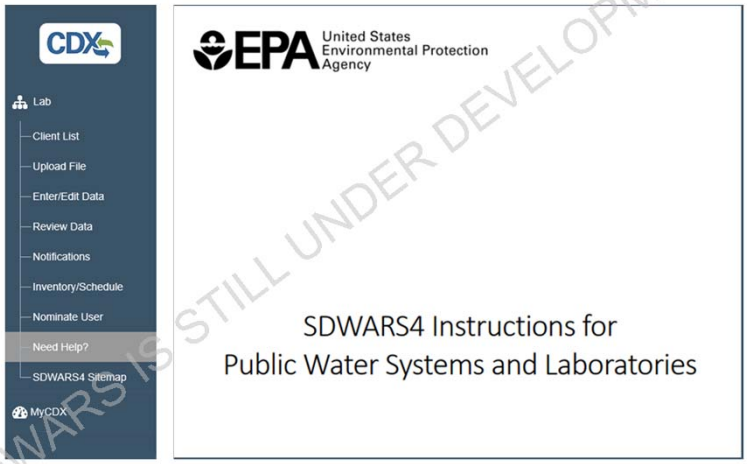
Step 9: Nominate User



Step 10: Receive Notifications

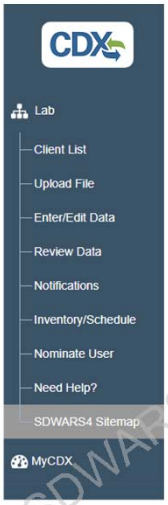


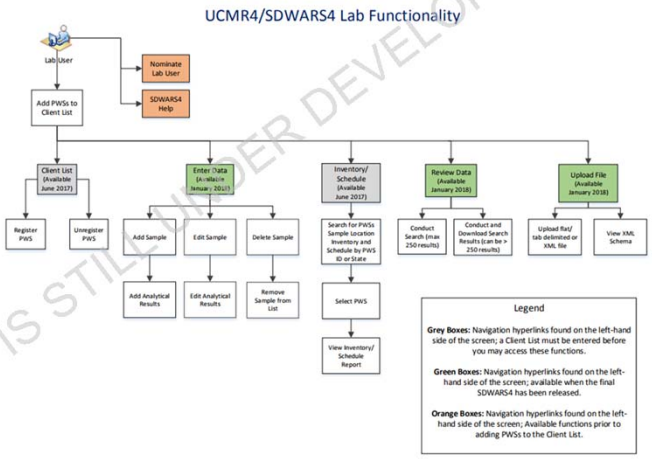
Need Help?



https://www.epa.gov/sites/production/files/2017-07/documents/sdwars4-instructions.pdf

SDWARS4 Sitemap





SDWARS Laboratories Workflow: Review

- **Steps 1 & 2: Log in to CDX UCMR 4**
  - Select SDWARS4 and then Application Program Settings
- **Step 3: Register Client List**
  - Add PWSs to your client list to be able to review their inventory/schedule and load data
- **Step 4: Review Inventory/Schedule**
  - Review the inventory and schedule for any PWS that you have added as client
- **Step 5: Upload File**
  - Load sample data either via text file or XML file format
- **Step 6: Edit Data**
  - Edit and approve samples waiting in lab hold

SDWARS Laboratories Workflow: Review

- **Step 7: Enter TOC/Br (optional)**
  - Enter TOC/Br data (target audience: utility labs only authorized for TOC/Br methods, option to manually enter)
  - PWS labs need to add their PWS as a client to submit TOC/Br data
- **Step 8: Review Data**
  - Search for, review and approve any sample that your lab has submitted
- **Step 9: Nominate user for your Laboratory (optional)**
  - Read the terms and conditions and provide CRK to nominee
- **Step 10: Receive Notifications**

Break

10 Minutes

Reporting Requirements and Data Elements

Jillian Toothman, USEPA

Overview

- Large System Reporting
  - Inventory
  - Schedule
  - Results
- Data Elements
- Flat File Specification Document
- QC Tips
- Resubmitting Data
- Timing of Reporting Results

Large System Reporting: Inventory

Large systems where State does **NOT** provide inventory	• Enter inventory via SDWARS by December 31, 2017 • Changes after December 31, 2017 must be submitted in writing and approved by EPA's Sampling Coordinator: UCMR_Sampling_Coordinator@epa.gov – Must provide a reason for the change
Large systems where State provides inventory	• Partnered States will provide LSI to EPA • States generally contact PWS about this approach • SDWARS notification sent to system when LSI was received by EPA – Only those who have a SDWARS account (used their CRK) received the notification

Large System Reporting: Schedule

- To change the schedule:
  - Before December 31, 2017 - enter via SDWARS and make any changes
  - After December 31, 2017
    - Contact EPA in writing to request change
    - Provide a basis for change(s) including:
      - Update to most vulnerable months for cyanotoxin monitoring
      - Sync with compliance monitoring for the UCMR 4 HAA monitoring
      - Budget/planning considerations
      - Other
    - UCMR_Sampling_Coordinator@epa.gov

Large System Reporting: Results

- Sample Location Information
  - PWSs must input all data elements specified in §141.35(e) Table 1 (e.g., disinfectant type, treatment information and disinfectant residual) into SDWARS
  - PWSs can input their data elements into SDWARS at time of collection
- Monitoring Results
  - Entered by UCMR 4 approved laboratory to SDWARS
  - Reviewed and submitted by PWS (default approval after 60 days)

Laboratory – Reporting Data Elements §141.35(e)

1. Public Water System Identification (PWSID) Code	16. Analytical Method Code
2. Public Water System Name	17. Extraction Batch Identification Code
3. Public Water System Facility Identification Code	18. Extraction Date
4. Public Water System Facility Name	19. Analysis Batch Identification Code
5. Public Water System Facility Type	20. Analysis Date
6. Water Source Type	21. Sample Analysis Type
7. Sampling Point Identification Code	22. Analytical Results—Sign
8. Sampling Point Name	23. Analytical Result—Measured Value
9. Sampling Point Type Code	24. Additional Value
10. Disinfectant Type	25. Laboratory Identification Code
11. Treatment Information	26. Sample Event Code
12. Disinfectant Residual Type	27. Bloom Occurrence
13. Sample Collection Date	28. Cyanotoxin Occurrence
14. Sample Identification Code	29. Indicator of Possible Bloom - Treatment
15. Contaminant	30. Indicator of Possible Boom – Source Water Quality Parameters

Flat File Specification Document

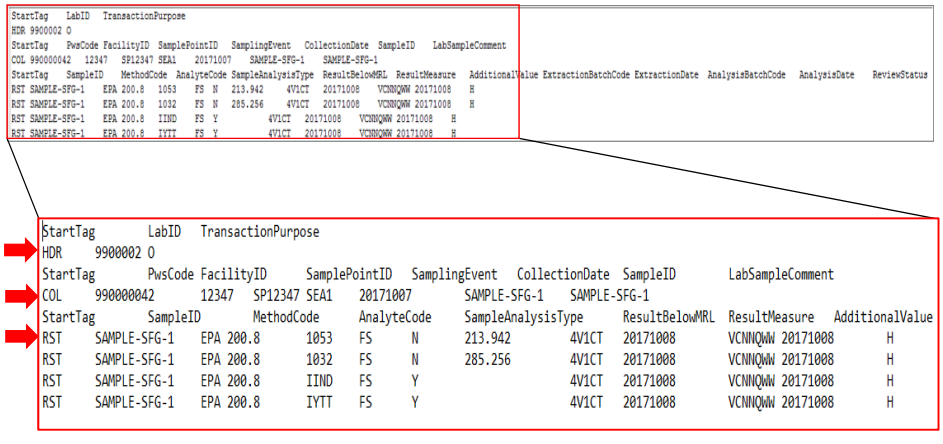
The Flat File Specifications Document provides the format and data elements required for successful upload of lab data

- Flat file formatting
  - Layout
  - How to read the record definitions
  - Header record definitions
  - Collection record definitions
  - Result record definitions

Labs will receive the Flat File Specifications document with Lab Beta Testing Instructions

- Error corrections and resubmissions
  - Correcting errors
  - Header row(s) validation
  - Authorization row validation
  - Extended data type validation
  - Data loading
  - Resubmitting data
  - Checking the range of data values
  - UCMR data range checks
  - SDWARS data range checks

Simple File Layout



```
StartTag    LabID   TransactionPurpose
HDR 9900002 O
StartTag    PwsCode FacilityID  SamplePointID   SamplingEvent   CollectionDate  SampleID    LabSampleComment
COL 990000042   12347   SP12347 SEA1    20171007    SAMPLE-SFG-1    SAMPLE-SFG-1
StartTag    SampleID    MethodCode  AnalyteCode SampleAnalysisType  ResultBelowMRL  ResultMeasure   AdditionalValue ExtractionBatchCode ExtractionDate  AnalysisBatchCode   AnalysisDate    ReviewStatus
RST SAMPLE-SFG-1    EPA 200.8   1053    FS  N   213.942     4V1CT   20171008    VCNNQWW 20171008    H
RST SAMPLE-SFG-1    EPA 200.8   1032    FS  N   285.256     4V1CT   20171008    VCNNQWW 20171008    H
RST SAMPLE-SFG-1    EPA 200.8   IIND    FS  Y           4V1CT   20171008    VCNNQWW 20171008    H
RST SAMPLE-SFG-1    EPA 200.8   IYTT    FS  Y           4V1CT   20171008    VCNNQWW 20171008    H
```

```
StartTag        LabID   TransactionPurpose
HDR     9900002 O
StartTag        PwsCode FacilityID      SamplePointID   SamplingEvent   CollectionDate  SampleID        LabSampleComment
COL     990000042       12347   SP12347 SEA1    20171007        SAMPLE-SFG-1    SAMPLE-SFG-1
StartTag        SampleID        MethodCode      AnalyteCode     SampleAnalysisType      ResultBelowMRL  ResultMeasure   AdditionalValue
RST     SAMPLE-SFG-1    EPA 200.8       1053    FS      N       213.942         4V1CT   20171008        VCNNQWW 20171008        H
RST     SAMPLE-SFG-1    EPA 200.8       1032    FS      N       285.256         4V1CT   20171008        VCNNQWW 20171008        H
RST     SAMPLE-SFG-1    EPA 200.8       IIND    FS      Y                       4V1CT   20171008        VCNNQWW 20171008        H
RST     SAMPLE-SFG-1    EPA 200.8       IYTT    FS      Y                       4V1CT   20171008        VCNNQWW 20171008        H
```

Layout for Record – Definitions

Column	Purpose
Field	Indicates position/order of the Field Name in the row
Field Name	Indicates the Name of the Field in the row
Type	Specifies the allowable data types: • A = alpha characters only, no numeric and no special characters • AN = alphanumeric: alpha characters, numeric, and special characters • N = numeric characters, with optional decimal "."
Max Length	Specifies the maximum number of alphanumeric characters
Nullable	Does the Field allow the value to be set to the special value of NULL (no-value/empty)
Example Value(s)	Specifies examples of Field values, and/or references an Appendix for a comprehensive list of valid Field values
Notes	Provides additional information about Field definition, their purpose, or its values

Header Record – Definitions

Field	Field Name	Type	Max Length	Nullable	Example Value(s)	Notes
1	StartTag	A	3	No	"HDR"	Identifies the record type as Header record/row. Required value: "HDR"
2	LabID	AN	7	No	"AK00002"	The code, assigned by EPA, used to identify each laboratory. The LabID begins with the standard two-character State postal abbreviation; the remaining five numbers are unique to each laboratory in the State.
3	Transaction Purpose	A	1	No	"O" or "R"	O: Originals (new data) R: Replacements (existing/new data)

Collection Record – Definitions

Field	Field Name	Type	Max Length	Nullable	Example Value(s)	Notes
1	StartTag	A	3	No	"COL"	Identifies the record type as Collection record/row. Required value: "COL".
2	PWSCode	AN	7	No	"AK0000042"	Identifies the PWS from which the sample was taken. The PWSCode begins with the standard two-character State postal abbreviation, or region code, and the remaining seven (7) numbers are unique to each PWS in the State. Utah is an exception where the PWSCode is four-characters followed by five (5) numbers. Tribes are an additional exception where the first two-characters are either a region code or "NN", followed by seven (7) numbers.
3	FacilityID	N	5	No	"12347"	A unique 5-digit number identifying each applicable Facility within a PWS (i.e., for each source of water, treatment plant, distribution system, or any other facility associated with water treatment or delivery). Leading zeroes are required.

Collection Record – Definitions

Field	Field Name	Type	Max Length	Nullable	Example Value(s)	Notes
4	SamplePointID	AN	20	No	"SP12347"	A unique code identifying each Sampling Point within an applicable Facility, for each applicable sampling location (i.e., entry point to the distribution system, source water influent or distribution system sample at maximum residence time).
5	SamplingEvent	AN	4	No	(See Appendix A)	A code, assigned by the PWS, for each Sample Event. This allows Samples within Sample Events to be associated with PWS monitoring plan to allow EPA to track compliance and completeness.
6	CollectionDate	N	8	No	"20170928"	The date the sample is collected, reported as 4-digit year, 2-digit month, and 2-digit day (YYYYMMDD).

Appendix A - Sampling Event Codes

Sampling Event	Description	Monitoring
SEA1	AM1 Sampling Event 1	Assessment Monitoring for metals, pesticides, alcohols and SVOCs
SEA2	AM1 Sampling Event 2	Assessment Monitoring for metals, pesticides, alcohols and SVOCs
SEA3	AM1 Sampling Event 3	Assessment Monitoring for metals, pesticides, alcohols and SVOCs
SEA4	AM1 Sampling Event 4	Assessment Monitoring for metals, pesticides, alcohols and SVOCs
SEH1	AM2 Sampling Event 1	Assessment Monitoring for HAAs
SEH2	AM2 Sampling Event 2	Assessment Monitoring for HAAs
SEH3	AM2 Sampling Event 3	Assessment Monitoring for HAAs
SEH4	AM2 Sampling Event 4	Assessment Monitoring for HAAs
SEC1	AM3 Sampling Event 1	Assessment Monitoring for cyanotoxins
SEC2	AM3 Sampling Event 2	Assessment Monitoring for cyanotoxins
SEC3	AM3 Sampling Event 3	Assessment Monitoring for cyanotoxins
SEC4	AM3 Sampling Event 4	Assessment Monitoring for cyanotoxins
SEC5	AM3 Sampling Event 5	Assessment Monitoring for cyanotoxins
SEC6	AM3 Sampling Event 6	Assessment Monitoring for cyanotoxins
SEC7	AM3 Sampling Event 7	Assessment Monitoring for cyanotoxins
SEC8	AM3 Sampling Event 8	Assessment Monitoring for cyanotoxins

Collection Record – Definitions

Field	Field Name	Type	Max Length	Nullable	Example Value(s)	Notes
7	SampleID	AN	30	No		A unique code, assigned by the Labs, to identify containers, or groups of containers, containing water samples collected at the same sampling location for the same sampling date Note: the SampleID will be forced to uppercase when it is saved to the database
8	LabSample Comment	AN	4000	Yes		Optional comments about the sample Carriage returns/line feeds should be replaced with a pipeline character (|)

Result Record – Definitions

Field	Field Name	Type	Max Length	Nullable	Example Value(s)	Notes
1	StartTag	A	3	No	"RST"	Identifies the record type as Result record/row. Required value: "RST".
2	SampleID	AN	30	No		Must exist in the SDWARS database or in the preceding/corresponding "COL" record.
3	MethodCode	AN	10	No	(See Appendix B)	The identification code of the analytical method used. Labs must be approved for a method, as displayed on the Lab home page. Methods are limited to the SampleAnalysisType of the specified sample point.
4	AnalyteCode	AN	4	No	(See Appendix C)	The unregulated contaminant for which the sample is being analyzed. The analyte must be applicable for the Method provided.
5	SampleAnalysisType	AN	5	No	(See Appendix E)	Indicates the type of sample collected and/or prepared, as well as the fortification level. (FS, LFSM, LFSMD, CCC, QCS, LFB, LRB, QHS)

Appendix B – MethodCode List

Method Code	Name	Applicable Sample Point Type	Applicable Monitoring Requirement
EPA 200.8	EPA Method 200.8	EP	Assessment Monitoring for metals, pesticides, alcohols and SVOCs
EPA 525.3	EPA Method 525.3	EP	Assessment Monitoring for metals, pesticides, alcohols and SVOCs
EPA 530	EPA Method 530	EP	Assessment Monitoring for metals, pesticides, alcohols and SVOCs
EPA 541	EPA Method 541	EP	Assessment Monitoring for metals, pesticides, alcohols and SVOCs
ASTM D6581	ASTM D6581	SR	Assessment Monitoring for HAAs
EPA 300.0	EPA Method 300.0	SR	Assessment Monitoring for HAAs
EPA 300.1	EPA Method 300.1	SR	Assessment Monitoring for HAAs
EPA 317.0	EPA Method 317.0	SR	Assessment Monitoring for HAAs
EPA 326.0	EPA Method 326.0	SR	Assessment Monitoring for HAAs
EPA 415.3	EPA Method 415.3	SR	Assessment Monitoring for HAAs
EPA 552.3	EPA Method 552.3	DS	Assessment Monitoring for HAAs
EPA 557	EPA Method 557	DS	Assessment Monitoring for HAAs
SM 5310B	Standard Method 5310B	SR	Assessment Monitoring for HAAs
SM 5310C	Standard Method 5310C	SR	Assessment Monitoring for HAAs
SM 5310D	Standard Method 5310D	SR	Assessment Monitoring for HAAs
EPA 544	EPA Method 544	EP	Assessment Monitoring for cyanotoxins
EPA 545	EPA Method 545	EP	Assessment Monitoring for cyanotoxins
EPA 546	EPA Method 546	EP	Assessment Monitoring for cyanotoxins

Appendix E – SampleAnalysisType List

Sample Analysis Type Code	Sample Analysis Type
CCC	continuing calibration check
FS	field sample
LFB	laboratory fortified blank
LRB	laboratory reagent blank
LFSM	laboratory fortified sample matrix
LFSMD	laboratory fortified sample matrix duplicate
QCS	quality control sample
QHS	quality HAA sample

Result Record – Definitions

Field	Field Name	Type	Max Length	Nullable	Example Value(s)	Notes
6	ResultBelowMRL	A	1	No	“Y” or “N”	Indicates if the sample analysis result was detected at a level below the Minimum Reporting Level, or not detected Y = Yes N = No If ResultMeasure value is provided, ResultBelowMRL must be "N"
7	ResultMeasure	N	10	Yes	9999.99999	The actual numeric value of the analytical results for: Field Samples; Laboratory Fortified Samples Matrix; Laboratory Fortified Sample Matrix Duplicates; and quality HAA sample, internal standard and surrogate For FS, analyte detections at or above MRL should have a ResultMeasure numeric value, and ResultBelowMRL is required to be "N" If analyte detections is less than MRL, ResultBelowMRL must be “Y” and ResultMeasure must not be numeric, but NULL instead If an analyte has no valid result for a sample, it should NOT appear in the flat file

Result Record – Definitions

Field	Field Name	Type	Max Length	Nullable	Example Value(s)	Notes
8	AdditionalValue	N	10	Yes	9999.99999	Represents the true value or the fortified concentration for spiked samples for QC Sample Analysis Types (CCC, QCS, LFB, LFSM and LFSMD). For Sample Analysis Type FS and LRB and for IS, surrogate and %CV QC analytes, leave this field null.
9	ExtractionBatchCode	AN	50	Yes		A unique, Lab assigned, ID for each extraction batch within the Lab for each Method. For CCC samples, report the Analysis Batch Identification Code value in this field. For Methods without an extraction batch, leave this field NULL.
10	ExtractionDate	N	8	Yes	"20170929"	Date for the start of the extraction batch (YYYYMMDD). For methods without an extraction batch, leave this field NULL.

Result Record – Definitions

Field	Field name	Type	Max Length	Nullable	Example Value(s)	Notes
11	AnalysisBatchCode	AN	50	Yes		A Lab-assigned, Analysis Batch ID, unique for each analysis batch within the Lab for each Method
12	AnalysisDate	N	8	Yes	"20170929"	Date for the start of the analysis batch (YYYYMMDD)
13	ReviewStatus	A	1	No	"A" or "H"	Indicates the review status of this analyte in this sample A = Approved H = Hold

Common Formatting/Validation Errors

- First Line Was Not the Header Row
- Invalid Column Count in Collection Header Row
- Result Cannot Be Below MRL and have Result Measure Provided
- PWS is Not Registered as a Lab Client
- Sample ID Already Exists
- Sample ID Duplicated in Upload File
- Cannot Upload Data for Approved Analytic Result
- Invalid Sampling Event for Facility/Sample Point
- Analyte is Incorrect for Method Specified
- Method Doesn't Support Sampling Event's Monitoring Type

Examples of Range Checks

Error Code	Error Message	Lab Can Override?
ResultMeasureExceeds MaximumReasonableValue	Result measure exceeds the maximum reasonable value	Y
CCCValueMissing	QC data for CCC is missing	N
Elisa546BelowMRL544Not Sampled	ELISA 546 was reported as below MRL. EPA 544 will not be analyzed.	N
Elisa546MethodMissing	ELISA 544 data cannot be approved until ELISA 546 is reported (and once complete, it must be above MRL)	N
LFBValueMissing	QC data for LFB is missing	N
LFSMValueMissing	QC data for LFSM is missing	N
LFSMDValueMissing	QC data for LFSMD is missing	N
CVValueMissing	QC data for %CV is missing	N
HoldTimeFailure	Sample exceeded holding time for method [ExtractionDate] - [CollectionDate]	N
AnalysisDateMissing	Analysis date for analytic result record is missing	N
BatchTimeFailure	Analysis Batch exceeded allowable time span [AnalysisDate] - [ExtractionDate]	N

Examples of QC Checks

Method Code	LFB Required?	LRB Required?	CCC Low Required?	CCC Mid/High Required?	Holding Time	Batch Time	%CV Required?
EPA 200.8	Y	Y	Y	Y	28	28	N
EPA 525.3	Y	Y	Y	Y	14	28	N
EPA 530	Y	Y	Y	Y	14	14	N
EPA 541	Y	Y	Y	Y	28	28	N
EPA 544	Y	Y	Y	Y	28	28	N
EPA 545	N	Y	Y	Y	28	NA	N
EPA 546	Y, 2 at mid level	Y, 2 required	Y	N	14	NA	Y
EPA 552.3	N	Y	Y	Y	14	28	N
EPA 557	N	Y	Y	Y	14	NA	N

QC Tips

- Smaller files are easier to troubleshoot
- Keeping batches together makes file generation easier (e.g. everything that is extracted together is analyzed together)
- QC associated with “Approved” analytes/samples cannot be altered or resubmitted. Submitting all field samples in a batch within one file can make it easier to keep track
- For sample types where a result is required (e.g. internal standards reported as a percent recovery), the ResultBelowMRL value should always be “N”
- For methods without an extraction, leave the extraction batch ID and date null
- Internal standard/surrogate recoveries and %CV are reported as a percentage and should be rounded to the nearest whole number (e.g. report 98.5% as 99% and 98.4% as 98%)
- EPA recommends 3 significant figures for concentrations and 2 significant figures for standard deviations

QC Tips

- Continuing Calibration Checks:
  - Report the analysis batch ID and date for the extraction batch ID and date fields
  - For methods where there is an option, report the IS value as compared to the most recently analyzed CCC
  - Submit only valid data that is bracketed by passing CCCs
- Method 546:
  - Each sample type should have a %CV reported with it
  - One CCC Low result is required and no other CCCs
  - Two LFB Mid results are required and no others
  - Two LRB results are required
- Method 544: results cannot be reported when method 546 is <MRL
- Methods 552.3 and 557: all QHS samples must have the same collection date
- QC for TOC/Br will not be submitted to SDWARS but the results should meet all method requirements and be resampled if method QC or method sample receipt criteria are not met

Resubmitting Data (making corrections)

- The laboratory can submit a flat file as an original (“O”) submissions or a replacement (“R”) submissions
- When resubmitting data, the Laboratory must use the code "R" in the TransactionPurpose indicating that the submission contains records that will replace existing records
- The Laboratory may resubmit results for a sample if the result has not yet been approved (still in “Lab Hold” ReviewStatus)
- QC data that is tied to approved field sample data cannot be overwritten
- The Laboratory must rename the flat file before resubmitting it
- The resubmission will overwrite the existing data in the CDX SDWARS database
- The Laboratory may confirm that the data was overwritten by viewing the records in the SDWARS application

Timing of Reporting Results

- Large systems
  - Laboratory posts results to SDWARS within 120 days of sample collection
  - Systems review, approve and submit to State and EPA within 60 days of laboratory's post
- Small systems
  - EPA will still manage laboratory contracts for small water systems
  - Laboratory posts results to SDWARS within 120 days of sample collection (shorter for contracts)
  - Systems access their data in SDWARS

SDWARS4 Development

- File formats for laboratories
  - Text files
  - XML
- Training
  - Webinar for laboratories
  - Webinar for water systems
- Laboratory beta-testing of SDWARS4
  - Improvements to user interface
  - Practice uploading data

Risk Communication

Brenda Parris, USEPA

Overview

- Reference Concentrations
- Consumer Confidence Reports
- Public Notification requirements

Risk Communication

- UCMR reference concentrations are compiled from publically available EPA sources
- Review the supporting documentation referenced in the UCMR Data Summary (updated quarterly)
  - Examples of secondary sources
    - Drinking Water Standards and Health Advisories
    - CCL 4 Contaminant Information Sheets
    - Human Health Benchmark for Pesticides (HHBPs)
  - Examples of sources where you can find additional information on the critical study, other health effects, chemical properties, sources, exposure etc.
    - Integrated Risk Information System (IRIS)
    - Office of Pesticides Program (OPP)
    - Office of Water – Drinking Water Contaminant Human Health Information
    - Agency for Toxic Substances & Disease Registry (ATSDR)
- UCMR 4 Compendium

Risk Communication

- The reference concentration:
  - Does not represent an “action level” (EPA requires no particular action based simply on the fact that UCMR monitoring results exceed draft reference concentrations)
  - Should not be interpreted as any indication of Agency intent to establish a future drinking water regulation at this or any other level
- Decisions whether or not to regulate the contaminant in drinking water will continue to be made following the Agency’s Regulatory Determination process

Risk Communication

- The intent of the UCMR reference concentrations is to provide, where possible, context around the detection of a particular UCMR contaminant above the MRL
- EPA will continue to look for ways to improve the UCMR Data Summary to make sure we are connecting you to the most appropriate information and messaging materials
- Follow State, Consumer Confidence Report and Public Notification requirements

Public Access to UCMR Results

- UCMR results can be viewed by the public:
  - At https://www.epa.gov/dwucmr
  - In annual Consumer Confidence Reports (CCRs)
    - Required by §141.153(d)(7) Community water systems (CWSs)
      - **Unregulated contaminants detected during UCMR monitoring** must be reported in a CWS's CCR following the year they were received. For additional information see 40 CFR Subpart O and https://www.epa.gov/ccr.
      - **Detected unregulated contaminants**, for which monitoring is required (except *Cryptosporidium*), the table(s) must contain the average and range at which the contaminant was detected. The report may include a brief explanation of why the CWS is monitoring for unregulated contaminants and this explanation can provide context for reference concentrations.
      - **TOC and bromide** are not UCMR 4 contaminants (only indicators) (40 CFR 141.40(a)(3) table 1 footnote e), and are not required to be reported on a CCR (40 CFR 141.35(b)(1)).

Public Access to UCMR Results: CCR

- Recommend that the UCMR 4 results (including UCMR 4 HAA6 Br and HAA9 results) be reported in the CCR in a section separate from the compliance-monitoring results for regulated contaminants.
- Since CCR requirements for UCMR apply to detection of *unregulated* contaminants, and since HAA5 is regulated, UCMR 4 HAA5 results do not need to be reported on CCR.
- If the UCMR 4 HAA5 monitoring is scheduled to coincide with the D/DBPR HAA5 compliance monitoring (i.e., if the monitoring serves both purposes), those results would be reported on the CCR as D/DBPR data.

Example CCR Language

Unregulated contaminants are those, for which EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist EPA in determining the occurrence of unregulated contaminants in drinking water and whether future regulation is warranted.

Preparing Your Drinking Water Consumer Confidence Report Guidance for Water Suppliers: "Unregulated contaminant monitoring helps EPA to determine where certain contaminants occur and whether the Agency should consider regulating those contaminants in the future." EPA is exploring possibilities for clearer risk communication.

Public Access to UCMR Results

- In Public Notification
  - Required by §141.207 for CWS and NTNCWS
  - PWSs must notify persons served of the availability of the results no later than 12-months after monitoring results are known
  - Follows Tier 3 public notice §141.204(c), (d)(1) and (d)(3)
    - Special requirement– notice must identify a person and the telephone number to contact for information on monitoring results
  - CWSs may include their public notice within their CCRs
  - For additional information: https://www.epa.gov/dwreginfo/public-notification-rule

Closing Remarks

Brenda Parris, USEPA

Webinar Participant Questions

- Click on "+" next to "Questions" in the control panel (Figure 1) to submit questions/comments
  - You may need to unhide the control panel to ask a question (Figure 2)
- Type a question in the box; click send (Figure 3)

Figure 1

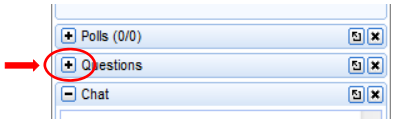
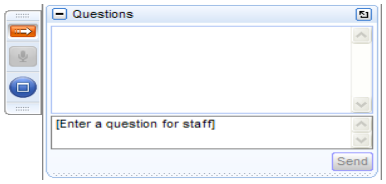


Figure 2

Figure 3



If You Have Questions Following This Webinar

- UCMR Homepage:
  - https://www.epa.gov/dwucmr
- UCMR 4:
  - https://www.epa.gov/dwucmr/fourth-unregulated-contaminant-monitoring-rule
  - Go to UCMR 4 Docket (EPA-HQ-OW-2015-0218) at http://www.regulations.gov for federal register notice and supporting documents
- Occurrence Data:
  - https://www.epa.gov/dwucmr/occurrence-data-unregulated-contaminant-monitoring-rule

UCMR Contacts

- UCMR Questions/SDWARS Data Entry?
  - UCMR Message Center: (800) 949-1581
  - UCMR4@glec.com
  - UCMR_Sampling_Coordinator@epa.gov
- CDX Help?
  - SDWARS registration and technical issues
  - Provide details and screen shots
    - CDX Help Desk: (888) 890-1995
    - helpdesk@epacdx.net
- Lab Approval Program:
  - UCMR_Lab_Approval@epa.gov
- Safe Drinking Water Questions?
  - Safe Drinking Water Hotline: (800) 426-4791

Questions and Discussion

Abbreviations and Acronyms

- **CCC** – Continuing Calibration Check
- **CCL** – Contaminant Candidate List
- **CCR** – Consumer Confidence Report
- **CDX** – Central Data Exchange
- **CF** – Concentration Fortified
- **CFR** – Code of Federal Regulations
- **CWS** – Community Water System
- **CRKs** – Customer Retrieval Keys
- **D/DBPRs** – Disinfectants and Disinfection Byproduct Rules (including Stage 1 and Stage 2 D/DBPRs)
- **DS** – Distribution System

Abbreviations and Acronyms

- **ELISA** – Enzyme-linked Immunosorbent Assay
- **EPA** – Environmental Protection Agency
- **(EP)TDS** – Entry Point to Distribution System
- **FR** – Federal Register
- **FS** – Field Sample
- **GC** – Gas Chromatography
- **GC-ECD** – Gas Chromatography with Electron Capture Detection
- **GC/MS** – Gas Chromatography/Mass Spectrometry
- **GLEC** – (Contractor) Great Lakes Environmental Center
- **GW** – Ground Water

Abbreviations and Acronyms

- **GWRMPs** – Ground Water Representative Monitoring Plans
- **GWUDI** – Ground Water Under the Direct Influence of Surface Water
- **HAAs** – haloacetic acids
- **HAA5** –dichloroacetic acid, monochloroacetic acid, tribromoacetic acid, monobromoacetic acid, dibromoacetic acid
- **HAA6Br** - monobromoacetic acid, dibromoacetic acid, bromochloroacetic acid, bromodichloroacetic acid, chlorodibromoacetic acid, tribromoacetic acid
- **HAA9** – dichloroacetic acid, monochloroacetic acid, trichloroacetic acid, monobromoacetic acid, dibromoacetic acid, bromochloroacetic acid, bromodichloroacetic acid, chlorodibromoacetic acid, tribromoacetic acid

Abbreviations and Acronyms

- **ICR** – Information Collection Request
- **IC-ESI-MS/MS** – Ion Chromatography Electrospray Ionization Tandem Mass Spectrometry
- **ICP/MS –** Inductively Coupled Plasma-Mass Spectrometry
- **IDC** – Initial Demonstration of Capability
- **IS** – Internal Standard
- **LC/ESI-MS/MS** – Liquid Chromatography/Electrospray Ionization/Tandem Mass Spectroscopy
- **LC-MS/MS** – Liquid Chromatography/Tandem Mass Spectrometry

Abbreviations and Acronyms

- **LFB** – Laboratory Fortified Blank
- **LFSM** – Laboratory Fortified Sample Matrix
- **LRB** – Laboratory Reagent Blank
- **LSI** – Large System Inventory
- **LT2 (LT2ESWTR)** – Long Term 2 Enhanced Surface Water Treatment Rule
- **MCLG** – Maximum Contaminant Level Goal
- **MRL** – Minimum Reporting Level
- **MRS** – Monitoring Review Sheet
- **NCOD** – National Contaminant Occurrence Database
- **NPDWRs** – National Primary Drinking Water Regulations

Abbreviations and Acronyms

- **NTNCWS** – Non-transient Non-community Water System
- **PA** – Partnership Agreement
- **PN** – Public Notice
- **PT** – Proficiency Testing
- **PWS** – Public Water System
- **PWSID** – Public Water System Identification
- **QA** – Quality Assurance
- **QC** – Quality Control
- **QCS** – Quality Control Sample
- **QHS** – Quality HAA Sample

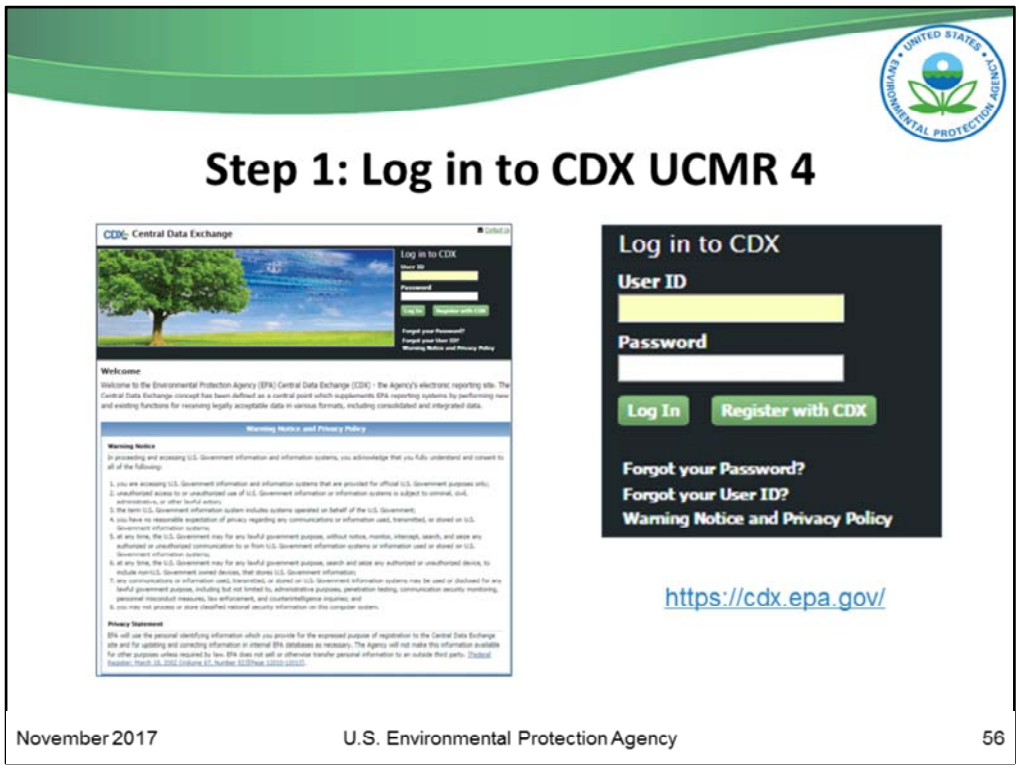
Abbreviations and Acronyms

- **SDWA** – Safe Drinking Water Act
- **SDWARS** – Safe Drinking Water Accession and Review System
- **SE** – Sample Event
- **SM** – Standard Methods for the Examination of Water and Wastewater
- **SMP** – State Monitoring Plan
- **SPE** – Solid Phase Extraction Phase
- **SR** – Source water

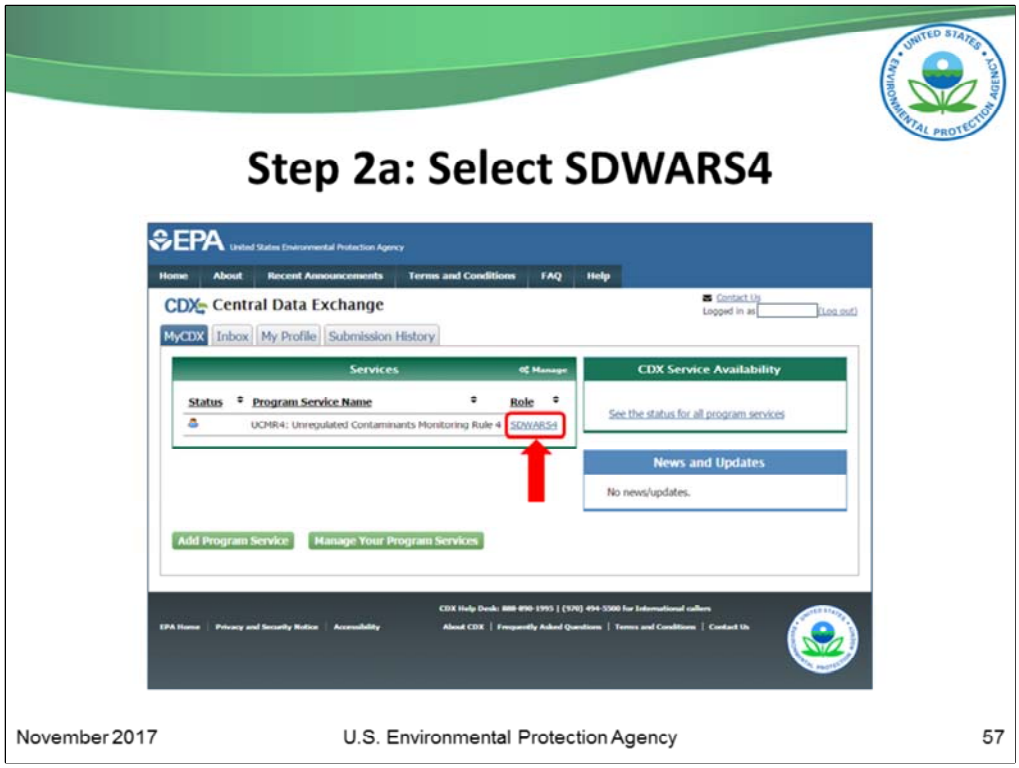
Abbreviations and Acronyms

- **SSI** – Small System Inventory
- **STF** – Sample Tracking Form
- **SUR** – Surrogate Standard
- **SW** – Surface Water
- **SWP** – Surface Water Purchased
- **TNCWS** – Transient Non-community Water System
- **TTHM** – Trihalomethanes
- **TOC** – Total Organic Carbon
- **UCMR** – Unregulated Contaminant Monitoring Rule

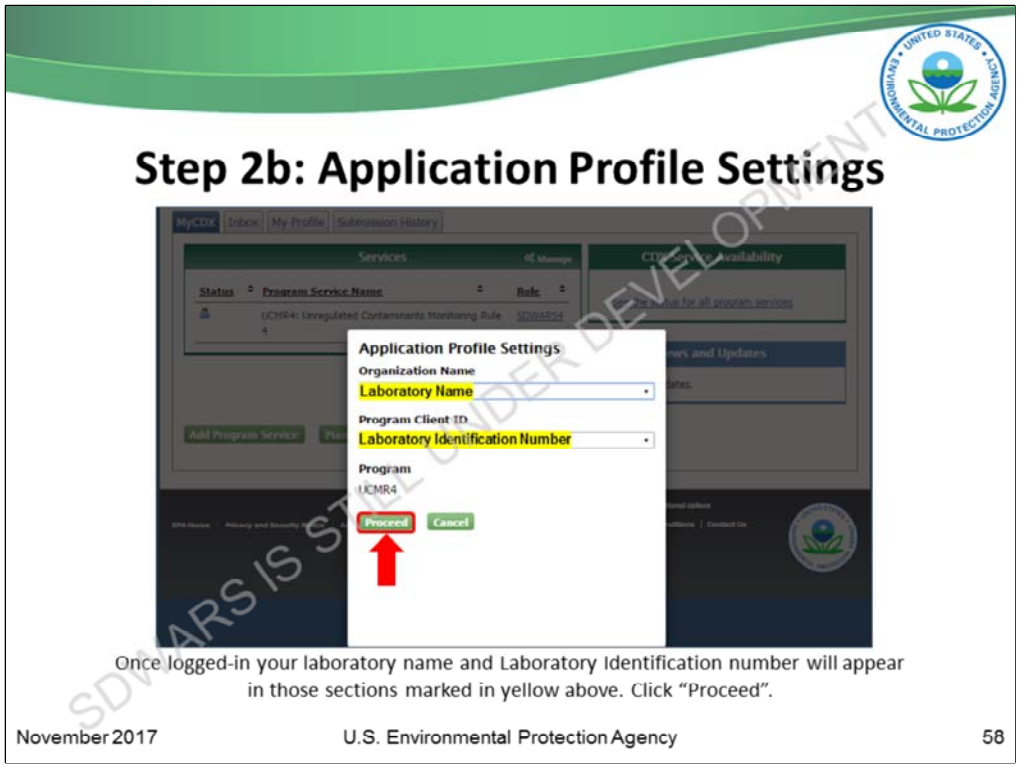
Appendix A
SDWARS for Laboratories (UCMR 4): Functions in SDWARS



Step 1: Log in to CDX UCMR 4. Log in to CDX using your **User ID** and **Password** that you created during registration. Select the **Log In** button. There are also options to help you retrieve your **Password** or **User ID** if you have forgotten them. If you are having trouble logging in or have locked yourself out after too many erroneous login attempts the screen will prompt you to contact the CDX help desk.



Step 2: Select SDWARS4. After logging into CDX select the **SDWARS4** hyperlink to access your account.



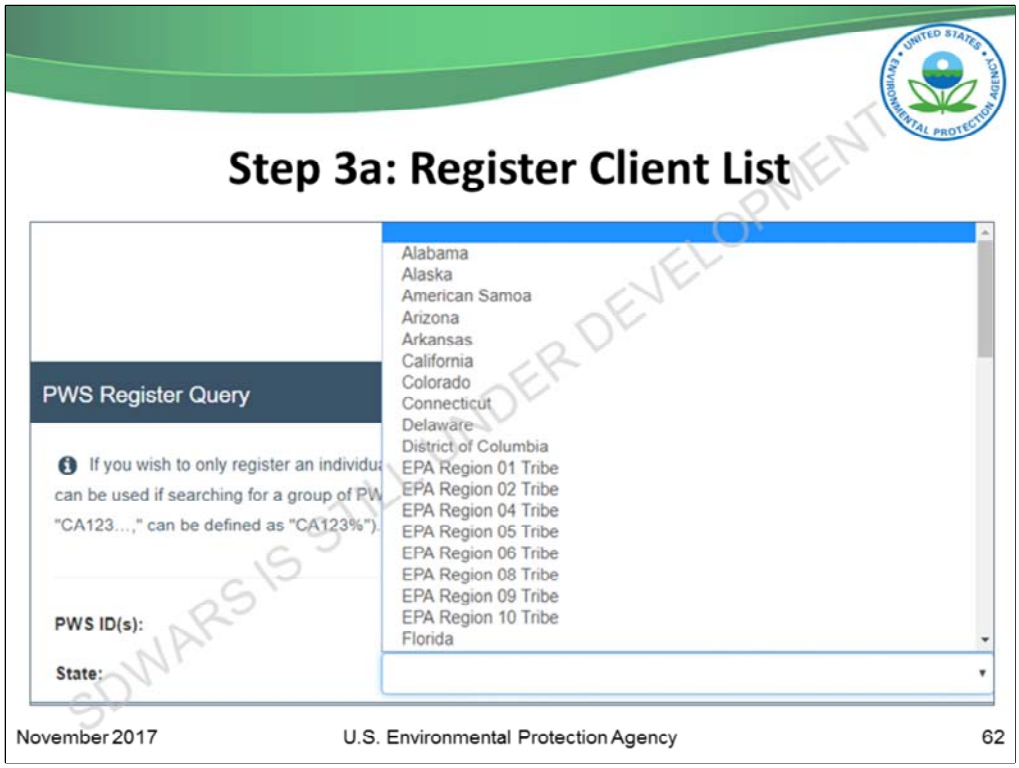
Once logged-in your **Laboratory Name** and **Laboratory Identification Number** will appear in those sections that are marked in yellow above. Click **Proceed**.

On the **Lab Home** page in SDWARS you can use the menu to the left to: establish a **Client List**, **Upload File**(s), **Enter/Edit Data** or **Review Data**, turn on or off **Notifications**, review **Inventory/Schedule** information for a client PWS or **Nominate Users**. Use the **SDWARS4 Sitemap** to review the capabilities of your account. For further technical direction on how to use your account, please refer to the **Need Help?** link for a help document.

Step 3: Register Client List. In order to review **Inventory/Schedules** and post UCMR4 data for a client public water system (PWS) you must first add the PWS to your **Client List**. Click **Register PWS**, to add one or more PWS(s) to your **Client List**. Click **Unregister PWS** to remove one or more selected PWS(s) from your **Client List**. If a PWS is not on your **Client List**, you cannot **Review Inventory/Schedule** or enter analytical results for that PWS.

Click **Register PWS** on the laboratories PWS **Client List** page in order to add one or more client PWS. The **PWS Register Query** will pop up. If you wish to register an individual PWS and know their **PWS ID**, enter their federal **PWS ID**. The wildcard percent symbol (**%**) can be used if searching for a group of PWSs with common **PWS ID** features (*e.g.*, searching for all PWSs that start with "CA123…", can be defined as "CA123%").

Additionally, you can search by **State**. As we will see on the next slide.



If you don't have a federal ID for a PWS the best option is to search by **State**. Tribes can be queried using their EPA region code.

You can also utilize the wildcard percent symbol (**%**) in **PWS ID(s)** for a full list of water systems participating in UCMR4. Please note the wildcard search will result in substantial processing delays since the list of PWS(s) is very long. Also, there is no filtering function on the results page (once you click **Search**) so it is better to start with some search criteria (either state or partial PWS ID).

In the search results, select all the PWSs that you wish to add to your **Client List** by checking the corresponding box. You may click the checkbox in the top left corner of the table to select all displayed PWSs. Please note that adding or deleting a large number of clients may result in processing delays.

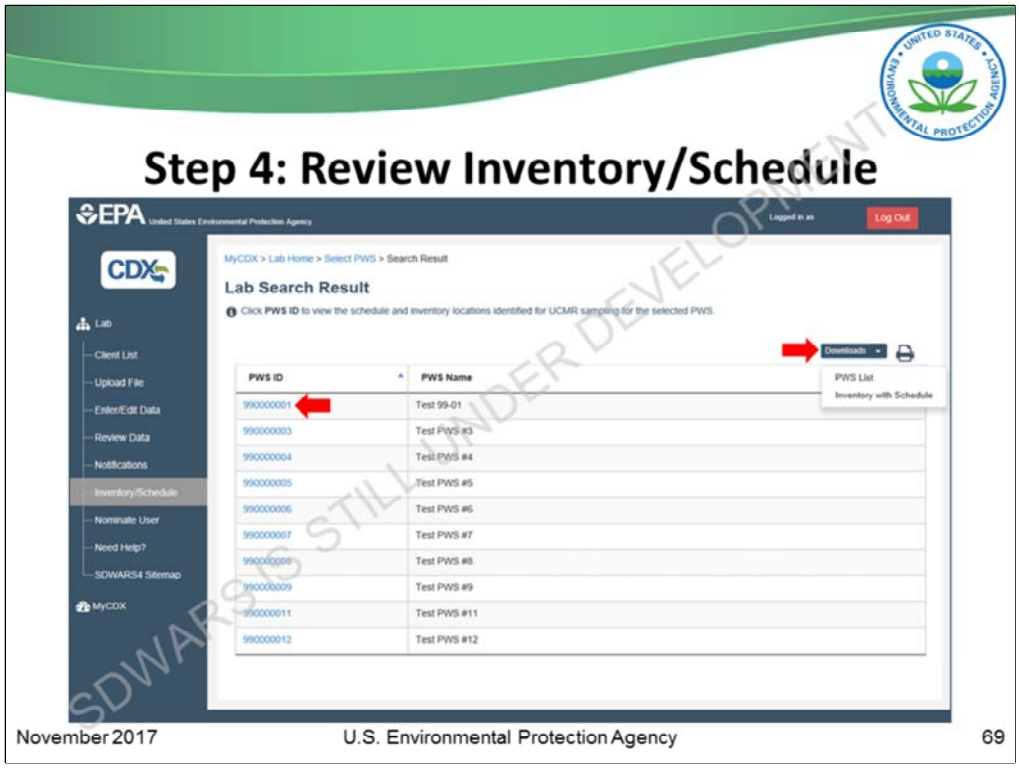
Click **Save** to add these to your **Client List**. This will return you to the **Client List** page where the newly added clients will be displayed in your list.

Once the selected PWS(s) are saved you may unregister select PWS(s) by checking the box and clicking **Unregister Selected PWS(s)**. You may click the checkbox in the top left corner of the table to select all displayed PWSs. You may print or download the displayed **Client List** by clicking the download or print symbols at the top right of the list.

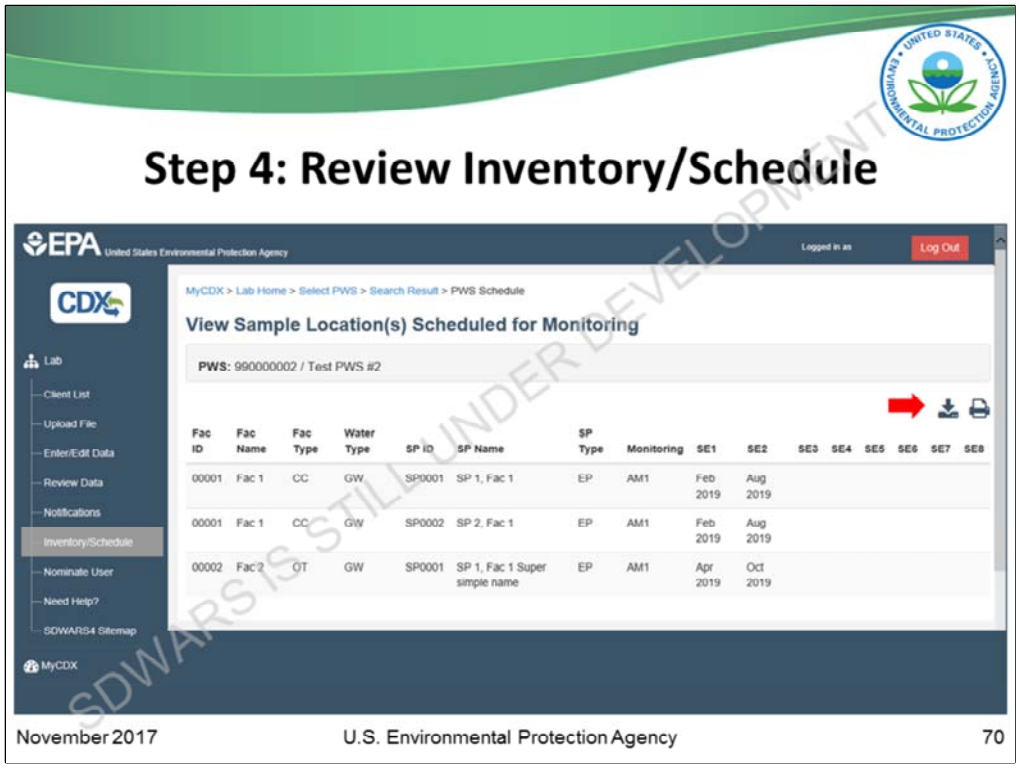
When you click the button **Unregister Selected PWS**, a pop-up box will prompt you to verify that you want to unregister the PWS(s) from your **Client List**.

Step 4: Review Inventory/Schedule. In order to review a specific PWS(s) **Inventory/Schedule**, search for that water systems information by entering its federal **PWS ID**. You can also select your client PWS from a list of PWS(s) via searching by **State** or using the wildcard percent symbol (**%**) in the PWS ID search field. You will only be able to view PWSs that you have registered as a client. For example, searching for Ohio will only return the PWSs that you have already added as clients in the state of Ohio.

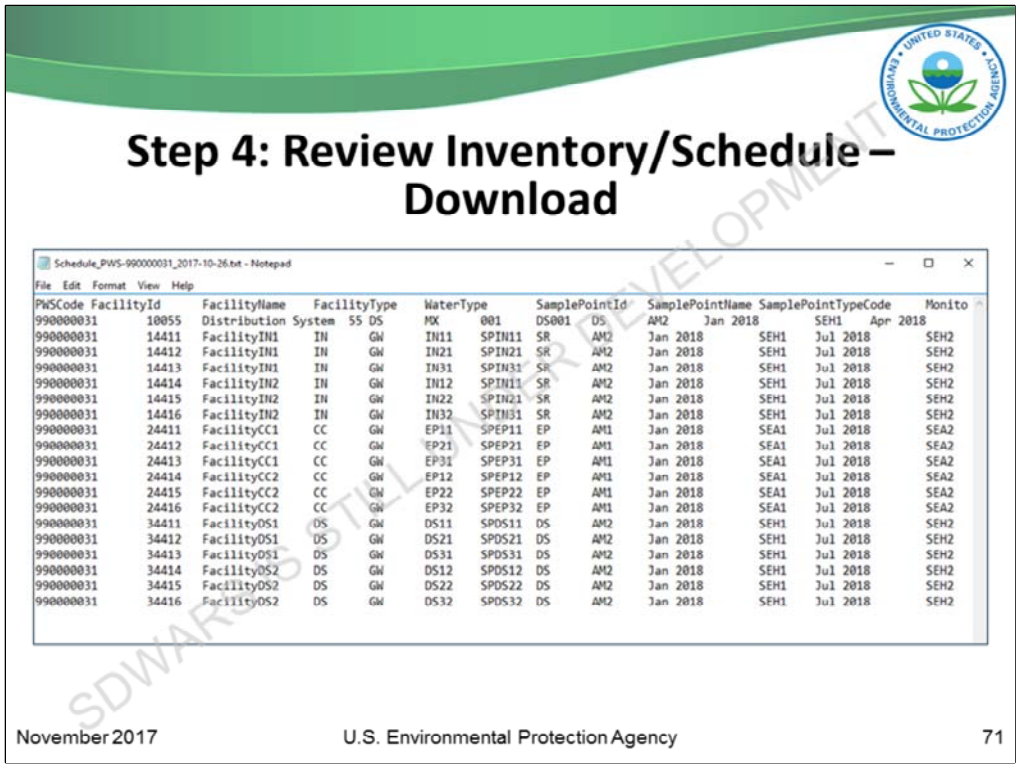
If there are no results for your search criteria, you will receive an orange error bar.



If your search is successful, the **Lab Search Results** screen will appear. Each PWS that appears in the **Lab Search Results** list is a link to the PWS(s) inventory. Click on this link to view all of the PWS(s) sampling locations and schedule. You may print or download the displayed PWS(s) inventory list by clicking the download or print symbols at the top right of the list. There is the option to only download or print the list or the list with inventory and schedules.



The **View Sample Location(s) Scheduled for Monitoring** screen will display the sampling locations and their schedule for a particular PWS. You may review the inventory, and print or download the displayed PWS(s) sampling schedule by clicking the download or print symbols at the top right of the list.



This is an example of what the print screen or downloaded inventory looks like.

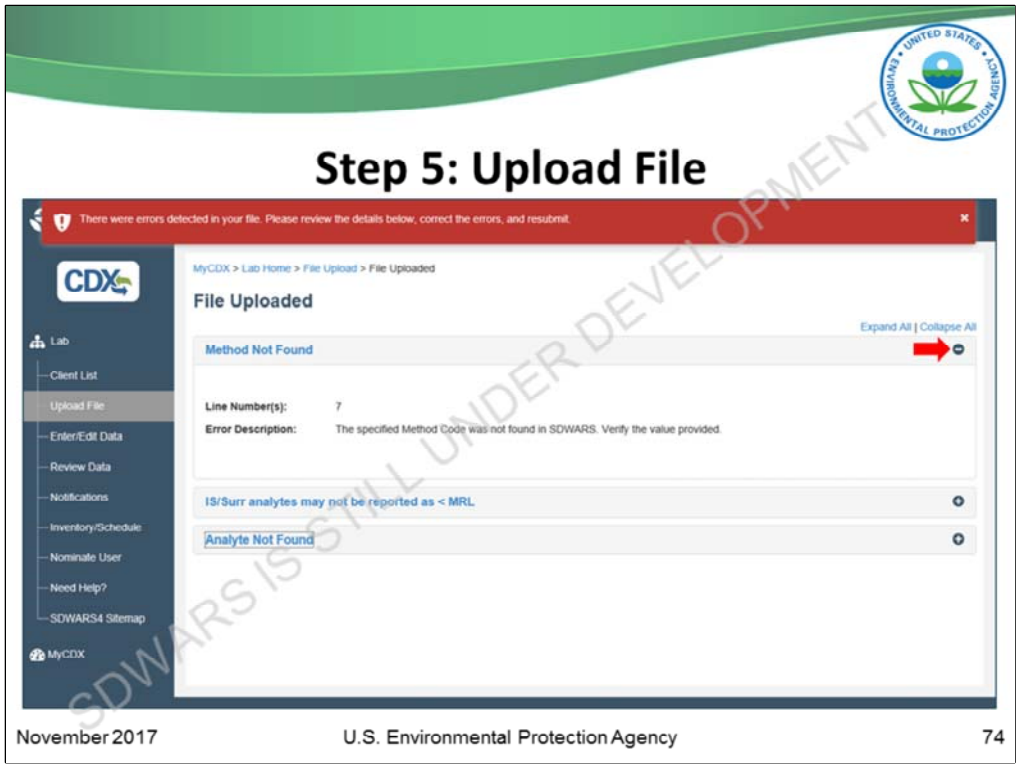
Step 5: Upload File. In order to submit your analytical results file to SDWARS it must be in text or XML format. Click on the **text** or **XML** links for help formatting your analytical results file. After your file is in text or XML format click **Choose File** to browse for your file. Once your file is selected click **Upload**. If your file is correctly formatted and there are no issues with your data criteria, then the database will proceed to Quality Control (QC) review. If your file doesn't meet the format criteria you will be redirected to a screen listing formatting errors. Files that do not meet the format criteria cannot be loaded into SDWARS and must be corrected before resubmission.

QC will only be processed once the file has passed the formatting criteria.

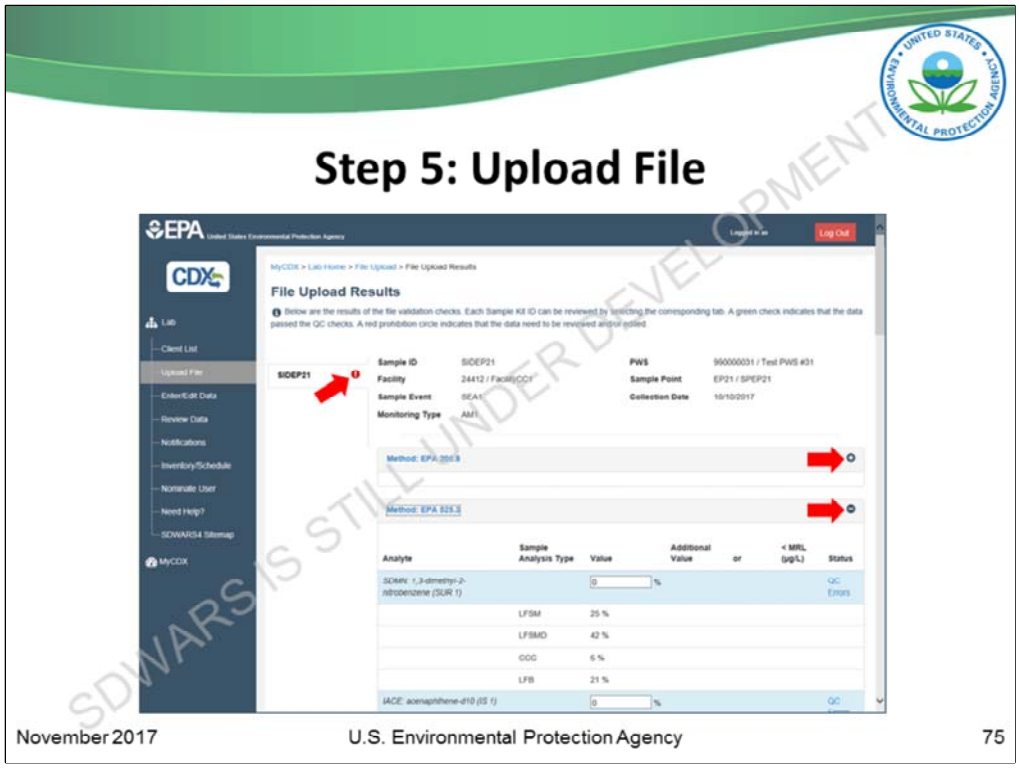
If your analytical results fail QC requirements, then an error message will be displayed. Depending on the file specifications your data will be placed in hold or loaded into SDWARS directly if your data passes all QC requirements. Data that doesn't pass QC requirements will be automatically placed in hold and can be edited either in the **Enter Data** section or via file correction.

We will take a closer look at file specifications and QC requirements later in this presentation.

If your file doesn't meet the format criteria you will be redirected to a **File Rejected** screen where you can review your file details. Correct your file and reload it. In order to proceed with the Quality Control (QC) check of your data, you need to perform any corrections indicated on the **File Rejected** page and then resubmit your file. Each error message will display a code (seen here in blue at the top of each box) as well as the lines impacted and a brief description. The screen will only show up to 25 errors. If there are more than 25 errors present, an email will go to your **MyCDX** inbox notifying you of this.

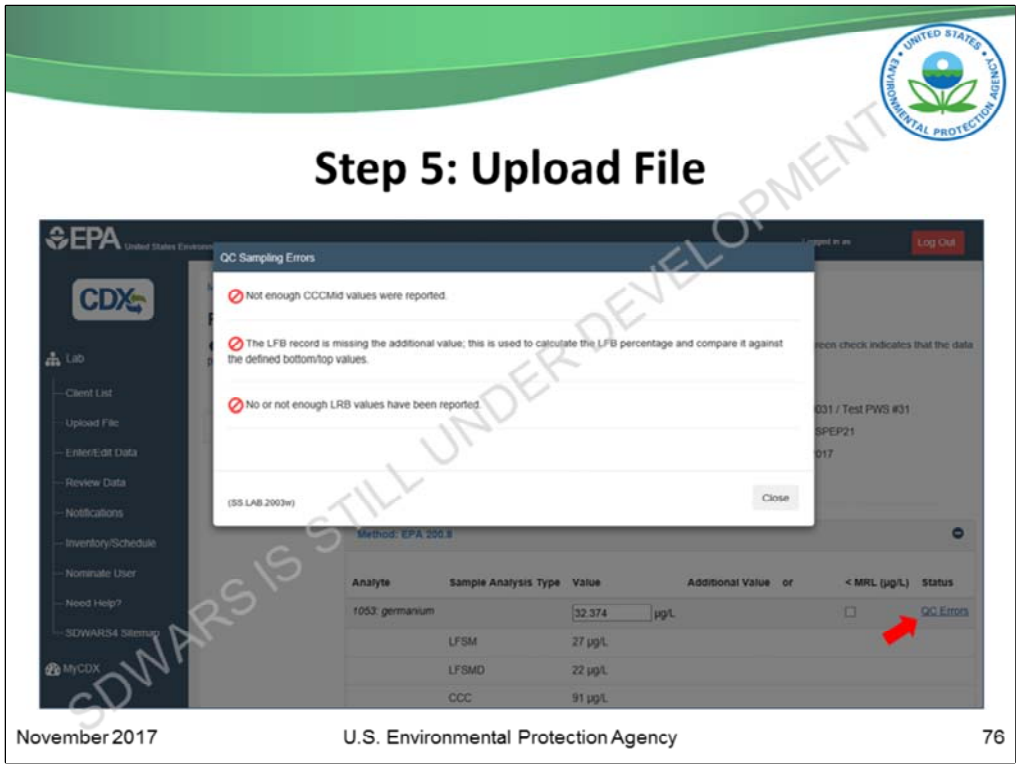


This screen shows the collapsed error messages. You will still be able to see the error codes while collapsed.



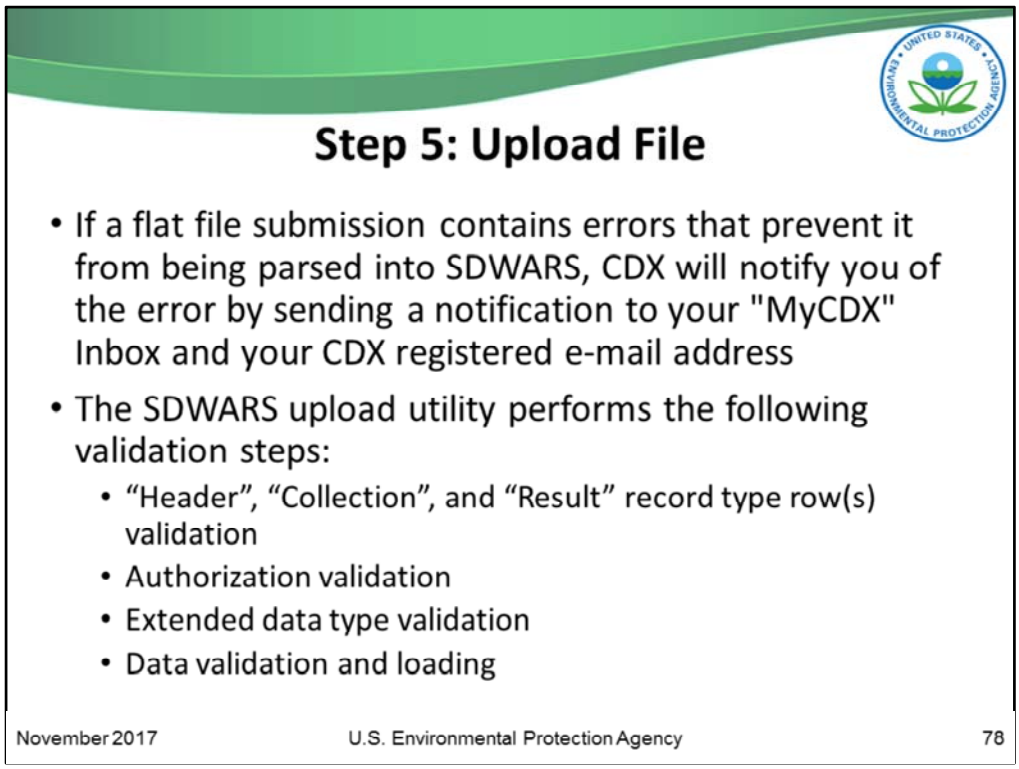
Once a file is successfully uploaded the **File Upload Results** screen will appear. Here you can view the results of the file validation checks. Each Sample Kit ID can be reviewed by selecting the corresponding tab on the left. A green check indicates that the data passed the QC checks and you will see the drop down to approve data on the right under **Status**. A red prohibition circle (as seen here) indicates that the data need to be reviewed and/or edited. When selected, a blue link on the right under **Status** labeled **QC Errors** will produce a pop-up window describing the errors (we will see this on the next screen).

You can expand or collapse the methods within a sample using the +/- arrows in the right hand side.



Clicking the **QC Errors** link will produce this pop-up which contains **QC Sampling Errors**. Each error is a brief description of the issues pertaining to that sample. Please note that if batch QC is incorrect, the errors will be repeated for each analyte (within each sample) that was impacted by that batch. In this example, method 200.8, the analytes fail because no CCC Mid was reported. This also means all other analytes in samples that have the same analysis batch ID will also fail and show this same error message.

If data is uploaded with no QC errors, a green check indicates that the data passed the QC checks. A drop down menu below **Status** allows you to **Approve** or **Hold** data. Once you change the status of data from **Hold** to **Approve** hit **Save** in the bottom right corner to save changes. Hit **Approve All** in the bottom right corner to approve all data.



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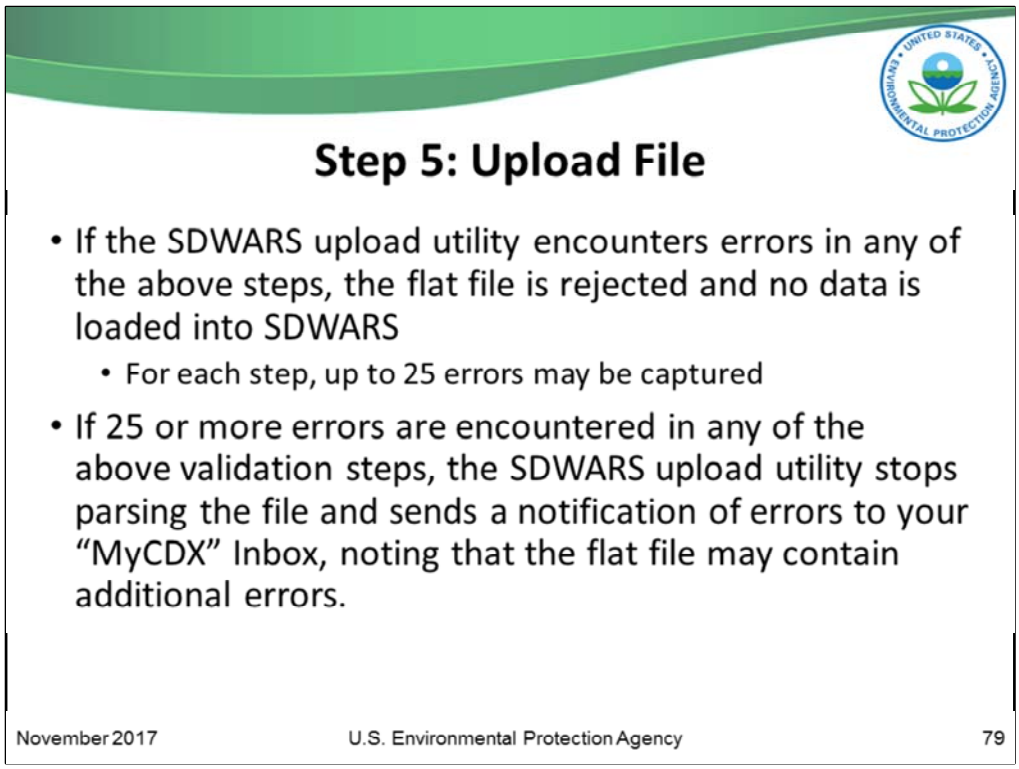

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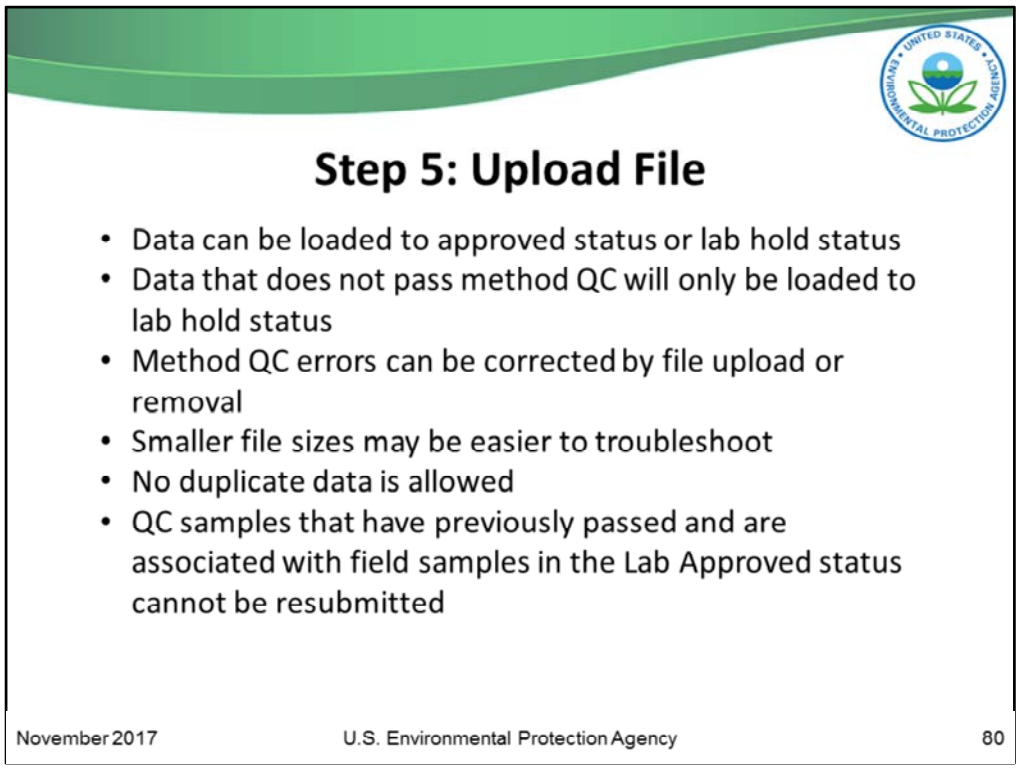

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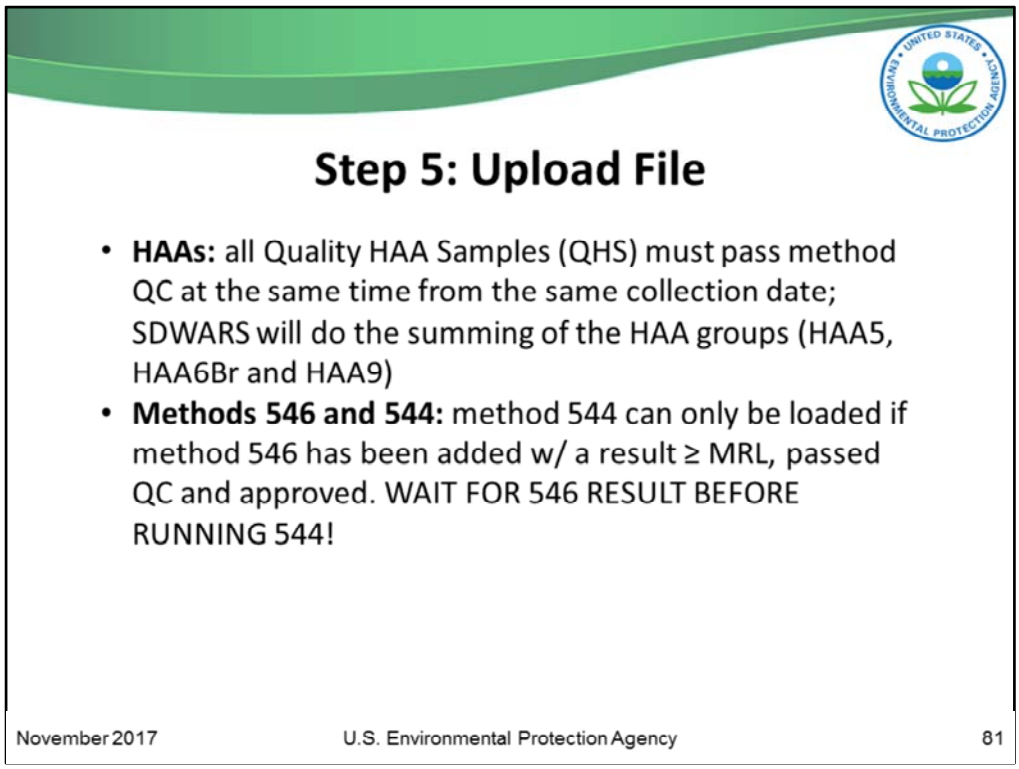

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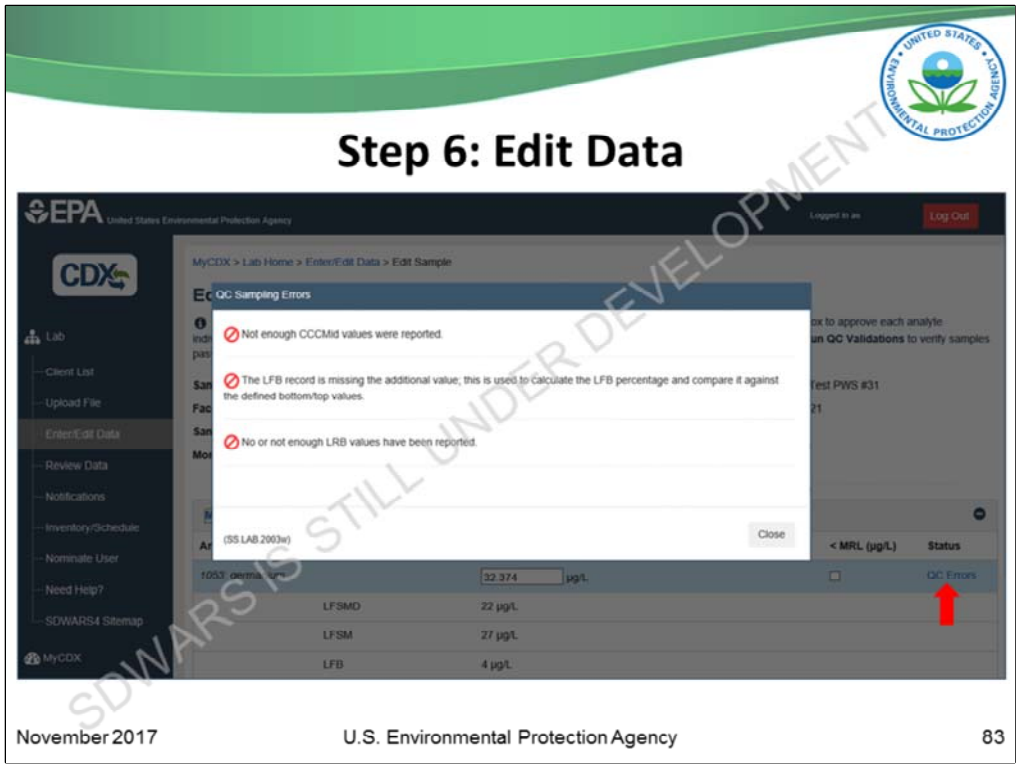
Step 6: Edit Data. This is where you can edit and delete samples. This is also where you can manually load TOC and Br by clicking **Add Sample** to enter new sample collection information and subsequently add analytical results (please note that only labs approved for TOC/Bromide will be able to view and utilize this **Add Sample** button) we will cover this function more in depth in Step 7.

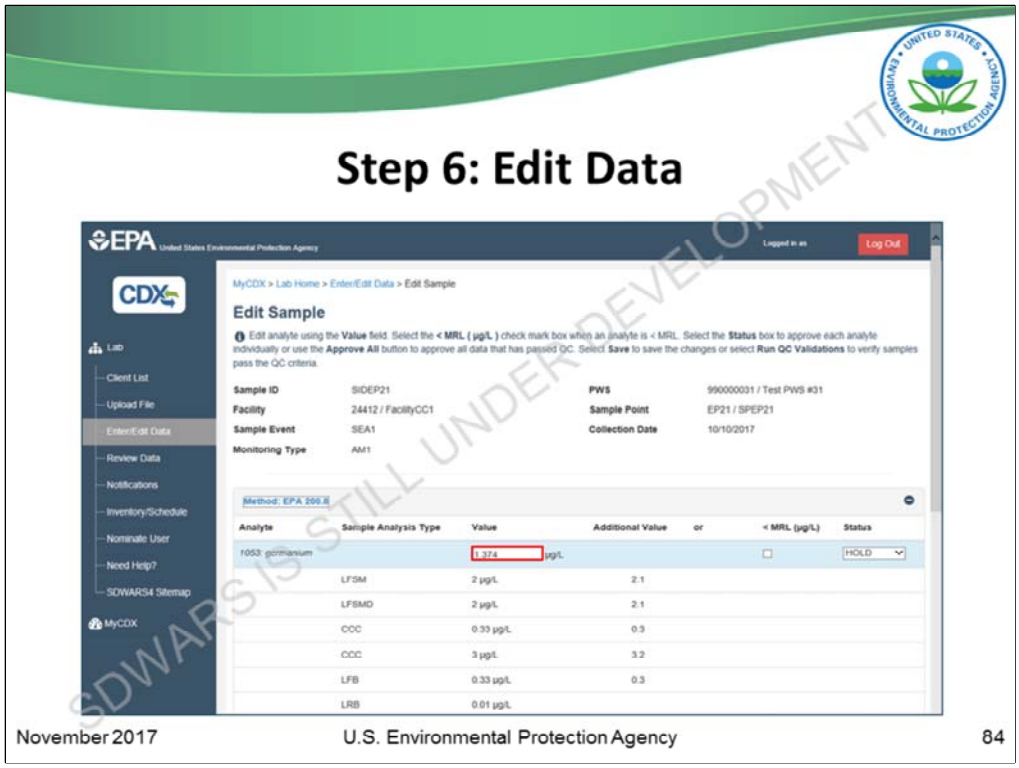
Click edit icon on the right to revise or add information for that sample. Click the delete icon to remove a sample from the list. These actions are only available when a sample is still in the lab hold status. Once you have approved a sample, you can no longer alter that data.

Click the download or print buttons at the top right corner to print or download sample files.

The **Enter/Edit Data** screen will only display the sample results that are still in lab hold.

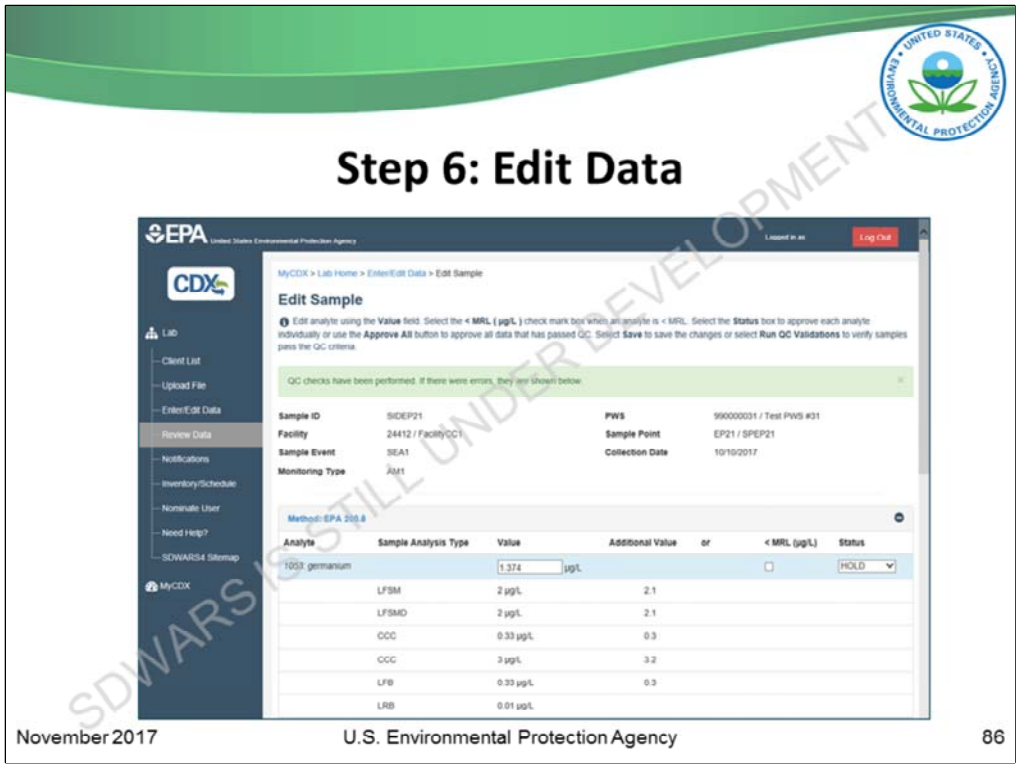


In the edit view, if your data has **QC Errors** the area under status will read **QC Errors**, click on this link to view individual **QC Errors** in a pop-up box. This pop-up box is the same as we have discussed previously.

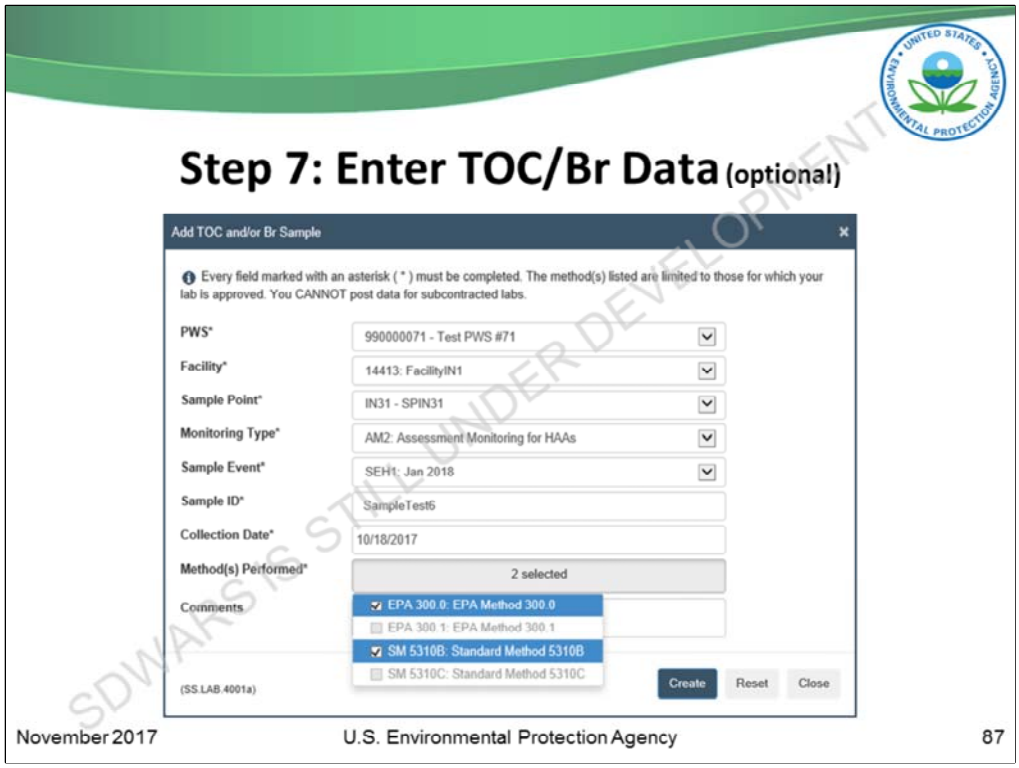


Edit the field sample analyte using the **Value** field. Select the **< MRL (µg/L)** check mark box when an analyte is < MRL. Select the **Status** box to approve each analyte individually.

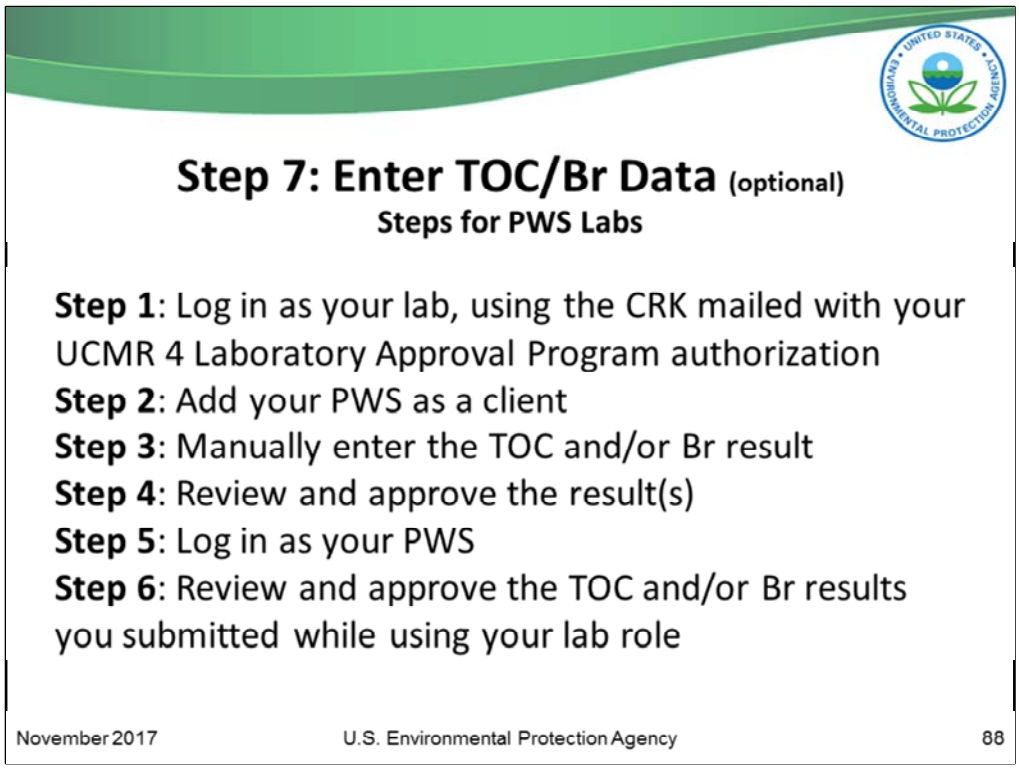
Or use the **Approve All** button to approve all data that has passed QC. Select **Save** to save the changes or select **Run QC Validations** to verify samples pass the QC criteria. This may be especially useful if you had previously loaded a partial file which was waiting in lab hold for its companion data. Once the second file has been loaded and completes the dataset, click the **Run QC Validation** button to ensure all QC criteria are met.



Once you hit the **Run QC Validations** button QC checks will be performed. If your data doesn't pass QC it will be indicated on this screen under **Status**. Hit **Approve All** to send data to your PWS.



Step 7: Enter TOC/Br data. This is an optional step available to only those labs approved for TOC and/or Br. Once you click **Add Sample** this pop-up box will display. Every field marked with an asterisk (*) must be filled in. You cannot post data for subcontracted labs. Hit **Save** once the fields are filled to save to add sample to sample list.



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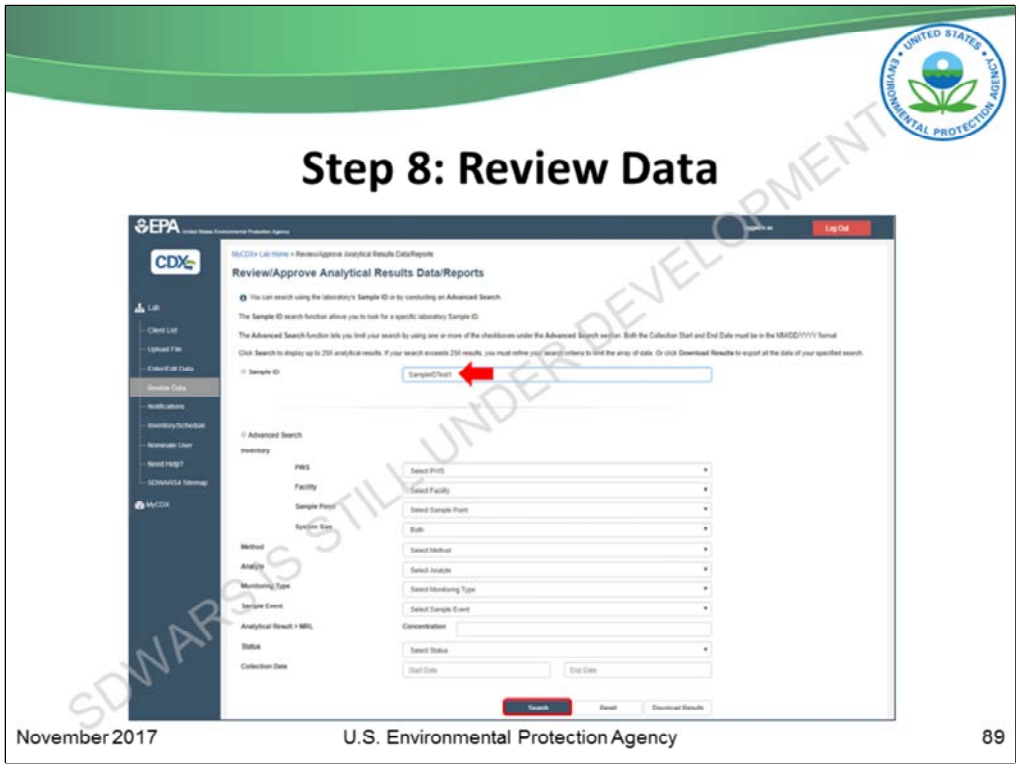


Step 8: Review Data. You can search using the laboratory's **Sample ID** or by conducting an **Advanced Search**. The **Sample ID** search function allows you to look for a specific laboratory **Sample ID**. The **Advanced Search** function lets you limit your search by using one more of the checkboxes under the **Advanced Search** section. Both the Collection Start and End Date must be in the MM/DD/YYYY format as listed in the instructions. You can use the wildcard percent symbol (**%**) to search for all of your data in those search fields that do not have a drop-down list. Click **Search** to display up to 250 analytical results. If your search exceeds 250 results, you must refine your search criteria to limit the array of data. Or click **Download Results** to export all the data of your specified search.

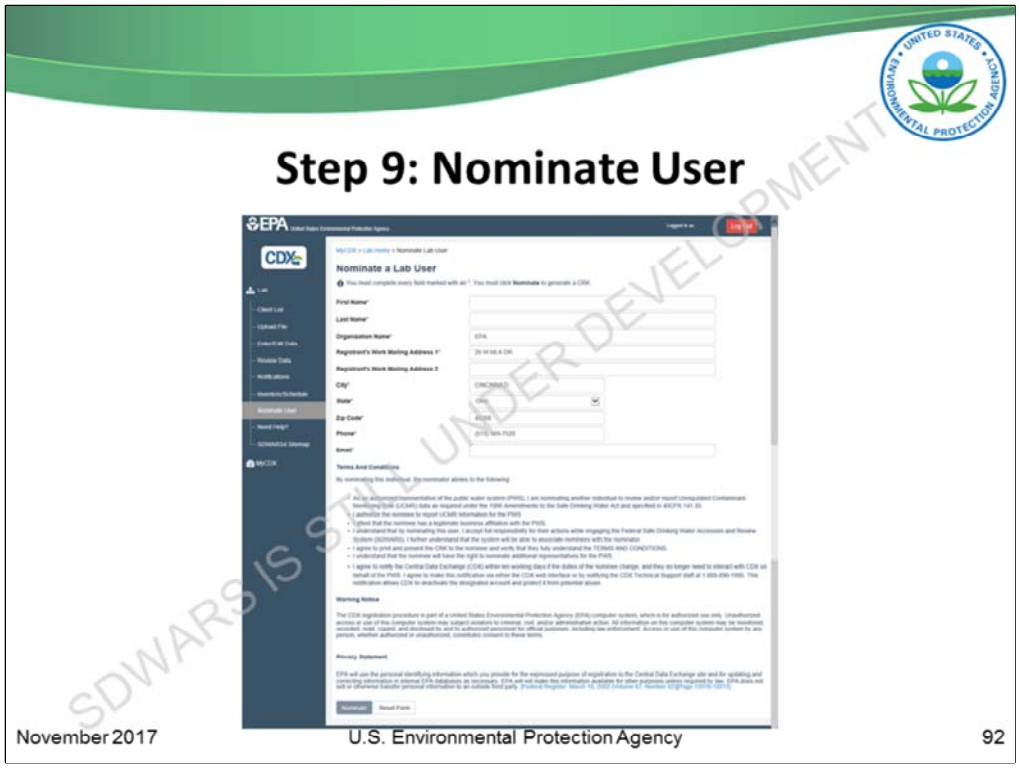
Use the **Review Data** search function to review any data that your lab has submitted, regardless of status. You will not be able to take any action on items that are in a review status of **Lab Approved** or higher but you will be able to search for those results. Lab hold data is also viewable through this search. You can additionally search by status if needed.

This view does look similar to the view in the **Enter/Edit Data** section but the key differences are that the possible search results are different (this section can display data in all statuses as we just discussed). You cannot edit any data in this view, only approve data that is still in lab hold and has passed QC. Select a **Status** for each analytical result. The **Approve All** button will set all lab hold statuses on the page to **Approve**.

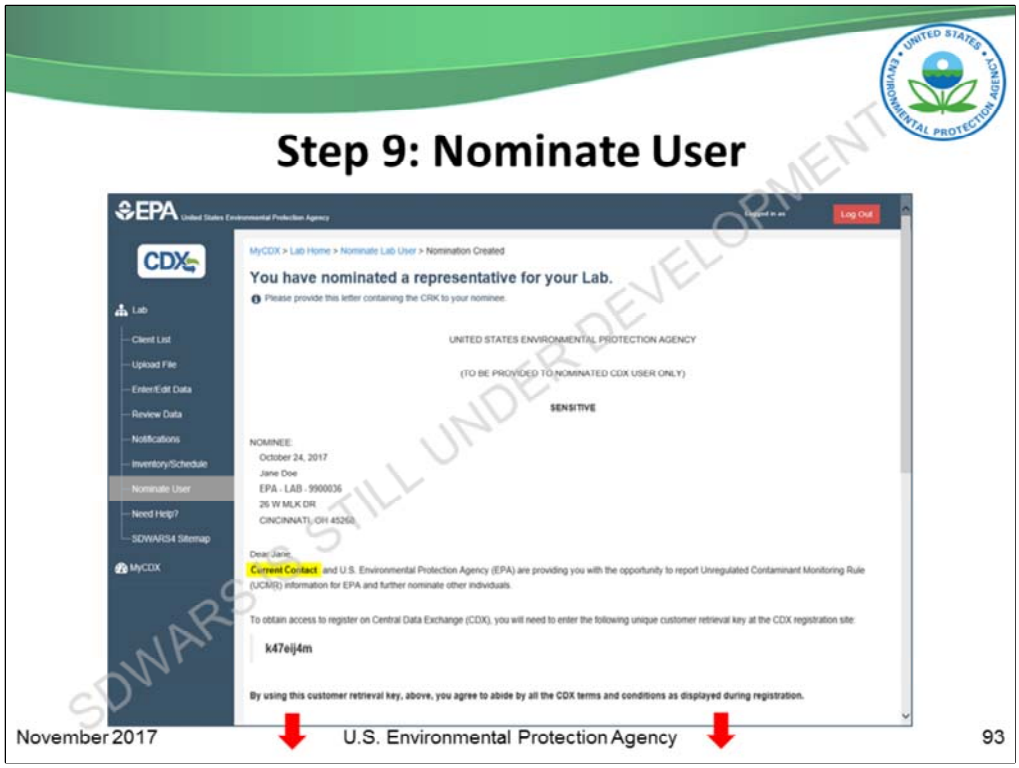
Data that indicates **Range Check** has a **Range Check Violation** and must be reviewed/edited in order to be lab approved.

To officially release data to your client PWS, you MUST change the **Status** to **Approve** and click the **Save** button.

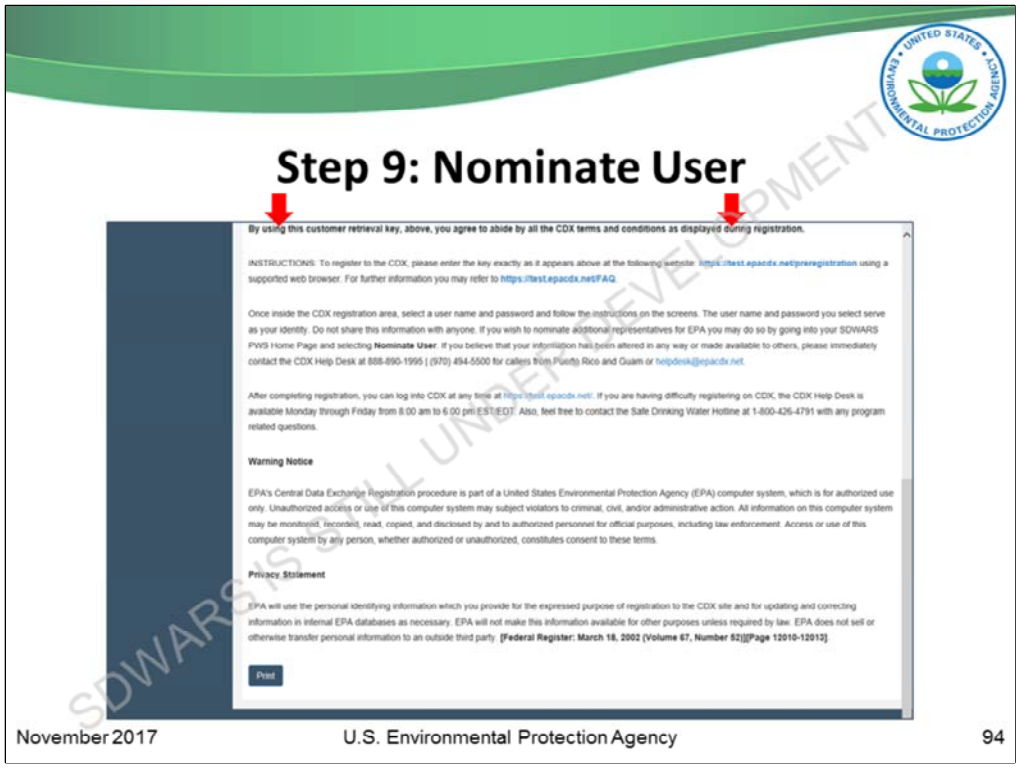
You can collapse a section by clicking on the (**–**) sign. To officially release data to your client PWS, you MUST change the **Status** to **Approve** and slick the **Save** button or the **Approve All** button.



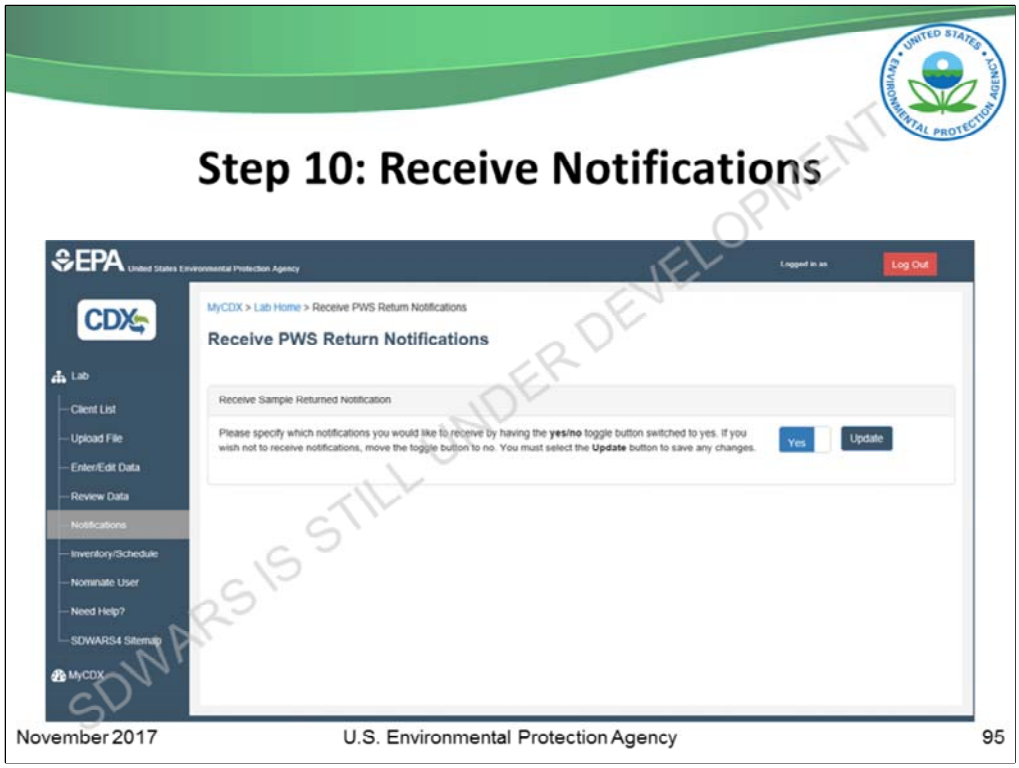
Step 9: Nominate user. To nominate a user, click **Nominate User** in the menu and fill in the necessary information. Please read the terms and conditions carefully prior to nominating.



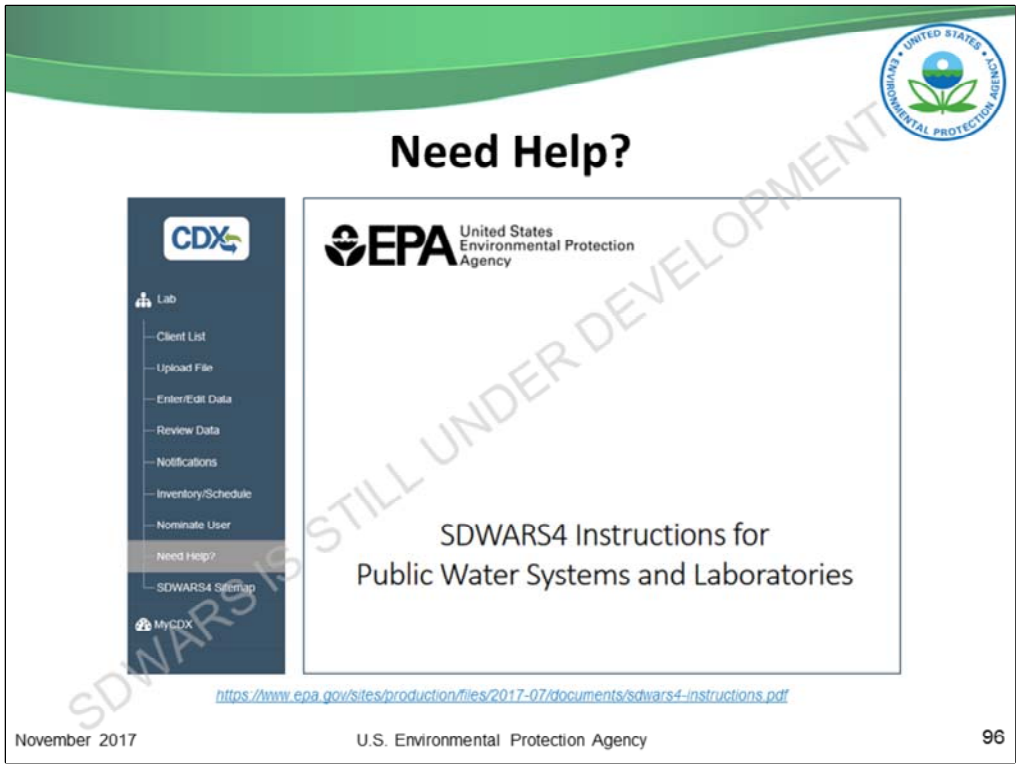
Once you click **Nominate** you will see a confirmation at the top of your screen, saying "You have nominated a representative for your Lab". As the confirmation page is long, the top part will show the nominee information and, more importantly, a CRK number for the nomination. Red arrows indicate that you need to scroll down to review the instructions, warning notice, privacy statement and print option (see next page).



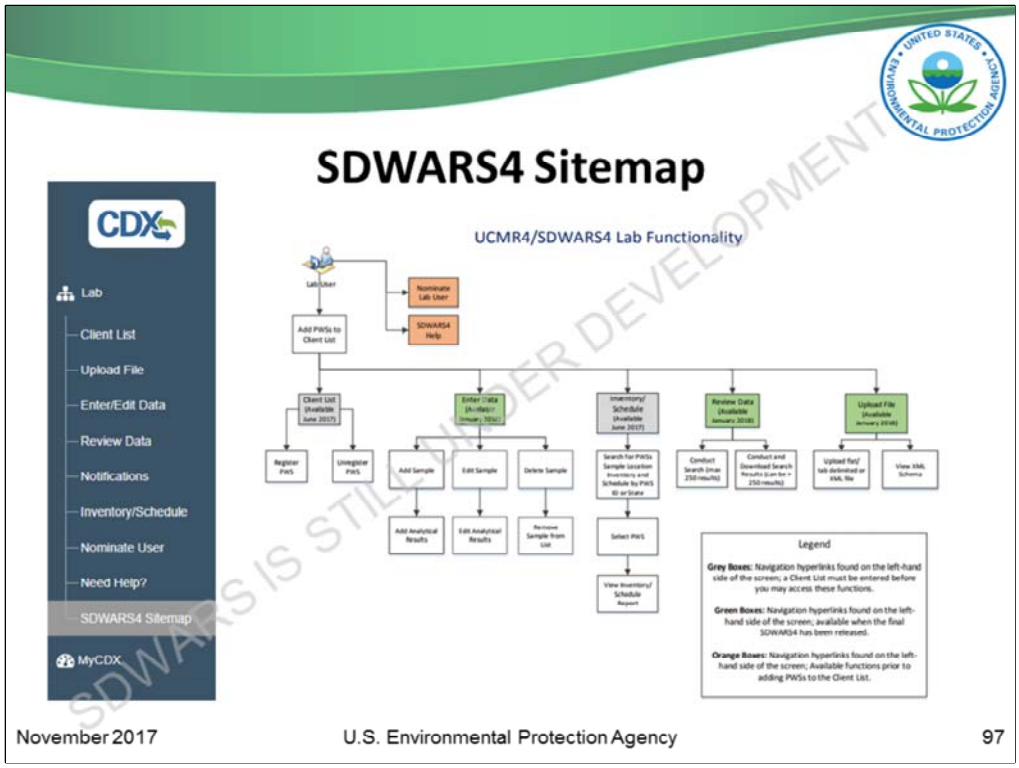
This is the bottom portion of the nomination agreement from previous page. You have to carefully review the instructions on your notification page, warning notice and privacy statement. You must print out the CRK and registration instructions for the nominee.



Step 10: Receive Notifications. Under **Notifications** you can select to receive sample returned notifications by having the yes/no toggle button switched to **Yes**. If you wish not to receive notifications, move the toggle button to **No**. You must select the **Update** button to save any changes.



Need Help? If so, Select **Need Help?** on the left side menu to access the SDWARS4 help document. This document walks through the screenshots for both the lab and PWS roles so it is a good resource for both lab questions and for walking your client PWS through inventory, schedule or data review questions. This document is being updated as new functionality becomes available.



Lastly, here is the sitemap of SDWARS which can be accessed through the **SDWARS4 Sitemap** link in the main menu.