HIGH MESA WF OPERATIONS AND MAINTENANCE MANUAL

Document No.:
Prepared by: Piceance Basin Water Management Group
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encana

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List of Acronyms

APCD	Air Pollution Control Division
bbl	barrel
BMP	Best Management Practice
BS&W	Basic Sediment and Water
BU	Business Unit
CDPHE	Colorado Department of Public Health and Environment
COGCC	Colorado Oil & Gas Conservation Commission
DAF	Dissolved Air Flotation
EH&S	Environmental, Health & Safety
ERP	Emergency Response Plan
FR	Fire Retardant
JSA	Job Safety Analysis
LOTO	Lock Out / Tag Out
MSDS	Material Safety Data Sheet
O&M	Operation & Maintenance
P&ID	Process & Instrumentation Diagram
PPE	Personal Protective Equipment
SBU	Sub-Business Unit
SOP	Standard Operating Procedure
SP	South Piceance
SPCC	Spill Prevention, Control & Countermeasure
SRBU	South Rockies Business Unit
TPY	Tons per year
WF	Water Treatment Facility

List of Reference Documents to be Maintained On-Site

Emergency Response Plan

Contractor Expectations Manual for Environmental, Health, Safety & Security (*not included in permit submittals*)

Oil Spill Contingency Plan for Parachute, Colorado (*not included in permit submittals*)

High Mesa SPCC Plan

MSDS Forms for all Chemicals On-Site

High Mesa WF Operational and Maintenance Manual Volume I (Equipment Manuals) (*not included in permit submittals*)

High Mesa WF Operational and Maintenance Manual Volume II (Equipment Manuals) (*not included in permit submittals*)

1.0 Introduction

This Operation and Maintenance (O&M) manual covers the procedures and guidelines for High Mesa Water Treatment Facility (WF). This facility receives, stores, treats, and transfers produced and flowback water and residual hydrocarbons and solids 24 hours per day, 365 days per year.

1.1 Facility Objectives

The objectives of this facility are to:

- Treat and recycle produced and flowback water within the Piceance Basin.
- Minimize environmental impact by:
  - Maximizing the use of recycled water
  - Following Best Management Practices (BMPs)
- Minimize environmental liability by operating the facility in accordance with all permits.
- Minimize the cost of managing water within the Piceance Basin.

1.2 Authorized Influent

This facility is authorized to receive the following influent:

- Flowback and produced water from Encana operated wells in the South and North Piceance SBUs.

Flowback and produced water from other oil and gas operators may be received by this facility on a case-by-case basis through a Colorado Oil & Gas Conservation Commission (COGCC) Rule 502.b variance request and approval with a water sharing agreement in place. No third-party influent will be accepted if doing so violates HIMWF's status as a non-commercial facility.

1.3 Permitted Capacity

High Mesa WF is subject to the following permitted capacity constraints, as per CDPHE APCD Permit No. 06GA0811 Issuance 1, issued May 31, 2012:

1.3.1 Throughput

- Annual Limits.
  - 7,300,000 bbl of water into Dissolved Air Flotation (DAF)
  - 1,825,000 bbl of water into flowback pond (Upper North Pond)
  - 20,000 bbl of condensate through Oil Sales Tank

1.3.2 Emissions

- Annual Emission Limits:
  - 159.6 tons from uncovered ponds (Upper South Pond, Middle Pond, Bottom Pond)

- 30.5 tons from flowback pond (Upper North Pond)
- 2.5 tons from Oil Sales Tank
- *1.3 tons from covered pond (Future)*

1.4 Other Air Permit Requirements

1.4.1 Operations & Maintenance

- Operator shall not use any methods of enhanced evaporation
- No foreign material is allowed on the pond
- Any oil and foreign material on the pond surface must be cleaned off within 24 hours
- All produced water must be routed through the DAF prior to entering the uncovered ponds
- All flowback water must be routed through a 5,000 bbl tank (T-910 or T-920) prior to entering the flowback pond (Upper North Pond)

1.4.2 Measurement & Sampling

- All water discharged into a pond must be introduced upstream of a flow meter.
- The flowrate discharged into each pond system must be measured with flow meters. Flow meters must be installed at the following locations:
  - Inlet to DAF unit
  - Pipeline discharging into flowback pond (Upper North Pond)
  - Inlet into uncovered ponds (Upper South Pond, Middle Pond, Bottom Pond)
  - Pipeline transferring any DAF-treated water from another Encana WTF
  - *Inlet into covered pond (future)*
- Regular water quality sampling is required, as shown in Table 1.1.

Table 1.1: Measurement & Sampling Requirements

Requirement	Frequency	Owner
DAF outlet water quality sampling	Monthly	SRBU Air Quality Specialist
Flowback water quality sampling (inlet to the pond from the tank)	Monthly	SRBU Air Quality Specialist
DAF inlet water quality sampling	Annually	SRBU Air Quality Specialist
WF throughput measurement	Quarterly	SRBU Air Quality Specialist

The High Mesa Produced / Flowback Water influent stream and the treated water effluent stream will be sampled monthly for hydrocarbon, methanol and BTEX content in accordance with EPA Approved Methods 8015 and 8260.

A rolling twelve month average of the facility influent and effluent water quality will be retained by Encana and reported to the Colorado Department of Public Health and Environment (CDPHE) Air Pollution Control Division (APCD) as required for permit compliance. These reports will be available to the COGCC upon request.

1.4.3 Additional Requirements

- Permit number and AIRS ID MUST be on all subject equipment
- Facility is subject to odor requirements

1.4.4 *Pond Cover Design & Inspection (Future)*

- Floating cover must be designed to float on the pond surface during normal operations.
- Pond cover must be made of high density polyethylene (or similar material with the same organic permeability) with a thickness of no less than 2.5 mm. *(Criteria to be reviewed during future design process. HDPE does not meet Encana standards.)*
- No cracks, holes, gaps or other open spaces are allowed in the pond cover. Any gap around pipelines must not exceed 0.5-inches.
- All closure devices must be designed so there are no visible cracks or holes when closed.
- All pond covers must be closed at all times except when:
    - Access is required to perform routine inspections
    - Sludge must be removed from the bottom of the impoundment
    - Pressure build up in the vapor headspace requires release
- Inspections
    - Pond cover must be visually inspected for defects, including gaps and cracks annually. A record of this inspection must be maintained. The record shall include date of defect detection, description and location of the defect and the corrective action to repair the defect.
    - If a defect is found, the first attempt at repair must be done within 5 days after detection and repair must be completed within 45 days after detection. The repair can be delayed if it requires the temporary removal from operation of the pond and there are no alternatives. In this case, the repair must be completed during the next shut down.

2.0 Facility Description

2.1 Site

High Mesa WF is located south of Parachute, CO in Garfield County on an elevated mesa. Drawings SP-HIM-P-4001 and SP-HIM-P-4002 (located at the end of this document) show the general layout of the facility.

All land in the immediate vicinity of the site is used for oil and natural gas exploration and production. Within 1500 feet, there is also livestock grazing and wildlife habitat. All land that the WF resides on is owned by Encana.

High Mesa WF is outside of the 100-year flood plain for the Colorado River. Due to the geographic location, topography and site grading, all precipitation falling outside of the ponds or containment areas runs offsite. Erosion control on the site is maintained through pond liners, gravel and vegetation. The ponds are enclosed by a fence to deter wildlife and unauthorized personnel from entering them.

2.2 Storage Facilities

Table 2.1 and Table 2.2 detail the ponds and above ground tanks used to store water at High Mesa WTF.

Table 2.1: Ponds

Pond Name	Physical Controls		Allowable Influent	Approximate Capacity (bbl)
	Emissions	Wildlife		
Upper North Pond (017)	None	Net, Fence	Flowback, DAF Treated Water	47,341 bbl
Upper South Pond (002)	None	Fence	DAF Treated Water	47,324 bbl
Middle Pond (002)	None	Fence	DAF Treated Water	102,672 bbl
Lower Pond (002)	None	Fence	DAF Treated Water	102,032 bbl

Table 2.2: Storage Tanks

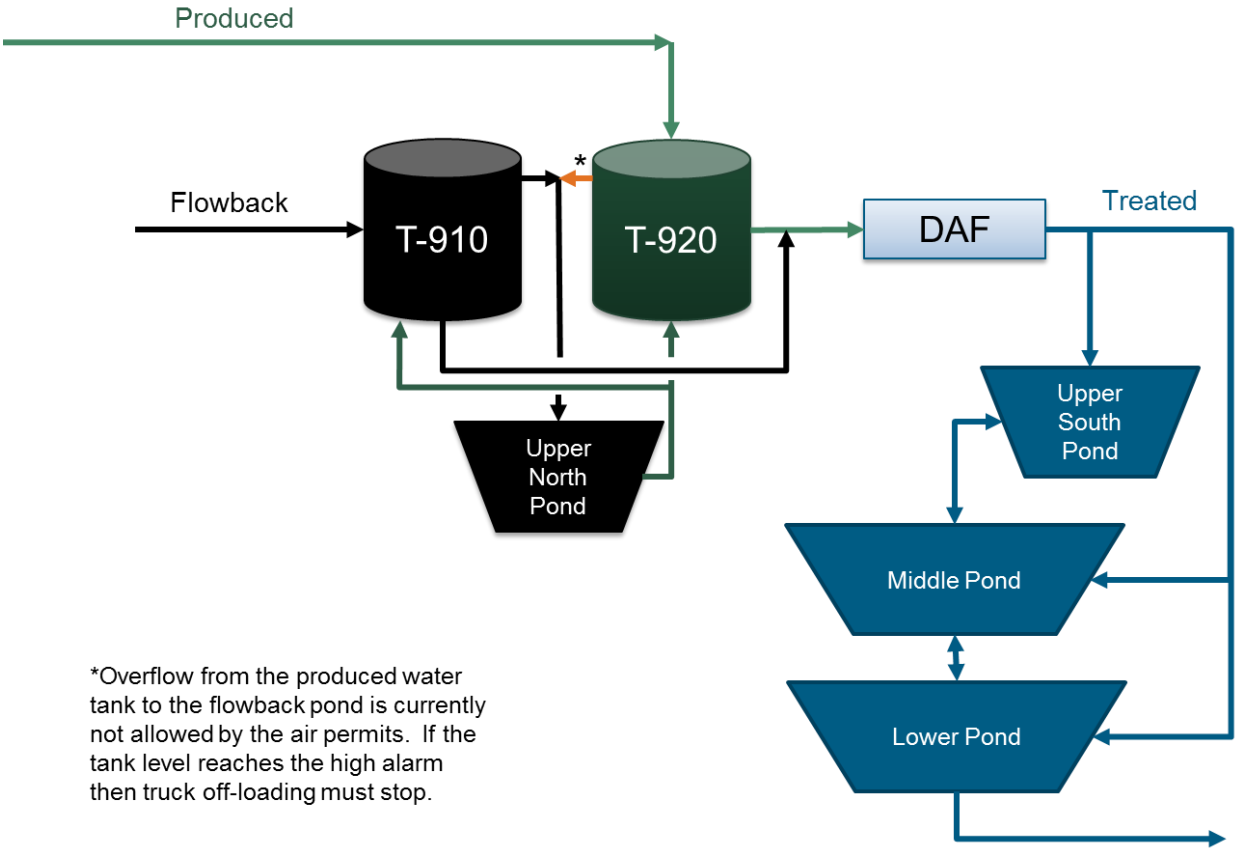
Tank ID	Name	Capacity (bbl)	Contents
T-400	DAF Sludge Tank	500	DAF Sludge
T-401	Fresh Water Tank	500	Fresh Water
T-910	Off-Load Tank	5,000	Flowback
T-920	Off-Load Tank	5,000	Produced Water
T-930	Sludge Tank	500	Sludge
T-940	Sludge Tank	500	Sludge
T-950	Oil/Water Separator	N/A	Condensate/Water
T-960	Oil Sales Tank	500	Condensate

2.3 Process Description

2.3.1 Process Flow

Figure 2.1 shows the overall process flow at High Mesa WF.

Figure 2.1: Process Flow Diagram



Detailed Process and Instrumentation Diagrams (P&ID's) are located in Appendix B. (*not included in permit submittals*)

2.3.2 Influent

Untreated water enters the facility in two ways:

- 6" or 12" pipelines from header building located approximately 500 feet south of the facility
- Truck off-loading on-site

Flowback water that enters the site must be directed into Off-Load Tank T-910, while produced water must be directed into either Off-Load Tank T-910 or T-920.

FLOWBACK WATER MUST BE DIRECTED INTO AN OFF-LOAD TANK

Routing flowback water directly to ANY POND will violate Encana's air permit and is not allowed. (see Paragraph 1.4.1 of this Manual)

2.3.3 Treatment Overview

Water is treated on-site by a dissolved air floatation (DAF) unit. Water enters the DAF by gravity flow or by pumping from either of the Off-Load Tanks or the Upper North Pond. Effluent from the DAF is directed to the Lower Pond, Middle Pond or Upper South Pond, depending upon available storage volumes and water balance requirements. Treated water can be transferred between ponds by gravity flow (Upper to Middle or Lower, or Middle to Lower), or by siphoning from the Lower Pond to the Middle or Upper pond. Water is stored in these ponds until it is pumped off-site to support hydraulic fracturing or to be disposed of via underground injection.

2.3.4 Discharge for Hydraulic Fracturing

Water used to support hydraulic fracturing is pumped out of the Upper South Pond, Middle Pond or Lower Pond via pipelines to:

- Orchard/Parachute field areas
- Middle Fork Water Facility.

2.3.5 Discharge to Injection Wells

Water which cannot be reused within Encana's water system due to the near-term water balance is disposed of via underground injection or pumped to Encana's Middle Fork Water Facility.

2.3.6 Solids Handling

Sludge that accumulates in the Off-Load Tank T-910 is pumped into Sludge Tank T-930. Similarly, sludge that accumulates in Off-Load Tank T-920 is pumped into Sludge Tank T-940. Sludge from the DAF unit is pumped into DAF Sludge Tank T-400. When the sludge tanks are full the contents are pumped out and transported off-site to Benzel WTF for sludge pressing operations.

2.3.7 Condensate Handling

Condensate that accumulates in Off-Load Tank T-910 or T-920 is pumped through an Oil-Water Separator (T-950) to recover the oil. After separation, the oil flows into the Oil Sales Tank (T-960) and the produced water returns to one of the Off-Load Tanks. When the Oil Sales Tank (T-960) reaches an appropriate level it is sold and transported off-site.

2.4 Dust Control

The access roads to High Mesa WF are wetted as necessary by contractors sourced to provide dust control to Encana's property to minimize dust at the site.

2.5 Noise and Odor Mitigation

The following noise and odor mitigation measures are designed into High Mesa WF:

- All permanent pumps are located within fully enclosed buildings

- DAF unit is located within a fully enclosed building
- All tanks are covered
- *Future ponds are covered*

3.0 Contact Lists

Table 3.1: Emergency Contacts

Emergency Type	Phone Number
Gas Control	970-285-2615
Safety On-Call	970-210-8755
Environmental On-Call (Spills)	970-319-9173

Table 3.2: Utilities

Utility	Phone Number	Utility	Phone Number
Holy Cross Power	970-985-5481		

Table 3.3: Trucking Companies

Trucking Company	Phone Number	Trucking Company	Phone Number
Knowles	970-773-1224		
Summit	970-778-1276		
T.D.	970-230-0694		

Table 3.4: Encana Facilities

Facility	Phone Number	Facility	Phone Number
High Mesa WF	**970-285- 2881 970-987-3725**		
Hunter Mesa WF	970-274-9652		
Benzel WF	970-274-8594		

Table 3.5: Other Contacts

Name / Company	Phone Number	Name / Company	Phone Number
FBC (Wes)	303-689-0291		
WCO	970-556-0885		
Wilson Supply	970-625-9800		
Frack Boys - Joe Bernat	970-201-8093		

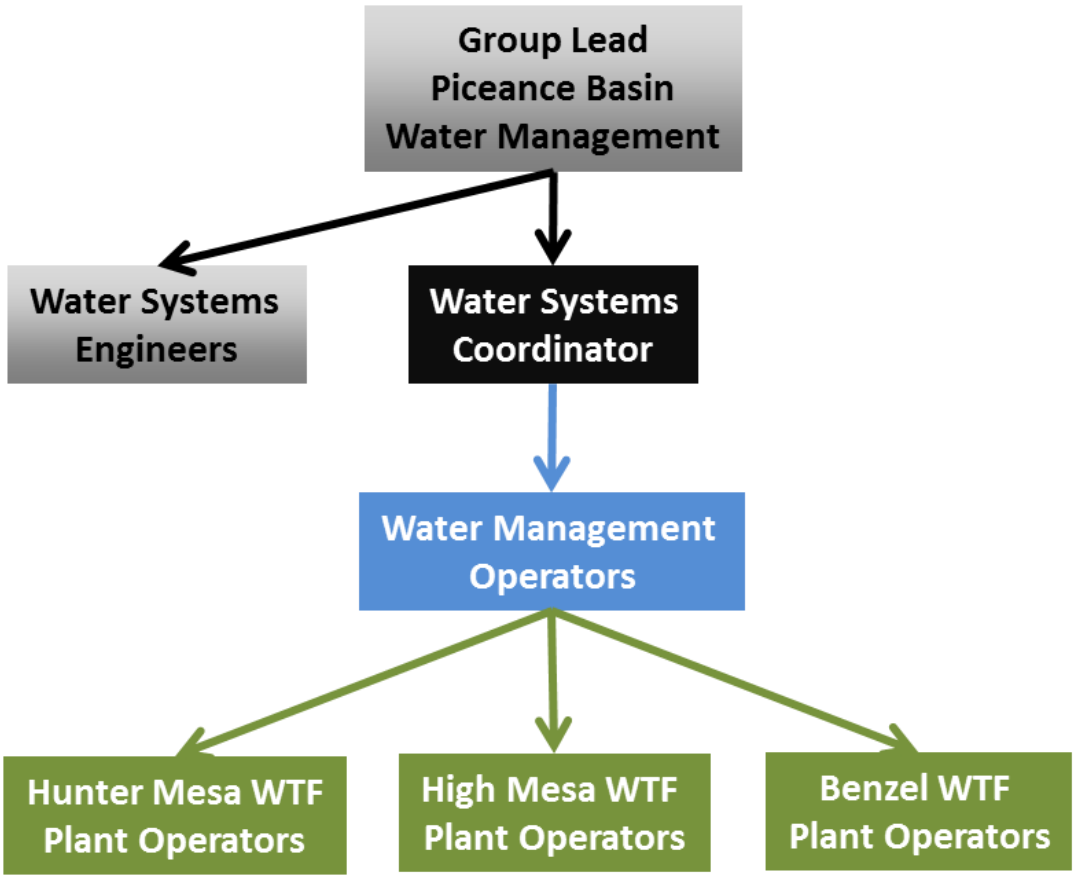
Table 3.6: CEO Operator Contact Information

Name	Phone Number	Name	Phone Number

Table 3.7: Encana Contacts

Name	Title	Phone Number
Parachute Office	-	970-285-2600
	Water Management Operator	
	Water Management Operator	
	Water Management Operator	
	Water Systems Coordinator	
	Trucking Specialist	
	Automation Technician	
	Lease Operator / Oil Sales	
	SRBU Air Quality Specialist	
	Water Movement Coordinator	
	Water Management Operator	
	Water Systems Engineer	
	Water Systems Engineer	
	Water Systems Engineer	
	Group Lead – Piceance Basin Water Management	

Figure 3.1: South Piceance Water Systems Facilities Organizational Chart



4.0 Site Specific Hazards

Encana is committed to providing a safe work environment for all employees and contractors. Failure to comply with safety programs may result in immediate removal from Encana properties.

This section provides a list of known, long-term hazards at High Mesa WF. Intermittent, short-term hazards may not be listed here.

Detailed information for each hazard should be reviewed before undertaking any work in a hazardous area. Detailed information on each hazard is available in the following places:

- Encana Ethos Practices.
    - http://ecn.encana.com/usa/EHS/managementsystems-byalphabet.shtml
- Contractor Expectations Manual for Environmental, Health, Safety & Security
    - Hard copy on site

Site-specific hazards that may be encountered at High Mesa WF are shown in Table 4.1.

Table 4.1: Site Specific Hazards

Hazard	Potentially Hazardous Area
Benzene	Tanks (interior) DAF Ponds
Hydrogen Sulfide	Tanks (interior) DAF Ponds
Confined Spaces	Tanks (interior)
Driving	Lengthy, narrow access roads with heavy truck traffic Winter conditions
Flammable / Restricted Hot Work areas (Class 1 Division 1 or Class 1 Division 2)	DAF Building Storage ponds, in particular the Upper North pond (“flowback” pond) Containment area around tanks
Walking and working surfaces	Site-wide potential for slips, trips and falls Site-wide use of ladders, scaffolding and harnesses
Working over water	Storage ponds

5.0 Plant Operator Responsibilities

5.1 Site Security

High Mesa WF is a restricted access, privately-owned facility. The facility is manned 24 hours per day, 365 days per year.

The Plant Operator is responsible for the following site security tasks:

- Controlling access by third parties.
- Immediately reporting any unusual or unauthorized use of the site to the Water Management Operator or the Encana Security team.

RIGHT TO REFUSE ENTRY – 3rd PARTY

The Plant Operator has the right to refuse entry to any non-Encana parties at any time while he contacts the Water Management Operator or the Encana Security team.

5.2 Health & Safety

High Mesa WF is an active treatment facility with known hazards. Encana takes the health and safety of staff members, contractors and visitors seriously and has developed practices and procedures to minimize risk to everyone on-site.

The Plant Operator has an integral role in maintaining a safe work environment at the facility, as described in this section. The Plant Operator is responsible for knowing this information regardless of whether or not they have received official EH&S training from Encana or their contract operators.

Specific hazards at High Mesa WF are listed in Section 4.0.

5.2.1 Facility Information

The Plant Operator is responsible for knowing, at a minimum, the following facility-specific health & safety information:

- Location of the Emergency Response Plan (ERP).
- Where to look in the ERP for instructions on how to handle an emergency.
- Location of the Material Safety Data Sheets (MSDS) files.
- What personal protective equipment (PPE) is required to handle the chemicals on-site.
- Location of all emergency shut-off valves.
- Any day-to-day work or conditions on-site that could impact the safety of *anyone*, even if they are not specifically involved in that task.

5.2.2 Visitor Preparedness

The Plant Operator is responsible for protecting the safety of *all visitors* by:

- Requiring them to sign in at the site office.

- Requiring them to read and sign the general site JSA.
- Verifying that they are wearing appropriate FR clothing, hard hats, steel toed boots and safety glasses.
- Explaining any day-to-day work or conditions on-site that could impact their safety, even if they are not specifically involved in that task.

The Plant Operator is responsible for protecting the safety of *contractors* by:

- Requiring them to have a JSA for their planned work.
- Verifying they are wearing any additional PPE called for in their JSA.

RIGHT TO REFUSE ENTRY – PPE & JSA

The Plant Operator has the right to refuse entry to any visitors who are not wearing appropriate PPE or who do not have a JSA for their task.

5.3 Environment

The Plant Operator is responsible for knowing, at a minimum, the following environmental policies and procedures and communicating them to contractors on-site:

- Migratory Bird Treaty Act and Other Wildlife Protection Requirements (see Appendix E)
- Time limits and procedures for removing surface hydrocarbons from ponds
- Oil Spill Contingency Plan for Parachute, Colorado
- High Mesa SPCC Plan

5.4 Facility Operation

5.4.1 Operating Within Permit Requirements and Design Capacity

The Plant Operator is responsible for operating the plant in accordance with all permits, as follows:

- Air Permit (rules are explained in Sections 1.3 and 1.4 of this Manual)

The Plant Operator is also responsible for operating the plant in accordance with the design capacity.

5.4.2 Performing Work On-Site

When performing work on-site, the Plant Operator must:

- Only perform work that is authorized by the Water Management Operator.
- Only perform work that has a written SOP unless authorized by the Water Management Operator. The SOPs are located in Section 8.0 of this O&M Manual.
- Follow the SOP when performing work. The Plant Operator should talk to the Water Management Operator if any of the following are true:
    - A SOP is incorrect, missing information or no longer relevant.
    - A new SOP is needed.

- The Plant Operator is unsure of how to follow a SOP.
- The Plant Operator thinks a SOP could be improved.

- Follow all Encana health and safety practices.

STOP WORK AUTHORITY

Any Encana employee, contractor, or sub-contractor has the authority and responsibility to stop work on any site for any suspected hazard or unsafe work.

The Plant Operator has the right to stop work without consequence if there is no written procedure for the task or if the operator feels the task is unsafe.

If the Plant Operator chooses to stop work, the operator must immediately contact the Water Management Operator to resolve the problem.

5.4.3 Overseeing Work On-Site

Regular on-site maintenance performed by contractors may be overseen by the Plant Operator. The Water Management Operator is responsible for checking and verifying completeness of the work performed.

5.5 Monitoring and Reporting

5.5.1 Purpose

Daily reports are completed by the Plant Operator for the following reasons:

- Many of the items contained in these reports are required for compliance with state and federal laws. Completing these reports ensures that Encana has a record of activity on its properties.
- The engineers and managers of your site are always working towards continuous improvement. Records help them identify what works well and what needs to be improved on-site. In addition, records help them obtain funding to fix the problem.

5.5.2 Daily Reports

Plant Operators are the “eyes and ears” for the entire Piceance Basin Water Management Group. It is the Plant Operator’s responsibility not only to complete their daily reports but also to notify the Water Management Operator if something of significance occurs. If there is any doubt whether something is “significant”, the Plant Operator should report the event.

The Plant Operator is responsible for completing the reports shown in Table 5.1. Sample report forms are included in Appendix A.

Table 5.1: Daily Reporting Requirements

Report	Recording Time	Submission Time	Submission Method
Daily Flow Report	Between 6 AM and 7 AM	7 AM	Email to Water Management Operator
Wildlife Protection	Between 7 AM and 9 AM	N/A	File hard copy on site.
Daily Shift Log	End of each shift	7 AM	Email to Water Management Operator
Site Inspection Checklist	Approximately once per hour during each site walkthrough.	N/A	File hard copy on site
DAF Log	4 times per shift	7 AM	Email to Water Management Operator

6.0 Inspection & Maintenance Schedule

Table 6.1: Site Inspection Schedule

Location	Action	Frequency	Report
Off-Load / On-Load Pads	Checked pad for spills, trash and any damage to pipes, valves, hoses or other equipment.	Once per hour	Site Inspection Checklist
Tanks (Exterior)	Checked for leaks, damage, or obstructions such as ice that may prevent proper functioning. Checked for liquids in tank containments.		
Piping / Valves	Checked for leaks, damage, or obstructions (on outlets) such as ice that may prevent proper functioning.		
Ingress / egress roads	Inspected roads for spills, safety hazards such as potholes or ice, and erosion or other damage to roadway or berms.	Minimum twice per shift	
Buildings (Exterior & Interior)	Checked for safety hazards, and any damage to exterior, interior, and electrical and phone lines.		
Chemical Tank Mesh	Checked that mesh on chemical tanks is attached and fully covering the openings.		
Pond	Checked that levels are acceptable and that animal escape ramps are in place. Removed trash, floating debris if required.		
Pond Net	Checked that net was at least 2-ft higher than the water level. Checked that the net and net supports were in good condition.		
Pond Liners	Inspected for tears, unusual staining or other damage.		
Site Security	Checked on-site lights, cameras, and locks for proper functioning		
Drainage Ditches / Swales	Checked for spills, standing water, erosion or other damage.		
Fencing	Checked that perimeter fence and rodent mesh are intact with no holes or gaps.		
Wildlife Deterrents	Checked that the bird deterrents and predator decoys are in place and working.		

Note: All loose trash and debris should be cleaned up daily.

Table 6.2: Monitoring Schedule

Metric	Measurement	Frequency	Report
Pond Volumes	Slope to Freeboard, Volume	Daily	Daily Flow Report
Tank Levels	Fresh water, oil sales, sludge		
Water Volumes In / Out	Water in, Truck load out, transports, bobtails		
DAF Injection Rates	Polymer, coagulant	Every shift	DAF Log
DAF System Pressures	MicroAire inlet, MicroAire discharge, Inlet Air, Rotometer		
Tank Levels	DAF Sludge		

Table 6.3: Equipment Inspection Schedule

Equipment	Inspection Schedule	Frequency	Report
DAF	Check effluent clarity	Every shift	DAF Log
	Visually inspect DAF float thickness and adjust skimmer speed if thicker than 6”		
	Check seals and latches on all hatches for decay/leaks		Site Inspection Checklist
	Inspect skimmer systems (chain, sprockets, alignment, wiper wear)		
	Check oil level in compressor		
	Check compressor belt tensioning		
	Check recycle pump and screen		
	Check chemical pump (hose condition, pumping rate, chemical level)		
	Check blue air dissolving tank (air flowrate, inlet air pressure, discharge air pressure)	Once per hour	
Pond Cover	*Check cover for defects*	*Weekly*	*Future*
	Check cover maintenance hatch latches	*Weekly*	
	Check cover maintenance hatches for decay/leaks	*Annually*	
	Check cover vent system	*Weekly*	

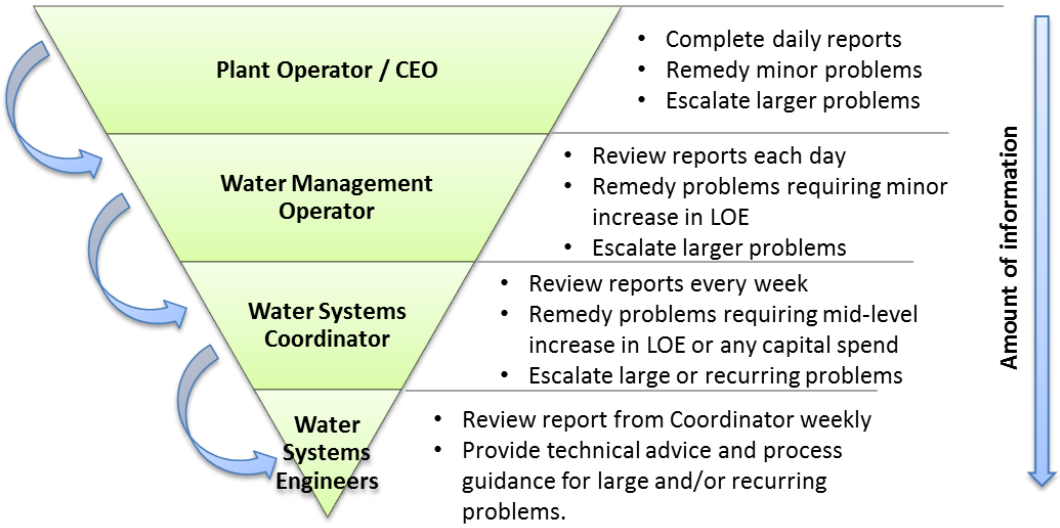
Table 6.4: Equipment Maintenance Schedule

Equipment	Maintenance Schedule	Minimum Frequency	Report
DAF	Pump bottom solids	Daily	Site Inspection Checklist
	Clean recycle pump screen		
	Drain water from air compressor tank		
	Grease DAF (pillow block bearing on skimmer shaft, skimmer shaft bearings, skimmer chain tracks)	Weekly	
	Regular maintenance on recycle pump (call pump maintenance company)	Quarterly	N/A
	Drain DAF and wash out tank		
Ponds	Drain and inspect ponds for sediment build-up and remove sediment as required.	Every two years	N/A

7.0 Encana Internal Reporting

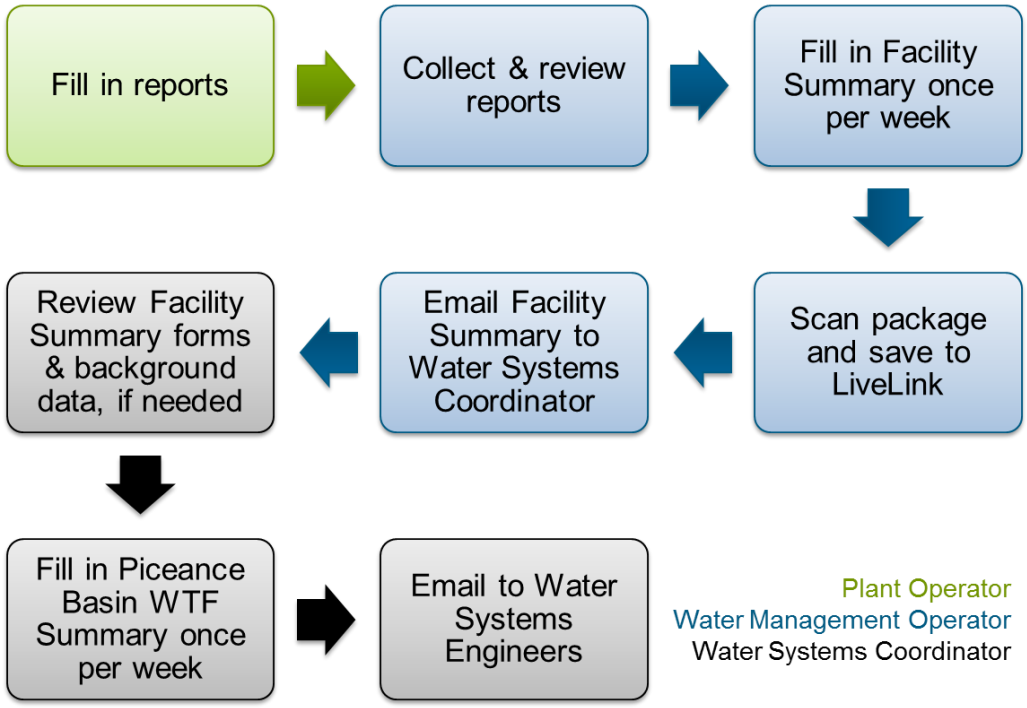
Each member of the group has specific reporting responsibilities, as shown in Figure 7.1.

Figure 7.1: Reporting Responsibilities



The reporting process is shown in Figure 7.2.

Figure 7.2: Reporting Process



8.0 Standard Operating Procedures

(*not included in permit submittals*)

- Operations
  - Truck Off-Loading – Plant Operator
  - Truck Off-Loading – Driver
  - Influent Water Management
  - DAF Operation
  - Pond Water Management
  - Pond Surface Management
  - Oil Management
  - BS&W and Sludge Management
  - Compressor O&M
  - Truck Load-Out
- Environmental Management
  - Wildlife Incident Response

Weekly Report	Facility Summary
Owner: SRBU: SP: High Mesa WTF	**Publication date:** December 19, 2012

Date:

Water Facility: High Mesa WTF

Water Facilities Operator:

Instructions: Fill in table below. Print & sign form. Scan together with weekly Plant Operator reports and save to LiveLink with a title in this format: YYYY-MM-DD High Mesa WTF Facility Summary.pdf

Give this form to the Water Systems Coordinator.

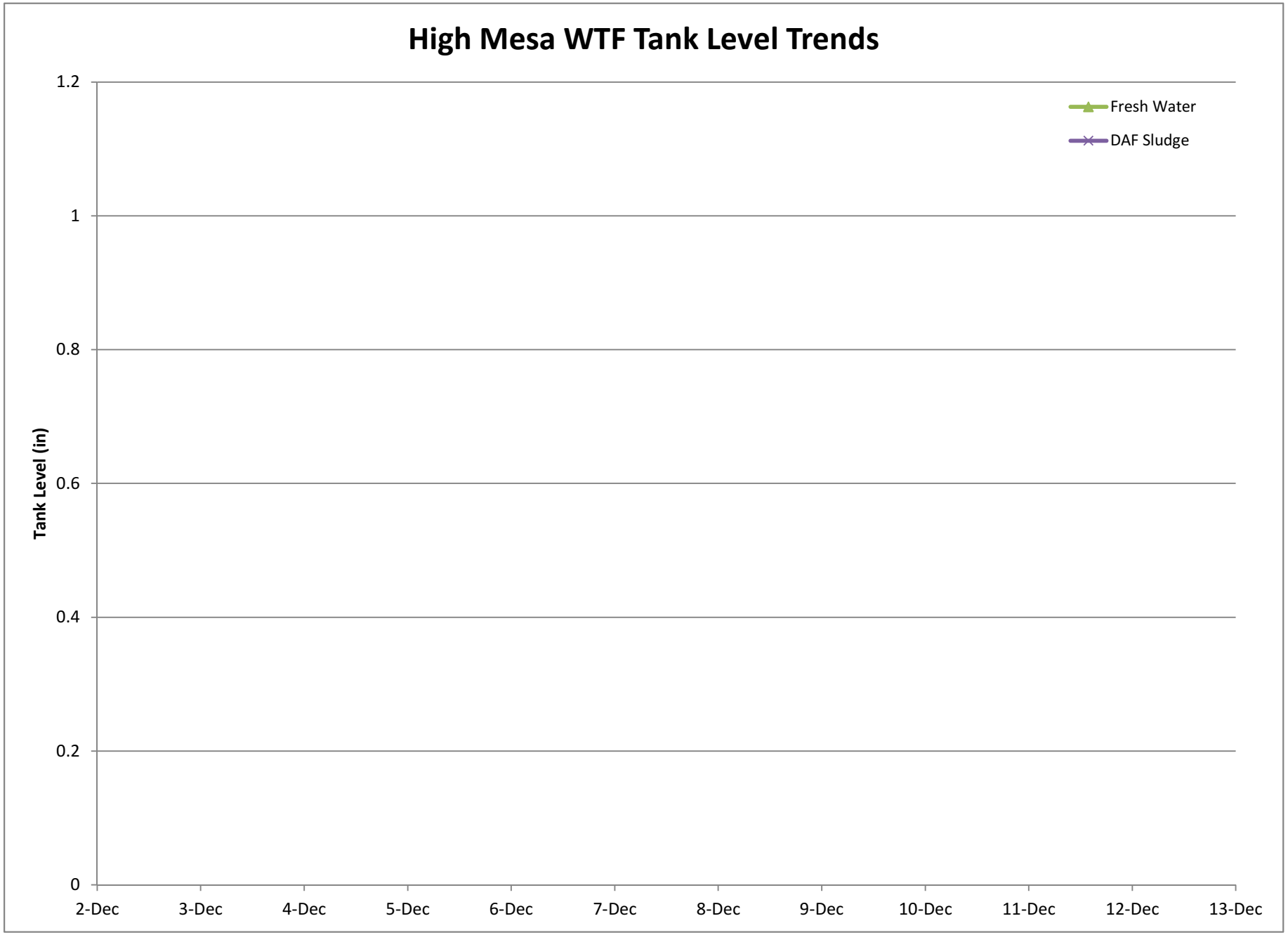
Plant Operator Reports	Report Dates	Weekly Trends / Action Items / Notable Events
Wildlife Protection Reports		
Site Inspection Checklists		
DAF Logs		
Night Reports		
Daily Shift Logs		
Daily Flow Reports		

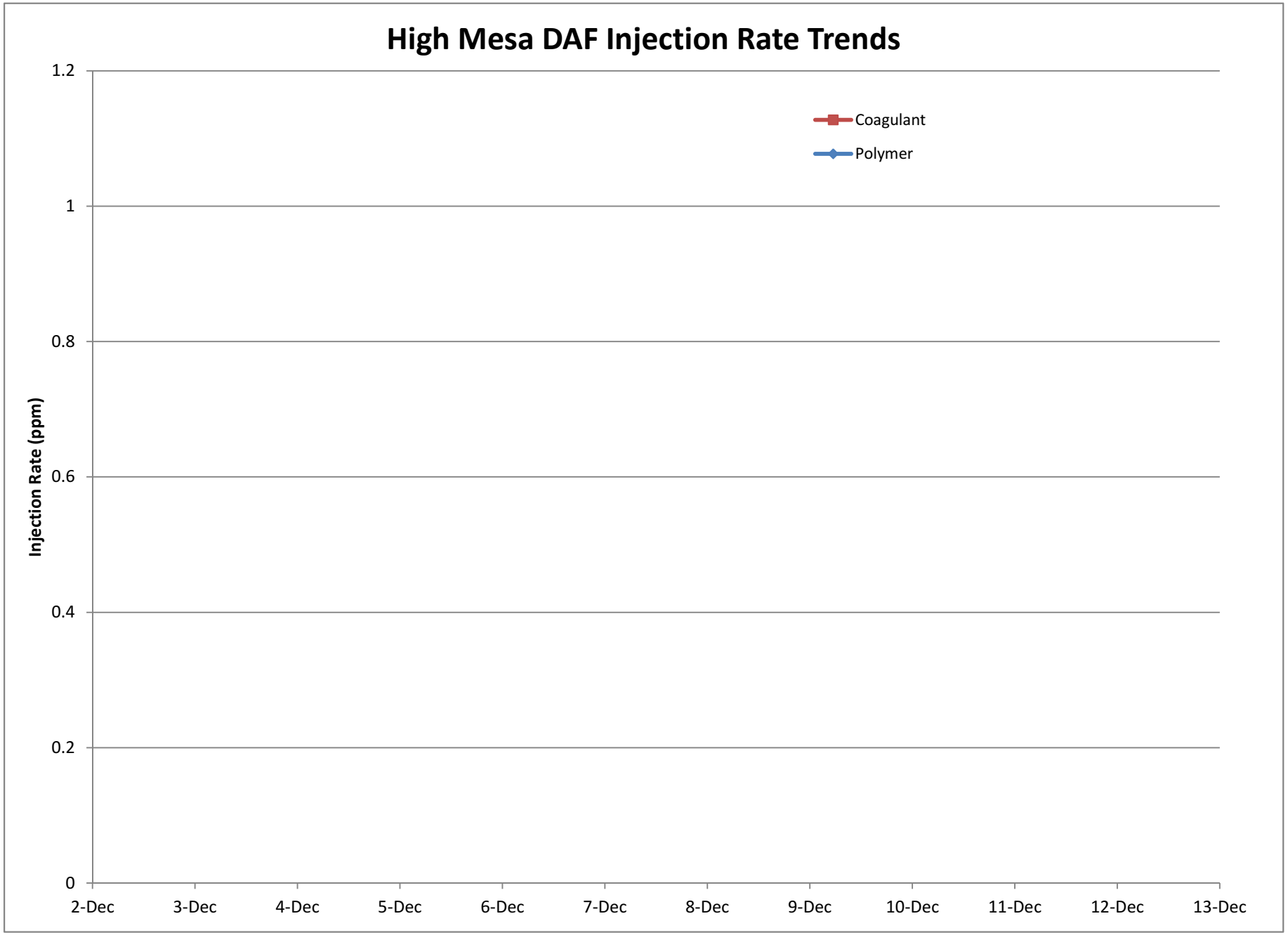
Other issues / ongoing trends:

Signature: _____

HIGH MESA WTF DAF LOG

High Mesa Operator	Date	Time	Hours that DAF has been on	Times that DAF was on	Polymer Injection Rate (ppm)	Coagulant Injection Rate (ppm)	MicroAire Inlet Pres. (psig)	MicroAire Discharge Pres (psig)	Inlet Air Pressure (psig)	Rotometer Pressure (scfh)	Floating Solids Thickness (in)	Fresh Water Tank Level (in)	Outside DAF Sludge Tank Level (in)	Effluent Clarity (clear, light part., heavy part.)
	12/03/2012	6:00 PM												
	12/04/2012	6:00 AM												
	12/04/2012	6:00 PM												
	12/05/2012	6:00 AM												
	12/05/2012	6:00 PM												
	12/06/2012	6:00 AM												
	12/06/2012	6:00 PM												
	12/07/2012	6:00 AM												
	12/07/2012	6:00 PM												
	12/08/2012	6:00 AM												
	12/11/2012	6:00 PM												
	12/12/2012	6:00 AM												


High Mesa WTF Tank Level Trends
Tank Level (in)
1.2
1
0.8
0.6
0.4
0.2
0
2-Dec
3-Dec
4-Dec
5-Dec
6-Dec
7-Dec
8-Dec
9-Dec
10-Dec
11-Dec
12-Dec
13-Dec
Fresh Water
DAF Sludge


High Mesa DAF Injection Rate Trends
Injection Rate (ppm)
1.2
1
0.8
0.6
0.4
0.2
0
Coagulant
Polymer
2-Dec
3-Dec
4-Dec
5-Dec
6-Dec
7-Dec
8-Dec
9-Dec
10-Dec
11-Dec
12-Dec
13-Dec

HIGH MESA WTF - WATER FLOW LOG

Date	Slope to Freeboard (ft)				Pond Volume (bbl)				Water in	Truck Loadout	Oil Sales
	Upper North	Upper South	Middle	Bottom	Upper North	Upper South	Middle	Bottom			
12/01/2012											
12/02/2012											
12/03/2012											
12/04/2012											
12/05/2012											
12/06/2012											
12/07/2012											
12/09/2012											
12/10/2012											
12/11/2012											
12/12/2012											
12/13/2012											
12/14/2012											
12/15/2012											
12/16/2012											
12/17/2012											
12/18/2012											
12/19/2012											
12/20/2012											
12/21/2012											
12/22/2012											
12/23/2012											
12/24/2012											
12/25/2012											
12/26/2012											
12/27/2012											
12/28/2012											
12/29/2012											
12/30/2012											
12/31/2012											
01/01/2013											
01/02/2013											

Weekly Report	Piceance Basin WTF Summary
Owner: SRBU: SP/NP: High Mesa, Hunter Mesa, Benzel, and Middle Fork WTFs	**Publication date:** December 28, 2012

Date:

Water Systems Coordinator:

Instructions: Review Facility Summaries from each WTF. Fill in table below with ongoing trends, action items, etc. Scan and upload to Livelink folder and email link to Livelink folder to Water Systems Engineer for discussion at weekly meeting.

Facility Summary	Received (Y/N)	Weekly Trends / Action Items / Notable Events
High Mesa WTF		
Hunter Mesa WTF		
Benzel WTF		
Middle Fork WTF		

Other issues / ongoing trends:

Signature

Shift Report	Site Inspection Checklist
Owner: SRBU: SP: High Mesa WTF	**Publication date:** December 28, 2012

Date: _____Shift: _____ Name: _____

Each location must be checked at least twice per shift	Location	Action	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM
	Off-Load / On-Load Pads	Checked pad for spills, trash and any damage to pipes, valves, hoses or other equipment.							
	Ingress / egress roads	Inspected roads for spills, safety hazards such as potholes or ice, and erosion or other damage to roadway or berms.							
	Tanks (Exterior)	Checked for leaks, damage, or obstructions such as ice that may prevent proper functioning.							
	Piping / Valves	Checked for leaks, damage, or obstructions (on outlets) such as ice that may prevent proper functioning.							
	Buildings (Exterior & Interior)	Checked for safety hazards, and any damage to exterior, interior, and electrical and phone lines.							
	Chemical Tank Mesh	Checked that mesh on chemical tanks is attached and fully covering the openings.							
	Ponds	Checked that levels are acceptable and that animal escape ramps are in place. Removed trash, floating debris if required.							
	Pond Net	Checked that net was at least 2-ft higher than the water level. Checked that the net and net supports were in good condition.							
	Pond Liners	Inspected for tears, unusual staining or other damage.							
	Site Security	Checked on-site lights, cameras, and locks for proper functioning.							
	Drainage Ditches / Swales	Checked for spills, standing water, erosion or other damage.							
	Fencing	Checked that perimeter fence is intact with no holes or gaps.							
	Wildlife Deterrents	Checked that the bird deterrents and predator decoys are in place and working.							

	Location	Action	AM PM
Each action must be completed at least once per shift	DAF	Checked that lids are latched & seals are in good condition	
	DAF	Greased DAF unit (skimmer shaft bearings, chain tracks)	
	DAF	Inspected skimmer system (chain, sprockets, alignment, wiper wear)	
	DAF	Checked compressor oil	
	DAF	Checked compressor belt	
	DAF	Checked recycle pump and screen	
	DAF	Does the DAF need to be cleaned	
	DAF	Did you clean the DAF	
	DAF	Pumped the bottom solids	
	DAF	Drained water from the compressor	
	DAF	Checked chemical pump (hose condition, pumping rate, chemical level)	
	DAF	Checked blue air dissolving tank (air flowrate, inlet air pressure, discharge air pressure)	

If any of these inspections showed that something was wrong, what action did you take?

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Signature: _____

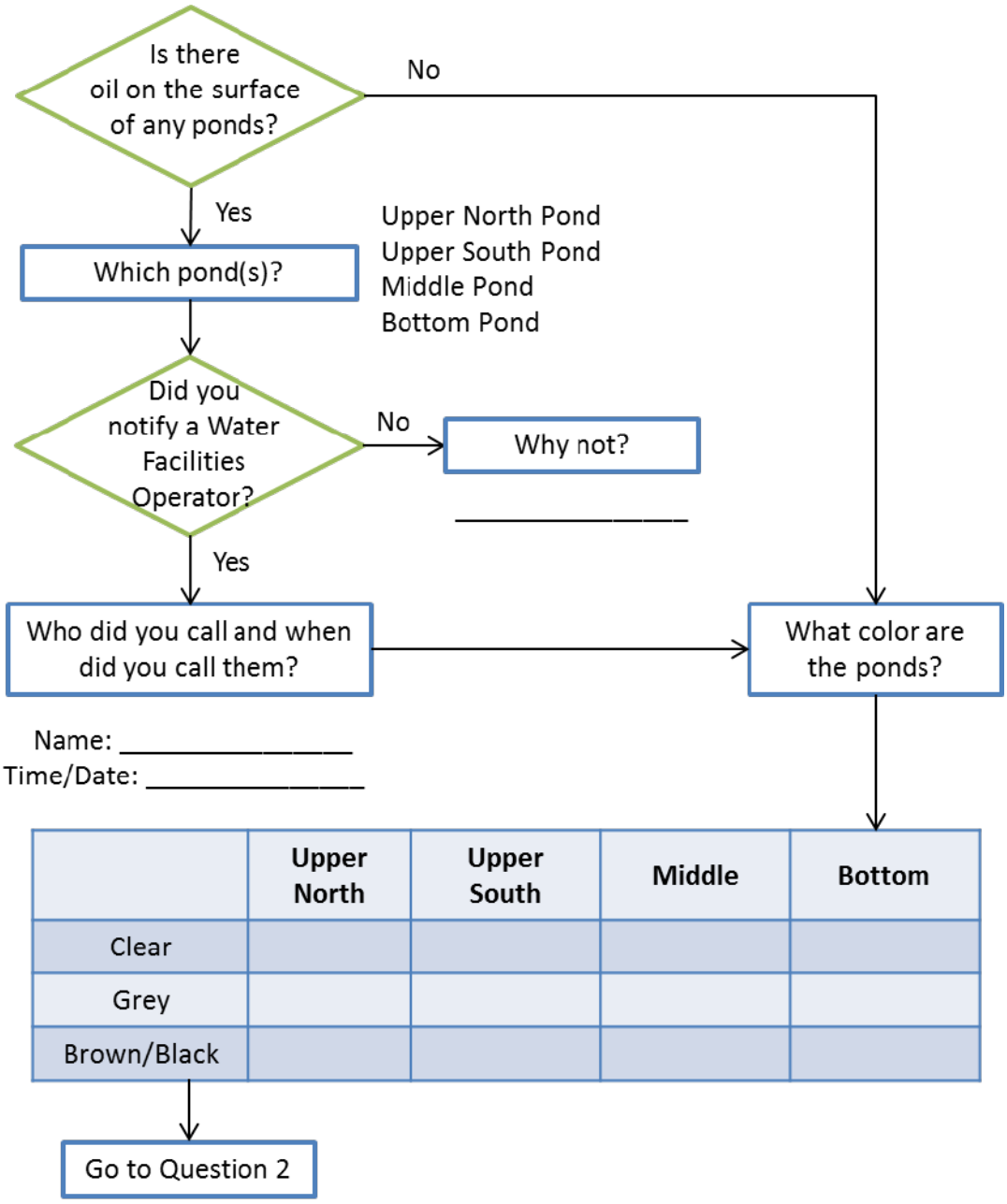
Time: _____

Daily Report	Wildlife Protection
Owner: SRBU: SP: High Mesa WTF	**Publication date:** December 28, 2012

Date: _____Time: _____ Temperature: _____Name: _____

Instructions: Circle the answer to each question and then go to the next box. Fill in the blanks where required. Sign the form to confirm that you walked around the site and reported what you saw.

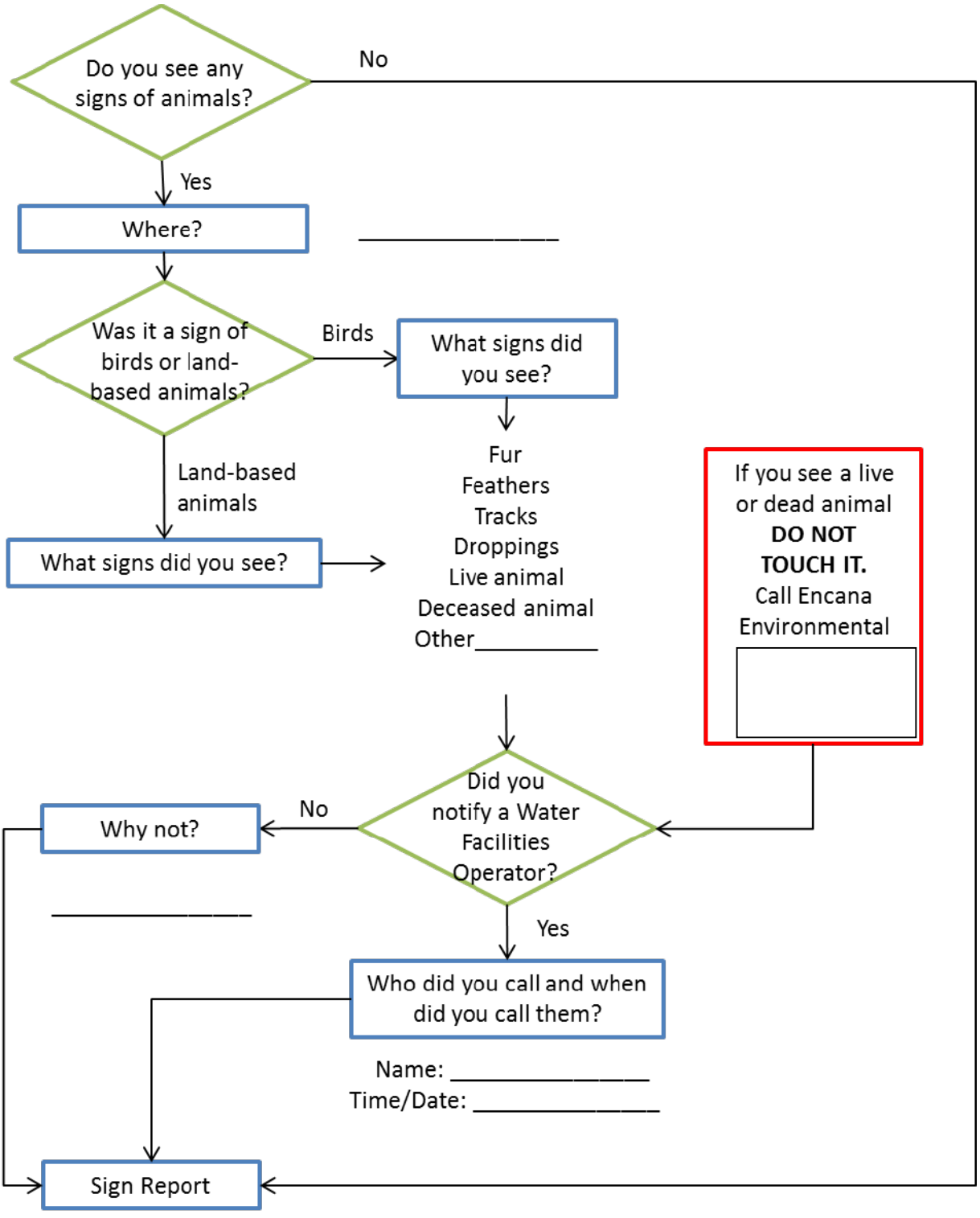
Question 1: Surface Hydrocarbons & Pond Color



	Upper North	Upper South	Middle	Bottom
Clear				
Grey				
Brown/Black				

Go to Question 2

Question 2: Evidence of Wildlife



Signature: _____