DISTRIBUTION
PROJECT MANAGERS MEETING
200 AREA GROUNDWATER and SOURCE OPERABLE UNITS
March 21, 2019

FINAL MEETING MINUTES

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200 AREA PROJECT MANAGERS MEETING
Attachments List
March 21, 2019

Minutes of the 200 Area Project Managers Meeting of March 21, 2019 are attached. Minutes are comprised of the following:

Attachment 1	**Agenda**
Attachment 2	**Attendees Sign In Sheets**
Attachment 3	**Signature Approval Page**
Attachment 4	**Milestones and O. U. Status November – February Data**
Attachment 5	**Documents Entered into the AR, and Approved TPA Change Notices (November – February) Data**
Attachment 6	**Email – CHPRC to DOE, ECY and EPA, *Unfiltered Hexavalent Chromium*, SGW-63225, Revision 0**
Attachment 7	**Action Item List**

200 AREA PROJECT MANAGERS MEETING
AGENDA
March 21, 2019

Sign Concurrence to November 15, 2018 Minutes

Milestones and O. U. Status- November 2018 – February 2019 Data

- Deep Vadose Zone
- 200-IS-1 and 200-EA-1
- 200-SW-2
- 200-SW-1
- 200-OA-1, 200-CW-1, 200-CW-3
- 200-BC-1 and 200-WA-1
- 200-BP-5 and 200-PO-1
- M-015 Milestone Series
- 200-PW-1/3/6 and 200-CW-5
- 200-UP-1
- 200-ZP-1
- 200 Area Groundwater/200 West P&T Facility
- M-016 Milestone Series
- M-024 Milestone Series
- 200 Area RCRA TSD Closures
- Canyon Facilities
- Waste Site Removal
- Unfiltered Hexavalent Chromium

Documents for the Administrative Record and Approved TPA Change Notices

Special Topic – Hexavalent Chromium

- Email - CHPRC to DOE, EPA and ECY, March 20, 2019, *Unfiltered Hexavalent Chromium*, SGW-63225, Revision 0

Action Items

Closing Comments (all)

- Sign concurrence to meeting minutes if applicable

- Future PMM meetings will be held in 2420 Stevens Room 308 from 2:30-3:30pm as follows:

<u>2019</u>

- March 21
- May 16
- July 18
- September 19
- November 21

CHPRC-1901098
ATTACHMENT 2

200 Area Project Managers Meeting
March 21, 2019

PRINTED NAME	ORGANIZATION	O.U. ROLE	TELEPHONE
KIM WELSCH	ECOLOGY	DOC. LEAD	372-7882
GEORGE JACKSON	PRC	PM	373-4355
JOE AXTELL	DOE RL	200WA1	373-6687
Martin Doornbos	CHPRC	Centralm	438-5516
Stuart Luttrell	ECY	HG	372-7883
Kathy Higgins	DOE	ALL	376-3658
Michael Clone	DOE/RL	ALL	376-6070
Bob Long	" "	"	6-7754
Stephenie Schlef	ECY	GB-1 CP-1	372-7929
Kelly Elsethagen	ECY	200-SW-2 NRDWL/SWL	372-7923
Shelley Cimon	ODOE		(541) 240-0161
Laura Buelow	EPA		376-5466
Craig Cameron	EPA		376-8665
Alicia Boyd	Ecology	All for Nina Menard	372-7934
Mark French	DOE-RL	PM	373-9863
Brigitte Weese	Ecology	Permit lead	372-7936
Shannan Johnson	DOE	Canyons	373-7689
Deborah Singleton	CHPRC		
Bob Cathel	CHPRC		376-1513
Scott Davis	USA	TPA	376-8753

200 Area Project Managers Meeting
Meeting Minutes Approval
March 21, 2019

APPROVAL: _____ **DATE:** 3/21/2019
Michael Cline, 200 Area Project Manager, DOE/RL

APPROVAL: _____ FOR OA FARA **DATE:** 3/21/2019
Al Farabee, 200 Area Project Manager, DOE/RL

APPROVAL: _____ **DATE:** 3/21/2019
Craig Cameron, 200 Area Project Manager, EPA

APPROVAL: _____ **DATE:** 3/21/2019
for **Nina Menard, 200 Area Project Manager, Ecology**

HFFACO Action Plan Section 4.1 requires signature of agreements and commitments made during the Project Manager Meeting. Approval of these minutes, documents agreements and commitments identified in the attached "Milestones and O.U. Status" and the "Action Item List". Approval does not apply to the minutes themselves or to any other attachments.

200 AREA PROJECT MANAGERS MEETING
Milestones and O.U. Status
November 2018 – February 2019 Data
March 21, 2019

200-DV-1 Ecology Lead (RL –Jim Hanson, CHPRC – Mark Byrnes)

- The 200-DV-1 Treatability Test Evaluation Report, Draft A, was finalized and submitted to Ecology for review on January 28, 2019, as committed to in letter 19-AMRP-0030 and in response to Ecology's letter 18-NWP-166.
- Initiated preparation of the Laboratory Test Plan in late December 2018. This plan outlines the objectives and testing of the six laboratory studies recommended in the 200-DV-1 Treatability Test Evaluation Report, Draft A (DOE/RL-2017-56). The model/paper study supporting a Barrier Design was also initiated.
- Developing the Perched Water Conceptual Site Model (CSM) that identifies how the recently collected 200-DV-1 characterization samples have impacted the Perched Water CSM. A presentation to Ecology is tentatively scheduled for April 8, 2019.
- Scheduled a meeting for April 9, 2019 to brief Ecology on the 200-DV-1 field characterization reports to define the nature and extent of contamination at a number of major waste disposal facilities.
- A total of 438,000 gallons have been pumped from the perched water wells YE-28, YE-29 and YE-30 to date (February 28th), with a total of 58,000 gallons pumped between November 2018 through February 2019. Wells YE-28 and YE-29 were offline at different times for well redevelopment in an attempt to improve extraction well yield.

Perched well	Cumulative to date (gallons)*	November 2018 (gallons)	December 2018 (gallons)	January 2019 (gallons)	February 2019 (gallons)
YE-28	50,000	0	2,000	5,000	4,000
YE-29	216,000	0	0	0	0
YE-30	172,000	13,000	13,000	13,000	8,000

*Data through February 28, 2019.

Regulatory Agency Comments: None

Deep Vadose Zone Treatability Studies EPA Lead (RL –Jim Hanson, CHPRC – Dave St John)

- The Uranium Reactive Gas Sequestration Treatability Test Report (Rev 1) was provided to EPA and Ecology on January 28, 2019.

Regulatory Agency Comments: None

200-IS-1 Ecology Lead (RL- Doug Hildebrand, CHPRC – Mike Hickey)

- No work planned for FY2019.

M-015-112: Submit Draft B, 200-IS-1 OU Pipeline System Waste Sites RFI/CMS/RI/FS work plan to Ecology, including a schedule of completion dates for major tasks and deliverables, 11/30/2020.

- Status: At risk. Due to competing resources, document schedule will be determined after completion of the 200-EA-1 RI/FS Work Plan.

Regulatory Agency Comments: None

200-EA-1 Ecology Lead (RL- Doug Hildebrand, CHPRC – Mike Hickey)

- All Ecology's comments on the Draft A 200-EA-1 RI/FS WP and SAP have been resolved, except:
  - Infiltration rate(s) to be evaluated during vadose zone modeling
  - Waste site characterization for PCB/Congeners
- RL and Ecology have agreed to present the competing proposals to the IAMIT for discussion/resolution.

200 AREA PROJECT MANAGERS MEETING
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M-015-92A: Submit a RFI/CMS & RI/FS work plan for the 200-EA-1 OU (200 East Inner Area) to Ecology, 7/31/2018

- Status: Completed 7/12/2018

Regulatory Agency Comments: None

200-SW-2 Ecology Lead (RL- Doug Hildebrand, CHPRC – Mike Hickey)

- No actions planned in FY2019 due to funding.

M-015-93C: Initiate characterization fieldwork for the 200-SW-2 Operable Unit landfills in accordance with the schedule in the approved RI/FS/RFI/CMS Work Plan.

- Status: Dispute resolution invoked on July 9, 2018 (18-AMRP-0135).

Regulatory Agency Comments: None

200-SW-1/NRDWL Ecology Lead (RL- Doug Hildebrand, CHPRC- Mike Hickey)

- Preparing the landfill cap design components for the NRDWL closure plan, which includes the construction quality control framework document and the storm water run-on/run-off calculations for final cover.

Regulatory Agency Comments: None

200-OA-1 (Outer Area), 200-CW-1, and 200-CW-3 EPA Lead (RL- Jim Hanson, CHPRC – Mike Hickey)

- Not funded in FY19.

M-015-38B Submit FS/PP for 200-CW-1, 200-CW-3 and 200-OA-1 OUs. Due 07-31-2023

- Status: On schedule.

Regulatory Agency Comments: None

200-BC-1 and 200-WA-1 EPA Lead (RL- Joe Axtell, CHPRC – Mike Hickey)

- No work planned for FY2019.

M-015-98: Complete remedial investigation of U Plant related waste sites located in 200-WA-1 in accordance with the WA-1 RI/FS Work Plan.

- Status: At Risk. Formal notification on February 19, 2019 that this milestone is at risk.

M-015-99: Complete remedial investigation of PFP related waste sites located in 200-WA-1 in accordance with the 200-WA-1 and 200-BC-1 RI/FS Work Plan

- Status: At Risk. Formal notification on February 19, 2019 that this milestone is at risk.

M-015-84 Complete RI of 200-WA-1 and 200-BC-1 Waste Sites in Accordance with RI/FS Work Plan.
Due 12-31-2021

- Status: At Risk. Formal notification on February 19, 2019 that this milestone is at risk.

200 AREA PROJECT MANAGERS MEETING
Milestones and O.U. Status
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M-015-91B Submit FS/PP for the 200-BC-1/200-WA-1 OUs to EPA.
Due 07-31-2023

- Status: At Risk. Formal notification on February 19, 2019 that this milestone is at risk.

Regulatory Agency Comments: None

200-BP-5 and 200-PO-1 Ecology Lead (RL – James Hanson, CHPRC – Chris Cearlock)

- Received Ecology comments on the Draft A, 200-BP-5/200-PO-1 Feasibility Study (FS) that supports an Interim Record of Decision (IROD) on February 27, 2019.
- Preparing the Draft A, 200-BP-5/200-PO-1 Proposed Plan for transmittal to Ecology by March 31, 2019.
- Received Ecology comments on the Draft A, Central Plateau Groundwater Tracer Study Sampling and Analysis Plan on January 16, 2019. Partial EPA comments were received on March 5, 2019.

M-015-21A: Submit 200-BP-5 and 200-PO-1 OU FS Report & PP(s) to Ecology, 3/31/2019.

- Status: On schedule. FS was submitted on December 18, 2018 and the PP is on schedule to be submitted by March 31, 2019.

Regulatory Agency Comments: None

200-PW-1/3/6 and CW-5 EPA Lead (RL- Robert Long, CHPRC – Mike Hickey)

- Not funded in FY2019.

  - Request and Obtain Project Funding (FY16-18). RL has not requested project funding.
  - CD-0, Approve Mission Need (FY18). RL has not begun process.
  - CD-0 to CD-1, Approve Alternative Selection and Cost Range (FY18-20). RL has not begun process.

Regulatory Agency Comments: EPA considers the attached schedule to be enforceable.

- A number of items are listed in the PW 1/3/6 RD/RA Work Plan for FY16-19. Would DOE confirm in the meeting minutes if any of these activities have been started and if any funds have been spent to date on these items?
  - Request and Obtain Project Funding (FY16-18). RL has not requested project funding.
  - CD-0, Approve Mission Need (FY18). RL has not begun process.
  - CD-0 to CD-1, Approve Alternative Selection and Cost Range (FY18-20). RL has not begun process.
- Please note that EPA has not agreed to any delays in this schedule and expects the RD/RA WP schedule to be followed since it is an enforceable part of the remedial action work plan. Any proposed changes to the schedule need to be discussed in a timely manner.
- EPA wants to have monthly meetings on PW 1/3/6 moving forward to discuss the schedule. The outcomes of these meetings will need to be documented.

No.	Task Name
1	Remediate 200-CW-5 and 200-PW-1/3/6 Operable Units
1.1	Manage 200-CW-5 and 200-PW-1/3/6 Remediation
1.1.1	Project Management and Support for 200-CW-5 and 200-PW-1/3/6 Remediation
1.1.2	Acquire Remediation System for 200-CW-5 and 200-PW-1/3/6
1.1.2.1	Request and Obtain Project Funding
1.1.2.2	CD-0, Approve Mission Need
1.1.2.3	CD-0 to CD-1, Approve Alternative Selection and Cost Range
1.1.2.4	CD-1 to CD-2, Approve Performance Baseline
1.1.2.5	CD-2 to CD-3, Approve Start of Construction/Execution
1.1.2.6	CD-3 to CD-4, Approve Start of Operations or Project Completion
1.1.3	Mobilize Remediation System for 200-CW-5 and 200-PW-1/3/6
1.2	Remove, Treat, and Dispose of Contaminated Soil and Debris
1.2.1	Manage RTD of Contaminated Soil and Debris
1.2.2	RTD of Soil and Debris from Z Ditches
1.2.3	RTD of Soil and Debris from 216-Z-5
1.2.4	RTD of Soil and Debris from 216-Z-18
1.2.5	RTD of Soil and Debris from 216-Z-9
1.2.6	RTD of Soil and Debris from 216-Z-12
1.2.7	RTD of Soil and Debris from 216-Z-1A, Z-1, Z-2, and Z-3
1.3	Remove, Treat, and Dispose of Settling Tanks
1.3.1	Manage RTD of Settling Tanks
1.3.2	RTD of Tank 241-Z-8
1.3.3	RTD of Tank 241-Z-361
1.4	Enhance Soil Cover, Install ET Barriers, and Demobilize the Project
1.4.1	Manage Enhance Soil Cover, Install ET Barriers, and Demobilize the Project
1.4.2	Enhance Soil Cover for Cs-137 Waste Sites
1.4.3	Install ET Barriers
1.4.4	Demobilize the Project
1.5	Long-Term Stewardship
1.5.1	Manage Long-Term Stewardship
1.5.2	Institutional Controls
1.5.3	Surveillance, Operations, and Maintenance
1.5.4	CERCLA 5-Year Review

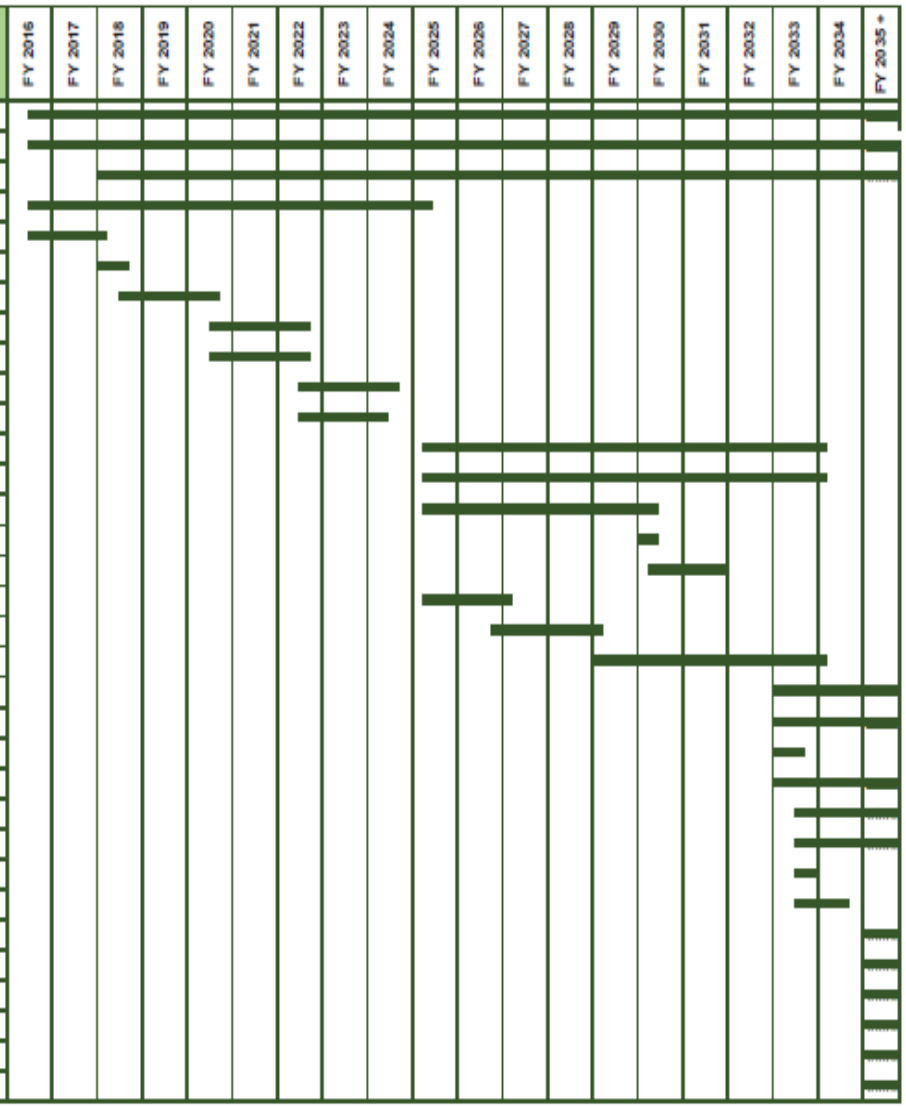

Figure 7-1. RA Schedule for the 200-CW-5, 200-PW-1, 200-PW-3, and 200-PW-6 OUs

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200-UP-1 EPA Lead (RL – Kate Amrhein, CHPRC –Chris Cearlock, PNNL-D. Wellman [I-129])

- Met with EPA on February 7, 2019 to discuss their comments on the Draft A 200-UP-1 SE Chromium Plume Remedial Design Investigation Report. The comments were resolved and the document is being finalized.
- Received regulator approval of TPA change notice TPA-CN-0850 for the UP-1 Drilling SAP on February 7, 2019.

Regulatory Agency Comments: None

200-ZP-1 EPA Lead (RL – Kate Amrhein, CHPRC – Mark Byrnes)

- The Remedial Design/Remedial Action Work Plan (RD/RAWP), the Performance Monitoring Plan (PMP), and the O&M Plan are being revised to incorporate new information on remedy implementation and activities associated with remedy optimization.
- The successful Chlorination Pilot Test has transitioned to include all the injection wells into the Injection Transfer Building-2, which began in early February 2019. The chlorination of the injection wells connected to Injection Transfer Building -1, which started in early November, is ongoing. Due to inclement weather, "pigging" operations have ceased and will resume late March 2019.
- Briefed EPA on February 19, 2019 on the 4th Quarter CY 2018 200 P&T Performance. Highlights include:
  - Throughput averaged 2,085 gpm for the 4th quarter, ranging from 2,005 to 2,157 gpm
  - Treated over 1,089 million gallons (4,125 million liters) of water through the 200 West P&T
  - Contaminants of Concern continue to decline
  - Implemented a process change to mitigate biofouling. Replaced ferric chloride with ferric sulfate, which reduces the manganese from 30-50 µg/L down to 2 to 3 µg/L.
- Briefed EPA on February 19, 2019 the results of the Data Gap analysis that was preformed in 2017 to show how the future monitoring wells are ranked and prioritized to optimize the well network.
- Briefed EPA February 21, 2019 on the continued development of 200-ZP-1 Ringold A Data Quality Objective/Sampling and Analysis Plan – Analytical Approach. EPA concurred with the analytical approach (Step 5 of the process) presented.
- The drilling of three new monitoring wells began on February 20, 2019 for C9936/(699-46-61) and has reached a depth of 151 ft bgs February 28, 2019. Total depth is anticipated at 358 ft bgs. The second well began drilling on February 21, 2019 for C9738 (299-W6-17) and has reached a depth of 152 ft bgs February 28, 2019. Total depth is anticipated at 486 ft bgs. Drilling of C9936 is anticipated to complete mid-March. The third well is expected to begin drilling the third week in March.
- Planning to begin drilling an additional injection well, YJ-35/C9879 and an additional extraction well, YE-33/C9988 in mid/late March 2019.

Regulatory Agency Comments: None

200 BP-5 Removal Action (RL- Jim Hanson, CHPRC-Chris Cearlock)

- A total of over 13 million gallons of groundwater have been pumped from the BP-5 extraction well YE-31 (299-E33-360) in calendar year 2019.

B Complex Extraction Well	Calendar Year to Date (gallons)*	January 2019 (gallons)*	February 2019 (gallons)*
YE-31 (299-E33-360)	13.5 million	7.2 million	6.3 million

*Data through February 28, 2019.

Regulatory Agency Comments: ECY stated they would be providing a memo to file to allow exceedance of the "up to 150gpm" identified in the AM.

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Modular Storage Units/200 East EPA Lead (RL-Kate Amrhein, CHPRC-Dave Capelle)

- RL and EPA approved TPA-CN-0838 on December 17, 2018, extending the MSU Pilot Test to May 31, 2019 due to inclement weather and freezing pipe lines.
- Resolved EPA's comments on the Feed Stream Acceptance Criteria for the 200 West P&T (SGW-59872) and the MSU Optimization Pilot Test Report (DOE/RL-2018-70) on February 12, 2019. The documents are being finalized and are on schedule to be released at the end of March 2019.

Regulatory Agency Comments: None

200 Area Groundwater/200 West P&T Facility

- Treated 96.3 M gallons of water in December, which included the removal of:
  - 8,622 kgs of nitrate
  - 174 kgs of carbon tetrachloride
  - 8.0 kgs of chromium
  - 5.83 kgs of uranium
  - 1.99 Ci of Tc-99

200 Area Groundwater/200 West P&T Facility

- Treated 95.98 M gallons of water in January, which included the removal of:
  - 8,412 kgs of nitrate
  - 197 kgs of carbon tetrachloride
  - 8.1 kgs of chromium
  - 6.1 kgs of uranium
  - 1.88 Ci of Tc-99

200 Area Groundwater/200 West P&T Facility

- Treated 79.31 M gallons of water in February, which included the removal of:
  - 5,799 kgs of nitrate
  - 157 kgs of carbon tetrachloride
  - 6 kgs of chromium
  - 4.74 kgs of uranium
  - 1.55 Ci of Tc-99

200 AREA PROJECT MANAGERS MEETING
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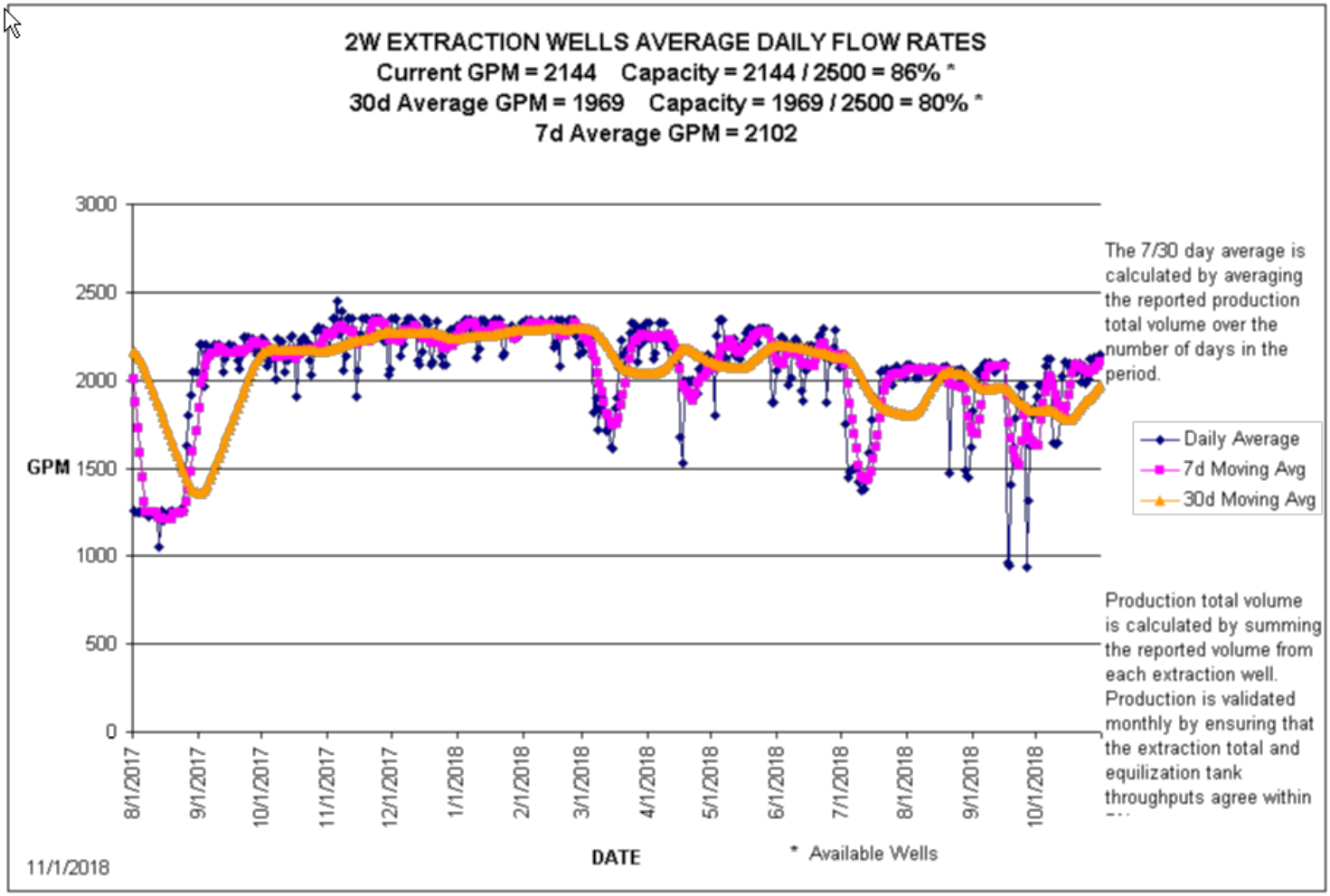

M-024 Well Installation Ecology Lead (RL-Kathy Higgins, CHPRC-Dave Capelle)

M-024-70: Complete the Construction of All Wells Listed for CY19 and Before.
- Status: Due 12-31-2019, On Schedule.

M-024-70-T01: Conclude Discussions of Well Commitments Initiated Under M-024-58.
- Status: Due 08-01-2019, On Schedule.

Regulatory Agency Comments: None

200 Area RCRA TSD Closures Ecology Lead (RL – Mostafa Kamal, CHPRC – Mike Hickey)
- Transmitted two certified Closure Plans (216-A-36B crib and 216-A-37-1 crib) to Ecology on February 05, 2019.
- Transmitted draft Closure Plan (216-A-29 Ditch) to Ecology for review on January 29, 2019.
- Presented the technical elements for the 216-B-Pond Closure Plan to Ecology on February 21, 2019.

Regulatory Agency Comments: None

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U Plant Canyon EPA Lead (RL – Robert Long, CHPRC – TBD)
- Nothing to report.

Regulatory Agency Comments: None

Canyon Facilities EPA/Ecology Lead (RL – Robert Long, CHPRC –George Jackson)
- B Plant: Tier 2 SAP Draft A to Regulators for Review in November; RAWP Rev. 0 Approved in December.
- REDOX: AM Rev. 0 Approved in November, RAWP/SAP/AMP in Final Comment Resolution, expected approval in early 2019.
- 200 East Area Miscellaneous Facilities (B Plant North): Tier 2 SAP Draft A to Regulators in December; Tier 2 RAWP Draft B expected to be sent to Regulators in early 2019 for Review.

Regulatory Agency Comments: None

Waste Site Removal Ecology Lead (RL- Al Farabee, CHPRC – Darin Corriell)
- Submitted to Ecology the three year rolling prioritized schedule as described in TPA milestone M-016-250C on March 28, 2018.

M-016-250: Submit to Ecology for approval a three-year rolling prioritized schedule consistent with site-wide clean-up priorities to implement waste site removal actions per Action Memoranda, March 31, 2016, and annually thereafter.
- Status: Complete on 3/28/2018 M-016-250C, due 3/31/2018.

Regulatory Agency Comments: Change Control form M-16-16-01 addressing Milestones M-016-255 and M-016-256 was disapproved by ECY on July 12, 2018.

Monthly Performance Report Assessment
The DOE project managers have not identified any significant issues with CHPRC's previous Monthly Performance Report to be addressed at this meeting.

Unfiltered Hexavalent Chromium
On March 20, 2019, CHPRC met with RL, Ecology, and EPA to discuss the benefit of collecting unfiltered hexavalent chromium samples (see Attachment 8). An agreement was reached that while under remedy performance monitoring, unfiltered hexavalent chromium samples are not required. The following list of documents specifically call out unfiltered hexavalent chromium as a sampling requirement in the Central Plateau.

Operable Unit	Document Number, Revision	Document Title
200-BP-5	DOE/RL-2014-33, R1	Sampling and Analysis Plan for the 200-BP-5 Groundwater Operable Unit
200-PO-1	DOE/RL-2013-46, R1	Groundwater Monitoring Plan for the Liquid Effluent Retention Facility
200-PO-1	WA7890008967, Part III, OUG3 Addenda D, OU3, CH3	WA7890008967, Part III, OUG3 Addenda D, LERF (200-E-17 Impoundment) LERF& 200 Area Effluent Treatment Facility GMP

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Operable Unit	Document Number, Revision	Document Title
200-PO-1	DOE/RL-2010-92, R3	Interim Status Groundwater Monitoring Plan for 216-A-37-1 PUREX Plant Crib
200-PO-1	DOE/RL-2003-4, R1, amended by TPA-CN-205	Sampling and Analysis Plan for the 200-PO-1 Groundwater Operable Unit.
200-UP-1	DOE/RL-2008-61, R1	Interim Status Groundwater Monitoring Plan for the 216-S-10 Pond and Ditch
200-UP-1	DOE/RL-2015-14, R1	Performance Monitoring Plan for the 200-UP-1 Groundwater Operable Unit Monitoring Remedial Action
200-ZP-1	DOE/RL-2009-66, R1	Interim Status Groundwater Quality Assessment Plan for the Single-Shell Tank Waste Management Area T
200-ZP-1	DOE/RL-2009-67, R1	Interim Status Groundwater Quality Assessment Plan for the Single-Shell Tank Waste Management Area TX-TY
200-ZP-1	DOE/RL-2009-115, R2	Performance Monitoring Plan for the 200-ZP-1 Groundwater Operable Unit Remedial Action

With concurrence from Ecology and EPA below, the unfiltered hexavalent chromium requirement in the above list of documents will be suspended, and as applicable, will be changed to filtered hexavalent chromium. At the appropriate time, these documents will have a TPA-CN or revision issued to remove or modify the unfiltered hexavalent chromium sampling requirement.

Regulatory Agency Comments: With signing of the minutes today, ECY, EPA, and RL agree that the unfiltered hexavalent chromium samples required by the above documents are no longer needed. In the event that the above work documents call out for unfiltered hexavalent chromium, filtered will be substituted.

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Central Plateau Milestones

MS#	Title	Due Date
Fiscal Year 2018		
M-015-93C	Initiate characterization field work for the 200-SW-2 OU	9/30/2018 In Dispute
M-016-255	DOE shall complete the removal of all waste sites for FY2018 as identified in TPA Change Package M-16-16-01.	9/30/2018 In Dispute
Fiscal Year 2019		
M-024-69	Complete construction of all wells listed for CY18 and before as listed in M-24-15-01	5/31/2017 Complete
M-016-256	DOE shall complete the removal of all waste sites for FY2019 as identified in TPA Change Package M-16-16-01.	9/30/2019 In Dispute
M-015-21A	Submit BP-5/PO-1 FS/PP for Interim ROD	3/31/2019
M-015-98	Complete remedial investigation of U Plant related waste sites located in 200-WA-1 in accordance with the WA-1 RI/FS Work Plan	6/30/2019 At Risk
M-085-70	Submit RI/FS Work Plan for 200-CB-1	9/30/2019 At Risk
Fiscal Year 2020		
M-015-99	Complete remedial investigation of PFP related waste sites located in 200-WA-1 in accordance with the 200-WA-1 and 200-BC-1 RI/FS Work Plan.	12/31/2019 At Risk
M-024-71-T01	Conclude discussions of well commitments initiated under M-024-58	8/1/2020
M-085-72	Submit RAWP to implement the approved Action Memorandum for 224-B	9/30/2020
M-085-80	Submit RI/FS Work Plan for 200-CP-1	9/30/2020 At Risk
M-085-100	Submit a RAWP to implement the approved Action Memorandum for 224-T	9/30/2020
M-037-10	Complete Unit-Specific closure requirements for six TSD units	9/30/2020
Fiscal Year 2021		
M-015-112	Submit RFI/CMS & RI/FS Work Plan for 200-IS-1 Work Plan to Ecology	11/30/2020 At Risk
M-016-86	Complete remedial actions for 618-11 Burial Ground	9/30/2021 At Risk
M-085-90	Submit RI/FS Work Plan for 200-CR-1	9/30/2021
Fiscal Year 2022		
M-015-84	Complete RI of 200-WA-1 and 200-BC-1 Waste Sites in Accordance with RI/FS Work Plan	12/31/2021 At Risk
M-037-13	Complete unit-specific closure requirements for 241-CX Tank System	9/30/2022
Fiscal Year 2023		
M-015-92B	Submit RFI/CMS, RI/FS Study report and Proposed CAD/PP for 200-EA-1	11/30/2022 At Risk

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M-015-93B	Submit RFI/CMS & RI/FS Study Report and proposed CAD/PP for 200-SW-2 OU	1/31/2023 At Risk
M-015-92C	Submit RFI/CMS & RI/FS Study report and proposed CAD/PP for the 200-IS-1 OU to Ecology	3/31/2023 At Risk
M-015-38B	Submit FS/PP for 200-CW-1, 200-CW-3 and 200-OA-1 OUs	7/31/2023
M-015-91B	Submit FS/PP for the 200-BC-1 and 200-WA-1 OUs to EPA	7/31/2023 At Risk
M-015-110B	Submit CMS & FS and Proposed CAD/PP for 200-DV-1 OU	9/30/2023
Fiscal Year 2024		
M-016-200A	Complete U Plant canyon demolition	9/30/2024
M-037-11	Complete unit-specific closure requirements for 216-B-3 Main Pond System and 216-S-10 Pond and Ditch	9/30/2024
Fiscal Years 2025-2027		
M-085-76	Initiate response actions for the B Plant geographic area	9/30/2025
M-085-84	Initiate response actions for the PUREX geographic work	9/30/2025
M-085-01	Submit change package to establish a date for major milestone M-085-00	6/30/2026
M-016-200B	Complete U Plant barrier construction	9/30/2027

200 AREA PROJECT MANAGERS MEETING
Milestones and O.U. Status
November 2018 – February 2019 Data
March 21, 2019

Documents Submitted to the AR November 2018-February 2019 Data		
Number	**Title**	**Referencing Document**
ECF-200EA1-18-0061	Development of Contaminants of Potential Concern for the 200-EA-1 Operable Unit	DOE/RL-2016-58
DOE/RL-2015-56	Hanford Atomic Energy Act Site wide Groundwater Monitoring Plan	Annual Reports
ECE-200BP5 18-00003	Environmental Cost Estimate for the 200-BP-5/200-PO-1 Interim Action Feasibility Study	DOE/RL-2018-30
ECF-HANFORD-17-0233	Identification of Site-Specific Monitoring Constituents for the Low-Level Burial Grounds	Engineering Reports
ECF-HANFORD-18-0048	Preparation of the March 2018 Hanford Site Water Table and Potentiometric Surface Maps	Annual Reports
ECF-Hanford-18-0067	Calendar Year 2017 Total Organic Carbon / Total Organic Halides Limit Of Detection / Limit Of Quantitation Environmental Calculation	Annual Reports
SGW-58710-FP	Finding Balance Between Biological Groundwater Treatment and Treated Injection Water	SGW-62183
ECF-200E-18-0066	Groundwater Flow and Migration Calculations to Assess Monitoring Networks in the 200 East Area Dangerous Waste Management Units	Engineering Reports
SGW-62607	Disinfection Pilot Test on Injection Well YJ14 To Investigate and Mitigate Well Fouling at 200 West Pump & Treat Facility	200W Documents
H-2-62877 Rev 3	Plans and Details: 216-A-37-1 Crib	-
H-2-69262	Civil Plan and Profile: 4" Drain To 216-A-37-1 Crib	-
H-2-91137 Rev 1	Civil Site Plan: 216-A-37-2 Crib	-
SGW-62323 Rev 0	Central Plateau Groundwater Tracer Study Phase 1 Report	-
ECF-200-UP1-14-0019	Initial Groundwater Plume Development (Uranium, Technetium-99, Nitrate, And Iodine-129) to Support Fate and Transport Modeling for Remedial Design in the 200-UP-1 Groundwater Operable Unit	-
ECF-200E-17-0003 Rev 1	Evaluate 216-A-37-1 Dangerous Waste Designation	DOE-RL-2016-58
RHO-CD-34-4Q	Radioactive Liquid Waste Discharged to Ground in the 200 Areas During 1977	DOE-RL-2016-58
RHO-CD-78-34-4Q	Radioactive Liquid Waste Discharged to Ground in the 200 Areas During 1978	DOE-RL-2016-58
DOE-RL-2016-52 Rev 0	Action Memorandum for the Reduction-Oxidation Facility Complex	TPA
BHI-00105	FY 1993 Wellfield Enhancement Status Report and Data Package for the 200 West Area Carbon Tetrachloride Expedited Response Action	DOE/RL-2017-58
CHPRC-01056 -VA	Hanford Site - Deep Vadose Zone Cleanup Challenge	DOE/RL-2017-58
SGW-50712	Excavation Depth Techniques Study	DOE/RL-2017-58
ECF-HANFORD-18-0032	Methodology for Selection of Groundwater Concentration Limits for Site-Specific Constituents in Single-Shell Tank Waste Management Areas	Engineering Reports
ECFHANFORD-18-0033	Methodology for Selection of Groundwater Concentration Limits for Ecology No. 97-407 Appendix 5 Waste Constituents	Engineering Reports
SGW-61350	Data Gaps Evaluation In Groundwater Monitoring at the Hanford 200-ZP-1Groundwater Operable Unit	DOE/RL-2015-14
SGW-61993	Data Gap Evaluation for Groundwater Monitoring of the Hanford 200-UP-1 Groundwater Operable Unit	DOE/RL-2015-14
PNNL-27773	Deep Vadose Zone Treatability Test Of Uranium Reactive Gas Sequestration for the Hanford Central Plateau: Final Report	DOE/RL-2017-58

200 AREA PROJECT MANAGERS MEETING
Milestones and O.U. Status
November 2018 – February 2019 Data
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Documents Submitted to the AR November 2018-February 2019 Data		
Number	**Title**	**Referencing Document**
ECF-HANFORD-18-0058	Practical Quantitation Limits for Groundwater Environmental Samples	Engineering Reports

Approved Change Notices – November 2018 – February 2019

Number	Title
TPA-CN-0826	Changes to this drilling SAP are required to add 2 additional wells scheduled for drilling in 2019.
TPA-CN-0829	Amending the well list in DOE/RL-2016-13 to add 2 wells in the U Plant vicinity that are scheduled for installation in 2019, delete 1 optional well for which drilling was cancelled and add 5 wells that were added for performance monitoring.
TPA-CN-0824	This TPA Change Notice changes the date of pilot test plan, and adds the ability to pipe MSU water.
TPA-CN-0838	This TPA Change Notice changes the date of pilot test plan to end on May 31, 2019
TPA-CN-0826	Changes to this drilling SAP are required to add 2 additional wells scheduled for drilling in 2019.
TPA-CN-0829	Amending the well list in DOE/RL-2016-13 to add 2 wells in the U Plant vicinity that are scheduled for installation in 2019, delete 1 optional well for which drilling was cancelled and add 5 wells that were added for performance monitoring.
TPA-CN-0824	This TPA Change Notice changes the date of pilot test plan, and adds the ability to pipe MSU water.
TPA-CN-0838	This TPA Change Notice changes the date of pilot test plan to end on May 31, 2019
TPA-CN-0833	Changes are required to the 200-ZP-l SAP to incorporate one new injection well and one new extraction well.

From: Doornbos, Martin H
Sent: Monday, March 25, 2019 9:51 AM
To: O'Mara, Laura K
Subject: FW: Unfiltered Hexavalent Chromium Briefing
Attachments: SGW-63225-VA_R0.pdf

Please include in the UMM and PMM minutes for the hexavalent chromium reference. Thanks,

Martin H. Doornbos, P.E., P.G., PMP
Director
Soil & Groundwater Remediation Project
509.438.5516 | Martin_H_Doornbos@rl.gov
CH2MHILL
Plateau Remediation Company

From: Feist, Ella T <ella_t_feist@rl.gov>
Sent: Wednesday, March 20, 2019 11:08 AM
To: Buelow, Laura (EPA) <buelow.laura@epa.gov>; Doornbos, Martin H <martin_h_doornbos@rl.gov>; Balone, Steven N <steven.balone@rl.doe.gov>; Whitley, Kelly M <kelly_m_whitley@rl.gov>; Hartman, Mary J <mary_j_hartman@rl.gov>; Hulstrom, Jason A <jason_a_hulstrom@rl.gov>; Boyd, Alicia (ECY) <aboy461@ecy.wa.gov>; Glossbrenner, Ellwood T <ellwood.glossbrenner@rl.doe.gov>; Hansen, James A <james.hansen@rl.doe.gov>; Hanson, James P <james.hanson@rl.doe.gov>; Fitzgerald, Scot L <scot_l_fitzgerald@rl.gov>; Yokel, Jerel W <jyok461@ecy.wa.gov>; kiwe@ecy.wa.gov; Smith-Jackson, Noel <nsmi461@ecy.wa.gov>
Subject: Unfiltered Hexavalent Chromium Briefing

All,

Here are the notes from this morning's meeting regarding the Unfiltered vs. Filtered Hex Chrome Samples.

Attendees: Laura Buelow-EPA
Noel Smith-Jackson, Kim Welsch, Jerry Yokel—Ecology
Jim P. Hanson, Jim A. Hansen, Steve Balone, Ellwood Glossbrenner—RL
Marty Doornbos, Kelly Whitley, Mary Hartman, Jason Hulstrom, Scot Fitzgerald, Ella Feist—PRC

Meeting started with introductions. Marty Doornbos started meeting by providing a history which let up to the evaluation of Unfiltered vs. Filtered Hex Chrome Samples, which brings up the question of what is the benefit from sample results from unfiltered samples. The meeting followed the presentation that was handed out (see attached). The presentation guided us with the history/driver of performing unfiltered samples, summarizing the data use of unfiltered Cr+6, and the labs analytical Methods used to measure unfiltered Cr+6 and how they conduct those analyses. Discussions focused on the results of filtered vs. unfiltered Cr+6 in groundwater. At this time the data, the data is showing that there is a low bias with unfiltered samples.

The discussion continued to discuss the recommendation of do we continue to collect unfiltered samples and do they provide additional meaningful data during this time of the sites operations, i.e. remedy performance monitoring.

The agreement reached and will be documented at the next UMM (March 21, 2019) is at this time while in remedy performance monitoring, unfiltered samples are not required.

Actions that were identified to provide additional information to the regulators in support of this decision are:

1. The sections from the Standard Operation Procedures (SOP) for the collection of water samples for Cr +6 along with a copy sample of the chain of custody will be provided to Ecology and EPA.--Actionee Kelly Whitley and Scot Fitzgerald.
2. An evaluation of D/H area filtered and unfiltered data will be conducted and will be provided to Ecology and EPA.--Actionee Jason Hulstrom.
3. A regulatory memo to be issued clarifying the 2007 letter regarding collection of unfiltered Cr+6 samples-Ecology and EPA.
4. Further discussion to take place regarding compliance monitoring and the requirement of unfiltered Cr+6 samples-PRC in consultation with Ecology, EPA and RL.

Any further questions, please contact Jason Hulstrom.

Ella

SGW-63225-VA
Revision 0

Unfiltered Hexavalent Chromium

Date Published
March 2019

To be Presented at
Washington State Department of Ecology

Department of Energy - Richland
Richland, WA

March 2019

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Contractor for the U.S. Department of Energy
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APPROVED
By Lynn M. Ayers at 3:40 pm, Mar 14, 2019

Release Approval | Date

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Unfiltered Hexavalent Chromium

Presented by: Soil and Groundwater Remediation Project - CH2M Plateau Remediation Company
Presented to: Department of Energy-Richland Office, Washington State Department of Ecology and United States Environmental Protection Agency
Date: March 2019

CH2MHILL
Plateau Remediation Company
a Jacobs company

Why are we collecting unfiltered Cr(VI)?

- Washington State Department of Ecology (Ecology) and United States Environmental Protection Agency (EPA) transmitted a letter (Hedges and Ceto, 2007, "Field Filtering of Ground Water Samples Prior to Laboratory Analysis")
  - "The use of field-filtered ground water samples may cause an underestimation of the amount of contamination that is naturally mobile in the groundwater."
  - Ecology and the EPA, therefore, notify Department of Energy-Richland (RL) that future ground water samples should not be field-filtered unless the turbidity exceeds 5 nephelometric turbidity units.
  - Field-filtering under any circumstances must be specifically requested, with basis provided, and approved by Ecology or EPA in work plans.
- WAC 173-340-720, Groundwater cleanup standards, Section 9 Compliance monitoring:
  - When groundwater cleanup levels have been established at a site, sampling of the groundwater shall be conducted to determine if compliance with the groundwater cleanup levels has been achieved. Compliance with groundwater cleanup levels shall be determined by analysis of groundwater samples representative of the groundwater.
    - Analyses shall be conducted on unfiltered groundwater samples, <u>unless it can be demonstrated that a filtered sample provides a more representative measure of groundwater quality.</u>
- Risk assessment to determine basis for action requires unfiltered sample results (Risk Assessment Guidance for Superfund, Part A)

Data Use – Unfiltered Cr(VI)

- Remedy Performance Monitoring, Plume Mapping, etc.
  - Treated as duplicate for dissolved Cr(VI) analyses.
  - Typically, concentration averaged with filtered Cr(VI) and filtered total Cr analyses.
  - Turbidity corrections are known to create low bias in some cases.
  - Unfiltered hexavalent chromium results are more erratic, causing increased effort to evaluate data quality.
- CERCLA Compliance Monitoring
  - Compare current groundwater concentration to cleanup standards.
  - WAC identifies unfiltered results, unless filtered samples are more representative of groundwater quality.
- Risk Assessment
  - Risk Assessment Guidance for current groundwater concentration to establish baseline risk.
  - "While filtration of ground-water samples provides useful information for understanding chemical transport within an aquifer (see Section 4.5.3 for more details), the use of filtered samples for estimating exposure is very controversial because these data may underestimate chemical concentrations in water from an unfiltered tap. Therefore, data from unfiltered samples should be used to estimate exposure concentrations. Consult with the RPM before using data from filtered samples."
    - Risk Assessment Guidance for Superfund Volume I, Human Health Evaluation Manual (Part A), Section 6.5.2 Estimate Exposure Concentrations in Ground Water

Dissolved Hexavalent Chromium Analytical Methods Require Filtering

- Hexavalent Chromium analytical methods evaluate dissolved Cr(VI), no option for a total Cr(VI) analysis.

- Definition of “dissolved metals”:
  - The concentration of metals determined in an aqueous sample after the sample is filtered through a 0.45 µm filter.

    (Reference: Chapter Three of the SW-846 Compendium: Inorganic Analytes)

Analytical Methods Measure Dissolved Hexavalent Chromium Only

- **EPA Method 7196a (Colorimetric method using diphenylcarbazide)**
  - Method Scope, Step 1.1 - "Method 7196 is used to determine the concentration of dissolved hexavalent chromium [Cr(VI)]" in groundwater.
  - Summary of Method, Step 2.1 – "Dissolved hexavalent chromium, in the absence of interfering amounts of substances such as molybdenum, vanadium, and mercury, may be determined colorimetrically by reaction with diphenylcarbazide in acid solution."
- **Standard Method 3500-Cr B (Colorimetric method using diphenylcarbazide)**
  - Procedure Section*:* Step 4.B. – "Treatment of sample: Filter sample through a 0.45 µm filter"
  - Equivalent method to EPA Method 7196a
- **Standard Method 3500-Cr C (Ion Chromatographic Method)**
  - *Under General Discussion section:* Step 1.a. "Principle: This method is applicable to determination of the dissolved hexavalent chromium in drinking water, groundwater, and industrial wastewater effluents."
  - Step 1.d. "Sample preservation and holding time: Filter sample through a 0.45 um filter."

Analytical Methods Measure Dissolved Hexavalent Chromium Only

- **EPA Method 1636 (Ion Chromatographic Method)**
  - *Under General Discussion section:* Step 1.1. "This method is for the determination of dissolved hexavalent chromium (as CrO2-4) in ambient waters at EPA water quality criteria (WQC) levels using ion chromatography (IC)."
  - Step 1.8. "For dissolved Cr(VI) determinations, samples must be filtered through a 0.45 µm capsule filter at the field site."
- **EPA Method 7199 (Ion Chromatographic Method)**
  - *Under Summary of Method:* 2.1. "An aqueous sample is filtered through a 0.45-µm filter"
  - *Under Sample Collection, Preservation and Handling:* 6.2 "For determination of dissolved Cr(VI), the sample should be filtered through a 0.45-µm filter
- **EPA Method 218.6 (Ion Chromatographic Method)**
  - *Under Summary of Method:* 2.1. "An aqueous sample is filtered through a 0.45-µm filter"
  - *Under Sample Collection, Preservation and Storage:* 8.2 "For determination of dissolved Cr(VI), the sample should be filtered through a 0.45-µm filter

Sample Turbidity

- Sample turbidity impacts data quality. Addressed as a post-filtration action if turbidity is still an issue:
  - EPA Method 7196a states that an aliquot of the sample containing all reagents except diphenylcarbazide should be prepared and used to correct the sample for turbidity (i.e. turbidity blank) (7.0).
  - Standard Method 3500-Cr B notes that if the solution is turbid take an absorbance reading before adding carbazide reagent and correct the absorbance reading of the final colored solution.
- Turbidity is not addressed in other methods.
- Laboratories address turbidity issues by various methods (see following slides)

Laboratory Operating Procedures Excerpts for Dissolved Hexavalent Chromium Analysis

- **Test America Richland**
  - Under Interferences: Turbid samples should be filtered prior to analysis to prevent interference from turbidity. Suspended particles should be removed by filtration.
    NOTE: The procedure is silent on the actual turbidity correction
- **Test America St. Louis**
  - They run a turbidity blank for every sample.
  - *Under Sample Analysis:* 11.1.2.6 Record the turbidity blank for each sample, method blank, and LCS. If the absorbance reading of the turbidity blank is above the calibration curve, the sample must be either (re)filtered or diluted until it is within the calibration curve.
- **Test America Denver**
  - Under Interferences: Turbidity and color in the samples may cause erroneously high absorbance readings but low levels can be corrected for by the use of a color blank.
  - Under Sample Analysis: High levels of turbidity or color in a sample may require dilution of the sample prior to addition of the color reagent before analysis.

Laboratory Operating Procedures Excerpts for Dissolved Hexavalent Chromium Analysis

- **ALS**
  - Under Interferences: 4.2. If not accounted for, turbidity and/or color in waters or aqueous extracts will cause a high bias in the analysis because suspended particles will block light in the light path of the spectrophotometer and thereby contribute an absorbance signal that is not due to Cr+6.
  - Turbid or colored samples should be filtered or centrifuged to remove or reduce cloudiness as much as possible. If turbidity and/or color is not filtered out, it can be accounted for by taking initial absorbance readings and subtracting it out from the final absorbance reading after the addition of diphenylcarbazide.
  - Under Sample Prep: Turbid samples should be filtered using a syringe and a 0.45 µm or 0.7 µm filter disk to remove or reduce suspended particles as much as possible before aliquotting. If turbidity and/or color are not filtered out, it can be accounted for by taking initial absorbance readings after the addition of the 10% H2SO4 and subtracting it out from the final absorbance reading after the addition of diphenyl.
- **GEL**
  - Under sample prep: Samples must be filtered via 0.45 µm filter prior to buffer addition

Unfiltered Cr(VI) Analysis

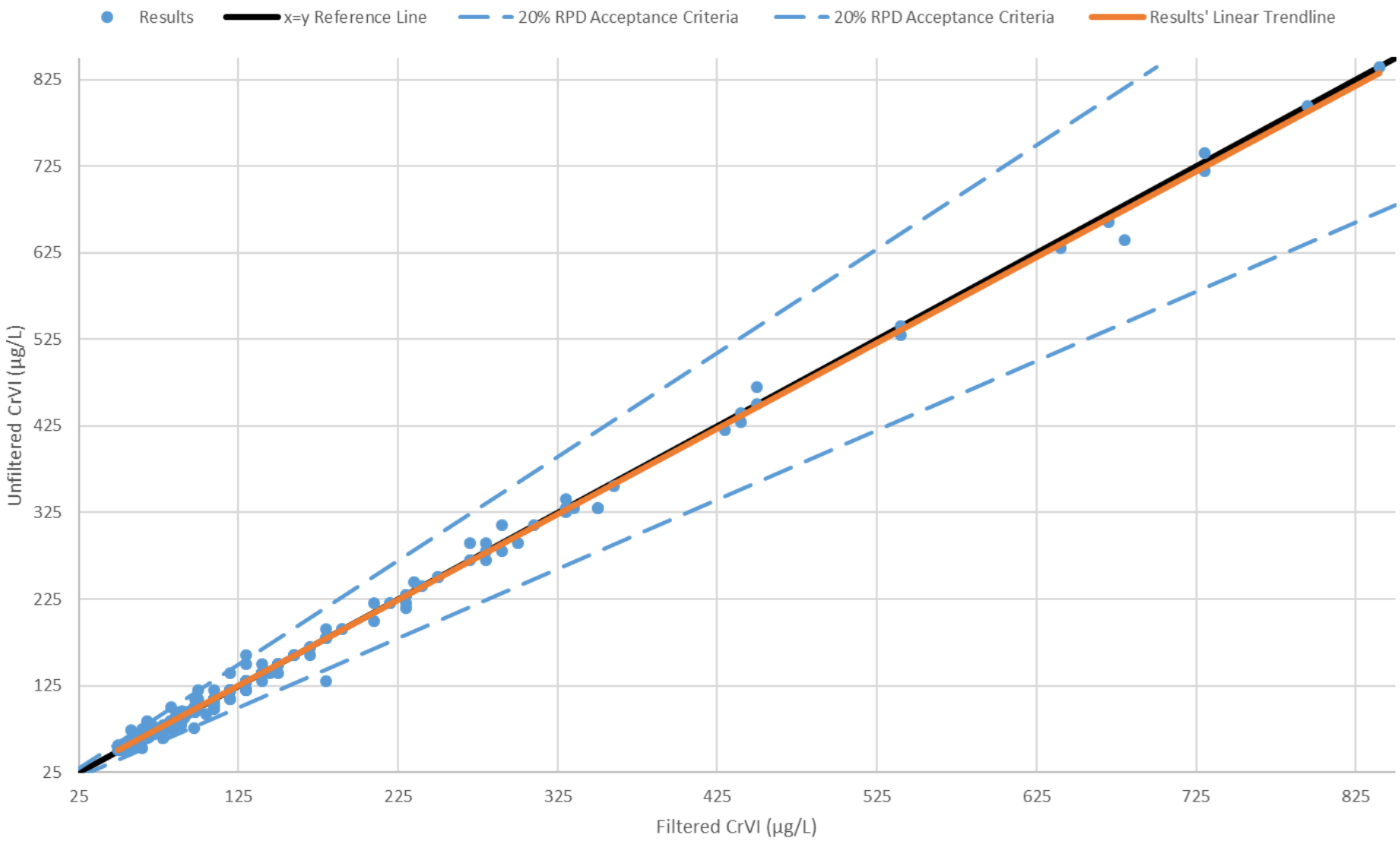
- Unfiltered Cr(VI) analysis is not a standard laboratory method
  - Previously performed as a special Hanford request
  - EPA method is specifically for dissolved Cr(VI) analysis (represented by filtered)
  - Standard Methods does not recognize unfiltered analysis
- Colorimetric method only analyzes dissolved Cr(VI)
  - There is no step in the method to dissolve any suspended/colloidal Cr(VI)
- Measurements are less precise due to turbidity corrections
- A currently contracted lab is willing to perform unfiltered analysis with turbidity correction HOWEVER,
  - Uses manual colorimetric method rather than automated method. Disadvantages:
    - Results in much lower precision than automated method
    - Detection limit for manual method is 2x greater
    - Slower process jeopardizes 24 hour hold time
  - Requires shipments of filtered and unfiltered samples to separate labs
  - Additional cost

Filtered Cr(VI) analysis are more representative than Unfiltered Cr(VI) in groundwater

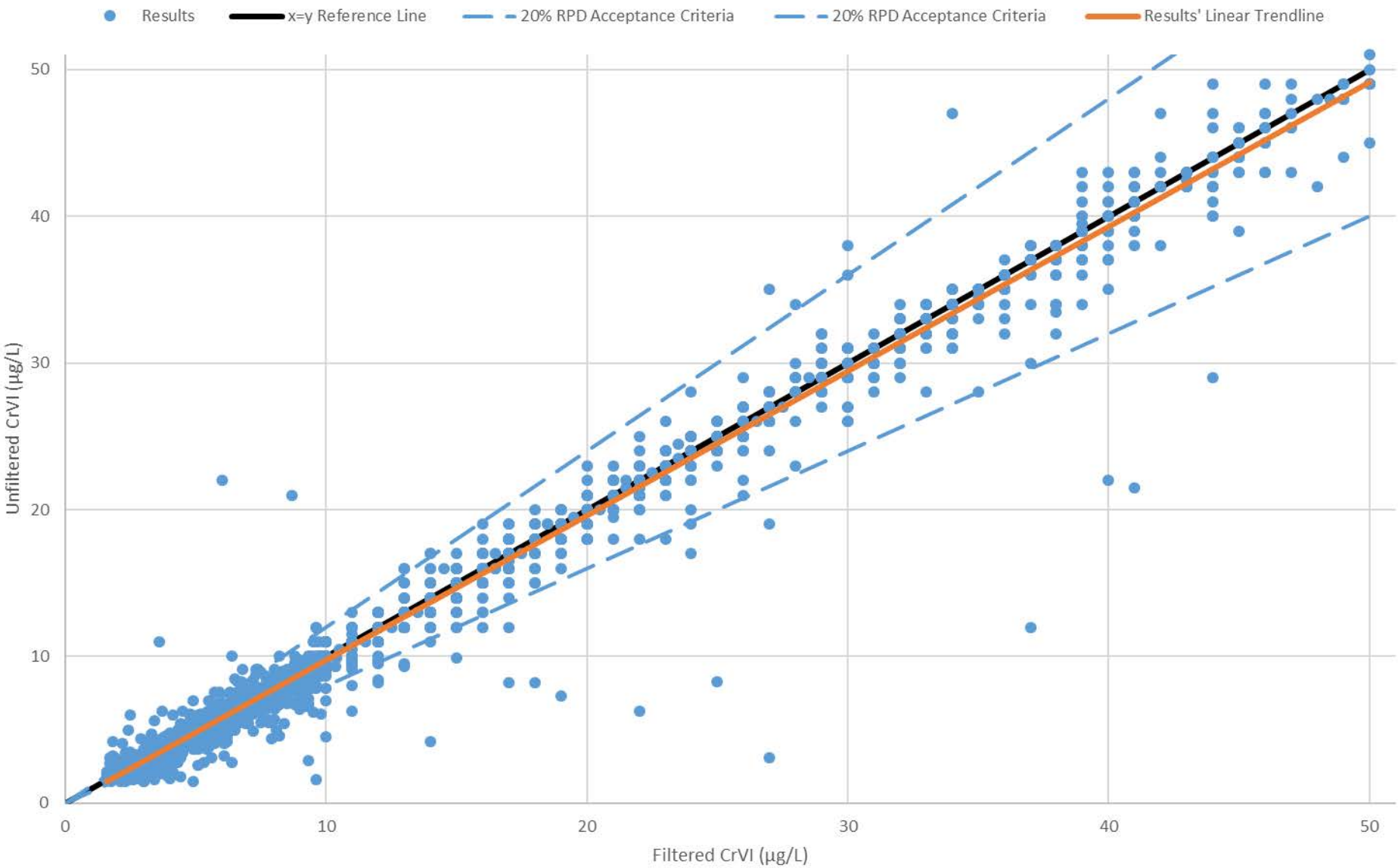
- During CY2018 at 100-KR, 320 unfiltered/filtered pairs were collected:
  - 136 pairs showed zero difference between filtered and unfiltered pair.
  - 49 sample pairs showed unfiltered results was greater than filtered
  - 135 sample pairs showed unfiltered results less than filtered

    (Note that unfiltered samples include turbidity correction)
- The following three graphs present 3 years worth of groundwater Cr(VI) data. The data points are filtered and unfiltered pairs where Cr(VI) was detected. The graphs contain the same data set with different concentration ranges.
  - Results ≥50µg/L
  - Results ≤50µg/L
  - Results ≤10µg/L
  - The orange line is the data trend line. The black line is the x=y reference line. The orange line is lower in all three indicating a low bias on the unfiltered samples with turbidity correction.

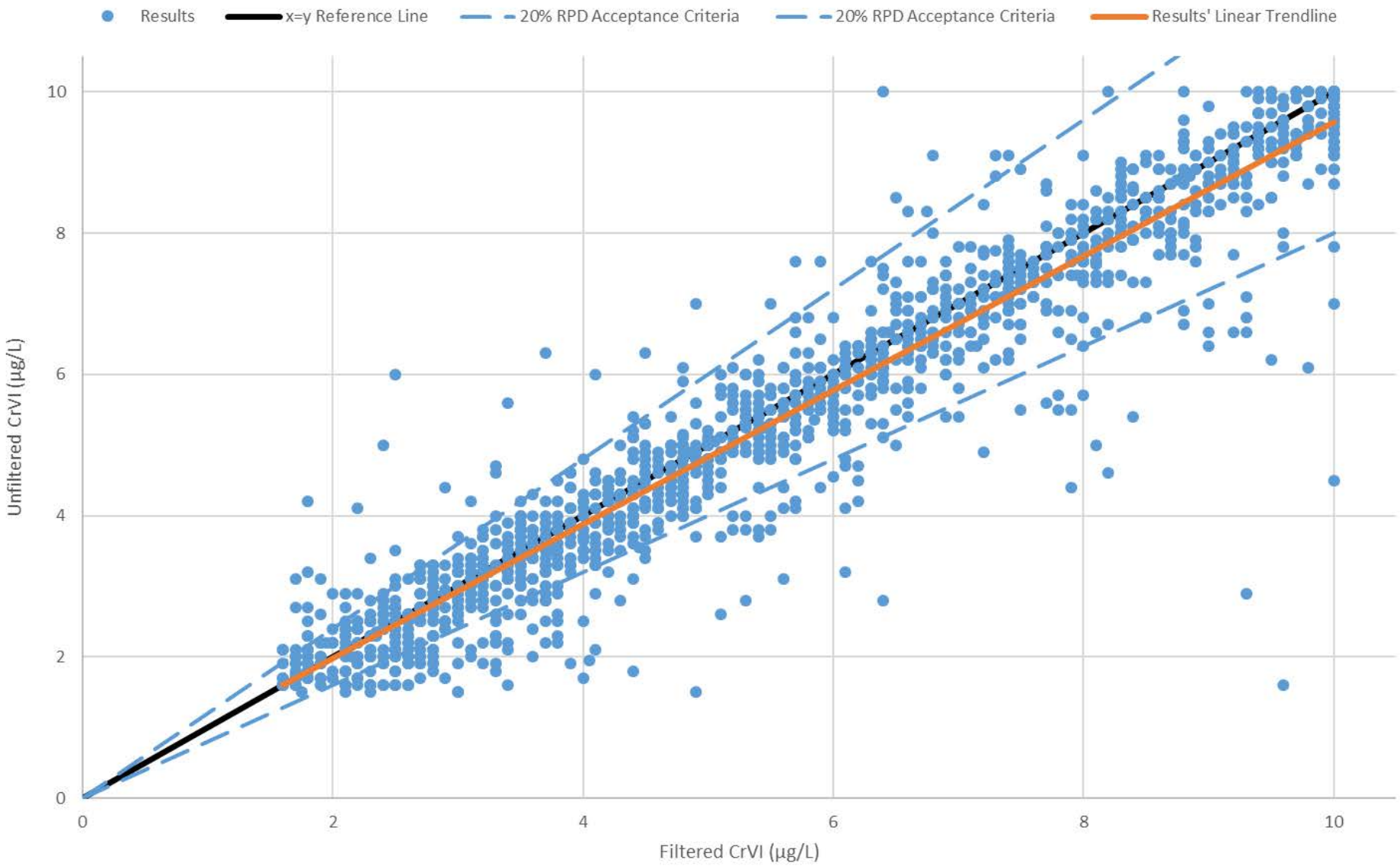
TARL Filtered and Unfiltered Hexavalent Chromium Results from Jan 2016 to Feb 2019 Excluding Non-Detects Pairs (Results ≥ 50 µg/L)



TARL Filtered and Unfiltered Hexavalent Chromium Results from Jan 2016 to Feb 2019 Excluding Non-Detects Pairs (Results ≤ 50 µg/L)



TARL Filtered and Unfiltered Hexavalent Chromium Results from Jan 2016 to Feb 2019 Excluding Non-Detects Pairs (Results ≤ 10 µg/L)



Recommendation

- Follow EPA methods or equivalent for dissolved Cr(VI), which includes filtering.
  - There is no EPA method for undissolved Cr(VI).
- Provide presentation/discussion to EPA and Ecology.
- Seek EPA and Ecology agreement to use filtered analysis only for Cr(VI).
- Adjust groundwater SAPs to filtered Cr(VI) only.

200 Area Project Managers Meeting
March 21, 2019

OPEN ACTION ITEM TRACKING

Action #	Action/Subject	Assigned To	Owed To	Assigned Date	Original Due Date	Adjusted Due Date	Status
188	DOE to brief EPA on changes to the 200-WA-1/BC-1 SAP	Joe Axtell	Craig Cameron	9/20/2018	10/31/2018		Closed. Joe Axtell briefed (EPA) Craig Cameron on the changes to the 200-WA-1 & 200-BC-1 SAP on November 6, 2018.
189	Provide previous and projected S&M budgets on canyons	Bobby Long	Craig Cameron/ Stephanie Schleif	9/20/2018	11/30/2018		Costs will be sent to Craig Cameron/Stephanie Schleif and added to the November PMM minutes- COMPLETED with email sent from Bobby Long 12-07-2018
190	Establish monthly meetings with Emy on PW-1, 3, 6 and CW-5 status	Bobby Long	Emy Laija	3/21/2019	4/12/2019		