NPDES Compliance Inspection Report

City of Kamiah
Water Treatment Plant
NPDES # ID0028461

Kamiah, Idaho

Permit #: ID0028461

Inspection Date: September 13, 2023

Prepared by:

Mike Beck, James Phillips
Eastern Research Group

For:

U.S. Environmental Protection Agency, Region 10
Enforcement & Compliance Assurance Division
Water Enforcement & Field Branch
Field, Data & Drinking Water Enforcement Section

Signature/Date:

Mike Beck	**11/15/2023**

Supervisor Signature/Date:

Marshalonis, Daniel (Dino)	Digitally signed by Marshalonis, Daniel (Dino) Date: 2023.11.16 09:20:54 -08'00'

Contents

(All details in this report were obtained through conversations with Stu Bryant or from observations made during the inspection.)

I. Facility Information

Facility Name:	Kamiah Water Treatment Plant (WTP)
Facility Owner:	City of Kamiah, Idaho
Facility Operator:	City of Kamiah Department of Public Works (DPW)
Facility Address:	101 E 3rd St Kamiah, Idaho 83536
Lat/Long:	46.228773, -116.018526
Mailing Address:	City of Kamiah Water Treatment Plant 101 E 3rd St Kamiah, Idaho 83536
Facility Contacts:	Stu Bryant, Lead Operator City of Kamiah DPW Email: sbryant@cityofkamia.org
Permit Number:	ID0028461
Receiving Water:	Clearwater River

II. Inspection Information

Inspection Date:	September 13, 2023
Inspectors:	Mike Beck, Inspector Eastern Research Group Email: mike.beck@erg.com James Phillips, Environmental Engineer Eastern Research Group Email: james.phillips@erg.com Charissa Bujak, Inspector EPA Region 10 Email: bujak.charissa@epa.gov

Arrival Time:	09:00 AM
Departure Time:	2:00 PM
Purpose:	To determine compliance with the Clean Water Act and the National Pollutant Discharge Elimination System (NPDES) permit for Kamiah WTP located in Kamiah, Idaho (ID0028461).

III. Permit Information

The Kamiah WTP (henceforth the "facility") is permitted under the NPDES permit ID0028461.The permit became effective on January 1, 2013. The permit expired on December 31, 2017, and has been administratively extended by the Idaho Department of Environmental Quality.

IV. Background

The Kamiah WTP is located within the Nez Perce Reservation along the Clearwater River, in the town of Kamiah, Idaho. The facility treats water from the Clearwater River and provides drinking water to the City of Kamiah as well as other areas in the Nez Perce Reservation. The Facility is owned by the City of Kamiah and operated by the City of Kamiah DPW. The facility is operated by 4 DPW employees; 3 Class I operators, and 1 Class II operator. The facility was constructed in 2013.

A satellite image of the facility with relevant areas and assets outlined in red, is included in **Attachment A**.

The facility is a surface water treatment plant consisting of pre-screening, flocculation, clarification, filtration, and chlorination. The water is first dosed with polyaluminum chloride (PAC) for flocculation and is then split between two parallel up-flow, gravel-bed clarifiers. Clarifier effluent is split between three parallel filters. Filter effluent is combined for disinfection with sodium hypochlorite and sent throughout the distribution system.

The facility's waste streams consist of filter backwash and clarifier rinses. Each filter is backwashed approximately twice per week while the clarifiers are rinsed every 2 hours for Clarifier #1 and every 3 hours for Clarifier #2. The water from the filter backwashes and clarifier rinses is sent to a settling basin where the solids are settled at the bottom and the supernatant from the settling basin is discharged to the Clearwater River through the facility's Outfall 001.

V. Inspection Chronology

This was an announced inspection. Representatives of the Nez Perce Tribe and facility were notified of the inspection by email on 09/01/2023.

The inspection consisted of an opening conference, a walk-through of the treatment plant, a records review, and a closing conference. For the walk-through, the inspection team viewed the facility's treatment processes and settling basin. Following the walk-through, the inspection team conducted a records review within the facility's laboratory. The closing conference occurred following the records review. During the closing conference, the inspection team discussed observations from the inspection with the facility representatives.

VI. Opening Conference

The opening conference was held with Stu Bryant from the City of Kamiah DPW (henceforth the facility representative) shortly after the arrival of the inspection team. The opening conference sign-in sheet can be found in **Attachment B**. Mike Beck and Charissa Bujak presented their EPA credentials. The inspection team discussed the purpose and expectations of the inspection. The facility representative provided a background of the facility and general process flow.

VII. Inspection Walkthrough

Following the opening conference, the inspection team conducted a walkthrough of the treatment plant. For the entire walk-through, the inspection team was joined by Stu Bryant. Photographs taken during the facility walkthrough, including a complete photograph log, appear in **Attachment C**.

The first stage observed was raw water being sent through a pre-screening process consisting of sand and grit traps. The water is then dosed with PAC to aid in the flocculation and settling process (refer to Attachment C, Photograph 1). After dosing, the water is split between the up-flow Clarifiers #1 and #2 which operate in parallel.

At the time of the inspection, both clarifiers were in use and the inspection team observed loose gravel at the top of Clarifier #1 (refer to Attachment C, Photograph 2). The facility representative stated this was due to cracks in the mesh strainer which allowed the gravel to flow upwards. According to the facility representative, Clarifier #1 is rinsed every 2 hours while Clarifier #2 is rinsed every 3 hours. The clarifier rinses do not occur automatically but are instead initiated manually through the facility's control system. The clarifier rinses are not documented, however, the volumetric flow from the rinses is recorded in the facility's control system and is combined with the flow recorded from the backwashes to calculate the facility's total discharge through Outfall 001.

The inspection team observed the three filters (refer to Attachment C, Photograph 3). At the filtration process area, the facility representative explained that the filters are backwashed approximately twice per week with chlorinated, finished water. The backwashes are documented using legal pads and the total flow is recorded in the facility's control system.

Since the backwash water is chlorinated, the facility representative explained that any discharge from the settling basin through Outfall 001 during the backwash process is dechlorinated using ascorbic acid to ensure that chlorine is not discharged to the Clearwater

River. The facility representative stated that a coffee can is used to measure the appropriate amount of ascorbic acid. The de-chlorination process is not documented or written down in any standard operating procedures (SOP) at the facility.

After viewing the up-flow clarifiers, the inspection team observed the facility's wastewater settling basin (refer to Attachment C, Photograph 4). The settling basin consists of two cells, separated by a concrete wall with an access for the cells to connect to one another. The influent to the settling basin is split between the two cells. Each cell is equipped with a weir where the supernatant is discharged. The supernatant from each cell is then combined and discharged to Outfall 001. The facility representative stated all compliance samples are taken from the weir when the settling basin is discharging. The inspection team observed a large buildup of solids in both cells of the settling basin (refer to Attachment C, Photograph 5). The facility representative stated solids were last pumped out of the settling basins approximately two years ago and were expected scheduled to be removed again before winter. When solids are removed, they are delivered to the Kamiah Wastewater Treatment Plant where they are combined with the wastewater solids.

The inspection team observed a sump next to the settling basin (refer to Attachment C, Photograph 6). The facility representative stated this was the drainage basin for facility floor drains, including any drains in the facility's chemical storage room. At the end of the drainage basin was a sump pump with a discharge line to the settling basin (refer to Attachment C, Photographs 7 and 8). The facility representative stated the pump was level controlled and would discharge to the settling basin when the drainage basin reached a certain level; however, most of the time, the drainage basin would not fill to this level and any water would just evaporate.

The inspection team observed the facility's chemical storage room (refer to Attachment C, Photograph 9). Within the chemical storage room, the inspectors observed two large storage containers and six 55-gallon drums for PAC as well as one 250-gallon drum and several bags of soda ash (refer to Attachment C, Photographs 10, 11, and 12). One large container, one 55-gallon drum of PAC, and the 250-gallon tote of soda ash were all within secondary containment. The additional large container and five 55-gallon drums of PAC as well as the bags of soda ash were outside the secondary containment. Any spills outside of the secondary containment would drain into the drainage basin (refer to Attachment C, Photograph 13).

The facility representative did not know the location of Outfall 001 nor was it physically locatable during the site visit so active flow from the outfall into the receiving water Outfall 001 was not observed by the inspection team.

The inspection team concluded the facility walkthrough and returned to the facility's laboratory to begin the file and laboratory review. The inspection team observed the facility's sampling bottles and equipment (refer to Attachment C, Photographs 14, 15, and 16). The facility sends its samples to Anatek Labs in Moscow, ID for analysis and utilizes a courier service for the submittal of bacteriological samples. Sampling procedures are outlined in the facility's Quality Assurance Plan (QAP).

VIII. File Review

While onsite, the inspection team reviewed the facility's operational logs, calibration logs, compliance sampling schedule, and laboratory chains of custody (CoC) (refer to Attachment C, Photographs 17, 18, 19, and 20). The inspection team reviewed the facility's discharge monitoring reports (DMR) offsite. The facility has not reported effluent limit exceedances or DMR late submittals for the past 5 years.

The inspection team was unable to review the Quality Assurance Plan (QAP), Operation and maintenance (O&M) Plan, or Best Management Practices (BMP) Plan onsite since the facility was unable to provide these documents during the inspection.

Following the inspection, the facility representative provided the inspection team with a copy of the QAP and an outline of the BMP Plan (refer to **Attachment D** for more information).

IX. Areas of Concern

The following areas of concern were noted during the inspection and were discussed with the facility during the closing conference:

A. Special Conditions Documentation

NPDES Permit OR0032638 Section II Part A, B, and C:
"The [O&M Plan] shall be retained on site and made available on request to EPA and the Nez Perce Tribe."
"Copies of the QAP must be kept on site and made available to EPA and/or the Nez Perce Tribe upon request."
"A copy of the BMP Plan shall be maintained at the facility and be available to EPA or its authorized representatives, upon request."

Observation 1. The facility was unable to provide the O&M Plan, BMP Plan, or QAP to the inspection team onsite during the inspection.

The BMP Plan outline, QAP, and O&M Plan were provided to the inspection team via email after the inspection (refer to **Attachment D** for more information).

B. Records Retention and Development

NPDES Permit OR0032638 Section III Part F: "The permittee must retain records of all monitoring information, including, all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, copies of DMRs, a copy of the NPDES permit, and records of all data used to complete the application for this permit, for a period of at least five years from the date of the sample, measurement, report or application."

Observation 2. The facility representative stated that the clarifier rinses were not recorded.

Observation 3. Calibration of the facility's pH/temperature and turbidity meter was not being performed each time the probes were used, sometimes not being calibrated for months at a time (refer to Attachment C, Photographs 19 and 20).

Observation 4. The facility did not have written or formalized SOPs for many of its procedures such as the time between clarifier rinses or backwashes, dechlorination procedures, or sludge pumping from the settling basin. Most of the operational knowledge at the facility is passed down verbally from the more experienced operators rather than being written down.

C. Operations and Maintenance

NPDES Permit OR0032638 Section IV Part E: "The permittee must at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by the permittee only when the operation is necessary to achieve compliance with the conditions of the permit."

Observation 5. The facility representative did not know the location of Outfall 001 so the receiving water in the vicinity of Outfall 001 was not observed by the inspection team. Following the inspection, the facility representative provided photographs and coordinates of Outfall 001 (refer to **Attachment D** for more information).

Observation 6. The chemical storage room had one large container and five 55-gallon drums of PAC as well as several bags of soda ash outside of secondary containment (refer to Attachment C, Photographs 9 and 12). The floor drain in this room leads to the outside drainage basin and could pose a contamination risk if the drainage basin discharges to the settling basin.

Observation 7. At the time of the inspection, the inspection team observed accumulation of solids in the settling basin (refer to Attachment C, Photograph 5). The solids were approximately 2 to 3 inches from the weir that discharges to Outfall 001. The facility representative stated the solids were last pumped out of the settling basin approximately two years ago.

D. Representative Sampling

NPDES Permit OR0032638 Section III Part A: "Samples and measurements must be representative of the volume and nature of the monitored discharge."

Observation 8. The inspection team observed that the temperature of the sampling coolers received at the laboratory were consistently greater than the recommended temperature of 6° Celsius (refer to Attachment C, Photographs 17 and 18).

X. Closing Conference

Following the walk-through and records review, the inspection team held a closing conference with the facility representatives. The inspection team discussed all observations made during the inspection and gave an overview of the post-inspection process.

XI. Post Inspection Follow-Up

On September 19, September 22, and October 11, 2023, the facility representatives emailed the inspection team with updates at the facility following the inspection and observations. See **Attachment D** for more information.

ATTACHMENT A

Satellite Imagery of the Facility

Figure A-1. Satellite imagery of the facility with relevant areas and assets outlined in red.

ATTACHMENT B

Opening Conference Sign-In Sheet

Inspection Name: Kamiah Water Treatment Plant Date: 09/13/2023

Name	Title	Contact Information	Signature
Mike Beck	Credentialed Inspector (ERG)	mike.beck@erg.com	
James Phillips	Env. Eng.	james.phillips@erg.com	
Stu Bryant	Water Plant Operator	sbryant@cityofkamiah.org	
Charissa Bujak	Biologist	bujak.charissa@epa.gov	

ATTACHMENT C

Photograph Log

All photographs taken by Mike Beck on September 13, 2023

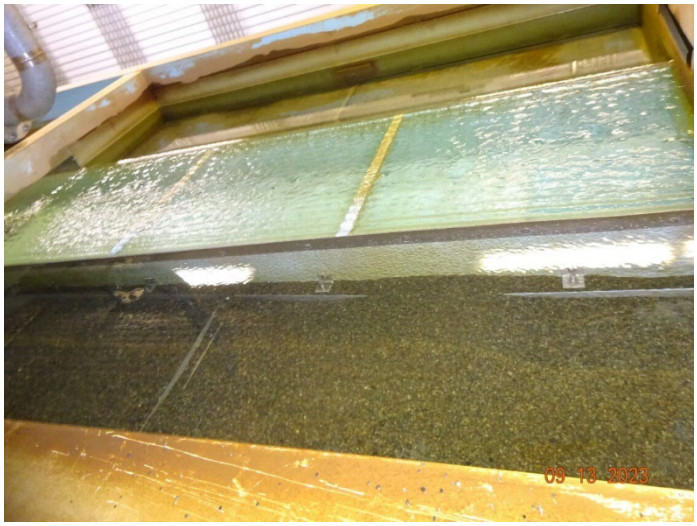
Photo Log – Kamiah WTP	
	
Photograph #01 (DSC03615) Description: Dosing point for the PAC, prior to flocculation and clarification.	Photograph #02 (DSC03628) Description: Clarifier #1. Note, the gravel that has flowed upwards through the screen.
	
Photograph #03 (DSC03627) Description: The three filters at the facility. Backwash from the filters flows to the settling basin.	Photograph #04 (DSC03601) Description: The facility's settling basin with the two cells separated by a concrete wall, outlined in red.

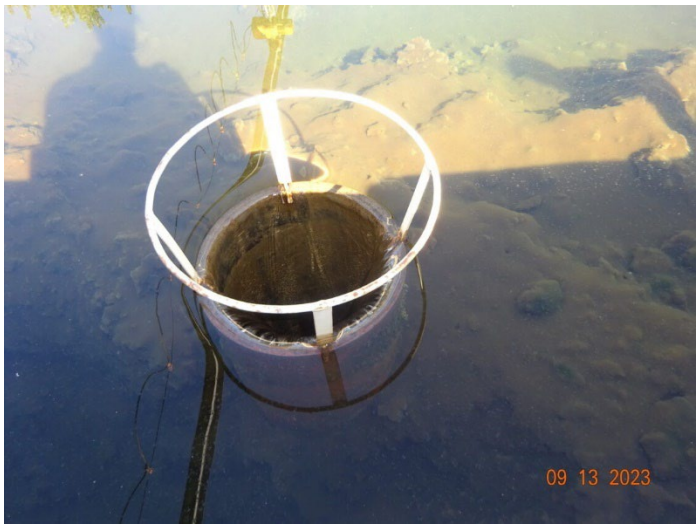
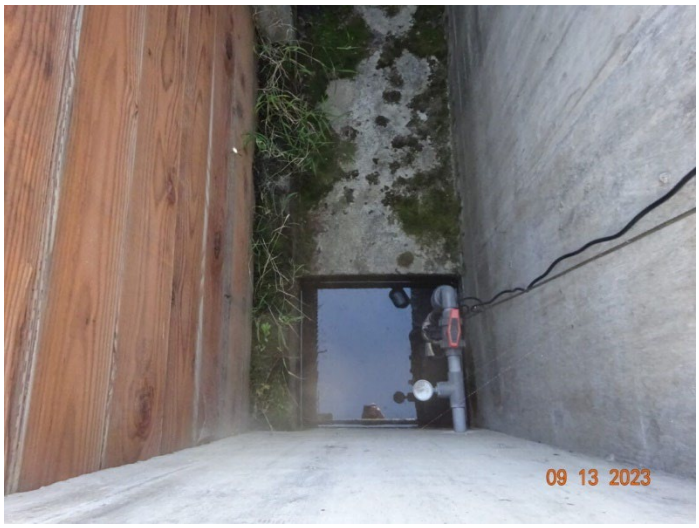
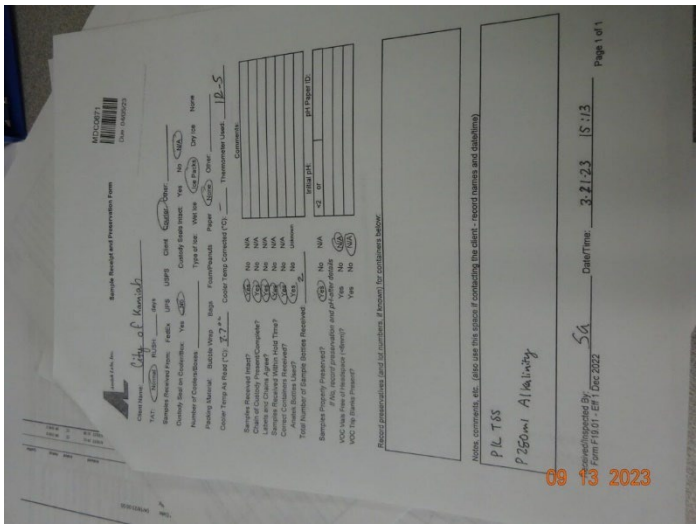
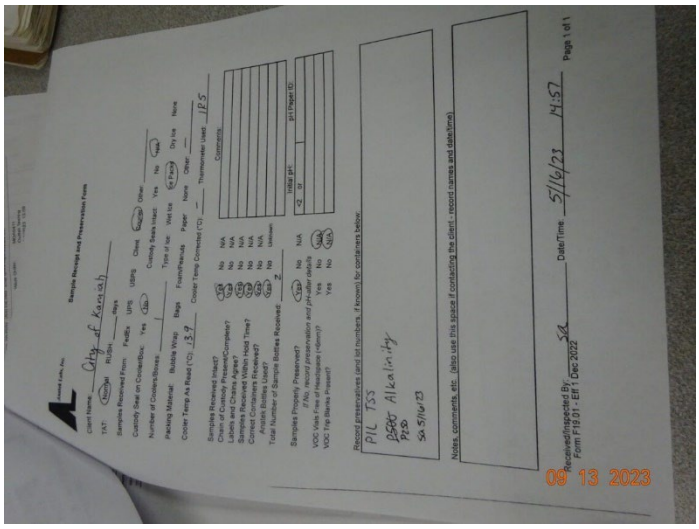
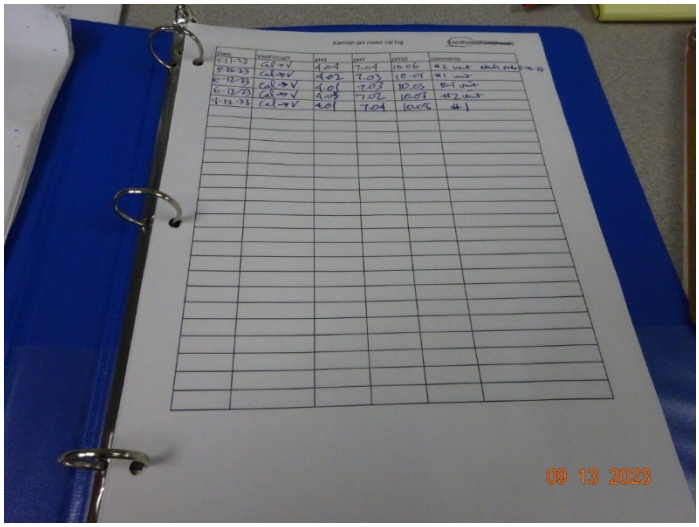
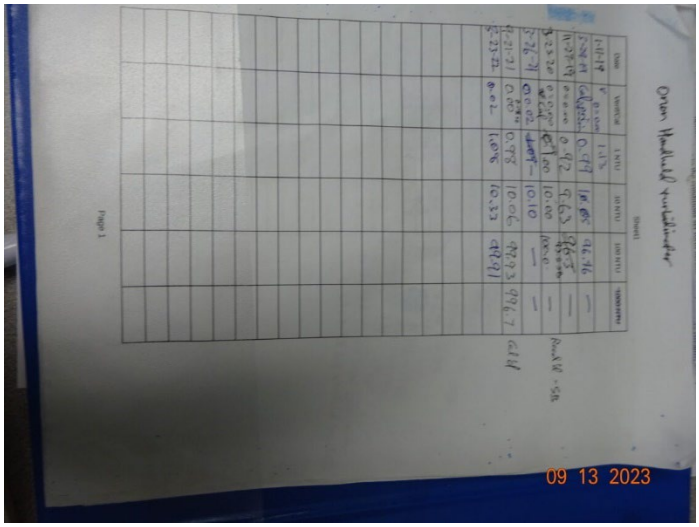
Photo Log – Kamiah WTP	
	
Photograph #05 (DSC03604) Description: One of the settling basin cell's weirs. The supernatant from this cell combines with the supernatant from the other cell and discharges to Outfall 001.	Photograph #06 (DSC03629) Description: The facility's drainage basin. Floor drains inside the facility, including the chemical storage room, as well as stormwater, drain to this basin.
	
Photograph #07 (DSC03631) Description: Sump pump for the facility's drainage basin. The sump pump operates on a level control, and if the water in the drainage basin reaches a certain level, the sump pump will discharge to the settling basin.	Photograph #08 (DSC03634) Description: Drainage line from the sump pump in the drainage basin to the settling basin, outlined in red.

Photo Log – Kamiah WTP	
	
Photograph #09 (DSC03617) Description: Chemical storage room. Note the two large plastic totes of PAC in the foreground. The container on the left is within secondary containment while the container on the right is outside secondary containment.	Photograph #10 (DSC03623) Description: Left, a 55-gallon drum of PAC. Right, a 250-gallon drum of soda ash.
	
Photograph #11 (DSC03622) Description: Bags of soda ash within the chemical storage room not in containment.	Photograph #12 (DSC03625) Description: Five 55-gallon drums of PAC in the chemical storage room. Note, these drums are not all filled completely.

Photo Log – Kamiah WTP	
	
Photograph #13 (DSC03618) Description: Drain in the chemical storage room which leads to the facility's drainage basin.	Photograph #14 (DSC03648) Description: The facility's pH/temperature probe used for compliance sampling and reporting.
	
Photograph #15 (DSC03650) Description: The facility's colorimeter, used for compliance sampling and reporting.	Photograph #16 (DSC03651) Description: The facility's turbidimeter, used for compliance sampling and reporting.

Photo Log – Kamiah WTP	
	
Photograph #17 (DSC03637) Description: An example of one of the facility's sampling receiving forms from Anatek Labs. Note, the cooler temperature was at 8.7°C.	Photograph #18 (DSC03643) Description: An example of one of the facility's sampling receiving forms from Anatek Labs. Note, the cooler temperature was at 13.9°C.
	
Photograph #19 (DSC03645) Description: Calibration logs for the pH/temperature probe. Note, the probe was not calibrated in July or August.	Photograph #20 (DSC03646) Description: Calibration logs for the turbidimeter. Note, the turbidimeter was not calibrated regularly.

ATTACHMENT D

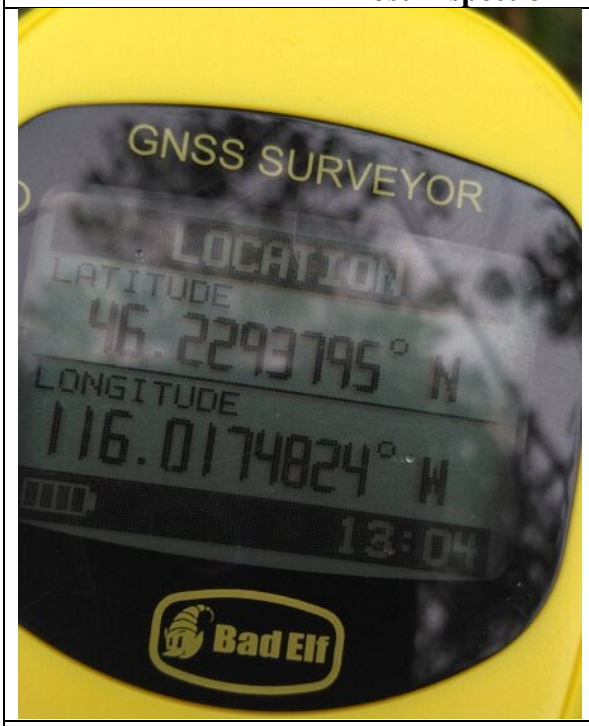
Post-Inspection Updates

On September 19, 2023, the facility representative provided electronic copies of the BMP Plan outline and QAP which the inspection team then reviewed offsite (**Attachment E** and **Attachment F**, respectively). Additionally, the facility representative stated that he ordered calibration kits for the colorimeter and turbidimeter as well as containment pallets for the chemical storage drums/tanks.

On September 22, 2023, the facility representative provided an update to the inspection team regarding the location of Outfall 001. Photograph D-1 and Photograph D-2 represent the GPS coordinates of Outfall 001 as well as the discharge pipe and location.

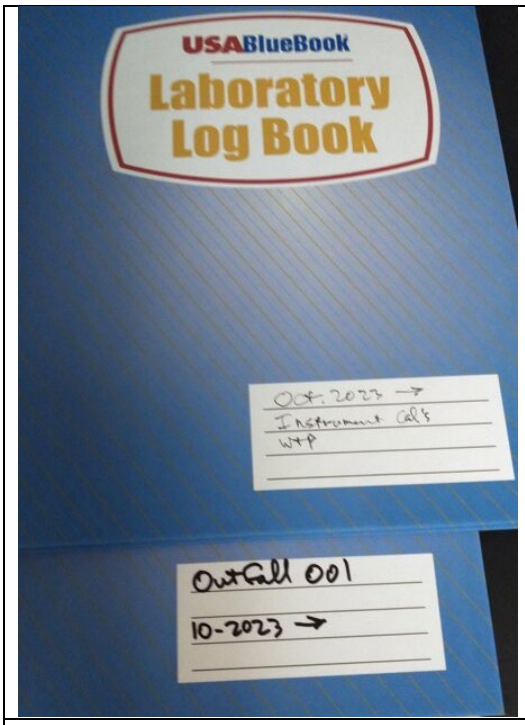
On October 11, 2023, the facility representative provided an update to the inspection team regarding recent improvements at the facility based on the inspection team's preliminary observations. The facility representative stated that a new document was created which outlines standard operating procedures for the wastewater processes at the Kamiah WTP (**Attachment G**). The document contains an overview of the water treatment plant and wastewater processes as well as written procedures for dechlorination of wastewater discharges and waste sludge removal from the settling basin. Additionally, the facility representative provided photographs of new calibration and operations logbooks (refer to Photograph D-3). The facility representative also stated that all drains in the chemical storage room were sealed (refer to Photograph D-4).

Post Inspection Facility Photographs



Photograph D-1. Coordinates of the facility's Outfall 001.

Photograph D-2. Physical location of Outfall 001.

	
Photograph D-3. New calibration and operations logbooks at the facility.	Photograph D-4. Sealed floor drain within the chemical storage room (refer to Attachment C, Photograph 13).

ATTACHMENT E

Kamiah WTP BMP Plan Outline

Kamiah Water Treatment Plant

Best Management Practices Document

NPDES Permit ID-002846-1

(Permit issue date January 1, 2013)

This Best Management Plan (BMP) has been developed in compliance with the NPDES permit ID-002846-1, using guidance from EPA 833 B 93-004, *Guidance Manual for Developing Best Management Practices (BMP),* and will be reviewed and updated as necessary to meet the following objectives for the control of pollutants:

a) to reduce the number and quantity of pollutants as well as the toxicity of the effluent generated and discharged to the extent feasible by managing each waste stream in the most appropriate manner;

b) to ensure proper operation and maintenance of water management and wastewater treatment systems in accordance with good engineering practices; and,

c) to routinely examine each facility component for waste minimization opportunities and reducing risks for any significant pollutant releases to waters of the United States due to equipment failure, improper operation, or natural phenomena.

Signature and Title	Date
Signature and Title	Date
Signature and Title	Date

This BMP consists of 14 elements designed to meet the objectives. Each element will be routinely reviewed and updated as necessary in compliance with the Treatment Plant's NPDES permit. Below is the list of the 14 elements.

- Statement of BMP policy.
- Structure, functions, and procedures of the BMP Committee.
- Description of potential pollutant sources.
- Risk identification and assessment.
- Standard operating procedures to achieve the BMP objectives and specific best management practices. Specific best management practices ensure solids, sludges, or other pollutants removed in the course of treatment or control of water and wastewaters are disposed of in a manner such as to prevent any pollutant from such materials from entering navigable waters and that any solid and hazardous waste that is classified under the Resource conservation and Recovery Act (RCRA) is referenced in the BMP.
- Reporting of BMP incidents.
- Materials compatibility.
- Good housekeeping.
- Inspections.
- Preventative maintenance and repair.
- Security.
- Employee training.
- Record keeping and reporting.
- Prior evaluation of any planned modifications to the facility to ensure that the requirements of the BMP plan are considered as part of the modifications.

Statement of BMP policy

A statement of management commitment to provide the necessary financial, staff, equipment, and training resources to develop and implement the BMP Plan on a continuing basis

Structure, functions, and procedures of the BMP Committee

Description of who will be responsible for developing, implementing, and maintaining the BMP plan; should also include who will review and approve the BMP.

Description of potential pollutant sources

This would include any items such as petroleum products for pump and mechanical maintenance and repair, chlorine products, other regulated items used for calibration, maintenance, and repairs that if released to the environment could impair US waters.

Risk identification and assessment

Risk for potential pollutants can be identified in accompanying MSDS sheets, in any SPCC plans, or emergency plan preparedness documents. Identify potential pathways of release to the environment (i.e. air, water, leachate, ingestion, etc.) and determine which materials have a greater risk such as high, medium, or low. Use these assessments to prioritize best management practices.

Standard Operating Practices

Using the list of potential pollutant sources and risk prioritization, develop operating practices that minimize these risks as well as minimizing waste. These practices can range from recycling office waste to changing maintenance products to less harmful formulations. General BMPs include: good housekeeping, preventive maintenance, facility inspections, security, employee training, and recordkeeping and reporting.

> *Good housekeeping* – examples include orderly storage of bags, drums, and piles of chemicals; prompt cleanup of spilled liquids to prevent significant runoff to receiving waters; expeditious sweeping, vacuuming, or other cleanup of dry chemicals preventing them from reaching receiving waters; proper disposal of toxic and hazardous wastes to prevent contact with and contamination of stormwater runoff.
>
> *Preventative maintenance* – there is probably an existing PM program – reference this and identify any special or specific practices that might exist outside of an existing PM plan.
>
> *Inspections* – these can be security scans (search for leaks and spills including problem areas already identified), site reviews, and routine facility walk throughs including solid and liquid materials storage, transfer areas, and material handling areas. Equipment and facility areas identified as having a higher risk for release should have specific formal inspections. Inspection checklists can also be developed to ensure PM, that BMPs are being implemented and are appropriate, and good housekeeping is being practiced.

Security

A plan that describes the system installed to prevent accidental or intentional entry to a facility that might result in vandalism, theft, sabotage, or other improper or illegal use of the facility. The security plan should also prevent environmental releases caused by any of these improper or illegal acts. This can include fencing, lighting, locks, guard stations, cameral surveillance, access control, etc. A facility security plan may already be in place which can be referenced here.

Employee Training

A method to instill an understanding of the BMP plan including the reasons for the plan, positive impacts, employee responsibilities, and general importance of preventing release of pollutants to the environment. Any contractor or temporary personnel should also be included in BMP training.

Recordkeeping and Reporting

This includes what records need to be kept and how they are reported. Records may include background information included as part of this BMP, the BMP itself, inspection reports, PM records, employee training materials, equipment calibration and maintenance, corrective action, and regulatory reporting. This section should also include who is responsible for the recordkeeping in addition to where and how long the records are kept.

BMP Plan Evaluation and Reevaluation

A routine review and evaluation performed assessing benefits to employees; benefits to the environment; reduced expenditures due to BMPs. This can consist of time off due to on-the-job injuries or illness resulting from exposure to chemicals and production records tracking worker productivity. Discharge monitoring reports may show reductions in the quantity or variability of pollutants and purchasing records may show reductions in volumes of solid waste generation. A list of review dates and approval signatures should be included.

Plan Reevaluation

The BMP plan is dynamic and should be revisited annually (at a minimum) to ensure it fulfills the objectives and is up-to-date. It should also be reevaluated if there is a restructuring of facility management, there is substantial growth, there are significant changes in the nature or quantity of pollutants discharged, the process or treatment had any modifications, there are new permit requirements, there is new BMP legislation, or there are releases to the environment.

ATTACHMENT F

Kamiah WTP QAP

Kamiah Water Treatment Plant

Quality Assurance Plan

NPDES Permit ID-002846-1

Prepared for City of Kamiah
December 2014

TDH Engineering
210 Main St
Lewiston, Idaho 83501
208-746-0938

Title and Approval Sheet

Kamiah Water Treatment Plant NPDES – Quality Assurance Plan

The Kamiah Water Treatment Plan is owned and operated by the City of Kamiah. The execution of this Quality Assurance Plan is the responsibility of the owner in accordance with the permitted operation of this facility and this Quality Assurance Plan.

_____ _____

Mayor, City of Kamiah Date

_____ _____

Wastewater Treatment Plant Supervisor Date

_____ _____

Water Treatment Plant Supervisor Date

Revision Approvals:

_____ _____

Signature Date

_____ _____

Signature Date

_____ _____

Signature Date

Introduction

The City of Kamiah was issued an NPDES permit, ID-002846-1, January 1, 2014 for a new water treatment facility. As part of the permit, this quality assurance plan (QAP) was developed to assist in planning for the collection and analysis of effluent and receiving water samples in support of the permit and in explaining data anomalies when they occur.

This QAP will be kept at the Kamiah Water Treatment Plant and will be available for viewing at the plant. The Treatment Plant Supervisor is responsible for implementing this plan.

Kamiah City treatment plant owners and operators recognize the importance of a quality assurance/ quality control program for proper collection and analysis of discharge samples and accurate data generation. It is the intention of the owners and operators to adhere to accepted quality assurance/quality control protocols as outlined in this document.

This QAP is written following the EPA QA/R-5 requirements for EPA permitted facilities and is comprised of three general elements: project management/task organization, data generation and handling, and monitoring requirements. This document is designed to be a "living document" used by the Kamiah Water Treatment Plan personnel, updated and revised as necessary.

Elements in the Project Management/Task Organization section address management of the plant, roles and responsibilities of key personnel, and contracted services. The Data Generation and Handling section addresses data generation and acquisition ensuring appropriate sampling methods and analysis, documentation, along with assessment and oversight. The third section outlines monitoring requirements including sampling requirements and locations.

Table of Contents

Project Management / Task Organization

The Environmental Protection Agency issued the City of Kamiah an NPDES permit effective January 1, 2013. This Water Treatment Plant QAP was developed to meet the permit requirements as outlined in Section II B of the permit.

Treatment Plant Roles and Responsibilities

Roles and responsibilities of the Treatment Plant staff include sample collection, determination of sample collection time, sample preservation, field chain of custody procedures, field QA/QC sample analysis, transport of samples to laboratory, review collection of analytical results and data management. The Treatment Plant Supervisor oversees the implementation of this plan and reviews all data and data collection activities for adherence to this plan. An organization chart is provided at the end of this section in Figure 1.

The Kamiah treatment plant and Idaho State Law requires treatment plant operators to, at a minimum, be Wastewater Plant Operator II certified. _____ is the Kamiah plant operator, has _____ years of experience in treatment plant operations, and is water treatment operator _____ certified and responsible for sample collection, analysis, and documentation for this QAP.

Mike Stanton is the Treatment Plant Supervisor, has _____ years of treatment plant experience, is Wastewater Plant Operator _____ certified, and is responsible for the annual review of this plan and procedures in addition to amending the plan whenever there is a modification in sample collection, sample analysis, or other procedure addressed by the QAP.

The City of Kamiah is ultimately responsible for the proper implementation and reporting of data to EPA and Nez Perce Tribes. Data from the required analysis will be used by the Treatment Plant staff to prepare reports submitted to the EPA.

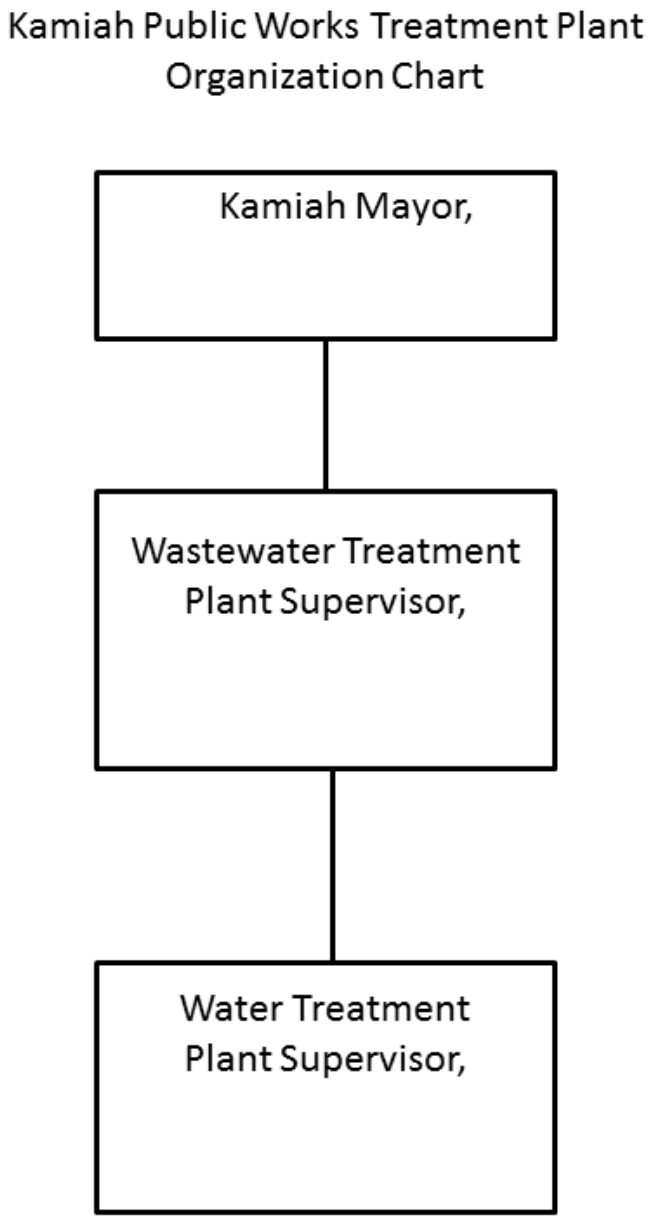


Figure 1. Kamiah Organization Chart

Contracted Services

The Treatment Plant will seek to contract commercial laboratories for test procedures that cannot be performed at the Plant. Available upon request are copies of all QA/QC procedures of tests performed by commercial laboratories to meet the requirements of this NPDES Permit. The Treatment Plant currently plans to use Anatek Labs or The City of Orofino Wastewater Lab. Lab and contact information are described below.

Anatek Labs
1282 Alturas Drive
Moscow, ID 83843
208-883-2839 800-943-2839
Fax: 208-882-9246

Anatek Labs is certified to perform the required Metals, Total Trihalomethanes (TTHMs), and Aluminum analysis as described in the NPDES along with alkalinity, total suspended solids (TSS) and turbidity as needed. Annual metals and TTHMs samples are required for the first three years of the permit. Analytical and sample handling Quality Assurance and Quality Control documentation is available on their website (http://www.anateklabs.com/qa-manual).

Orofino Waste Water Lab
10200 Hwy 12
PO Box 312
Orofino, ID 83544
208-476-5051
Fax: 208-476-3634

Orofino Waste Water Lab can perform total suspended solids (TSS) analysis. The City of Orofino Quality Assurance Plan for Laboratory Operations is available at the laboratory. A copy is available upon request.

The treatment plant will purchase supplies and equipment as needed in support of water treatment plant monitoring from reputable companies. Acquisition of equipment and certified QA/QC supplies may come from the following list (but not limited to):

Omega
1-888-TC-OMEGA (1-888-826-6342)
www.omega.com

Ben Meadows
PO Box 5277
Janesville, WI USA 53547-5277
1-800-241-6401

Fisher Scientific
2000Park Lane Drive
Pittsburgh, PA15275
1-800-766-7000
www.fishersi.com

Hach Company
PO Box 389
Loveland, CO 80539
1-800-227-4224
www.hach.com

Water Treatment Plant Monitoring Equipment

The Water Treatment Plant (WTP) operator will monitor flow, pH, temperature, total chlorine, and turbidity. The contract laboratory will analyze total suspended solids, alkalinity, metals, Total trihalomethanes, and aluminum. Routine monitoring equipment for the WTP includes a ph/temperature meter (currently an Omega PHH-7000 Series), a total chlorine meter (Hanna checker HC Handheld

Colorimeter), and an inline 1720E Low Range Sensor Turbidimeter for turbidity measurements. A table listing WTP equipment and necessary supplies is listed below.

The WTP will provide bottles and supplies for calibration and maintenance for the monitoring equipment.

Table 1. Monitoring Equipment and Supplies

Monitoring Equipment	Supplies	Suggested Supplier
pH/temperature Omega PHH-7011	• calibration standards for pH 4.00, 7.00, and 10.00 (PHA-4, PHA-7, PHA-10) • annual replacement of pH electrode (PHE-7011) • AAA battery replacement	Omega.com
Total Residual Chlorine Hanna Checker - 180669	• reagent pillows (Reagent No.195331) • sample cuvettes • AAA battery replacement	Ben Meadows Company Benmeadows.com 800-241-6401

Turbidimeter
Hach 1720E low range
	• calibration standards
	• sensor cleaning materials
	  ○ cotton swab
	  ○ isopropyl alcohol
	  ○ lint free wipe
	  ○ 25 mL of household bleach in 3.78 liters of water
	  ○ soft bristle brush
		www.hach.com
		800-227-4224

Supplies and equipment for contract laboratory analysis will be supplied by the contract lab. These supplies include:

- chain of custody forms
- chain of custody seals
- sample containers
- cooler (if needed)

Arrangements need to be made with the analytical laboratory for sample pickup if not delivered directly to the lab. Historically an Anatek Lab courier has been available for weekly for sample pickup at the Kamiah Health District office.

Routine maintenance, calibration, and general upkeep of the sampling equipment will be performed by the respective parties responsible for supplying the field and laboratory equipment. Maintenance records will be kept for sampling equipment and recorded.

The Water Treatment Plant will order all supplies and consumables associated with the required monitoring. Supplies will be ordered in advance to avoid running out of critically needed items. Receiving personnel should check supplies for any damage, expiration dates, proper storage, and file any accompanying certificates for standards and instruments.

A list of potential sources for acquisition of supplies and consumables is provided in the *Contracted Services* section above.

Temporary Personnel

The Treatment Plant may seek the assistance of additional Public Works employees and or contract temporary personnel to aid in the implementation of this plan which could include duties described in this QAP. Any additional personnel will be trained in the proper methods described in this document and closely supervised. A training log will be kept for all temporary personnel performing duties on behalf of the Treatment Plant. Training documentation will be logged in a bound notebook or recorded in the form located in this document, and will be available for reference and review in the Treatment Plant.

Data Handling and Management

As part of the EPA issued NPDES Permit, a quality assurance plan is required. This document comprises the quality assurance plan which has been developed to meet the permit requirements for effluent sample collection and analysis and associated quality assurance and quality control of samples collected in support of this permit. Additionally this plan can be used to explain data anomalies should they occur.

Data Quality Objectives

Data Quality Objectives are specified in the NPDES permit. For operational efficiencies, Data Quality Indicators will be used to assess monitoring equipment, operations, and compliance with the NPDES permit. For analysis with the contracted lab, data quality is addressed in the labs QA/QC documents available upon request. Data quality Indicators are listed in Table 2.

Table 2. Data Quality Indicators.

DQI	Definition	Determination
Precision	The measure of agreement among repeated measurements of the same property under identical or substantially similar conditions.	The same analytical instruments are used to make repeated analyses on the same sample. Results will be compared to previous results of same constituent.
bias	The systematic or persistent distortion of a measurement process that causes errors in one direction	Periodic known standards are analyzed; will compare calibration and monitoring results from previous calibrations and monitoring.
Accuracy	A measure of the overall agreement of a measurement to a known value.	Known standards are used to check accuracy of monitoring equipment.
Representativeness	A qualitative term that expresses the degree to which data accurately and precisely represent a parameter.	Samples are collected during normal operations and typical discharge rates.
Comparability	A qualitative term that expresses the measure of confidence that one data set can be compared to another for decision purposes.	Samples are collected in a manner consistent with SOPs designated in the Appendix of this document so same constituent samples can be compared.
Completeness	A measure of the amount of valid data needed to be obtained from a measurement system.	Samples are collected as specified in NPDES permit.
Sensitivity	The capability of a method or instrument to discriminate between measurement responses representing different levels of the variable of interest.	Monitoring ranges are specified for all monitoring equipment. Analytical sensitivities are specified by EPA or Standard Method protocols.

Special Training/Certification

WTP operators will be trained on monitoring equipment by supervisor. Manuals for all monitoring equipment will be kept on site for training and reference.

Documents and Records

Reportable monitoring results, calibration, sensor and battery replacement, and standard checks will be recorded on forms and kept on site for five years. Non-reportable monitoring results will be kept as needed. Certificates for purchased standards shall be kept on site as long as standard is in use. Any corrective action reports or NPDES permit-related documentation should be kept on site for a minimum of five years

Monthly DMRs are reported to EPA as required by the NPDES permit..

City Ethics

The City of Kamiah has a no tolerance policy with regard to falsification or improper manipulation of data. The City will assume that any and all data generated by the Treatment Plant staff has been done so within the framework of this approved QA/QC plan. The City of Kamiah recognizes the importance of the validity of the data its Treatment Plant staff generates. Any deviations from the established protocols set forth in the QAP will be investigated and any data determined to be invalid will be discarded. Sufficient training on the approved sample collection methods will be provided and documentation of this training will be provided upon request.

Corrective Action

NPDES monitoring activities are governed by documented procedures, requirements, and quality assurance plans. When any activity, for any reason, does not conform to the requirements of the governing documents, the non-conforming event or situation must be properly documented, evaluated, and appropriate corrective action must be taken. It is the responsibility of the person discovering the non-conforming situation to initiate corrective action. Consultation with a supervisor and appropriate documentation is to be made citing the problem and corrective action taken.

Monitoring Requirements

Sampling for NPDES reportable parameters are grab samples collected at outfall 001 (end of discharge pipe) with the exception of turbidity which is measured with an inline analyzer located at the end of the last treatment unit prior to discharge. A map of the outfall and sampling location is shown below in Figure 2.

Figure 2. Sample location.

Samples are collected at regular intervals under the same operating conditions each day/week/or month as listed in below in Table 3.

Table 3. NPDES Effluent Limitations and Monitoring Requirements.

Parameter	Units	Effluent Limitations		Monitoring Requirements	
		Avg Monthly	Max Daily	Frequency	Type
pH	Standard units	Between 6.5 - 9	Between 6.5 - 9	Weekly	Grab
Temperature	°C	Report	Report	Weekly	Grab
Total Residual chlorine	mg/l	0.3	0.5	Weekly	grab
	lb/day	0.12	0.20		
Alkalinity	mg/l as $CaCO_3$	Report	Report	Monthly	Grab
Turbidity	NTUs	Report	Report	Monthly	Grab
Total Suspended Solids (TSS)	mg/l	30	45	Monthly	Grab
	lb/day	12.23	18.35		
Metals	µg/l	Report	Report	Annually	Grab
TTHMs	µg/l	Report	Report	Annually	Grab
Aluminum	µg/l	Report	Report	Annually	Grab

Additional samples for non-reportable parameters will be collected as needed at locations as needed.

All NPDES reportable parameters will be collected and handled per standard operating procedures (SOPs) listed in Appendix A and B of this document. Current chain of custody forms for Anatek and Orofino labs are also included in Appendix D.

Table 4 outlines analytical methods for both contract lab and Treatment plant monitoring equipment.

Table 4. Analytical Methods and Holding Times.

Parameter	Anateck Test Type	Analysis Method	Lab	Holding Time (days)	Price as of Dec 2014
Metals: antimony (Sb), arsenic (As), beryllium (Be), cadmium (Cd), chromium (Cr III and VI), copper (Cu), lead (Pb), mercury (Hg), nickel (Ni), selenium (Se), silver (Ag), thallium (Tl), and zinc (Zn)	ID IOC Package – Phase II IOC Metals	EOA 200.8; analyzed and reported as total recoverable	Anatek	28	$174
Total Trihalomethanes (TTHM) includes: chloroform, chlorodibromomethane, dichlorobromomethane, and bromoform.	DBD	EPA 524.2	Anatek	14	$110
Aluminum	IOC Metals	EPA 200.8	Anatek	28	$30
Alkalinity	IOC	Standard Methods 2320	Anatek or Orofino WWTP	14	$15
Total Suspended Solids (TSS)		Standard Methods 2540/EPA 160.2	Anatek or Orofino WWTP	7	$15
Temperature (Omega PHH-7000 series meter) 0-90°C range;± 0.3°C accuracy; 0.1°C resolution		EPA 170.1	KWTP	n/a	KWTP monitoring equipment
Turbidity (Hach 1720E Low Range Sensor Turbidimeter)		EPA 180.1		n/a	
pH (Omega PHH-7000 series meter) -2 to 16 range; ±0.01 +1 digit accuracy; 0.01 resolution		EPA 150.1		n/a	
Total Residual Chlorine (Hanna Checker meter) 0-3.5 mg/L range; 0.01 mg/L resolution; ±0.03 mg/L ±3% of reading accuracy		EPA 330.5 (DPD)		n/a	

Instrument/Equipment Testing, Inspection, and Maintenance

Monitoring sensors owned by the Kamiah Water Treatment facility will be calibrated and maintained per manufacturer specifications. Manufacturer specifications and user manuals will be kept on site for equipment used at the KWTP. At a minimum, KWTP personnel will inspect equipment monthly checking battery life and other recommended maintenance per manufacturers specifications and will record calibrations and maintenance in logs provided in

Inspection/Acceptance of Supplies and Consumables

KWTP personnel will inspect and record supplies and consumables as described in Contracted Services above.

Appendix A - Standard Operating Procedures for Sample Collection - Metals, Mercury, TTHM, TSS, Alkalinity, Aluminum

All samples are grab samples and will be collected at the end of pipe, 001 outfall; all sample containers will be provided by contracted laboratory; contact laboratory prior to sampling to arrange sample pickup and analysis. TSS and Alkalinity are collected monthly; metals and TTHM are collected annually for first three years.

Metals Sample (includes Aluminum)

Container: one 250-ml HDPE

** Anatek will analyze aluminum with the metals sample. If using another lab, this may not be the case.*

- Wear clean latex or nitrile gloves while collecting samples.
- Collect at least 250 ml in a clean HDPE or glass sample container used only for sample collection from end of pipe. Can use sample container for sample collection if needed.
- Open container carefully placing lid upright, do not allow inside of cap, bottle, or bottle threads to be touched by any object.
- Carefully pour collected water into sample container slowly and carefully completely filling container.
- Replace and tighten cap.
- Write the sample number (following numbering protocol below), sampling location (KWTP-001), and date and time of sample collection on sample container with black permanent marker.
    - Sample numbering protocol: two digit month-last two digit year-Metals+AL
        - Example, for samples taken March 23, 2013: 03-13-Metals+AL

Mercury Sample

Container: one 40-ml vial with preservative

- Wear clean latex or nitrile gloves while collecting samples.
- Collect at least 100-ml of water in a clean glass sample container used only for sample collection from the end of the pipe.
- Carefully open container cap from 40-ml bottle remembering preservative is already in vial. Do not put cap face down or in pocket. Do not allow inside of cap, inside of bottle, or bottle threads to be touched by any object.
- Pour collected water into vial slowly and carefully until container is full.
- Carefully place the cap over the top of the vial. The Teflon side of the septum must be facing the sample. (Teflon side is smooth and shiny).
- Screw cap on securely.
- Shake sample to mix with preservative.
- Write, using a black permanent marker pen, the sample number (following sample number protocol below), sampling location (KWTP-001), and date and time of the sample collection on the sample container.
    - Sample numbering protocol: two digit month-last two digit year-Hg

        - Example, for samples taken March 23, 2013:
          03-13-Hg

TTHM samples

Containers: Two 40-mL amber glass vials with Teflon septa; will have preservative already in bottle.

- Wear clean latex or nitrile gloves while collecting samples.
- Collect at least 1000-ml of water in a clean glass sample container used only for sample collection from the end of the pipe.
- Carefully open container cap from 40-ml bottles remembering preservative is already in vial. Do not put cap face down or in pocket. Do not allow inside of cap, inside of bottle, or bottle threads to be touched by any object.
- Pour collected water into vial slowly and carefully until water is actually above the vial rim. (This will prevent the formation of an air pocket in the vial.)
- Gently tap the vial to dislodge any air bubbles.
- Carefully place the cap over the top of the vial. The Teflon side of the septum must be facing the sample. (Teflon side is smooth and shiny).
- Screw cap on securely. Check for air bubbles by inverting the vial and gently tapping the cap. If bubbles are present, add more water. (Note: Samples with bubbles larger than a pea cannot be analyzed.)
- Shake sample to mix with preservative.
- Write, using a black permanent marker pen, the sample number (following sample number protocol below), sampling location (KWTP-001), and date and time of the sample collection on the sample container.
    - Sample numbering protocol: two digit month-last two digit year-TTHM01 or TTHM02
        - Example, for samples taken March 23, 2013:
          03-13-TTHM01 for the first sample
          03-13-TTHM02 for the second

Total Suspended Solids Sample

Container: one 125-ml HDPE

- Wear clean latex or nitrile gloves while collecting samples
- Collect at least 125 ml in a clean HDPE or glass sample container used only for sample collection from end of pipe. Can use sample container for sample collection if needed.
- Open container carefully placing lid upright, do not allow inside of cap, bottle, or bottle threads to be touched by any object.
- Carefully pour collected water into sample container slowly and carefully completely filling container.
- Replace and tighten cap.
- Write the sample number (following numbering protocol below), sampling location (KWTP-001), and date and time of sample collection on sample container with black permanent marker.
    - Sample numbering protocol: two digit month-last two digit year-TSS
        - Example, for samples taken March 23, 2013:
          03-13-TSS

Alkalinity Sample

Container: one 125-ml HDPE

- Wear clean latex or nitrile gloves while collecting samples
- Collect at least 125 ml in a clean HDPE or glass sample container used only for sample collection from end of pipe. Can use sample container for sample collection if needed.
- Open container carefully placing lid upright, do not allow inside of cap, bottle, or bottle threads to be touched by any object.
- Carefully pour collected water into sample container slowly and carefully completely filling container.
- Replace and tighten cap.
- Write the sample number (following numbering protocol below), sampling location (KWTP-001), and date and time of sample collection on sample container with black permanent marker.
    - Sample numbering protocol: two digit month-last two digit year-ALK
        - Example, for samples taken March 23, 2013:
          03-13-ALK

Aluminum Sample (if needed to collect separately)

Container: one 125-ml HDPE *

** Anatek will analyze aluminum along with metals sample. If another lab is chosen, this may not be the case. Always check with lab prior to sampling.*

- Wear clean latex or nitrile gloves while collecting samples
- Collect at least 125 ml in a clean HDPE or glass sample container used only for sample collection from end of pipe. Can use sample container for sample collection if needed.
- Open container carefully placing lid upright, do not allow inside of cap, bottle, or bottle threads to be touched by any object.
- Carefully pour collected water into sample container slowly and carefully completely filling container.
- Replace and tighten cap.
- Write the sample number (following numbering protocol below), sampling location (KWTP-001), and date and time of sample collection on sample container with black permanent marker.
    - Sample numbering protocol: two digit month-last two digit year-AL
        - Example, for samples taken March 23, 2013:
          03-13-AL

Chain of Custody Form (for all samples):

- Complete Chain of custody form from appropriate laboratory. Current (as of December 2014) Chain of Custody for both Anatek and Orofino included in this appendix. Contact individual lab for questions completing this form.

Shipping and Handling (for all samples):

- Keep samples in closed cooler with ice packs at 4°C.
- Complete chain-of-custody form and make a copy for KWTP files.
- To prevent breakage, wrap glass bottles in bubble wrap or other protective material.

- Deliver sample to lab or pick-up location within one day of sample collection.
- Sample chain-of-custody form must accompany samples during transport and be signed by receiver of samples.

Appendix B - Standard Operating Procedures for Sample collection - pH, Temperature, Total Residual Chlorine

All samples are grab samples (collected within the span of 15 minutes) and will be collected at the end of pipe, outfall 001; all samples are collected weekly.

- Prior to sample collection, calibrate or ensure calibration is current for meters.
- Collect enough sample at the outfall in a clean glass or HDPE container to completely submerse sensor probe.
- Gently swirl sample probe and watch until readings equilibrate (measurements are constant for ~10 seconds).
- Record stabilized readings on monitoring logs along with date and time.

Appendix C. - Monitoring and Maintenance Logs

Monitoring Log

Date	Time	Parameter (Ph/Temp/ Residual Cl)	Calibration (date or check if okay)	Notes

Maintenance Log

Date	Equipment	Maintenance	Notes

Appendix D - Chain of Custody Forms

Anatek Labs, Inc.

Chain of Custody Record

1282 Alturas Drive, Moscow ID 83843 (208) 883-2839 FAX 882-9246
504 E Sprague Ste D, Spokane WA 99202 (509) 838-3999 FAX 838-4433

Anatek Log-In #

Company Name:	Project Manager:
Address:	Project Name & # :
City: State: Zip:	Email Address :
Phone:	Purchase Order #:
Fax:	Sampler Name & phone:

Turn Around Time & Reporting

Please refer to our normal turn around times at:
http://www.anateklabs.com/services/guidelines/reporting.asp

__Normal
__Next Day*
__2nd Day*
__Other*_____

*All rush order requests must be prior approved.

__Phone
__Mail
__Fax
__Email

Provide Sample Description / List Analyses Requested / Note Special Instructions/Comments

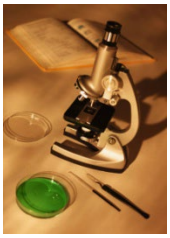
Lab ID	Sample Identification	Sampling Date/Time	Matrix	# of Containers	Sample Volume	Preservative:

Inspection Checklist

Received Intact?	Y	N
Labels & Chains Agree?	Y	N
Containers Sealed?	Y	N
VOC Head Space?	Y	N

Temperature (°C):_____
Preservative:_____
Date & Time:_____
Inspected By:_____

	Printed Name	Signature	Company	Date	Time
Relinquished by					
Received by					
Relinquished by					
Received by					
Relinquished by					
Received by					



Orofino Waste Water Chain of Custody

Orofino Waste
Water Lab
10200 Hwy 12
PO Box 312
Orofino ID 83544
Phone (208) 476-5051
Fax (208) 476-3634
orofinowwtp@yahoo.com

Submitting Company:	**Report To:**		**Bill To:**
Sample Location:	Permit Number:		
	Email Address:		
	Phone:	Fax:	
Time Collected:	Samplers Printed Name:	Samplers Signature:	

CHECK ANALYSIS REQUIRED — RESULTS

____ Phosphorus, Total _____ mg/l

____ E-coli _____ #/100ml

____ Ammonia _____ mg/l

____Total Suspended Solids(TSS) Raw_____ mg/l Effluent_____ mg/l _____%

____BOD Raw_____ mg/l Effluent_____ mg/l _____%

Directions: 1. Separate composite and grab containers
2. Fill all containers to the top
3. Store containers at 4 deq. C or on ice in cooler

Notes: 1. The lab should receive samples the day of sampling
2. NEVER fill one container from another container
3. Do NOT remove the preservatives from the container
4. AVOID CONTACT WITH PRESERVATIVES!

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

For Lab Use Only

Temp of samples when received_____ Date Tests were performed_____

Time tests performed _____ Lab technician performing tests_____

_____

Appendix E- Training Logs

Training Logs for Temporary Personnel

Trainee:_____ Date: _____

Trainee:_____ Date: _____

Trainee:_____ Date: _____

Trainer:_____ Date: _____

Trainee:_____ Date: _____

Trainee:_____ Date: _____

Trainee:_____ Date: _____

Trainer:_____ Date: _____

Trainee:_____ Date: _____

Trainee:_____ Date: _____

Trainee:_____ Date: _____

Trainer:_____ Date: _____

Appendix F - KWTP Equipment Manufacturer Information

ATTACHMENT G

Kamiah WTP Outfall O&M Plan

Kamiah Water Treatment Plant

Backwash Discharge Outfall 001

Operation and Maintenance Plan

NPDES Permit ID-002846-1

City of Kamiah, ID

_____ Date _____

Mayor, City of Kamiah

_____ Date _____

Wastewater Treatment Plant Supervisor

_____ Date _____

Water Treatment Plant Supervisor

Revision Approvals:

_____ _____

Signature Date

_____ _____

Signature Date

_____ _____

Signature Date

Overview-

This document is to outline operation and maintenance of the outfall for the City of Kamiah Backwash Basin & Outfall. This Backwash Basin is a concrete structure which is ramped on one end and is intended for collecting solids from the Water Treatment Plant Backwash & Rinse activities. This structure allows the solids to separate and be collected, with the liquid portion to decant off and run to a point near the river where under most conditions it forms a tiny intermittent stream which either is absorbed into the ground near or on occasion may run directly to the river.

The solids which accumulate are the result of solids being removed from the river in the process of removing sediment (turbidity) from the river in the process of filtering the water in order to make it potable. These solids are mechanically filtered by beds of layers of media after a coagulant (Poly Aluminum Chloride) is added to create flocculation. This process is routinely tested per our Quality Assurance Plan as required by our NPDES permit.

These parallel basins are ramped to allow equipment such as a front loader to enter one side which has been isolated and allowed to dry so this accumulated material can be most easily removed. The other side is then left active to handle the duty of continuing to accumulate this material as the other side is being prepared for removal. This dried material is hauled to the Kamiah Wastewater Treatment Plant facility where it is accumulated the eventually combined with wastewater solids to be ground applied under Idaho DEQ permit.

This entire process should generally happen each year, although it can potentially be pushed to 18 months or more if carefully managed if extenuating circumstances require. Obviously, one side must be chosen to be cleaned out first, with the second happening only after the first is returned to service.

The reality is this basin's design does not make it work as readily as was expected in terms of material removal. In practice, there are times when it is more practical to simply use a trash pump to pump the "sludge" material out into a waste truck to be hauled to a drying area at the wastewater plant. A minor modification is planned for better isolating these two sides by building up the wall where a spillover path exists. This will help the isolated side which is drying to not get flooded at each backwash, rendering it unable to ever thicken enough to be removed by loader. Fixing this will make the entire process less messy and much quicker. It is anticipated this should be accomplished no later than summer 2025.

Valving operation

There are two valves in separate valve boxes on the mound at the at the SSW end of the backwash basin. These multi turn valves simply control the ability to isolate each side the basin in order to allow for cleaning/bed drying or other maintenance activities. At least one valve must be open at any and all times. Normally both valves are left open.

Pump Operation

There are two electric pumps used for dewatering. Control is from either inside the plant via the plant control system or manually from the local control station at the end of the basin.

The large pump which is suspended by the overhead hoist (for moving pump between sides) is for more rapidly emptying the main chambers. The main disconnect is the large box in the center of the panel. It must be on for this

dewatering pump to be enabled and should be off otherwise. Immediately to the left of the disconnect box is the manual override for the main dewatering pump. It allows setting to auto (controlled inside plant), manual on (local outside control), or off.

There is a power outlet on each outside side long wall for this pump, found near the hoist stanchion. There is also a separate outlet on each side, although it might be hard to find, disconnect, or re-connect if the solids level is allowed too high in the basin. This, obviously, should be prevented whenever possible.

To the left of the dewatering control selector switch is a small light switch (labeled "sump pump") which controls the small sump pump which is for the header area. The pump may be pulled out and switched to the opposite side when required. This is a small low volume pump intended only for that small header area at the end of each chamber. This header area appears to be intended to collect the slow trickle of remaining water from the collected bed of solids in the main gallery, thus speeding its drying some.

Operation of the main dewatering pump from inside the plant relies upon the water height measurement to automatically stop pumping at a predetermined level. It should be visually checked at frequent intervals as it reaches the target level. Controls are otherwise similar except incorporated in the control system's software in page 2 of the HMI controller's pumps section.

Direct discharge from water plant

There is a valve almost touching the fence near the Water Plant, this is in the vicinity of the large screened elbow clearwell vent. The left of the two valves there allows the contact chamber & clearwells to be discharged to the backwash basin. This is **not a routine procedure**, and is only to be used when the chlorine content of the contact chamber & clearwell water is out of specification. (Greater than 4 mg/l or less than 0.2 mg/l, or anytime CT is not met and cannot be met with reducing the

flow.) This only occurs from a malfunction in the chlorination system. (pump prime lost) The point at which the chlorine is monitored is where the water exits the clearwells, hence there is an inherent delay in detecting the error. Detection is assured before the water is discharged to the city's water system, but cannot always be detected prior. This can leave us with some tens of thousands of gallons of insufficiently chlorinated water. Supplemental rechlorination was considered but logistically prohibitive since CT determination requires all the variables to be known. This valve is opened partially in order to manage needed back pressure for the discharge pumps in order to be able to monitor discharge chlorination via the inline monitor. This discharge **MUST** be dechlorinated as it enters the basins. In this event it is necessary to apply the dechlorination material at the point of entry into the basin. This is in contrast to the seasonal filter cleaning regimen where the dechlor agent gets added to the waste manifold as it leaves the filter. The Kamiah Water Treatment Plant uses food grade ascorbic acid as the dichlorination agent of choice because it cannot leave an oxygen depletion zone at the final discharge. A minimum of one gram of ascorbic acid per each milligram per liter of chlorine per 100 gallons of water is added at the point of entry. The discharge on the active side (far side from plant) shall be monitored frequently midway and at the discharge end to ensure adequate dichlorination. A slight "over dose" (125-150%) is desirable as it helps ensure adequate dechlorination and better protects the flora and fauna in the riparian wetland on the way to and in the river. We see minimal to no change in effluent pH as a result; pH remains well within permit standards.

Sludge (solids) removal

While wet removal by pumping could theoretically happen whenever the air temperatures remain above freezing, dry removal must occur only during summer or early fall due to the need for warm temperatures to more rapidly dry the given bed in place. Dry removal involves isolating the given side, then dewatering via pumps (discussed in earlier section) until no more water can be extracted without causing discharge of solids. The bed is then allowed to dry naturally until it is solid enough to be picked up by front loader.

Wet removal involves the use of a 3” trash pump and a special suction pipe which allows for moving the suction around in order to remove sludge as evenly as possible from the basin. It is pumped directly into the truck or trailer which will be delivered to the Kamiah wastewater treatment plant for inclusion and mixture into the solids over there. This solution was suggested by and agreed upon with Idaho DEQ who oversees that eventual land application operation. Dry removal solids are handled essentially the same way.