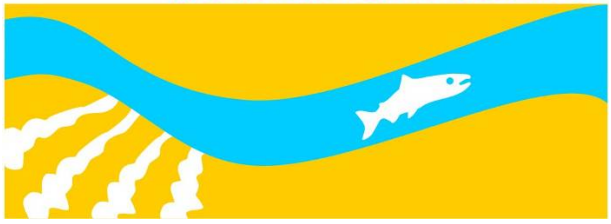
Water Quality Monitoring for San Joaquin River Seepage Management Projects

Water Quality Monitoring Report
Sample Collection: May, 2018

SAN JOAQUIN RIVER
RESTORATION PROGRAM



Mission Statement

The Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities.

Water Quality Monitoring for San Joaquin River Seepage Management Projects

Water Quality Monitoring Report
Sample Collection: May, 2018

Prepared by:

US Department of the Interior
Bureau of Reclamation
Laura Benninger, Physical Scientist

Approved by:

US Department of the Interior **Date**
Bureau of Reclamation
Paul Kot
Supervisory Physical Scientist, Environmental Affairs

US Department of the Interior **Date**
Bureau of Reclamation
Tiago Seabra De Oliveira, PhD.
Supervisory Quality Assurance Officer, Environmental Affairs

The Water Quality Monitoring Project for Seepage Management Projects investigation is managed and conducted by the United States Bureau of Reclamation (Reclamation) Environmental Monitoring and Hazardous Materials Branch. This Water Quality Project is implemented in support of the San Joaquin River Restoration Program.

Contents

Introduction 1
Methods 1
Site Locations and Schedule 1
Sample Collection and Storage 1
Chemical Analyses 3
Water Quality Standards Overview 3
Quality Assurance 4
Results and Water Quality Evaluation 4
Inorganic Chemicals and Physical Measurements 4
Organic Chemicals 5
Reference Citations 6

Figures

Figure 1 Location map - San Joaquin River, Reach 3
Figure 2 Satellite image - 2018 sampling locations
Figure 3 Boron and chloride concentrations – 2012 to 2018

Tables

Table 1 Sample Collection Summary Information
Table 2 Analytical Results and WQ Evaluation – Inorganics and Physicals
Table 3 Analytical Results and WQ Evaluation – Organic Chemicals
Table 4 WQ Standards for SJR Seepage Management

Acronyms and Abbreviations

Blank	quality assurance sample composed of deionized water
°C	degrees Centigrade
DI	de-ionized water
Duplicate	quality assurance sample replicate
EC	electrical conductivity normalized to 25 °C
GW	ground water
HDPE	high-density polyethylene
µg/L	micrograms per liter
µS/cm	microsiemens per centimeter
mg/L	milligrams per liter
QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
Reclamation	United States Bureau of Reclamation
Ref	quality assurance sample composed of reference material of a known concentration
RL	reporting limit
SJR	San Joaquin River
SJRRP	San Joaquin River Restoration Program
SOP	standard operating procedure
Spike	quality assurance sample composed of environmental sample-water with added constituent(s) of known concentration(s)
SW	surface water
WQ	water quality

Introduction

The Water Quality Monitoring Study for Seepage Management Projects (Study) is a multi-year water quality (WQ) monitoring effort conducted by the US Bureau of Reclamation (Reclamation) in support of the San Joaquin River Restoration Program (SJRRP). Study data are broadly used to help evaluate potential WQ effects that increased flows within the San Joaquin River (SJR) could have on ground water (GW) within adjacent lands. Monitoring activities conducted in 2018 will be used to inform SJRRP decisions regarding the discharge of SJR seepage water that may be collected from local interceptor drains.

Methods

Target analytes, analytical methods, quality assurance (QA) methods, and sample collection methods for the 2018 sampling event are consistent with those used in previous Study events (Reclamation, 2012a; Reclamation, 2013, Reclamation, 2015). From 2015 forward however, “dissolved” concentrations of trace metals and aluminum have been analyzed using laboratory-filtered sample water (0.45 µS/cm filter). Prior to 2015, the concentrations of “total” metals were determined using unfiltered water. Total concentrations, which capture both ionic and particulate concentrations, were measured because many irrigation suitability limits are based on total metals concentrations. Beginning in 2015, dissolved metals have been targeted in order to better evaluate WQ for the protection of aquatic organisms.

Sample collection methods are summarized below and are described in detail in the current QA Project Plan (QAPP) for the Study (Reclamation, 2018). Analytical methods are described in published (standard) analytical methods documents and are available by request from Reclamation QA staff.

Site Locations and Schedule

Monitoring was conducted May 30, 2018. These data reflect the quality of surface water (SW) collected from the Columbia Canal at Eastside Drive, and five ground GW-monitoring wells that collect seepage water emanating from the SJR. Table 1 summarizes general sample information such as sample identification codes, station coordinates, and for well samples, depth-to-water at the time of sampling. Figure 1 (map of SJR Reach 3) and Figure 2 (satellite image showing specific sampling sites) show station locations.

Sample Collection and Storage

Field procedures were performed following Branch of Environmental Monitoring standard operating procedures (SOPs) for sample collection, handling, and documentation (Reclamation, 2017). Procedures specific to this Study are summarized below.

Disposable materials were used whenever feasible in order to minimize the potential for environmental contamination, and to minimize cross-contamination between samples. New nitrile gloves, sample containers, high density poly ethylene (HDPE) bailers, and bailing twine were selected for each sample collected. Non-disposable equipment and instruments were cleaned prior to each use. Cleaning was performed in the field by scrubbing surfaces with an approximately 10% solution of de-ionized water (DI) and residue-free concentrated detergent (Liquinox®), triple rinsing with DI, triple rinsing with environmental (site) water, then shaking to remove excess water. Well water was collected using bailers because low-flow pumping was logistically infeasible.

Surface water grab samples were collected using a clean HDPE churn-splitter, then dispensed from churn to sample bottles; GW was hand-bailed using HDPE bailers. Prior to GW collection, water-column height was measured, then three or more well-volumes of water were purged prior to sampling. Bailing technique was employed to minimize re-suspension of accumulated sediment (slow pace, no contact with well bottom). After purging, a new bailer was selected for sample collection. For most GW samples, water was dispensed directly from bailer to sample bottle. Duplicate and triplicate samples (used for QA purposes) were poured from bailer to a clean churn-splitter, then dispensed into sample bottles following standard protocols for achieving replicate samples (Reclamation, 2017).

Sample bottles were kept cool and out of direct sunlight both prior to, and during, sample collection. Within five minutes of filling, sample containers were packed in “blue-ice”, placed in coolers, and stored in the shade. Coolant packs were periodically tested for firmness and replaced with solidly-frozen packs as needed.

Water collected for analysis of organic constituents was delivered from the field to the analytical laboratory the day that it was collected. Samples were stored in coolers for up to six hours prior to arriving at the commercial analytical laboratory.

Water collected for analysis of inorganic constituents was stored on blue-ice in coolers for up to 24 hours, then driven to the Reclamation QA laboratory. At the Reclamation laboratory, samples were transferred to refrigerators and stored at approximately 4°C pending completion of QA procedures (e.g. inclusion of blank, spike and other QA samples). Finally, coolers with samples and blue ice, were shipped next-day delivery to the commercial analytical laboratory.

Sample volumes, container materials, chemical preservatives, and sample hold-times[1] were consistent with those specified in the appropriate analytical methods documents.

[1] Analyzing samples within the method-specified “hold time” (usually stated as hours, days or weeks) ensures that chemical concentrations that are detected in the laboratory are representative of the chemical concentrations under field conditions.

Chemical Analyses

Chemical analyses were performed commercially, using the methods indicated in Table 2 and Table 3. When possible, selected methods were chosen to yield reporting limits (RLs) lower than the applicable WQ standards. For many organic chemicals, this was not possible. Also, due to matrix affects and other sample-specific analytical complexities, achieved RLs were not always as low as the method RLs.

Water Quality Standards Overview

WQ standards are used to help determine whether water is of sufficient quality for particular water uses (e.g. irrigation, aquatic wildlife habitat). Water properties and constituents (e.g. temperature, chemical concentrations) are compared with WQ standards to help determine whether the water is of sufficient quality to sustain the particular use. This monitoring effort evaluates water suitability for the following interests: irrigation, wildlife habitat, and watershed-specific-concerns that have been identified by the State of CA (Basin Plan standards). WQ standards applied in this study (Table 4) are discussed below.

Agricultural standards (Ayers and Westcott, 1985) are used to evaluate water suitability both for agriculture, and for wildlife vegetative habitat. These standards include Irrigation Suitability objectives (IRRIG) and Poultry and Livestock (P&L) drinking water standards. Poultry and Livestock standards are applied here to evaluate suitability for bird and mammalian drinking water as standards that particular water use have not been formally designated.

Water quality standards for the protection of Fresh Water Aquatic Wildlife (FWAL) are made up of sub-objectives: the legally binding California (CTR) and National (NTR) Toxics Rules, and the non-binding National Recommended Water Quality Criteria (NRWQC). NRWQC limits are most valuable in cases where additional CTR/NRT limits do not exist. Different FWAL objectives target different lengths of exposure to the water in question. Chronic exposure is evaluated via “continuous concentration” objectives (FWAL CC), while, “maximum concentration” and “instantaneous maximum” objectives (FWAL MC and FWAL IM) are used to evaluate acute exposures. FWAL limits were drawn from, “A Compilation of Water Quality Goals” (Marshack, 2017).

“Basin Plan” (BP) limits, which are designed to protect location-specific concerns, have been selected from the Water Quality Control Plan (Basin Plan) for the Sacramento and San Joaquin River Basins (SWRCB, 2017).

FWAL and BP limits are designed for use with surface water (SW), but in this evaluation, the standards are applied to both SW and ground water (GW). SW standards allow for quantitative evaluation of water quality whereas GW standards are narrative and difficult to apply. Applying SW standards to GW for this study provides a conservative estimate of potential impacts that seepage water could have on the surface environment. The estimate is conservative because in the surface environment, the

overall quality of GW may be improved through dilution with potentially higher-quality surface water.

Quality Assurance

Data presented in this report was analyzed by commercial analytical laboratories. Data quality has been evaluated by the commercial laboratory's quality control (QC) system, and through Reclamation's independent quality management (QM) system. Both systems provide confidence in data validity and legal defensibility.

The laboratory QC system includes the evaluation of laboratory "QC Samples" such as reference materials and blank samples in order to evaluate sample results for potential issues with precision, accuracy, and contamination. A QC report indicating any potential issues with the data is provided to Reclamation along with all sample results.

Reclamation's QM system is summarized as follows.

- QA audits are conducted on-site to verify that field and laboratory procedures are consistent with stated SOPs.
- Reclamation "QA samples" (e.g. references, blanks) are submitted without identification to the analytical laboratories alongside study samples in order to further evaluate potential issues with precision, accuracy, and contamination.
- Commercial laboratory QA/QC reports are reviewed by Reclamation QA staff and any potential data issues are summarized and highlighted
- Analytical results that do not meet Reclamation QA acceptance criteria are flagged with an alpha code indicating possible data issues (e.g. a result flagged as "potentially biased low" is followed by an "L")

Results and Water Quality Evaluation

Inorganic Chemicals and Physical Measurements

Results of inorganic analyses and physical measurements are shown in Table 2.

Water Suitability for Wildlife Habitat

With one exception, all samples met FWAL limits for all applicable analytes (alkalinity, aluminum, ammonia, arsenic, cadmium, chloride, copper, lead, mercury, nickel, pH, and selenium and zinc).

The FWAL standard for dissolved zinc (76 µg/L) was exceeded in water collected at Well PZ-R3-7 (result = 1010 µg/L). This result is slightly higher than what was detected in August 2015 (result = 840 µg/L). Water from Well PZ-R3-7 met FWAL limits for all other analytes.

All samples met P&L limits for all applicable analytes (arsenic, boron, EC, magnesium, molybdenum, selenium, zinc).

Water Suitability for Vegetative Habitat and Agriculture

All samples met IRRIG limits for arsenic, bicarbonate, electrical conductivity (EC), molybdenum, nitrate, pH, selenium, sodium, total dissolved solids (TDS) and zinc.

In all samples, boron and chloride exceeded the most restrictive IRRIG limits. Water collected from the Columbia Canal contained 86 µg/L boron and 28 µg/L chloride, while boron in well samples ranged in concentration from 71 µg/L -194 µg/L, and chloride ranged from 33 µg/L to 47 µg/L. For water to be considered suitable for irrigation with no restrictions on use (e.g. application rates, crops to be irrigated), boron concentration must be < 0.7 µg/L and chloride must be < 3 µg/L. See Ayers and Westcott for details. Changes in boron and chloride concentrations over time are shown in Figure 3.

Sodium absorption ratio (SAR) limits were met in four of the GW samples, however SAR ratios for water collected from well MW-12-191, and the Columbia Canal (ratios = 4.7 and 5.6 respectively), suggest that depending on the particular irrigation practices employed, WQ could be an irrigation concern. Optimal SAR ranges between <3 and <9, depending on use. See Ayers and Westcott for details.

Water Suitability for Basin Specific Concerns

All samples met BP limits for pH and selenium. BP limits on temperature and turbidity restrict changes to receiving waters from point-source inputs, so are not applicable to this situation and were not evaluated.

Organic Chemicals

No organic constituents were detected this sampling event.

Of the 64 organic chemicals analyzed, 21 are associated with WQ standards (FWAL and BP). WQ standards were met for 16 of these analytes; the remaining five could not be fully evaluated. For these compounds (disulfoton, demeton, toxaphene, heptachlor, and heptachlor epoxide), reporting limits were higher than the applicable quality limits. See Table 3 for details.

Reference Citations

Ayers, R.S. and D.W. Westcot, 1985, Water Quality for Agriculture, Food and Agriculture Organization of the United Nations – Irrigation and Drainage Paper No. 29, Rev.1, 107 p., Rome. Tables 1, 21, 28, and 30.

SWRCB, 2017, Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board Central Valley Region: The Sacramento River Basin and San Joaquin River Basin, Fourth Edition, Revised October 2011,with approved amendments and updates through July 2017, 148 p.

Marshack, J.B., 2017, A Compilation of Water Quality Goals. August 2003 with approved amendments and updates through July 2017: California Regional Water Quality Control Board, Central Valley Region.

Reclamation, 2015, *Water Quality Monitoring for San Joaquin River Seepage Management Projects – Water Quality Assessment and Quality Assurance Summary, Sample Collection: December, 2012.* United States Bureau of Reclamation, Mid Pacific Region, Division of Environmental Affairs, March, 8p. plus appendices.

Reclamation, 2013, *Water Quality Monitoring for San Joaquin River Seepage Management Projects – Water Quality Assessment and Quality Assurance Summary, Sample Collection: December, 2012.* United States Bureau of Reclamation, Mid Pacific Region, Division of Environmental Affairs, March, 20p. plus appendices.

Reclamation, 2012a, *Water Quality Monitoring for San Joaquin River Seepage Management Projects – Water Quality Assessment and Quality Assurance Summary, Sample Collection: December, 2012.* United States Bureau of Reclamation, Mid Pacific Region, Division of Environmental Affairs, March, 20p. plus appendices.

Reclamation, 2017, *Standard Operating Procedures for Environmental Monitoring*, United States Bureau of Reclamation, Mid Pacific Region, Division of Environmental Affairs, August, 169p.

Reclamation, 2012c, *Standard Operating Procedures for Quality Assurance 2012-07*, United States Bureau of Reclamation, Mid Pacific Region, Environmental Monitoring Branch, May, 61p. plus appendices.

Figure 1. Map showing Reach 3 of the San Joaquin River, Central Valley, CA. Water quality samples were collected southeast of Firebaugh, from the central portion of Reach 3 and immediately east of the river.

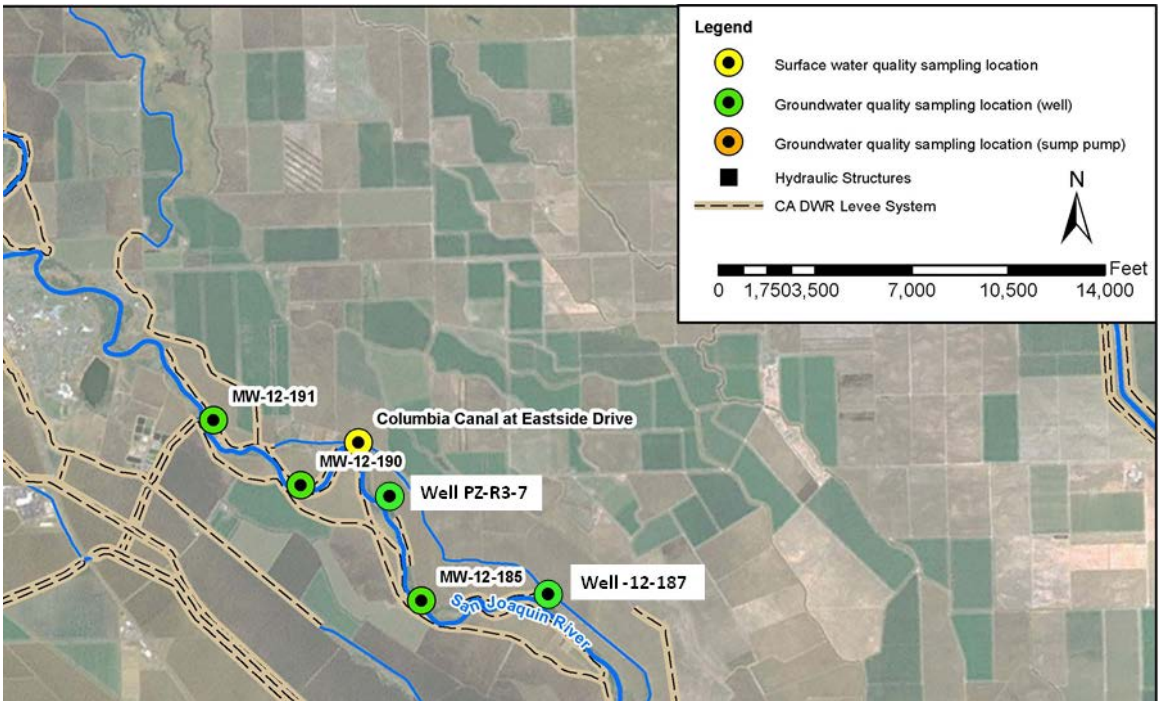


Figure 2. Satellite image showing station locations for the 2018 water quality monitoring samples. Water was collected from five wells and one canal. The town of Firebaugh is visible along the left edge of the image.

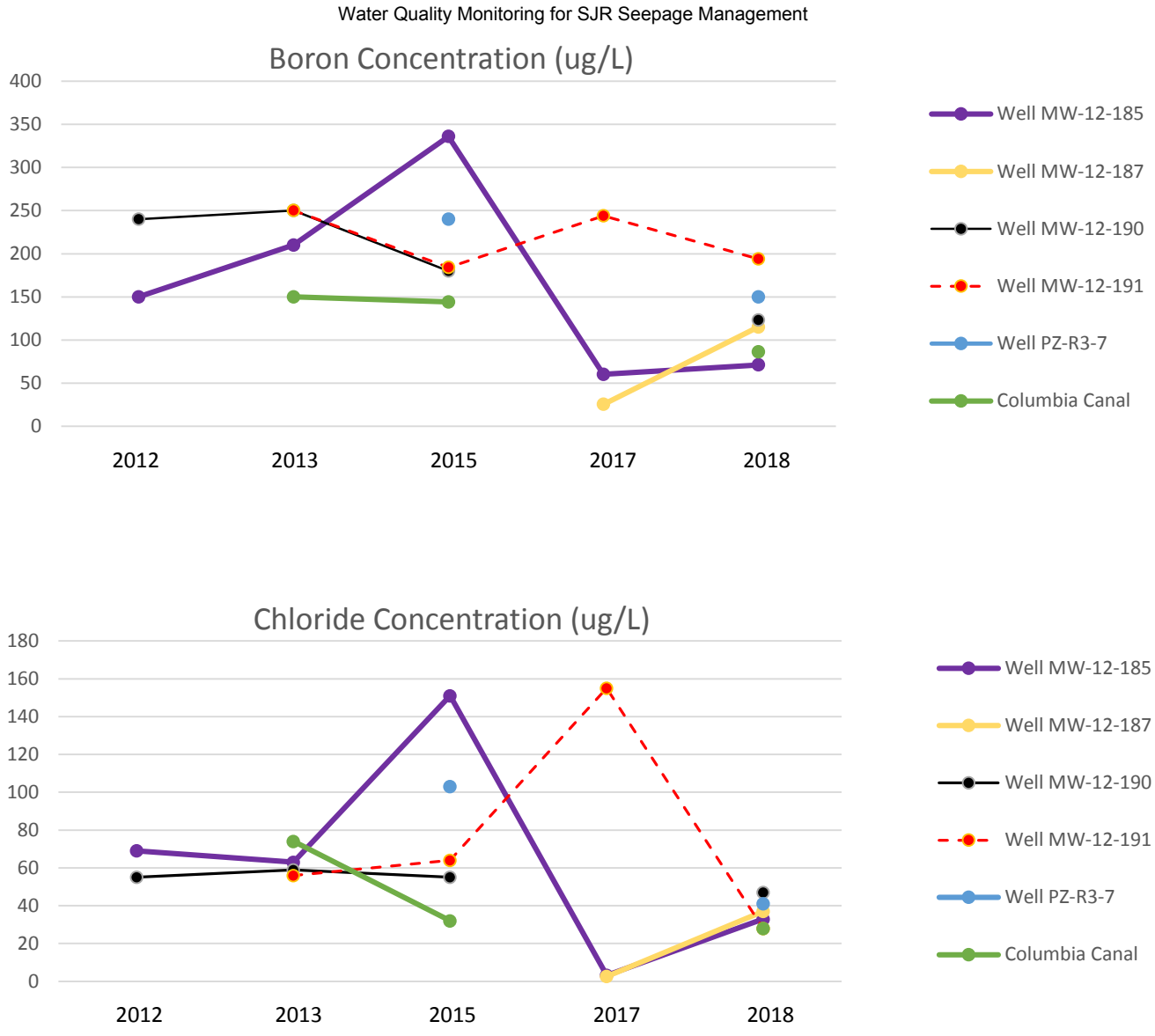


Figure 3. Boron and chloride concentration in GW wells and the Columbia Canal, 2012-2018

Table 1. Sample Collection Summary

Sample ID	Station Name	Latitude	Longitude	Date	Time	Matrix	InitiaL Depth to Water (ft)	Final Depth to Water (ft)
SCP-151	Well MW-12-185	36° 49' 28.63"	120° 24' 08.64"	5/30/2018	1032	GW	14.83	14.84
SCP-150	Well MW-12-187	36° 49' 30.25"	120° 23' 21.68"	5/30/2018	0926	GW	15.90	16.23
SCP-153	Well MW-12-190	36° 50' 11.20"	120° 25' 00.98"	5/30/2018	1309	GW	11.32	didn't measure
SCP-154	Well MW-12-191	36° 50' 35.27"	120° 25' 39.18"	5/30/2018	1408	GW	14.02	didn't measure
SCP-152	PZ-R3-7	36° 50' 06.66"	120° 24' 27.31"	5/30/2018	1157	GW	11.00	10.55
SCP-146	Columbia Canal @ Eastside Dr.	36° 50' 25.97"	120° 24' 34.69"	5/30/2018	0800	SW	-	-

Table 2. Results and Evaluation for WQ Samples Collected May, 2018 - Inorganic Analyses and Physical Measurements

Sample ID	Station Name	Analyte	Units	Result	RL	Method	Lowest Limit (except as noted)	WQ Objective	Meets Standards?
SCP146	Columbia Canal at Eastside Dr.	ALKALINITY (AS CACO3, TOTAL)	mg/l	51.8	2.0	SM 2320	>20	FWAL	Met
SCP151	Well MW-12-185	ALKALINITY (AS CACO3, TOTAL)	mg/l	54.1	2.0	SM 2320			
SCP150	Well MW-12-187	ALKALINITY (AS CACO3, TOTAL)	mg/l	54	2.0	SM 2320			
SCP153	Well MW-12-190	ALKALINITY (AS CACO3, TOTAL)	mg/l	58.6	2.0	SM 2320			
SCP154	Well MW-12-191	ALKALINITY (AS CACO3, TOTAL)	mg/l	84.6	2.0	SM 2320			
SCP152	Well PZ-R3-7	ALKALINITY (AS CACO3, TOTAL)	mg/l	60.7	2.0	SM 2320			
SCP146	Columbia Canal at Eastside Dr.	ALUMINUM (DISSOLVED)	ug/l	22.6	20.0	EPA 200.8	87	FWAL	Met
SCP151	Well MW-12-185	ALUMINUM (DISSOLVED)	ug/l	< 20	20.0	EPA 200.8			
SCP150	Well MW-12-187	ALUMINUM (DISSOLVED)	ug/l	26	20.0	EPA 200.8			
SCP153	Well MW-12-190	ALUMINUM (DISSOLVED)	ug/l	< 20	20.0	EPA 200.8			
SCP154	Well MW-12-191	ALUMINUM (DISSOLVED)	ug/l	< 20	20.0	EPA 200.8			
SCP152	Well PZ-R3-7	ALUMINUM (DISSOLVED)	ug/l	< 20	20.0	EPA 200.8			
SCP146	Columbia Canal at Eastside Dr.	AMMONIA AS N	mg/l	< 0.5	0.5	EPA 350.1	21.6	FWAL	Met
SCP151	Well MW-12-185	AMMONIA AS N	mg/l	< 0.5	0.5	EPA 350.1	5.8		
SCP150	Well MW-12-187	AMMONIA AS N	mg/l	< 0.5	0.5	EPA 350.1	8.7		
SCP153	Well MW-12-190	AMMONIA AS N	mg/l	< 0.5	0.5	EPA 350.1	7.1		
SCP154	Well MW-12-191	AMMONIA AS N	mg/l	< 0.5	0.5	EPA 350.1	7.9		
SCP152	Well PZ-R3-7	AMMONIA AS N	mg/l	< 0.5	0.5	EPA 350.1	11.8		
SCP146	Columbia Canal at Eastside Dr.	ARSENIC (DISSOLVED)	ug/l	1.5	0.5	EPA 200.8	100	IRRIG, P&L FWAL	Met
SCP151	Well MW-12-185	ARSENIC (DISSOLVED)	ug/l	2.8	0.5	EPA 200.8			
SCP150	Well MW-12-187	ARSENIC (DISSOLVED)	ug/l	4	0.5	EPA 200.8			
SCP153	Well MW-12-190	ARSENIC (DISSOLVED)	ug/l	0.57	0.5	EPA 200.8			
SCP154	Well MW-12-191	ARSENIC (DISSOLVED)	ug/l	0.84	0.5	EPA 200.8			
SCP152	Well PZ-R3-7	ARSENIC (DISSOLVED)	ug/l	0.51	0.5	EPA 200.8			
SCP146	Columbia Canal at Eastside Dr.	BICARBONATE AS CACO3	mg/l	51.8	2.0	SM 2320	92	IRRIG	Met
SCP151	Well MW-12-185	BICARBONATE AS CACO3	mg/l	54.1	2.0	SM 2320			
SCP150	Well MW-12-187	BICARBONATE AS CACO3	mg/l	54	2.0	SM 2320			
SCP153	Well MW-12-190	BICARBONATE AS CACO3	mg/l	58.6	2.0	SM 2320			
SCP154	Well MW-12-191	BICARBONATE AS CACO3	mg/l	84.6	2.0	SM 2320			
SCP152	Well PZ-R3-7	BICARBONATE AS CACO3	mg/l	60.7	2.0	SM 2320			

Table 2. Results and Evaluation for WQ Samples Collected May, 2018 - Inorganic Analyses and Physical Measurements

Sample ID	Station Name	Analyte	Units	Result	RL	Method	Lowest Limit (except as noted)	WQ Objective	Meets Standards?
SCP146	Columbia Canal at Eastside Dr.	BORON (DISSOLVED)	ug/l	85.7	10.0	EPA 200.8	0.7	IRRIG, P&L	Met P&L; Did not meet IRRIG (<0.7-<15.0)
SCP151	Well MW-12-185	BORON (DISSOLVED)	ug/l	70.9	10.0	EPA 200.8			
SCP150	Well MW-12-187	BORON (DISSOLVED)	ug/l	115	10.0	EPA 200.8			
SCP153	Well MW-12-190	BORON (DISSOLVED)	ug/l	123	10.0	EPA 200.8			
SCP154	Well MW-12-191	BORON (DISSOLVED)	ug/l	194	10.0	EPA 200.8			
SCP152	Well PZ-R3-7	BORON (DISSOLVED)	ug/l	150	10.0	EPA 200.8			
SCP146	Columbia Canal at Eastside Dr.	CADMIUM (DISSOLVED)	ug/l	< 0.1	0.10	EPA 1638	0.40	FWAL	Met
SCP151	Well MW-12-185	CADMIUM (DISSOLVED)	ug/l	0.04	0.10	EPA 1638	1.96		
SCP150	Well MW-12-187	CADMIUM (DISSOLVED)	ug/l	< 0.1	0.10	EPA 1638	1.61		
SCP153	Well MW-12-190	CADMIUM (DISSOLVED)	ug/l	0.04	0.10	EPA 1638	1.65		
SCP154	Well MW-12-191	CADMIUM (DISSOLVED)	ug/l	< 0.1	0.10	EPA 1638	1.07		
SCP152	Well PZ-R3-7	CADMIUM (DISSOLVED)	ug/l	< 0.1	0.10	EPA 1638	1.52		
SCP146	Columbia Canal at Eastside Dr.	CALCIUM (DISSOLVED)	mg/l	2.9	0.04	EPA 200.8	-	-	-
SCP151	Well MW-12-185	CALCIUM (DISSOLVED)	mg/l	17.5	0.04	EPA 200.8			
SCP150	Well MW-12-187	CALCIUM (DISSOLVED)	mg/l	14.9	0.04	EPA 200.8			
SCP153	Well MW-12-190	CALCIUM (DISSOLVED)	mg/l	16.9	0.04	EPA 200.8			
SCP154	Well MW-12-191	CALCIUM (DISSOLVED)	mg/l	8.95	0.04	EPA 200.8			
SCP152	Well PZ-R3-7	CALCIUM (DISSOLVED)	mg/l	12.4	0.04	EPA 200.8			
SCP146	Columbia Canal at Eastside Dr.	CARBONATE AS CACO3	mg/l	< 2	2.0	SM 2320	-	-	-
SCP151	Well MW-12-185	CARBONATE AS CACO3	mg/l	< 2	2.0	SM 2320			
SCP150	Well MW-12-187	CARBONATE AS CACO3	mg/l	< 2	2.0	SM 2320			
SCP153	Well MW-12-190	CARBONATE AS CACO3	mg/l	< 2	2.0	SM 2320			
SCP154	Well MW-12-191	CARBONATE AS CACO3	mg/l	< 2	2.0	SM 2320			
SCP152	Well PZ-R3-7	CARBONATE AS CACO3	mg/l	< 2	2.0	SM 2320			
SCP146	Columbia Canal at Eastside Dr.	CHLORIDE (DISSOLVED)	mg/l	27.9	1.0	EPA 300.0	3	IRRIG, FWAL	May meet some IRRIG, uses (<3-<40)
SCP151	Well MW-12-185	CHLORIDE (DISSOLVED)	mg/l	32.9	1.0	EPA 300.0			
SCP150	Well MW-12-187	CHLORIDE (DISSOLVED)	mg/l	37	1.0	EPA 300.0			
SCP153	Well MW-12-190	CHLORIDE (DISSOLVED)	mg/l	47.2	1.0	EPA 300.0			
SCP154	Well MW-12-191	CHLORIDE (DISSOLVED)	mg/l	28.4	1.0	EPA 300.0			
SCP152	Well PZ-R3-7	CHLORIDE (DISSOLVED)	mg/l	41.1	1.0	EPA 300.0			

Table 2. Results and Evaluation for WQ Samples Collected May, 2018 - Inorganic Analyses and Physical Measurements

Sample ID	Station Name	Analyte	Units	Result	RL	Method	Lowest Limit (except as noted)	WQ Objective	Meets Standards?
SCP146	Columbia Canal at Eastside Dr.	COPPER (DISSOLVED)	ug/l	0.66	0.5	EPA 200.8	1.22	FWAL	Met
SCP151	Well MW-12-185	COPPER (DISSOLVED)	ug/l	1.7	0.5	EPA 200.8	7.66		
SCP150	Well MW-12-187	COPPER (DISSOLVED)	ug/l	< 0.5	0.5	EPA 200.8	6.13		
SCP153	Well MW-12-190	COPPER (DISSOLVED)	ug/l	< 0.5	0.5	EPA 200.8	6.28		
SCP154	Well MW-12-191	COPPER (DISSOLVED)	ug/l	0.7	0.5	EPA 200.8	3.82		
SCP152	Well PZ-R3-7	COPPER (DISSOLVED)	ug/l	< 0.5	0.5	EPA 200.8	5.72		
SCP146	Columbia Canal at Eastside Dr.	EC	µS/cm	273	N/A	YSI	700	IRRIG, P&L	Met
SCP151	Well MW-12-185	EC	µS/cm	296	N/A	YSI			
SCP150	Well MW-12-187	EC	µS/cm	319	N/A	YSI			
SCP153	Well MW-12-190	EC	µS/cm	394	N/A	YSI			
SCP154	Well MW-12-191	EC	µS/cm	392	N/A	YSI			
SCP152	Well PZ-R3-7	EC	µS/cm	360	N/A	YSI			
SCP146	Columbia Canal at Eastside Dr.	HARDNESS	N/A	10	N/A	Calculation	-	-	-
SCP151	Well MW-12-185	HARDNESS	N/A	83	N/A	Calculation			
SCP150	Well MW-12-187	HARDNESS	N/A	64	N/A	Calculation			
SCP153	Well MW-12-190	HARDNESS	N/A	66	N/A	Calculation			
SCP154	Well MW-12-191	HARDNESS	N/A	37	N/A	Calculation			
SCP152	Well PZ-R3-7	HARDNESS	N/A	59	N/A	Calculation			
SCP146	Columbia Canal at Eastside Dr.	LEAD (DISSOLVED)	ug/l	< 0.2	0.2	EPA 200.8	0.2	FWAL	Met
SCP151	Well MW-12-185	LEAD (DISSOLVED)	ug/l	< 0.2	0.2	EPA 200.8	2.1		
SCP150	Well MW-12-187	LEAD (DISSOLVED)	ug/l	< 0.2	0.2	EPA 200.8	1.5		
SCP153	Well MW-12-190	LEAD (DISSOLVED)	ug/l	< 0.2	0.2	EPA 200.8	1.6		
SCP154	Well MW-12-191	LEAD (DISSOLVED)	ug/l	< 0.2	0.2	EPA 200.8	0.8		
SCP152	Well PZ-R3-7	LEAD (DISSOLVED)	ug/l	< 0.2	0.2	EPA 200.8	1.4		
SCP146	Columbia Canal at Eastside Dr.	MAGNESIUM (DISSOLVED)	mg/l	0.593	0.1	EPA 200.8	250	P&L	Met
SCP151	Well MW-12-185	MAGNESIUM (DISSOLVED)	mg/l	9.63	0.1	EPA 200.8			
SCP150	Well MW-12-187	MAGNESIUM (DISSOLVED)	mg/l	6.56	0.1	EPA 200.8			
SCP153	Well MW-12-190	MAGNESIUM (DISSOLVED)	mg/l	5.79	0.1	EPA 200.8			
SCP154	Well MW-12-191	MAGNESIUM (DISSOLVED)	mg/l	3.53	0.1	EPA 200.8			
SCP152	Well PZ-R3-7	MAGNESIUM (DISSOLVED)	mg/l	6.85	0.1	EPA 200.8			

Table 2. Results and Evaluation for WQ Samples Collected May, 2018 - Inorganic Analyses and Physical Measurements

Sample ID	Station Name	Analyte	Units	Result	RL	Method	Lowest Limit (except as noted)	WQ Objective	Meets Standards?
SCP146	Columbia Canal at Eastside Dr.	MERCURY	ng/l	1.58	2.00	EPA 1631E	770	FWAL	Met
SCP151	Well MW-12-185	MERCURY	ng/l	2.91	2.00	EPA 1631E			
SCP150	Well MW-12-187	MERCURY	ng/l	3.5	2.00	EPA 1631E			
SCP153	Well MW-12-190	MERCURY	ng/l	2.63	2.00	EPA 1631E			
SCP154	Well MW-12-191	MERCURY	ng/l	4.78	2.00	EPA 1631E			
SCP152	Well PZ-R3-7	MERCURY	ng/l	0.44	2.00	EPA 1631E			
SCP146	Columbia Canal at Eastside Dr.	MOLYBDENUM (DISSOLVED)	ug/l	3.1	0.5	EPA 200.8	10	IRRIG, P&L	Met
SCP151	Well MW-12-185	MOLYBDENUM (DISSOLVED)	ug/l	1.2	0.5	EPA 200.8			
SCP150	Well MW-12-187	MOLYBDENUM (DISSOLVED)	ug/l	1.4	0.5	EPA 200.8			
SCP153	Well MW-12-190	MOLYBDENUM (DISSOLVED)	ug/l	1.6	0.5	EPA 200.8			
SCP154	Well MW-12-191	MOLYBDENUM (DISSOLVED)	ug/l	7.6	0.5	EPA 200.8			
SCP152	Well PZ-R3-7	MOLYBDENUM (DISSOLVED)	ug/l	< 0.5	0.5	EPA 200.8			
SCP146	Columbia Canal at Eastside Dr.	NICKEL (DISSOLVED)	ug/l	< 0.5	0.5	EPA 200.8	7.21	FWAL	Met
SCP151	Well MW-12-185	NICKEL (DISSOLVED)	ug/l	1.4	0.5	EPA 200.8	44.57		
SCP150	Well MW-12-187	NICKEL (DISSOLVED)	ug/l	0.55	0.5	EPA 200.8	35.75		
SCP153	Well MW-12-190	NICKEL (DISSOLVED)	ug/l	0.55	0.5	EPA 200.8	36.61		
SCP154	Well MW-12-191	NICKEL (DISSOLVED)	ug/l	1.2	0.5	EPA 200.8	22.36		
SCP152	Well PZ-R3-7	NICKEL (DISSOLVED)	ug/l	< 0.5	0.5	EPA 200.8	33.36		
SCP146	Columbia Canal at Eastside Dr.	NITRATE AS NO3 (DISSOLVED)	mg/l	< 0.5	0.5	EPA 300.0	30	IRRIG	Met
SCP151	Well MW-12-185	NITRATE AS NO3 (DISSOLVED)	mg/l	< 0.5	0.5	EPA 300.0	32		
SCP150	Well MW-12-187	NITRATE AS NO3 (DISSOLVED)	mg/l	0.74	0.5	EPA 300.0	31		
SCP153	Well MW-12-190	NITRATE AS NO3 (DISSOLVED)	mg/l	< 0.5	0.5	EPA 300.0	34		
SCP154	Well MW-12-191	NITRATE AS NO3 (DISSOLVED)	mg/l	5.2	0.5	EPA 300.0	35		
SCP152	Well PZ-R3-7	NITRATE AS NO3 (DISSOLVED)	mg/l	0.88	0.5	EPA 300.0	33		
SCP146	Columbia Canal at Eastside Dr.	ORTHOPHOSPHATE AS PO4 (DISSOLVED)	mg/l	0.63	0.6	EPA 300.0	-	-	-
SCP151	Well MW-12-185	ORTHOPHOSPHATE AS PO4 (DISSOLVED)	mg/l	< 0.6	0.6	EPA 300.0			
SCP150	Well MW-12-187	ORTHOPHOSPHATE AS PO4 (DISSOLVED)	mg/l	< 0.6	0.6	EPA 300.0			
SCP153	Well MW-12-190	ORTHOPHOSPHATE AS PO4 (DISSOLVED)	mg/l	< 0.6	0.6	EPA 300.0			
SCP154	Well MW-12-191	ORTHOPHOSPHATE AS PO4 (DISSOLVED)	mg/l	< 0.6	0.6	EPA 300.0			
SCP152	Well PZ-R3-7	ORTHOPHOSPHATE AS PO4 (DISSOLVED)	mg/l	< 0.6	0.6	EPA 300.0			

Table 2. Results and Evaluation for WQ Samples Collected May, 2018 - Inorganic Analyses and Physical Measurements

Sample ID	Station Name	Analyte	Units	Result	RL	Method	Lowest Limit (except as noted)	WQ Objective	Meets Standards?
SCP146	Columbia Canal at Eastside Dr.	pH	-	7.9	N/A	YSI	8.4	IRRIG, BP, FWAL	Met
SCP151	Well MW-12-185	pH	-	6.6	N/A	YSI			
SCP150	Well MW-12-187	pH	-	7	N/A	YSI			
SCP153	Well MW-12-190	pH	-	6.8	N/A	YSI			
SCP154	Well MW-12-191	pH	-	6.9	N/A	YSI			
SCP152	Well PZ-R3-7	pH	-	7.3	N/A	YSI			
SCP146	Columbia Canal at Eastside Dr.	POTASSIUM (DISSOLVED)	mg/l	0.90	0.04	EPA 200.8	-	-	-
SCP151	Well MW-12-185	POTASSIUM (DISSOLVED)	mg/l	1.63	0.04	EPA 200.8			
SCP150	Well MW-12-187	POTASSIUM (DISSOLVED)	mg/l	2.05	0.04	EPA 200.8			
SCP153	Well MW-12-190	POTASSIUM (DISSOLVED)	mg/l	3.64	0.04	EPA 200.8			
SCP154	Well MW-12-191	POTASSIUM (DISSOLVED)	mg/l	1.33	0.04	EPA 200.8			
SCP152	Well PZ-R3-7	POTASSIUM (DISSOLVED)	mg/l	1.87	0.04	EPA 200.8			
SCP146	Columbia Canal at Eastside Dr.	SAR	N/A	5.55	N/A	Calculation	3	IRRIG	IRRIG not met (<3 - <9)
SCP151	Well MW-12-185	SAR	N/A	0.83	N/A	Calculation			yes
SCP150	Well MW-12-187	SAR	N/A	1.67	N/A	Calculation			
SCP153	Well MW-12-190	SAR	N/A	2.02	N/A	Calculation			
SCP154	Well MW-12-191	SAR	N/A	4.65	N/A	Calculation			IRRIG not met (<3 - <9)
SCP152	Well PZ-R3-7	SAR	N/A	2.13	N/A	Calculation			yes
SCP146	Columbia Canal at Eastside Dr.	SELENIUM	ug/l	< 0.4	0.4	SM 3500-Se-C	5	BP, FWAL IRRIG, P&L	Met
SCP151	Well MW-12-185	SELENIUM	ug/l	< 0.4	0.4	SM 3500-Se-C			
SCP150	Well MW-12-187	SELENIUM	ug/l	< 0.4	0.4	SM 3500-Se-C			
SCP153	Well MW-12-190	SELENIUM	ug/l	< 0.4	0.4	SM 3500-Se-C			
SCP154	Well MW-12-191	SELENIUM	ug/l	< 0.4	0.4	SM 3500-Se-C			
SCP152	Well PZ-R3-7	SELENIUM	ug/l	< 0.4	0.4	SM 3500-Se-C			
SCP146	Columbia Canal at Eastside Dr.	SODIUM (DISSOLVED)	mg/l	39.8	0.1	EPA 200.8	<69	IRRIG	Met
SCP151	Well MW-12-185	SODIUM (DISSOLVED)	mg/l	17.5	0.1	EPA 200.8			
SCP150	Well MW-12-187	SODIUM (DISSOLVED)	mg/l	30.9	0.1	EPA 200.8			
SCP153	Well MW-12-190	SODIUM (DISSOLVED)	mg/l	37.8	0.1	EPA 200.8			
SCP154	Well MW-12-191	SODIUM (DISSOLVED)	mg/l	65.1	0.1	EPA 200.8			
SCP152	Well PZ-R3-7	SODIUM (DISSOLVED)	mg/l	37.8	0.1	EPA 200.8			

Table 2. Results and Evaluation for WQ Samples Collected May, 2018 - Inorganic Analyses and Physical Measurements

Sample ID	Station Name	Analyte	Units	Result	RL	Method	Lowest Limit (except as noted)	WQ Objective	Meets Standards?
SCP146	Columbia Canal at Eastside Dr.	SULFATE (DISSOLVED)	mg/l	16.9	1.0	EPA 300.0	-	-	-
SCP151	Well MW-12-185	SULFATE (DISSOLVED)	mg/l	20.4	1.0	EPA 300.0			
SCP150	Well MW-12-187	SULFATE (DISSOLVED)	mg/l	26.4	1.0	EPA 300.0			
SCP153	Well MW-12-190	SULFATE (DISSOLVED)	mg/l	47	1.0	EPA 300.0			
SCP154	Well MW-12-191	SULFATE (DISSOLVED)	mg/l	42	1.0	EPA 300.0			
SCP152	Well PZ-R3-7	SULFATE (DISSOLVED)	mg/l	33.9	1.0	EPA 300.0			
SCP146	Columbia Canal at Eastside Dr.	TDS	mg/l	139	10	SM 2540C	450	IRRIG	Met
SCP151	Well MW-12-185	TDS	mg/l	193	10	SM 2540C			
SCP150	Well MW-12-187	TDS	mg/l	170	10	SM 2540C			
SCP153	Well MW-12-190	TDS	mg/l	232	10	SM 2540C			
SCP154	Well MW-12-191	TDS	mg/l	262	10	SM 2540C			
SCP152	Well PZ-R3-7	TDS	mg/l	179	10	SM 2540C			
SCP146	Columbia Canal at Eastside Dr.	Temperature	° C	23.9	N/A	YSI	see stds tbl	Basin Plan	not evaluated
SCP151	Well MW-12-185	Temperature	° C	16.1	N/A	YSI	see stds tbl	-	-
SCP150	Well MW-12-187	Temperature	° C	19.1	N/A	YSI			
SCP153	Well MW-12-190	Temperature	° C	17.1	N/A	YSI			
SCP154	Well MW-12-191	Temperature	° C	15.8	N/A	YSI			
SCP152	Well PZ-R3-7	Temperature	° C	16.3	N/A	YSI			
SCP146	Columbia Canal at Eastside Dr.	TKN	mg/l	< 0.5	0.50	EPA 351.2	-	-	-
SCP151	Well MW-12-185	TKN	mg/l	< 0.5	0.50	EPA 351.2			
SCP150	Well MW-12-187	TKN	mg/l	< 0.5	0.50	EPA 351.2			
SCP153	Well MW-12-190	TKN	mg/l	< 0.5	0.50	EPA 351.2			
SCP154	Well MW-12-191	TKN	mg/l	< 0.5	0.50	EPA 351.2			
SCP152	Well PZ-R3-7	TKN	mg/l	< 0.5	0.50	EPA 351.2			
SCP146	Columbia Canal at Eastside Dr.	Turbidity	NTU	4.8	N/A	HACH	see stds tbl	Basin Plan	not evaluated
SCP151	Well MW-12-185	Turbidity	NTU	6.3	N/A	HACH	see stds tbl	-	-
SCP150	Well MW-12-187	Turbidity	NTU	16.7	N/A	HACH			
SCP153	Well MW-12-190	Turbidity	NTU	27.4	N/A	HACH			
SCP154	Well MW-12-191	Turbidity	NTU	40.2	N/A	HACH			
SCP152	Well PZ-R3-7	Turbidity	NTU	1	N/A	HACH			

Table 2. Results and Evaluation for WQ Samples Collected May, 2018 - Inorganic Analyses and Physical Measurements

Sample ID	Station Name	Analyte	Units	Result	RL	Method	Lowest Limit (except as noted)	WQ Objective	Meets Standards?
SCP146	Columbia Canal at Eastside Dr.	ZINC (DISSOLVED)	ug/l	< 20	20.0	EPA 200.8	16	FWAL, IRRIG, P&L	Met IRRIG/P&L FWAL cant tell
SCP151	Well MW-12-185	ZINC (DISSOLVED)	ug/l	< 20	20.0	EPA 200.8	101		Met
SCP150	Well MW-12-187	ZINC (DISSOLVED)	ug/l	< 20	20.0	EPA 200.8	81		
SCP153	Well MW-12-190	ZINC (DISSOLVED)	ug/l	< 20	20.0	EPA 200.8	83		
SCP154	Well MW-12-191	ZINC (DISSOLVED)	ug/l	< 20	20.0	EPA 200.8	51		
SCP152	Well PZ-R3-7	ZINC (DISSOLVED)	ug/l	1010	20.0	EPA 200.8	76		Met IRRIG/P&L FWAL not met

Table 3. Results and Evaluation for WQ Samples Collected May, 2018 - Organic Analyses

Sample ID	Station Name	Analyte	Units	Result	RL	Method	Lowest Limit (except as noted)	WQ Objective	Meets Standards?
SCP146	Columbia Canal at Eastside Dr.	1,2-DIBROMO-3-CHLOROPROPANE	ug/l	< 0.01	0.01	CA DOHS	-	-	-
SCP152	Well MW-12-185	1,2-DIBROMO-3-CHLOROPROPANE	ug/l	< 0.01	0.01	CA DOHS			
SCP151	Well MW-12-187	1,2-DIBROMO-3-CHLOROPROPANE	ug/l	< 0.01	0.01	CA DOHS			
SCP150	Well MW-12-190	1,2-DIBROMO-3-CHLOROPROPANE	ug/l	< 0.01	0.01	CA DOHS			
SCP153	Well MW-12-191	1,2-DIBROMO-3-CHLOROPROPANE	ug/l	< 0.01	0.01	CA DOHS			
SCP154	Well PZ-R3-7	1,2-DIBROMO-3-CHLOROPROPANE	ug/l	< 0.01	0.01	CA DOHS			
SCP146	Columbia Canal at Eastside Dr.	1,2-DIBROMOETHANE	ug/l	< 0.01	0.01	CA DOHS	-	-	-
SCP152	Well MW-12-185	1,2-DIBROMOETHANE	ug/l	< 0.01	0.01	CA DOHS			
SCP151	Well MW-12-187	1,2-DIBROMOETHANE	ug/l	< 0.01	0.01	CA DOHS			
SCP150	Well MW-12-190	1,2-DIBROMOETHANE	ug/l	< 0.01	0.01	CA DOHS			
SCP153	Well MW-12-191	1,2-DIBROMOETHANE	ug/l	< 0.01	0.01	CA DOHS			
SCP154	Well PZ-R3-7	1,2-DIBROMOETHANE	ug/l	< 0.01	0.01	CA DOHS			
SCP146	Columbia Canal at Eastside Dr.	4,4'-DDD	ug/l	< 0.01	0.01	EPA 8081A EPA8082	detection	BP	yes
SCP152	Well MW-12-185	4,4'-DDD	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP151	Well MW-12-187	4,4'-DDD	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP150	Well MW-12-190	4,4'-DDD	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP153	Well MW-12-191	4,4'-DDD	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP154	Well PZ-R3-7	4,4'-DDD	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP146	Columbia Canal at Eastside Dr.	4,4'-DDE	ug/l	< 0.01	0.01	EPA 8081A EPA8082	detection	BP	yes
SCP152	Well MW-12-185	4,4'-DDT	ug/l	< ?	0.01	EPA 8081A EPA8082			
SCP152	Well MW-12-187	4,4'-DDE	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP150	Well MW-12-190	4,4'-DDE	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP153	Well MW-12-191	4,4'-DDE	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP154	Well PZ-R3-7	4,4'-DDE	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP146	Columbia Canal at Eastside Dr.	4,4'-DDT	ug/l	< 0.01	0.01	EPA 8081A EPA8082	detection	BP	yes
SCP152	Well MW-12-185	4,4'-DDT	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP151	Well MW-12-187	4,4'-DDT	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP150	Well MW-12-190	4,4'-DDT	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP153	Well MW-12-191	4,4'-DDT	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP154	Well PZ-R3-7	4,4'-DDT	ug/l	< 0.01	0.01	EPA 8081A EPA8082			

Table 3. Results and Evaluation for WQ Samples Collected May, 2018 - Organic Analyses

Sample ID	Station Name	Analyte	Units	Result	RL	Method	Lowest Limit (except as noted)	WQ Objective	Meets Standards?
SCP146	Columbia Canal at Eastside Dr.	4,4'-TDE/DDD	ug/l	< 0.01	0.01	EPA 8081A EPA8082	detection	BP	yes
SCP152	Well MW-12-185	4,4'-TDE/DDD	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP151	Well MW-12-187	4,4'-TDE/DDD	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP150	Well MW-12-190	4,4'-TDE/DDD	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP153	Well MW-12-191	4,4'-TDE/DDD	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP154	Well PZ-R3-7	4,4'-TDE/DDD	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP146	Columbia Canal at Eastside Dr.	ALDRIN	ug/l	< 0.01	0.01	EPA 8081A EPA8082	3	FWAL	yes
SCP152	Well MW-12-185	ALDRIN	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP151	Well MW-12-187	ALDRIN	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP150	Well MW-12-190	ALDRIN	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP153	Well MW-12-191	ALDRIN	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP154	Well PZ-R3-7	ALDRIN	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP146	Columbia Canal at Eastside Dr.	AZINPHOSMETHYL	ug/l	< 1	1.0	EPA 8141A	-	-	-
SCP152	Well MW-12-185	AZINPHOSMETHYL	ug/l	< 1	1.0	EPA 8141A			
SCP151	Well MW-12-187	AZINPHOSMETHYL	ug/l	< 1	1.0	EPA 8141A			
SCP150	Well MW-12-190	AZINPHOSMETHYL	ug/l	< 1	1.0	EPA 8141A			
SCP153	Well MW-12-191	AZINPHOSMETHYL	ug/l	< 1	1.0	EPA 8141A			
SCP154	Well PZ-R3-7	AZINPHOSMETHYL	ug/l	< 1	1.0	EPA 8141A			
SCP146	Columbia Canal at Eastside Dr.	BOLSTAR	ug/l	< 0.1	0.10	EPA 8141A	-	-	-
SCP152	Well MW-12-185	BOLSTAR	ug/l	< 0.1	0.10	EPA 8141A			
SCP151	Well MW-12-187	BOLSTAR	ug/l	< 0.1	0.10	EPA 8141A			
SCP150	Well MW-12-190	BOLSTAR	ug/l	< 0.1	0.10	EPA 8141A			
SCP153	Well MW-12-191	BOLSTAR	ug/l	< 0.1	0.10	EPA 8141A			
SCP154	Well PZ-R3-7	BOLSTAR	ug/l	< 0.1	0.10	EPA 8141A			
SCP146	Columbia Canal at Eastside Dr.	CHLORDANE-ALPHA	ug/l	< 0.01	0.01	EPA 8081A EPA8082	-	-	-
SCP152	Well MW-12-185	CHLORDANE-ALPHA	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP151	Well MW-12-187	CHLORDANE-ALPHA	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP150	Well MW-12-190	CHLORDANE-ALPHA	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP153	Well MW-12-191	CHLORDANE-ALPHA	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP154	Well PZ-R3-7	CHLORDANE-ALPHA	ug/l	< 0.01	0.01	EPA 8081A EPA8082			

Table 3. Results and Evaluation for WQ Samples Collected May, 2018 - Organic Analyses

Sample ID	Station Name	Analyte	Units	Result	RL	Method	Lowest Limit (except as noted)	WQ Objective	Meets Standards?
SCP146	Columbia Canal at Eastside Dr.	CHLORDANE-GAMMA	ug/l	< 0.01	0.01	EPA 8081A EPA8082	-	-	-
SCP152	Well MW-12-185	CHLORDANE-GAMMA	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP151	Well MW-12-187	CHLORDANE-GAMMA	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP150	Well MW-12-190	CHLORDANE-GAMMA	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP153	Well MW-12-191	CHLORDANE-GAMMA	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP154	Well PZ-R3-7	CHLORDANE-GAMMA	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP146	Columbia Canal at Eastside Dr.	CHLOROTOLURON	ug/l	< 0.1	0.1	LC-MS-MS	-	-	-
SCP152	Well MW-12-185	CHLOROTOLURON	ug/l	< 0.1	0.1	LC-MS-MS			
SCP151	Well MW-12-187	CHLOROTOLURON	ug/l	< 0.1	0.1	LC-MS-MS			
SCP150	Well MW-12-190	CHLOROTOLURON	ug/l	< 0.1	0.1	LC-MS-MS			
SCP153	Well MW-12-191	CHLOROTOLURON	ug/l	< 0.1	0.1	LC-MS-MS			
SCP154	Well PZ-R3-7	CHLOROTOLURON	ug/l	< 0.1	0.1	LC-MS-MS			
SCP146	Columbia Canal at Eastside Dr.	CHLORPYRIFOS	ug/l	< 0.005	0.005	EPA 8141A	0.015	FWAL	yes
SCP152	Well MW-12-185	CHLORPYRIFOS	ug/l	< 0.005	0.005	EPA 8141A			
SCP151	Well MW-12-187	CHLORPYRIFOS	ug/l	< 0.005	0.005	EPA 8141A			
SCP150	Well MW-12-190	CHLORPYRIFOS	ug/l	< 0.005	0.005	EPA 8141A			
SCP153	Well MW-12-191	CHLORPYRIFOS	ug/l	< 0.005	0.005	EPA 8141A			
SCP154	Well PZ-R3-7	CHLORPYRIFOS	ug/l	< 0.005	0.005	EPA 8141A			
SCP146	Columbia Canal at Eastside Dr.	COUMAPHOS	ug/l	< 0.2	0.20	EPA 8141A	-	-	-
SCP152	Well MW-12-185	COUMAPHOS	ug/l	< 0.2	0.20	EPA 8141A			
SCP151	Well MW-12-187	COUMAPHOS	ug/l	< 0.2	0.20	EPA 8141A			
SCP150	Well MW-12-190	COUMAPHOS	ug/l	< 0.2	0.20	EPA 8141A			
SCP153	Well MW-12-191	COUMAPHOS	ug/l	< 0.2	0.20	EPA 8141A			
SCP154	Well PZ-R3-7	COUMAPHOS	ug/l	< 0.2	0.20	EPA 8141A			
SCP146	Columbia Canal at Eastside Dr.	DEF	ug/l	< 0.1	0.10	EPA 8141A	-	-	-
SCP152	Well MW-12-185	DEF	ug/l	< 0.1	0.10	EPA 8141A			
SCP151	Well MW-12-187	DEF	ug/l	< 0.1	0.10	EPA 8141A			
SCP150	Well MW-12-190	DEF	ug/l	< 0.1	0.10	EPA 8141A			
SCP153	Well MW-12-191	DEF	ug/l	< 0.1	0.10	EPA 8141A			
SCP154	Well PZ-R3-7	DEF	ug/l	< 0.1	0.10	EPA 8141A			

Table 3. Results and Evaluation for WQ Samples Collected May, 2018 - Organic Analyses

Sample ID	Station Name	Analyte	Units	Result	RL	Method	Lowest Limit (except as noted)	WQ Objective	Meets Standards?
SCP146	Columbia Canal at Eastside Dr.	DEMETON	ug/l	< 0.2	0.20	EPA 8141A	0.1	FWAL	insufficient RL
SCP152	Well MW-12-185	DEMETON	ug/l	< 0.2	0.20	EPA 8141A			
SCP151	Well MW-12-187	DEMETON	ug/l	< 0.2	0.20	EPA 8141A			
SCP150	Well MW-12-190	DEMETON	ug/l	< 0.2	0.20	EPA 8141A			
SCP153	Well MW-12-191	DEMETON	ug/l	< 0.2	0.20	EPA 8141A			
SCP154	Well PZ-R3-7	DEMETON	ug/l	< 0.2	0.20	EPA 8141A			
SCP146	Columbia Canal at Eastside Dr.	DIAZINON	ug/l	< 0.01	0.01	EPA 8141A	0.1	BP/FWAL	yes
SCP152	Well MW-12-185	DIAZINON	ug/l	< 0.01	0.01	EPA 8141A			
SCP151	Well MW-12-187	DIAZINON	ug/l	< 0.01	0.01	EPA 8141A			
SCP150	Well MW-12-190	DIAZINON	ug/l	< 0.01	0.01	EPA 8141A			
SCP153	Well MW-12-191	DIAZINON	ug/l	< 0.01	0.01	EPA 8141A			
SCP154	Well PZ-R3-7	DIAZINON	ug/l	< 0.01	0.01	EPA 8141A			
SCP146	Columbia Canal at Eastside Dr.	DICHLORVOS	ug/l	< 0.2	0.20	EPA 8141A	-	-	-
SCP152	Well MW-12-185	DICHLORVOS	ug/l	< 0.2	0.20	EPA 8141A			
SCP151	Well MW-12-187	DICHLORVOS	ug/l	< 0.2	0.20	EPA 8141A			
SCP150	Well MW-12-190	DICHLORVOS	ug/l	< 0.2	0.20	EPA 8141A			
SCP153	Well MW-12-191	DICHLORVOS	ug/l	< 0.2	0.20	EPA 8141A			
SCP154	Well PZ-R3-7	DICHLORVOS	ug/l	< 0.2	0.20	EPA 8141A			
SCP146	Columbia Canal at Eastside Dr.	DIELDRIN	ug/l	< 0.01	0.01	EPA 8081A EPA8082	0.06	FWAL	yes
SCP152	Well MW-12-185	DIELDRIN	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP151	Well MW-12-187	DIELDRIN	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP150	Well MW-12-190	DIELDRIN	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP153	Well MW-12-191	DIELDRIN	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP154	Well PZ-R3-7	DIELDRIN	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP146	Columbia Canal at Eastside Dr.	DIMETHOATE	ug/l	< 0.1	0.10	EPA 8141A	-	-	-
SCP152	Well MW-12-185	DIMETHOATE	ug/l	< 0.1	0.10	EPA 8141A			
SCP151	Well MW-12-187	DIMETHOATE	ug/l	< 0.1	0.10	EPA 8141A			
SCP150	Well MW-12-190	DIMETHOATE	ug/l	< 0.1	0.10	EPA 8141A			
SCP153	Well MW-12-191	DIMETHOATE	ug/l	< 0.1	0.10	EPA 8141A			
SCP154	Well PZ-R3-7	DIMETHOATE	ug/l	< 0.1	0.10	EPA 8141A			

Table 3. Results and Evaluation for WQ Samples Collected May, 2018 - Organic Analyses

Sample ID	Station Name	Analyte	Units	Result	RL	Method	Lowest Limit (except as noted)	WQ Objective	Meets Standards?
SCP146	Columbia Canal at Eastside Dr.	DISULFOTON	ug/l	< 0.1	0.10	EPA 8141A	0.05	FWAL	insufficient RL
SCP152	Well MW-12-185	DISULFOTON	ug/l	< 0.1	0.10	EPA 8141A			
SCP151	Well MW-12-187	DISULFOTON	ug/l	< 0.1	0.10	EPA 8141A			
SCP150	Well MW-12-190	DISULFOTON	ug/l	< 0.1	0.10	EPA 8141A			
SCP153	Well MW-12-191	DISULFOTON	ug/l	< 0.1	0.10	EPA 8141A			
SCP154	Well PZ-R3-7	DISULFOTON	ug/l	< 0.1	0.10	EPA 8141A			
SCP146	Columbia Canal at Eastside Dr.	DIURON	ug/l	< 0.1	0.1	LC-MS-MS	-	-	-
SCP152	Well MW-12-185	DIURON	ug/l	< 0.1	0.1	LC-MS-MS			
SCP151	Well MW-12-187	DIURON	ug/l	< 0.1	0.1	LC-MS-MS			
SCP150	Well MW-12-190	DIURON	ug/l	< 0.1	0.1	LC-MS-MS			
SCP153	Well MW-12-191	DIURON	ug/l	< 0.1	0.1	LC-MS-MS			
SCP154	Well PZ-R3-7	DIURON	ug/l	< 0.1	0.1	LC-MS-MS			
SCP146	Columbia Canal at Eastside Dr.	ENDOSULFAN I	ug/l	< 0.01	0.01	EPA 8081A EPA8082	0.06	FWAL	yes
SCP152	Well MW-12-185	ENDOSULFAN I	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP151	Well MW-12-187	ENDOSULFAN I	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP150	Well MW-12-190	ENDOSULFAN I	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP153	Well MW-12-191	ENDOSULFAN I	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP154	Well PZ-R3-7	ENDOSULFAN I	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP146	Columbia Canal at Eastside Dr.	ENDOSULFAN II	ug/l	< 0.01	0.01	EPA 8081A EPA8082	0.06	FWAL	yes
SCP152	Well MW-12-185	ENDOSULFAN II	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP151	Well MW-12-187	ENDOSULFAN II	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP150	Well MW-12-190	ENDOSULFAN II	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP153	Well MW-12-191	ENDOSULFAN II	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP154	Well PZ-R3-7	ENDOSULFAN II	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP146	Columbia Canal at Eastside Dr.	ENDOSULFAN SULFATE	ug/l	< 0.01	0.01	EPA 8081A EPA8082	0.06	FWAL	yes
SCP152	Well MW-12-185	ENDOSULFAN SULFATE	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP151	Well MW-12-187	ENDOSULFAN SULFATE	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP150	Well MW-12-190	ENDOSULFAN SULFATE	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP153	Well MW-12-191	ENDOSULFAN SULFATE	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP154	Well PZ-R3-7	ENDOSULFAN SULFATE	ug/l	< 0.01	0.01	EPA 8081A EPA8082			

Table 3. Results and Evaluation for WQ Samples Collected May, 2018 - Organic Analyses

Sample ID	Station Name	Analyte	Units	Result	RL	Method	Lowest Limit (except as noted)	WQ Objective	Meets Standards?
SCP146	Columbia Canal at Eastside Dr.	ENDRIN	ug/l	< 0.01	0.01	EPA 8081A EPA8082	detect/0.04	BP/FWAL	yes
SCP152	Well MW-12-185	ENDRIN	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP151	Well MW-12-187	ENDRIN	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP150	Well MW-12-190	ENDRIN	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP153	Well MW-12-191	ENDRIN	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP154	Well PZ-R3-7	ENDRIN	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP146	Columbia Canal at Eastside Dr.	ENDRIN ALDEHYDE	ug/l	< 0.01	0.01	EPA 8081A EPA8082	-	-	-
SCP152	Well MW-12-185	ENDRIN ALDEHYDE	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP151	Well MW-12-187	ENDRIN ALDEHYDE	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP150	Well MW-12-190	ENDRIN ALDEHYDE	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP153	Well MW-12-191	ENDRIN ALDEHYDE	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP154	Well PZ-R3-7	ENDRIN ALDEHYDE	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP146	Columbia Canal at Eastside Dr.	ENDRIN KETONE	ug/l	< 0.01	0.01	EPA 8081A EPA8082	-	-	-
SCP152	Well MW-12-185	ENDRIN KETONE	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP151	Well MW-12-187	ENDRIN KETONE	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP150	Well MW-12-190	ENDRIN KETONE	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP153	Well MW-12-191	ENDRIN KETONE	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP154	Well PZ-R3-7	ENDRIN KETONE	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP146	Columbia Canal at Eastside Dr.	EPN	ug/l	< 0.1	0.10	EPA 8141A	-	-	-
SCP152	Well MW-12-185	EPN	ug/l	< 0.1	0.10	EPA 8141A			
SCP151	Well MW-12-187	EPN	ug/l	< 0.1	0.10	EPA 8141A			
SCP150	Well MW-12-190	EPN	ug/l	< 0.1	0.10	EPA 8141A			
SCP153	Well MW-12-191	EPN	ug/l	< 0.1	0.10	EPA 8141A			
SCP154	Well PZ-R3-7	EPN	ug/l	< 0.1	0.10	EPA 8141A			
SCP146	Columbia Canal at Eastside Dr.	EPTC	ug/l	< 0.1	0.10	EPA 8141A	-	-	-
SCP152	Well MW-12-185	EPTC	ug/l	< 0.1	0.10	EPA 8141A			
SCP151	Well MW-12-187	EPTC	ug/l	< 0.1	0.10	EPA 8141A			
SCP150	Well MW-12-190	EPTC	ug/l	< 0.1	0.10	EPA 8141A			
SCP153	Well MW-12-191	EPTC	ug/l	< 0.1	0.10	EPA 8141A			
SCP154	Well PZ-R3-7	EPTC	ug/l	< 0.1	0.10	EPA 8141A			

Table 3. Results and Evaluation for WQ Samples Collected May, 2018 - Organic Analyses

Sample ID	Station Name	Analyte	Units	Result	RL	Method	Lowest Limit (except as noted)	WQ Objective	Meets Standards?
SCP146	Columbia Canal at Eastside Dr.	ETHION	ug/l	< 0.1	0.10	EPA 8141A	0.02	FWAL	yes
SCP152	Well MW-12-185	ETHION	ug/l	< 0.1	0.10	EPA 8141A			
SCP151	Well MW-12-187	ETHION	ug/l	< 0.1	0.10	EPA 8141A			
SCP150	Well MW-12-190	ETHION	ug/l	< 0.1	0.10	EPA 8141A			
SCP153	Well MW-12-191	ETHION	ug/l	< 0.1	0.10	EPA 8141A			
SCP154	Well PZ-R3-7	ETHION	ug/l	< 0.1	0.10	EPA 8141A			
SCP146	Columbia Canal at Eastside Dr.	ETHOPROP	ug/l	< 0.1	0.10	EPA 8141A	-	-	-
SCP152	Well MW-12-185	ETHOPROP	ug/l	< 0.1	0.10	EPA 8141A			
SCP151	Well MW-12-187	ETHOPROP	ug/l	< 0.1	0.10	EPA 8141A			
SCP150	Well MW-12-190	ETHOPROP	ug/l	< 0.1	0.10	EPA 8141A			
SCP153	Well MW-12-191	ETHOPROP	ug/l	< 0.1	0.10	EPA 8141A			
SCP154	Well PZ-R3-7	ETHOPROP	ug/l	< 0.1	0.10	EPA 8141A			
SCP146	Columbia Canal at Eastside Dr.	FENSULFOTHION	ug/l	< 0.5	0.50	EPA 8141A	-	-	-
SCP152	Well MW-12-185	FENSULFOTHION	ug/l	< 0.5	0.50	EPA 8141A			
SCP151	Well MW-12-187	FENSULFOTHION	ug/l	< 0.5	0.50	EPA 8141A			
SCP150	Well MW-12-190	FENSULFOTHION	ug/l	< 0.5	0.50	EPA 8141A			
SCP153	Well MW-12-191	FENSULFOTHION	ug/l	< 0.5	0.50	EPA 8141A			
SCP154	Well PZ-R3-7	FENSULFOTHION	ug/l	< 0.5	0.50	EPA 8141A			
SCP146	Columbia Canal at Eastside Dr.	FENTHION	ug/l	< 0.1	0.10	EPA 8141A	-	-	-
SCP152	Well MW-12-185	FENTHION	ug/l	< 0.1	0.10	EPA 8141A			
SCP151	Well MW-12-187	FENTHION	ug/l	< 0.1	0.10	EPA 8141A			
SCP150	Well MW-12-190	FENTHION	ug/l	< 0.1	0.10	EPA 8141A			
SCP153	Well MW-12-191	FENTHION	ug/l	< 0.1	0.10	EPA 8141A			
SCP154	Well PZ-R3-7	FENTHION	ug/l	< 0.1	0.10	EPA 8141A			
SCP146	Columbia Canal at Eastside Dr.	GAMMA-BHC (LINDANE)	ug/l	< 0.01	0.01	EPA 8081A EPA8082	detect/0.08	BP/FWAL	yes
SCP152	Well MW-12-185	GAMMA-BHC (LINDANE)	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP151	Well MW-12-187	GAMMA-BHC (LINDANE)	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP150	Well MW-12-190	GAMMA-BHC (LINDANE)	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP153	Well MW-12-191	GAMMA-BHC (LINDANE)	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP154	Well PZ-R3-7	GAMMA-BHC (LINDANE)	ug/l	< 0.01	0.01	EPA 8081A EPA8082			

Table 3. Results and Evaluation for WQ Samples Collected May, 2018 - Organic Analyses

Sample ID	Station Name	Analyte	Units	Result	RL	Method	Lowest Limit (except as noted)	WQ Objective	Meets Standards?
SCP146	Columbia Canal at Eastside Dr.	HCH-ALPHA	ug/l	< 0.01	0.01	EPA 8081A EPA8082	-	-	-
SCP152	Well MW-12-185	HCH-ALPHA	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP151	Well MW-12-187	HCH-ALPHA	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP150	Well MW-12-190	HCH-ALPHA	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP153	Well MW-12-191	HCH-ALPHA	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP154	Well PZ-R3-7	HCH-ALPHA	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP146	Columbia Canal at Eastside Dr.	HCH-BETA	ug/l	< 0.01	0.01	EPA 8081A EPA8082	-	-	-
SCP152	Well MW-12-185	HCH-BETA	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP151	Well MW-12-187	HCH-BETA	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP150	Well MW-12-190	HCH-BETA	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP153	Well MW-12-191	HCH-BETA	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP154	Well PZ-R3-7	HCH-BETA	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP146	Columbia Canal at Eastside Dr.	HCH-DELTA	ug/l	< 0.01	0.01	EPA 8081A EPA8082	-	-	-
SCP152	Well MW-12-185	HCH-DELTA	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP151	Well MW-12-187	HCH-DELTA	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP150	Well MW-12-190	HCH-DELTA	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP153	Well MW-12-191	HCH-DELTA	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP154	Well PZ-R3-7	HCH-DELTA	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP146	Columbia Canal at Eastside Dr.	HEPTACHLOR	ug/l	< 0.01	0.01	EPA 8081A EPA8082	detect/0.004	BP/FWAL	Can't eval BP/FWAL CC Meets FWAL acute
SCP152	Well PZ-R3-7	HEPTACHLOR	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP151	Well MW-12-185	HEPTACHLOR	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP150	Well MW-12-187	HEPTACHLOR	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP153	Well MW-12-190	HEPTACHLOR	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP154	Well MW-12-191	HEPTACHLOR	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP146	Columbia Canal at Eastside Dr.	HEPTACHLOR EPOXIDE	ug/l	< 0.01	0.01	EPA 8081A EPA8082	detect/0.004	BP/FWAL	Can't eval BP/FWAL CC Meets FWAL acute
SCP152	Well PZ-R3-7	HEPTACHLOR EPOXIDE	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP151	Well MW-12-185	HEPTACHLOR EPOXIDE	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP150	Well MW-12-187	HEPTACHLOR EPOXIDE	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP153	Well MW-12-190	HEPTACHLOR EPOXIDE	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP154	Well MW-12-191	HEPTACHLOR EPOXIDE	ug/l	< 0.01	0.01	EPA 8081A EPA8082			

Table 3. Results and Evaluation for WQ Samples Collected May, 2018 - Organic Analyses

Sample ID	Station Name	Analyte	Units	Result	RL	Method	Lowest Limit (except as noted)	WQ Objective	Meets Standards?
SCP146	Columbia Canal at Eastside Dr.	ISOPROTURON	ug/l	< 0.1	0.1	LC-MS-MS	-	-	-
SCP152	Well PZ-R3-7	ISOPROTURON	ug/l	< 0.1	0.1	LC-MS-MS			
SCP151	Well MW-12-185	ISOPROTURON	ug/l	< 0.1	0.1	LC-MS-MS			
SCP150	Well MW-12-187	ISOPROTURON	ug/l	< 0.1	0.1	LC-MS-MS			
SCP153	Well MW-12-190	ISOPROTURON	ug/l	< 0.1	0.1	LC-MS-MS			
SCP154	Well MW-12-191	ISOPROTURON	ug/l	< 0.1	0.1	LC-MS-MS			
SCP146	Columbia Canal at Eastside Dr.	LINURON	ug/l	< 0.1	0.1	LC-MS-MS	-	-	-
SCP152	Well PZ-R3-7	LINURON	ug/l	< 0.1	0.1	LC-MS-MS			
SCP151	Well MW-12-185	LINURON	ug/l	< 0.1	0.1	LC-MS-MS			
SCP150	Well MW-12-187	LINURON	ug/l	< 0.1	0.1	LC-MS-MS			
SCP153	Well MW-12-190	LINURON	ug/l	< 0.1	0.1	LC-MS-MS			
SCP154	Well MW-12-191	LINURON	ug/l	< 0.1	0.1	LC-MS-MS			
SCP146	Columbia Canal at Eastside Dr.	MALATHION	ug/l	< 0.03	0.03	EPA 8141A	0.1	FWAL	yes
SCP152	Well PZ-R3-7	MALATHION	ug/l	< 0.03	0.03	EPA 8141A			
SCP151	Well MW-12-185	MALATHION	ug/l	< 0.03	0.03	EPA 8141A			
SCP150	Well MW-12-187	MALATHION	ug/l	< 0.03	0.03	EPA 8141A			
SCP153	Well MW-12-190	MALATHION	ug/l	< 0.03	0.03	EPA 8141A			
SCP154	Well MW-12-191	MALATHION	ug/l	< 0.03	0.03	EPA 8141A			
SCP146	Columbia Canal at Eastside Dr.	MERPHOS	ug/l	< 0.1	0.10	EPA 8141A	-	-	-
SCP152	Well PZ-R3-7	MERPHOS	ug/l	< 0.1	0.10	EPA 8141A			
SCP151	Well MW-12-185	MERPHOS	ug/l	< 0.1	0.10	EPA 8141A			
SCP150	Well MW-12-187	MERPHOS	ug/l	< 0.1	0.10	EPA 8141A			
SCP153	Well MW-12-190	MERPHOS	ug/l	< 0.1	0.10	EPA 8141A			
SCP154	Well MW-12-191	MERPHOS	ug/l	< 0.1	0.10	EPA 8141A			
SCP146	Columbia Canal at Eastside Dr.	METAZACHLOR	ug/l	< 0.1	0.1	LC-MS-MS	-	-	-
SCP152	Well PZ-R3-7	METAZACHLOR	ug/l	< 0.1	0.1	LC-MS-MS			
SCP151	Well MW-12-185	METAZACHLOR	ug/l	< 0.1	0.1	LC-MS-MS			
SCP150	Well MW-12-187	METAZACHLOR	ug/l	< 0.1	0.1	LC-MS-MS			
SCP153	Well MW-12-190	METAZACHLOR	ug/l	< 0.1	0.1	LC-MS-MS			
SCP154	Well MW-12-191	METAZACHLOR	ug/l	< 0.1	0.1	LC-MS-MS			

Table 3. Results and Evaluation for WQ Samples Collected May, 2018 - Organic Analyses

Sample ID	Station Name	Analyte	Units	Result	RL	Method	Lowest Limit (except as noted)	WQ Objective	Meets Standards?
SCP146	Columbia Canal at Eastside Dr.	METHOXYCHLOR	ug/l	< 0.01	0.01	EPA 8081A EPA8082	detect/0.03	BP/FWAL	yes
SCP152	Well PZ-R3-7	METHOXYCHLOR	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP151	Well MW-12-185	METHOXYCHLOR	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP150	Well MW-12-187	METHOXYCHLOR	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP153	Well MW-12-190	METHOXYCHLOR	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP154	Well MW-12-191	METHOXYCHLOR	ug/l	< 0.01	0.01	EPA 8081A EPA8082			
SCP146	Columbia Canal at Eastside Dr.	METOXURON	ug/l	< 0.1	0.1	LC-MS-MS	-	-	-
SCP152	Well PZ-R3-7	METOXURON	ug/l	< 0.1	0.1	LC-MS-MS			
SCP151	Well MW-12-185	METOXURON	ug/l	< 0.1	0.1	LC-MS-MS			
SCP150	Well MW-12-187	METOXURON	ug/l	< 0.1	0.1	LC-MS-MS			
SCP153	Well MW-12-190	METOXURON	ug/l	< 0.1	0.1	LC-MS-MS			
SCP154	Well MW-12-191	METOXURON	ug/l	< 0.1	0.1	LC-MS-MS			
SCP146	Columbia Canal at Eastside Dr.	MEVINPHOS	ug/l	< 0.7	0.70	EPA 8141A	-	-	-
SCP152	Well PZ-R3-7	MEVINPHOS	ug/l	< 0.7	0.70	EPA 8141A			
SCP151	Well MW-12-185	MEVINPHOS	ug/l	< 0.7	0.70	EPA 8141A			
SCP150	Well MW-12-187	MEVINPHOS	ug/l	< 0.7	0.70	EPA 8141A			
SCP153	Well MW-12-190	MEVINPHOS	ug/l	< 0.7	0.70	EPA 8141A			
SCP154	Well MW-12-191	MEVINPHOS	ug/l	< 0.7	0.70	EPA 8141A			
SCP146	Columbia Canal at Eastside Dr.	NALED	ug/l	< 0.5	0.50	EPA 8141A	-	-	-
SCP152	Well PZ-R3-7	NALED	ug/l	< 0.5	0.50	EPA 8141A			
SCP151	Well MW-12-185	NALED	ug/l	< 0.5	0.50	EPA 8141A			
SCP150	Well MW-12-187	NALED	ug/l	< 0.5	0.50	EPA 8141A			
SCP153	Well MW-12-190	NALED	ug/l	< 0.5	0.50	EPA 8141A			
SCP154	Well MW-12-191	NALED	ug/l	< 0.5	0.50	EPA 8141A			
SCP146	Columbia Canal at Eastside Dr.	PARATHION, ETHYL	ug/l	< 0.1	0.10	EPA 8141A	-	-	-
SCP152	Well PZ-R3-7	PARATHION, ETHYL	ug/l	< 0.1	0.10	EPA 8141A			
SCP151	Well MW-12-185	PARATHION, ETHYL	ug/l	< 0.1	0.10	EPA 8141A			
SCP150	Well MW-12-187	PARATHION, ETHYL	ug/l	< 0.1	0.10	EPA 8141A			
SCP153	Well MW-12-190	PARATHION, ETHYL	ug/l	< 0.1	0.10	EPA 8141A			
SCP154	Well MW-12-191	PARATHION, ETHYL	ug/l	< 0.1	0.10	EPA 8141A			

Table 3. Results and Evaluation for WQ Samples Collected May, 2018 - Organic Analyses

Sample ID	Station Name	Analyte	Units	Result	RL	Method	Lowest Limit (except as noted)	WQ Objective	Meets Standards?
SCP146	Columbia Canal at Eastside Dr.	PARATHION, METHYL	ug/l	< 0.1	0.10	EPA 8141A	-	-	-
SCP152	Well PZ-R3-7	PARATHION, METHYL	ug/l	< 0.1	0.10	EPA 8141A			
SCP151	Well MW-12-185	PARATHION, METHYL	ug/l	< 0.1	0.10	EPA 8141A			
SCP150	Well MW-12-187	PARATHION, METHYL	ug/l	< 0.1	0.10	EPA 8141A			
SCP153	Well MW-12-190	PARATHION, METHYL	ug/l	< 0.1	0.10	EPA 8141A			
SCP154	Well MW-12-191	PARATHION, METHYL	ug/l	< 0.1	0.10	EPA 8141A			
SCP146	Columbia Canal at Eastside Dr.	PENDIMETHALIN	ug/l	< 0.1	0.10	EPA 8141A	-	-	-
SCP152	Well PZ-R3-7	PENDIMETHALIN	ug/l	< 0.1	0.10	EPA 8141A			
SCP151	Well MW-12-185	PENDIMETHALIN	ug/l	< 0.1	0.10	EPA 8141A			
SCP150	Well MW-12-187	PENDIMETHALIN	ug/l	< 0.1	0.10	EPA 8141A			
SCP153	Well MW-12-190	PENDIMETHALIN	ug/l	< 0.1	0.10	EPA 8141A			
SCP154	Well MW-12-191	PENDIMETHALIN	ug/l	< 0.1	0.10	EPA 8141A			
SCP146	Columbia Canal at Eastside Dr.	PHORATE	ug/l	< 0.1	0.10	EPA 8141A	-	-	-
SCP152	Well PZ-R3-7	PHORATE	ug/l	< 0.1	0.10	EPA 8141A			
SCP151	Well MW-12-185	PHORATE	ug/l	< 0.1	0.10	EPA 8141A			
SCP150	Well MW-12-187	PHORATE	ug/l	< 0.1	0.10	EPA 8141A			
SCP153	Well MW-12-190	PHORATE	ug/l	< 0.1	0.10	EPA 8141A			
SCP154	Well MW-12-191	PHORATE	ug/l	< 0.1	0.10	EPA 8141A			
SCP146	Columbia Canal at Eastside Dr.	PROPANIL	ug/l	< 0.1	0.1	LC-MS-MS	-	-	-
SCP152	Well PZ-R3-7	PROPANIL	ug/l	< 0.1	0.1	LC-MS-MS			
SCP151	Well MW-12-185	PROPANIL	ug/l	< 0.1	0.1	LC-MS-MS			
SCP150	Well MW-12-187	PROPANIL	ug/l	< 0.1	0.1	LC-MS-MS			
SCP153	Well MW-12-190	PROPANIL	ug/l	< 0.1	0.1	LC-MS-MS			
SCP154	Well MW-12-191	PROPANIL	ug/l	< 0.1	0.1	LC-MS-MS			
SCP146	Columbia Canal at Eastside Dr.	PYRIPROXYFEN	ug/l	< 0.1	0.1	LC-MS-MS	-	-	-
SCP152	Well PZ-R3-7	PYRIPROXYFEN	ug/l	< 0.1	0.1	LC-MS-MS			
SCP151	Well MW-12-185	PYRIPROXYFEN	ug/l	< 0.1	0.1	LC-MS-MS			
SCP150	Well MW-12-187	PYRIPROXYFEN	ug/l	< 0.1	0.1	LC-MS-MS			
SCP153	Well MW-12-190	PYRIPROXYFEN	ug/l	< 0.1	0.1	LC-MS-MS			
SCP154	Well MW-12-191	PYRIPROXYFEN	ug/l	< 0.1	0.1	LC-MS-MS			

Table 3. Results and Evaluation for WQ Samples Collected May, 2018 - Organic Analyses

Sample ID	Station Name	Analyte	Units	Result	RL	Method	Lowest Limit (except as noted)	WQ Objective	Meets Standards?
SCP146	Columbia Canal at Eastside Dr.	RONNEL	ug/l	< 0.1	0.10	EPA 8141A	-	-	-
SCP152	Well PZ-R3-7	RONNEL	ug/l	< 0.1	0.10	EPA 8141A			
SCP151	Well MW-12-185	RONNEL	ug/l	< 0.1	0.10	EPA 8141A			
SCP150	Well MW-12-187	RONNEL	ug/l	< 0.1	0.10	EPA 8141A			
SCP153	Well MW-12-190	RONNEL	ug/l	< 0.1	0.10	EPA 8141A			
SCP154	Well MW-12-191	RONNEL	ug/l	< 0.1	0.10	EPA 8141A			
SCP146	Columbia Canal at Eastside Dr.	SIMAZINE	ug/l	< 0.1	0.10	EPA 8141A	10	FWAL	yes
SCP152	Well PZ-R3-7	SIMAZINE	ug/l	< 0.1	0.10	EPA 8141A			
SCP151	Well MW-12-185	SIMAZINE	ug/l	< 0.1	0.10	EPA 8141A			
SCP150	Well MW-12-187	SIMAZINE	ug/l	< 0.1	0.10	EPA 8141A			
SCP153	Well MW-12-190	SIMAZINE	ug/l	< 0.1	0.10	EPA 8141A			
SCP154	Well MW-12-191	SIMAZINE	ug/l	< 0.1	0.10	EPA 8141A			
SCP146	Columbia Canal at Eastside Dr.	STIROPHOS	ug/l	< 0.1	0.10	EPA 8141A	-	-	-
SCP152	Well PZ-R3-7	STIROPHOS	ug/l	< 0.1	0.10	EPA 8141A			
SCP151	Well MW-12-185	STIROPHOS	ug/l	< 0.1	0.10	EPA 8141A			
SCP150	Well MW-12-187	STIROPHOS	ug/l	< 0.1	0.10	EPA 8141A			
SCP153	Well MW-12-190	STIROPHOS	ug/l	< 0.1	0.10	EPA 8141A			
SCP154	Well MW-12-191	STIROPHOS	ug/l	< 0.1	0.10	EPA 8141A			
SCP146	Columbia Canal at Eastside Dr.	SULFOTEP	ug/l	< 0.1	0.10	EPA 8141A	-	-	-
SCP152	Well PZ-R3-7	SULFOTEP	ug/l	< 0.1	0.10	EPA 8141A			
SCP151	Well MW-12-185	SULFOTEP	ug/l	< 0.1	0.10	EPA 8141A			
SCP150	Well MW-12-187	SULFOTEP	ug/l	< 0.1	0.10	EPA 8141A			
SCP153	Well MW-12-190	SULFOTEP	ug/l	< 0.1	0.10	EPA 8141A			
SCP154	Well MW-12-191	SULFOTEP	ug/l	< 0.1	0.10	EPA 8141A			
SCP146	Columbia Canal at Eastside Dr.	TEBUTHIURON	ug/l	< 0.1	0.1	LC-MS-MS	-	-	-
SCP152	Well PZ-R3-7	TEBUTHIURON	ug/l	< 0.1	0.1	LC-MS-MS			
SCP151	Well MW-12-185	TEBUTHIURON	ug/l	< 0.1	0.1	LC-MS-MS			
SCP150	Well MW-12-187	TEBUTHIURON	ug/l	< 0.1	0.1	LC-MS-MS			
SCP153	Well MW-12-190	TEBUTHIURON	ug/l	< 0.1	0.1	LC-MS-MS			
SCP154	Well MW-12-191	TEBUTHIURON	ug/l	< 0.1	0.1	LC-MS-MS			

Table 3. Results and Evaluation for WQ Samples Collected May, 2018 - Organic Analyses

Sample ID	Station Name	Analyte	Units	Result	RL	Method	Lowest Limit (except as noted)	WQ Objective	Meets Standards?
SCP146	Columbia Canal at Eastside Dr.	TOKUTHION	ug/l	< 0.1	0.10	EPA 8141A	-	-	-
SCP152	Well PZ-R3-7	TOKUTHION	ug/l	< 0.1	0.10	EPA 8141A			
SCP151	Well MW-12-185	TOKUTHION	ug/l	< 0.1	0.10	EPA 8141A			
SCP150	Well MW-12-187	TOKUTHION	ug/l	< 0.1	0.10	EPA 8141A			
SCP153	Well MW-12-190	TOKUTHION	ug/l	< 0.1	0.10	EPA 8141A			
SCP154	Well MW-12-191	TOKUTHION	ug/l	< 0.1	0.10	EPA 8141A			
SCP146	Columbia Canal at Eastside Dr.	TOXAPHENE	ug/l	< 0.5	0.50	EPA 8081A EPA8082	0.0002	FWAL	meets FWAL acute cant eval FWAL chronic
SCP152	Well PZ-R3-7	TOXAPHENE	ug/l	< 0.5	0.50	EPA 8081A EPA8082			
SCP151	Well MW-12-185	TOXAPHENE	ug/l	< 0.5	0.50	EPA 8081A EPA8082			
SCP150	Well MW-12-187	TOXAPHENE	ug/l	< 0.5	0.50	EPA 8081A EPA8082			
SCP153	Well MW-12-190	TOXAPHENE	ug/l	< 0.5	0.50	EPA 8081A EPA8082			
SCP154	Well MW-12-191	TOXAPHENE	ug/l	< 0.5	0.50	EPA 8081A EPA8082			
SCP146	Columbia Canal at Eastside Dr.	TRICHLORONATE	ug/l	< 0.1	0.10	EPA 8141A	-	-	-
SCP152	Well PZ-R3-7	TRICHLORONATE	ug/l	< 0.1	0.10	EPA 8141A			
SCP151	Well MW-12-185	TRICHLORONATE	ug/l	< 0.1	0.10	EPA 8141A			
SCP150	Well MW-12-187	TRICHLORONATE	ug/l	< 0.1	0.10	EPA 8141A			
SCP153	Well MW-12-190	TRICHLORONATE	ug/l	< 0.1	0.10	EPA 8141A			
SCP154	Well MW-12-191	TRICHLORONATE	ug/l	< 0.1	0.10	EPA 8141A			
SCP146	Columbia Canal at Eastside Dr.	TRIFLURALIN	ug/l	< 0.05	0.05	EPA 8141A	-	-	-
SCP152	Well PZ-R3-7	TRIFLURALIN	ug/l	< 0.05	0.05	EPA 8141A			
SCP151	Well MW-12-185	TRIFLURALIN	ug/l	< 0.05	0.05	EPA 8141A			
SCP150	Well MW-12-187	TRIFLURALIN	ug/l	< 0.05	0.05	EPA 8141A			
SCP153	Well MW-12-190	TRIFLURALIN	ug/l	< 0.05	0.05	EPA 8141A			
SCP154	Well MW-12-191	TRIFLURALIN	ug/l	< 0.05	0.05	EPA 8141A			

Table 4. Water Quality Standards for Seepage Management Projects

SCP Analyte	Basin Plan (SWRCB, 2016)	Freshwater Aquatic Life Protections (Marshack, 2016)						Agricultural Goals (Ayers and Westcott, 1985)	
		CA Toxics Rule (CTR) and/or National Toxics Rule (NTR)			National Recommended Water Quality Criteria (NRWQC)			Irrigation Suitability (IRRIG)	Poultry & Livestock (P&L)
		Continuous Concentration (CC)	Maximum Concentration (MC)	Instantaneous Maximum (IM)	Continuous Concentration (CC)	Maximum Concentration (MC)	Instantaneous Maximum (IM)		
PHYSICAL MEASUREMENTS (units as noted)									
pH (units)	6.5 - 8.5	-	-	-	-	-	6.5 - 9.0	6.5 - 8.4	-
EC (µS/cm)	-	-	-	-	-	-	-	<700 - <3,000 (1)	<5000
Temperature (°C)	(2)	-	-	-	-	-	-	-	-
Turbidity (NTU)	(3)	-	-	-	-	-	-	-	-
CONVENTIONAL PARAMETERS (mg/L)									
Total Ammonia (N)	-	-	-	-	calculation (4)	calculation (4)	-	-	-
Bicarbonate Alkalinity	-	-	-	-	-	-	-	<92 - <519 (1)	-
Total Alkalinity	-	-	-	-	>20	-	-	-	-
Boron	<2.0 (5)	-	-	-	-	-	-	<0.7-<15.0 (1)	<5000
Calcium	-	-	-	-	-	-	-	-	-
Chloride	-	-	-	-	<230	<860	-	< 3 - < 40 (5)	-
Hardness	-	-	-	-	-	-	-	-	-
Magnesium	-	-	-	-	-	-	-	-	<250
Molybdenum	-	-	-	-	-	-	-	<10	<10
Nitrate (as NO_3)	-	-	-	-	-	-	-	<30	-
Sodium	-	-	-	-	-	-	-	< 69 (7)	-
Sodium Absorption Ratio (SAR)	-	-	-	-	-	-	-	<3- < 9 (1, 7)	-
Sulfate	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS)	-	-	-	-	-	-	-	<450 - <2,000 (1)	-
Total Phosphorus	-	-	-	-	-	-	-	-	-
Total Kjeldahl Nitrogen (TKN)	-	-	-	-	-	-	-	-	-
METALS - TOTAL (µg/L)									-
Aluminum	-	-	-	-	<87 (8)	<750	-	<5000 (9)	<5000
Arsenic	-	-	-	-	-	-	-	<100	<200
Cadmium	-	calculation (10)	calculation (10)	-	-	-	-	<10	<50
Copper	-	calculation (10)	calculation (10)	-	-	-	-	<200	<500
Lead	-	calculation (10)	calculation (10)	-	-	-	-	<5000	<100
Mercury	-	-	-	-	<0.77	<1.4	-	-	<10
Nickel	-	calculation (10)	calculation (10)	-	-	-	-	<200	<200
Selenium	<5 (11)	<5	<20[8]	-	-	-	-	<20	<50
Zinc	-	calculation (10)	calculation (10)	-	-	-	-	<2000	<24000

Table 4. Water Quality Standards for Seepage Management Projects

SCP Analyte	Basin Plan (SWRCB, 2016)	Freshwater Aquatic Life Protections (Marshack, 2016)						Agricultural Goals (Ayers and Westcott, 1985)	
		CA Toxics Rule (CTR) and/or National Toxics Rule (NTR)			National Recommended Water Quality Criteria (NRWQC)			Irrigation Suitability (IRRIG)	Poultry & Livestock (P&L)
		Continuous Concentration (CC)	Maximum Concentration (MC)	Instantaneous Maximum (IM)	Continuous Concentration (CC)	Maximum Concentration (MC)	Instantaneous Maximum (IM)		
METALS - DISSOLVED (µg/L)									
Aluminum (standard is for total Al)	-	-	-	-	-	-	-	-	-
Arsenic	-	<150	<340	-	-	-	-	-	-
Boron	-	-	-	-	-	-	-	-	-
Cadmium	-	calculation (10)	calculation (10)	-	-	-	-	-	-
Copper	-	calculation (10)	calculation (10)	-	-	-	-	-	-
Lead	-	calculation (10)	calculation (10)	-	-	-	-	-	-
Mercury	-	-	-	-	-	-	-	-	-
Nickel	-	calculation (10)	calculation (10)	-	-	-	-	-	-
Selenium	-	-	-	-	-	-	-	-	-
Zinc	-	calculation (10)	calculation (10)	-	-	-	-	-	-
ANALYZED ORGANIC COMPOUNDS WITH ASSOCIATED STANDARDS (µg/L)									
Aldrin	-	-	-	3	-	-	3	-	-
Chlorpyrifos	0.025/0.015 (14)	-	-	-	0.041	0.083	-	-	-
Demeton	-	-	-	-	0.1	-	-	-	-
Diazinon	0.16/0.10 (14)	-	-	-	0.17	0.17	-	-	-
Dieldrin	-	0.056	-	0.24	0.056	-	0.24	-	-
Disulfoton	-	-	-	-	-	0.05	-	-	-
Endosulfan I	-	0.056	-	0.22	0.056	-	0.22	-	-
Endosulfan II	-	0.056	-	0.22	0.056	-	0.22	-	-
Endosulfan Sulfate	-	-	-	-	-	0.056 (15)	-	-	-
Endrin	Detection	0.036	0.086	-	0.036	0.086	-	-	-
Ethion	-	-	-	-	-	-	0.02	-	-
Gamma-BHC (Lindane) [BHCc]	Detection	-	0.95	-	0.08	0.95	-	-	-
Heptachlor	Detection	0.0038	-	0.52	0.0038	-	0.52	-	-
Heptachlor Epoxide	Detection	0.0038	-	0.52	0.0038	-	0.52	-	-
Malathion	-	-	-	-	-	0.43	0.1	-	-
Methoxychlor	Detection	-	-	-	-	-	0.03	-	-
Simazine	-	-	-	-	-	-	10	-	-
Toxaphene	-	0.0002	-	0.73	0.0002	-	0.73	-	-
Total DDD [DDD]	Detection	-	-	-	0.001		1.1	-	-
Total DDE [DDE]	Detection	-	-	-	0.001		1.1	-	-
Total DDT [DDT]	Detection	-	-	-	0.001		1.1	-	-

Table 4. Water Quality Standards for Seepage Management Projects

SCP Analyte	Basin Plan (SWRCB, 2016)	Freshwater Aquatic Life Protections (Marshack, 2016)						Agricultural Goals (Ayers and Westcott, 1985)	
		CA Toxics Rule (CTR) and/or National Toxics Rule (NTR)			National Recommended Water Quality Criteria (NRWQC)			Irrigation Suitability (IRRIG)	Poultry & Livestock (P&L)
		Continuous Concentration (CC)	Maximum Concentration (MC)	Instantaneous Maximum (IM)	Continuous Concentration (CC)	Maximum Concentration (MC)	Instantaneous Maximum (IM)		

(1) Limit varies within this range, based on irrigation practices, soil, crops, and desired protection (e.g. dripline clogging, plant health)

(2) Receiving water must not increase temperature by more than 5 degrees C due to discharge inputs

(3) Receiving water must not increase in turbidity by more than 20% due to discharge inputs

(4) Limit individually calculated for each sample based on the sample's pH and temperature

(5) Monthly Mean, Sack Dam to Mouth of Merced River, March 15-Sept 15

(6) Tolerable concentration varies by crop and plant structure of concern (e.g. roots, leaves)

(7) Limit applies to tree crops and woody plants under surface (non-drip) irrigation

(8) Limit applies only if pH is between 6.5 and 9.0. Also, if limit exceeded, use of Water-Effects Ratios may be appropriate

(9) If this limit is exceeded, ag production in soils with pH <5.5 may be zero; if water is applied to soils with pH 5.5-7, productivity may be reduced

(10) Limit individuallly calculated for each sample based on hardness of the water sample

(11) 4-day average, Sack Dam to Vernalis; standard is for total (unfiltered) sample

(12) = This value is the Lowest Observable Effect (LOE) for Chronic Toxicity (NRWQC)

(14) First value is 1 hr ave, second value 4 hr ave; applies Mendota Dam to Vernalis

(15) 24 hour average