Spill Prevention Control and Countermeasure Plan

Cascade Creek and Collbran Operational Areas

Mesa and Garfield Counties, Colorado

Prepared for:

OXY USA WTP LP and OXY USA Inc.
Mid-Continent Business Unit – Piceance Asset

760 Horizon Drive Suite 101
Grand Junction, CO 81506

Prepared November 2011
Format Updated February 2013

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Date of Plan: November 11, 2011

Designated person(s) accountable for spill prevention:

Chris Clark, Operations Manager, (970) 263-3607

SPILL PREVENTION, CONTROL AND COUNTERMEASURE PLAN REVIEW AND AMENDMENT

In accordance with 40 CFR, Part 112.5, this SPCC Plan will be amended when there is a change in the facility design, construction, operation, or maintenance that materially affects its potential for a discharge. The amendment will occur within six months of the change. To aid in ensuring that amendments are made within the required timeframe, the SPCC Plan will be reviewed semi-annually for changes by Oxy's Regulatory Department. The Regulatory Department will use the Facility Change Guidance Document (Appendix I) to aid in determining which field changes require a technical amendment of the Plan. Any and all modifications to the SPCC Plan text, tables, figures, attachments, and appendices shall be documented on the Document Revision/Amendment Log in Attachment 1. Each revised sheet shall be noted with the revision number and revision date. All technical (non-administrative) modifications shall be reviewed and approved by a Colorado registered Professional Engineer.

In accordance with 40 CFR, Part 112.4, this SPCC Plan must also be amended following a discharge (per 40 CFR Part 112.1(b) and Part 110), of more than 1000 gallons of oil in a single discharge event, or more than 42 gallons of oil in each of two (2) discharges occurring within a 12-month period. Oxy's Health, Environmental, and Safety (HES) Department handles spill response and reporting associated with Oxy's Cascade Creek and Collbran operating areas. When an unauthorized discharge of greater than 1,000 gallons (23.8 barrels) of oil in a single discharge event occurs, or more than 42 gallons (1 barrel) in each of two (2) discharges occurs within a 12-month period, the HES Department shall notify the Regulatory Department to initiate a review of the release to determine if the release or releases meet the description of a "discharge" as provided in 40 CFR Part 112.1(b) and Part 110 and amend the SPCC Plan as necessary. Resulting amendments will address potential design flaws, engineering controls, or implementation of new best management practices to reduce the potential for similar discharges. Any amendments that are performed in accordance with these requirements will be documented on the Document Revision/Amendment Log (Attachment 1).

Additionally, an amendment to the Plan may also be required by the EPA Regional Administrator following such a discharge(s). Any amendments that are performed in accordance with these requirements will be documented on the Document Revision/Amendment Log (Attachment 1). Any technical amendment of this Plan shall be certified by a Professional Engineer registered in the state of Colorado.

Five-Year SPCC Plan Review

A complete review and evaluation of this SPCC Plan will occur at least once every five years from the initial certification date. As a result of this review and evaluation, Oxy will amend the SPCC Plan within six months of the review date to include more effective prevention and control technology if: (1) such technology will significantly reduce the likelihood of a spill event from a facility; and (2) if such technology has been field-proven at the time of review. Any amendment will be implemented as soon as possible but in no case later than six months after preparation of the amendment. Any technical amendment of this Plan shall be certified by a Professional Engineer registered in the

state of Colorado. The Oxy Operations Manager shall review the proposed amendments and sign the Five-Year SPCC Plan Review Amendment Log below.

I have completed a review and evaluation of the SPCC Plan for the Cascade Creek and Collbran Operational Areas on the date indicated below and will or will not amend the Plan as a result of that review:

Five-Year SPCC Plan Review Amendment Log			
Review Date	Name & Signature	Will Plan be Amended?	Amendment Summary

MANAGEMENT APPROVAL

OXY USA WTP LP and OXY USA Inc. agrees to provide the manpower, equipment and materials required to expeditiously control and remove any quantity of oil discharge that may be harmful. I approve this SPCC Plan and expect all employees and contractors to abide by the provisions in the Plan. I certify that the provisions in this SPCC Plan are being fully implemented.

Management Representative: _____

Title: _____

Signature: _____

Date: _____

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List of Acronyms

API	American Petroleum Institute
ASC	Aboveground Storage Container
Bbl/bbls	Barrel/barrels
BMPs	Best Management Practices
ERP	Emergency Response Plan
FD	Facility Diagram
FOS	Facility Overview Sheet
MI	Mechanical Integrity
NFPA	National Fire Protection Association
OSCP	Oil Spill Contingency Plan
OSHA	Occupational Safety and Health Administration
Oxy	OXY USA WTP LP and OXY USA Inc.
PPE	Personal Protection Equipment
SWD	Saltwater Disposal Facilities
SPCC	Spill Prevention, Control, and Countermeasure
UL	Underwriter's Laboratory
UST	Underground Storage Tank

Cross Reference

40 Code of Federal Regulations (CFR) Part	Requirement	SPCC Plan Section
112.3 (a)(1)	Amend Plan as necessary per updated regulations	Review Pg 2
112.3 (b)	Amend Plan if a new oil production facility becomes operational	Review Pg 2
112.3 (d)	Professional Engineer certification	ATT 3
112.3 (e)	Maintain a copy of Plan at required facilities	2.0
112.4	Report certain discharges to EPA	Review Pg. 2, 9.2
112.5 (a)	Amend Plan following significant changes to the facility	Review Pg 2
112.5 (b)	Review Plan at least every five years and amend if appropriate	Review Pg 2
112.5 (c)	Professional Engineer review of technical amendments	Review Pg 2
112.7	Management approval of Plan	Approval Pg 1
112.7	Provide a cross reference matrix to regulations	Cross Reference
112.7	Discuss needed facilities, equipment, or procedures not yet operational in separate paragraphs	5.1
112.7 (a)(1)	Discussion of facility conformance with the regulations	11.0
112.7 (a)(2)	Equivalent environmental protection is allowed for deviations from portions of regulations. Reasons for non conformance must be stated	11.0
112.7 (a)(3)	Describe the physical layout of the facility. Provide a facility diagram including tanks, underground tanks, storage areas for mobile containers, produced water containers, associated piping, transfer stations, connecting pipes and intra-facility gathering lines	3.1, FOSs, FDs (ATT 3)
112.7 (a)(3)(i)	Plan must include type of oil in each container and capacity of each container	3.1, 3.2, FOSs, FDs (ATT 3)
112.7 (a)(3)(ii)	Discharge prevention measures including procedures for oil handling at loading/unloading areas	8.1
112.7 (a)(3)(iii)	Drainage control around containers and other equipment	5.0
112.7 (a)(3)(iv)	Countermeasures for discharge discovery, response and cleanup	9.0, APP F
112.7 (a)(3)(v)	Methods of disposal of recovered materials	9.0, APP F
112.7 (a)(3)(vi)	Contact list including phone numbers	9.1, APP A
112.7 (a)(4)	Discharge reporting procedures, information to be included	9.2
112.7 (a)(5)	Organize Plan to make it useful in an emergency	9.1
112.7 (b)	Provide an equipment failure analysis including sources, quantity, direction, and rate of flow	4.0
112.7 (c)	General secondary containment requirement (typical failure mode and most likely quantity) for areas from which a discharge could occur by at least one of eight specified measures	5.0
112.7 (d)	If necessary provide an explanation of impracticability of secondary containment, conduct periodic integrity testing of containers and periodic integrity and leak testing of valves and piping	11.0
112.7 (d)(1)	For impracticability, provide an oil spill contingency Plan per part 109	11.0, APP F
112.7 (d)(2)	For impracticability, provide written commitment of manpower, equipment, and materials	Approval Pg 1

40 Code of Federal Regulations (CFR) Part	Requirement	SPCC Plan Section
112.7 (e)	Written procedures for inspections and tests	7.0, APP B
112.7 (e)	Records of inspections must be signed and kept with Plan for three years	7.9
112.7 (f)(1)	Train oil handling personnel	10.1
112.7 (f)(2)	Designate an individual accountable for discharge prevention	8.2
112.7 (f)(3)	Conduct an annual discharge prevention briefing	10.2
112.7 (g)	Security (oil production facilities excluded)	N/A
112.7 (h)(1)	Provide sized secondary containment (largest compartment on tanker) for loading/unloading racks	8.4
112.7 (h (2)	Provide systems to prevent truck departure before disconnection	8.4, APP E
112.7 (h)(3)	Inspect truck prior to filling and departure	8.4, APP E
112.7 (i)	Evaluate field constructed containers for brittle fracture failure when containers are altered or repaired	7.1.2
112.7 (j)	Compliance with State requirements	11.0
112.7 (k)	Qualified oil-filled operational equipment – alternative to general secondary containment requirements	7.4
112.7 (k)(2)(i)	If no secondary containment, prepare inspection procedures or monitoring program	7.4
112.7 (k)(2)(ii)	If no secondary containment, provide an oil spill contingency Plan per part 109	7.4, APP F
112.7 (k)(2)(ii)	If no secondary containment, provide written commitment of resources	7.4, Approval Pg 1
112.9 (b)(1)	Oil production facility drains of dikes must be kept closed. Inspect diked areas before draining water and remove accumulated oil	8.5
112.9 (b)(2)	Inspect field drainage systems, oil traps, sumps or skimmers for oil and remove accumulated oil	7.8
112.9 (c)(1)	Material and construction of containers must be compatible with stored material and conditions of storage	6.0
112.9 (c)(2)	Provide sized secondary containment (capacity of largest container plus precipitation) for tank battery, separation, and treating facility installations	5.1
112.9 (c)(2)	Confine drainage from undiked areas to catchment basin or holding pond	5.0
112.9 (c)(3)	Visually inspect containers, foundations, and supports periodically and on a regular schedule	7.0, APP B
112.9 (c)(4)	Engineer tank batteries to prevent discharges with one of the following features:	8.3
112.9 (c)(4)(i)	Provide adequate tank capacity to prevent overfilling, or	8.3
112.9 (c)(4(ii))	Provide overflow equalizing lines between containers, or	8.3
112.9 (c)(4(iii))	Provide vacuum protection to prevent collapse, or	8.3
112.9 (c)(4)(iv)	Provide high level sensors	8.3
112.9 (c)(5)	Alternative to sized secondary containment for some flow through process vessels	7.3
112.9(c)(5)(i)	Periodically and regularly inspect and/or test flow through process vessels and associated components	7.3
112.9(c)(5)(ii)	Take corrective action as indicated by inspections or tests or evidence of oil	7.0

40 Code of Federal Regulations (CFR) Part	Requirement	SPCC Plan Section
112.9(c)(5)(iii)	Remove or stabilize and remediate any accumulation of oil	7.0
112.9 (c)(6)	Alternative to sized secondary containment for some produced water containers	5.1, 7.1.1
112.9 (c)(6)(i)	Implement a procedure to remove free-phase surface oil. Include written procedures, frequency, amount of oil expected inside container, and a PE certification. Maintain records of these activities.	7.1.1
112.9 (c)(6)(ii)	On a regular schedule visually inspect and/or test produced water containers and associated piping	7.1.1
112.9 (c)(6)(iii)	Take corrective action as indicated by inspections or tests or accumulation of oil	7.0
112.9 (c)(6)(iv)	Promptly remove or stabilize and remediate accumulation of oil	7.0
112.9 (d)(1)	Periodically and regularly inspect aboveground valves, piping, drip pans, supports, and pumps associated with transfer operations	7.0
112.9 (d)(2)	Inspect salt water disposal facilities	7.7
112.9 (d)(3)	For flowlines and intra-facility gathering lines without secondary containment provide:	5.2
112.9 (d)(3)(i)	Oil spill contingency per Part 109 and	5.2, APP F
112.9 (d)(3)(ii)	Written commitment of resources	5.2, Approval Pg 1
112.9(d)(4)	Prepare and implement a flowline maintenance program including:	7.5.1, 7.5.2
112.9(d)(4)(i)	Ensure materials are compatible with fluids	7.5.1, 7.5.2
112.9(d)(4)(ii)	Visually inspect or test flowlines and intra-facility gathering lines on a regular and periodic schedule. For lines not having secondary containment the frequency and type of testing must allow for prompt implementation of the contingency Plan.	7.5.1, 7.5.2
112.9(d)(4)(iii)	Take corrective action as a result of inspections, tests, or evidence of a discharge	7.0
112.9(d)(4)(iv)	Promptly remove or stabilize and remediate oil discharges	7.0
112.10	Requirements for onshore oil drilling and workover facilities which are responsible for providing a site-specific SPCC Plan	8.6
112.20 (e) 112.20(f)(1)	Certification of the applicability of substantial harm criteria	ATT 3

Spill Prevention, Control and Countermeasure Plan

Cascade Creek and Collbran Operational Areas
Mesa and Garfield Counties, Colorado

1.0 Overview and Organization of Plan

This Spill Prevention, Control and Countermeasure (SPCC) Plan has been prepared for the OXY USA WTP LP and OXY USA Inc. (Oxy) natural gas production facilities identified in Attachment 2 of this Plan and located in Oxy's Cascade Creek and Collbran Operational Areas (in the Mid-Continent Business Unit – Piceance Asset). The Plan has been prepared in accordance with the requirements established in 40 CFR Part 112 – Oil Pollution Prevention regulations, Parts 112.1 through 112.7, 112.9, 112.10 and 112.20. Where applicable, the regulatory citation has been provided at the beginning of each section containing information regarding compliance with the regulation. Excerpts from the cited regulations have been provided in Appendix H of this Plan. In some cases the regulatory language was paraphrased for clarity. Oxy's SPCC Plan is living document, and as such, the Plan should be reviewed by Oxy's Regulatory, Operations, Facilities, and HES Departments regularly.

The following presents an overview of the remaining sections of this SPCC Plan:

Section 2 identifies the owner and operator of the regulated facilities, including company contact information; discusses distribution of the Plan and provides an overview of Oxy's operations in the areas.

Section 3 provides an overview of area operations and equipment.

Section 4 describes the physical location of the operating areas, and references the individual facility diagrams that describe the physical layout of each facility managed under the scope of this Plan.

Section 5 explains the containment and diversionary structures or equipment used at the facilities to prevent discharged oil from reaching navigable waters.

Section 6 discusses requirements for the construction of containers and equipment.

Section 7 describes the inspections, tests, maintenance and records conducted at the facility to ensure compliance with applicable SPCC requirements.

Section 8 discusses discharge prevention measures.

Section 9 provides information regarding oil spill control and countermeasures.

Section 10 describes spill prevention training, including personnel training and spill prevention briefings.

Section 11 discusses the facility's overall conformance with state and federal SPCC requirements, any planned corrective actions, and environmental protection measures being implemented in the interim.

Figures 1 – 7 are maps identifying the areas of operation included in this Plan.

Attachment 1 contains the Document Revision/Amendment Log. This log is used to track revisions and amendments that are made to the SPCC Plan. Any and all modifications to the SPCC Plan text, tables, figures, attachments, and appendices shall be documented in this section.

Attachment 2 contains the worksheet used to calculate the secondary containment capacity at each individual facility. The worksheet may be used to aid in evaluating changes in site conditions and in determining whether or not the capacity of an individual containment unit is sufficient during inspections.

Attachment 3 contains a listing of facilities managed under the scope of this Plan and an information sheet for each facility that depicts the layout of the facility and provides required facility-specific information. Also included in this attachment are the Substantial harm Criteria Checklist and PE Certification for each facility.

Appendix A outlines contact information for Oxy emergency response personnel and other emergency contacts identified within the operational areas.

Appendix B contains inspection, testing and maintenance documents and information.

Appendix C contains Oxy's Exhibit A form to be utilized for documentation purposes in the event of a release.

Appendix D contains the list of facilities utilizing 3-phase separators.

Appendix E contains loading/unloading procedures and an example of the types of warning signs found at each facility.

Appendix F contains a copy of the Oil Spill Contingency Plan that has been developed for the facilities managed under the scope of this Plan.

Appendix G contains a copy of the Oxy Emergency Response Plan for the Piceance Asset.

Appendix H provides excerpts from the regulations cited in the Plan.

Appendix I contains the Facility Change Guidance Document. This document provides guidelines for managing SPCC facility changes.

2.0 Owner/Operator Contact Information

40 CFR 112.3(e)

Oxy owns and operates the facilities being managed under the scope of this Plan. The Oxy field office located in Grand Junction, Colorado serves as the support office for the Piceance, Mid-Continent Business Unit. General contact information for the Grand Junction office is provided below. Contact information for key Oxy operations personnel working in the Cascade Creek and Collbran Operational Areas is included in Appendix A.

OXY USA WTP LP and OXY USA Inc.
760 Horizon Drive, Suite 101
Grand Junction, CO 81506
970-263-3600

A copy of this SPCC Plan is maintained at each of the offices identified below. Each of the offices is normally attended at least four hours per day and serves as the nearest field office for nearby facilities that are not so attended. The Plan is available for onsite review during normal business hours. Hard copies of the Plan have been numbered for document control purposes to ensure that revisions are made to each copy in circulation. Copies that are not numbered will not be considered complete or current and should not be referenced.

The master copy (original) of this Plan is maintained at the Grand Junction field office and is the version with which records of inspections and tests are maintained, in accordance with Section 7.8 of this Plan.

1. Grand Junction Office (master & e-copy)
2. Cascade Creek Field Office (copy)
3. Brush Creek Field Office (copy)
4. Conn Creek Compression Facility (copy)
5. East Plateau Compressor Station (copy)
6. Alkali Creek Compressor Station (copy)

3.0 Operational Overview

Oxy owns and operates natural gas exploration and production operations in the Cascade Creek and Collbran Operational Areas located in the Piceance Basin in western Colorado. The two areas cover approximately 129,000 net acres and include more than 500 production wells and associated production facilities. The Collbran Operational Area is divided into the Brush Creek, East Plateau, and Hell's Gulch Production Areas, while the Cascade Creek Operational Area is comprised of the Mesa, Valley, and Logan Wash Production Areas. Figure 1 depicts the two operational areas.

In each area, natural gas extraction pads contain wells that operate continuously, producing a stream containing gaseous and liquid phases. The gaseous and liquid phases

are processed through a two- or three-phase heated separator located at the extraction pad where they are physically separated. The gaseous phase is transferred via underground piping to a central compression facility for distribution and sales. The extracted liquid fraction contains a mixture of water and petroleum products (i.e., oil). The mixture is further separated into a condensate fraction containing more oil and a smaller fraction of water and a produced water fraction, composed of primarily water with a minor amount of oil. Tri-ethylene glycol dehydration units may be utilized to reduce and/or eliminate excess fluids in the stream (well pad facilities). Tri-ethylene glycol dehydration units are utilized at the compression facilities. The condensate and produced water fractions are piped to storage tanks located at the extraction pad. The condensate is then transferred off-site for immediate sales or is transferred via piping or truck off-site to the Central Water Handling Facility for treatment (i.e., additional water removal) and storage before being transported off-site for sales.

From the extraction pad storage tanks, produced water is transferred via piping or truck to the Cascade Creek Central Water Handling Facility, where the produced water is treated by gravity separation for the removal of solids, allowing sufficient time for solids to settle out before being transferred to an area storage pit for beneficial reuse or being shipped to an injection well for disposal by Oxy. Products of the production water treatment process may also be transferred to an off-site location for beneficial reuse or proper disposal. Separated produced water may also be transferred from either the Collbran or Cascade Creek Operational Areas via truck or pipeline to an injection facility where it is further separated and filtered before being sent to an injection well for disposal via pipeline.

The individual natural gas production facilities managed under the scope of this Plan, as identified in Attachment 3, are defined per 40 CFR 112 as oil production facilities. The facilities are located in Mesa and Garfield Counties in western Colorado. The Brush Creek, East Plateau, and the majority of the Hell's Gulch Production Areas are located in Mesa County, while the Mesa, Valley, Logan Wash and a small portion of the Hell's Gulch Production Area resides in Garfield County.

3.1 Facility Descriptions and Diagrams

40 CFR 112.7(a)(3), (a)(3)(i)

Figure 1 depicts the physical locations of the Cascade Creek and Collbran Operational Areas, while Figures 2 – 7 identify the locations of individual oil production facilities within each Production Area. All Oxy oil production facilities located within the Cascade Creek and Collbran Operational Areas are subject to the requirements of this SPCC Plan. For each of the subject facilities, a facility overview sheet (FOS) and facility diagram (FD) has been developed. The FOS identifies the location of the facility and provides a written description of the physical layout of the individual facility, as well as a list of containers, container contents, potential spill sources, and an assessment of existing secondary containment structures. The FDs mark the location and contents of each fixed oil storage container and the storage area where mobile or portable containers may be located. In addition, the diagrams identify the location of all underground storage tanks, transfer stations, connecting pipes, and intra-facility gathering lines. Current FOSs and FDs are maintained in Attachment 3 of this Plan.

3.2 Portable and Temporary Equipment

40 CFR 112.7(a)(3)(i)

Facilities may utilize portable/mobile and temporary containers to store 55 gallons or more of an oil product or material. Such portable containers may be used to store fuels, lubricating oils, condensate, produced water, etc. Estimated capacities for these containers range from 55 gallons (e.g., hydraulic oil drum) to 500 bbls (e.g., frac tank). Depending on the activity, there may be anywhere from 0 to 100 portable containers at a facility at any given time.

4.0 Facility Layouts and Predictions for Spill Flow

40 CFR 112.7(b)

Where experience indicates a reasonable potential for equipment failure to occur (such as a tank overflow, pipeline valve leak or rupture, tank leak, etc.), Oxy has performed an analysis of the typical modes of each type of major failure as part of Oxy's Critical Process Equipment annual review. This Critical Process Equipment review is performed for each new facility or when an existing facility is modified. Included in the review are predictions for the direction of flow, estimated rates of flow, and total quantity of oil that could be discharged from the facility as a result of each major type of failure.

Oil spills are expected to be confined to a containment structure unless the failure occurs outside of containment. If the discharged oil is outside of or moves beyond a containment structure, the predicted direction of flow will follow the drainage patterns described on the FOSs and depicted on the individual FDs located in Attachment 3. Under a worst-case scenario, the total quantity of oil that may be discharged from each container is anticipated to be the capacity of that container. Where containers are hard-piped together at or near the bottoms of the tanks for equalization or other purposes, and valves between the tanks are operated in an open position when unattended, the total quantity of oil that may be discharged is estimated to be the total capacity of each interconnected container. The FOS provides the volume of each container and notes any interconnected containers. A discussion of the types of major equipment failures and estimates for the anticipated rates of flow for each failure type is provided in the sections below for Aboveground Storage Containers (ASCs), portable and temporary containers, flow-through process vessels, pits/ponds, pipelines, and loading/unloading operations. For pipelines and loading/unloading failures, an estimate of the total volume of oil that could be released is also provided below.

4.1 Aboveground Storage Containers (ASCs) and Flow-through Process Vessels

The major failure modes for ASCs and their associated equipment include valve leaks, tank overflow, and tank rupture. The rate of material flow from a storage tank due to a leak or rupture will depend on the cause, size and location of the leak or rupture. Experience indicates that ASC components are prone to fail at loading/unloading connections, welds, flanged valve points, near the tank base when exposed to standing water or when wet gravel/soil maintains contact with side walls, and when damaged (i.e., struck by lightning, heavy equipment, etc.). The rate of overflow from an ASC can also vary depending on the rate of material flow into the tank at the time the tank capacity is exceeded.

Flow-through process vessels utilized in the Cascade Creek and Collbran Operational Areas include separators, pig launchers/receivers, knockout pots, pumps, filter pods, etc. The major failure modes and estimated flow rates for flow-through process vessels mirror those of ASCs for leaks or ruptures. Because flow-through process vessels are typically fully enclosed, overflow is not considered a major failure mode for these units.

The following table provides estimated rates of flow in the event of an equipment failure.

Table 4.1 ASC and Flow-through Process Vessel Failure Modes

Failure Mode	Estimated Rate of Flow
Valve Leak – Minor	Less than 1 bbl/day
Valve Leak – Major	1 to 20 bbl/day
Rupture – Minor	Up to 1 bbl/day
Rupture – Catastrophic	1500 bbl/day
Overflow*	1 to 2,600 bbl/day

* Failure mode analysis and rate of flow estimated for ASCs only

4.2 Portable and Temporary Containers

Portable and temporary containers are subject to same major failure modes as ASCs. Because these containers are generally present in areas of high activity and operators are expected to closely monitor transfer operations, it is anticipated that the failure of a portable or temporary container would be discovered and remedied in a timely manner. As with ASCs, the rate of material flow from a portable or temporary container due to a leak or rupture will vary according to the cause, size and location of the leak or rupture. The estimated flow rates provided in Table 4.2 below are based on past experience.

Table 4.2 Portable and Temporary Container Failure Modes

Failure Mode	Estimated Rate of Flow
Valve Leak – Minor	Less than 1 bbl/day
Valve Leak – Major	40 to 250 bbl/day
Rupture – Minor	Up to 1 bbl/day
Rupture – Catastrophic	37,500 bbl/day
Overflow	1 to 250 bbl/day

4.3 Pits and Ponds

Produced water may be stored within permitted pits or ponds located at facilities within the Cascade Creek and Collbran Operational Areas. Pits are generally utilized during drilling and initial completions activities as reserve pits which may receive *de minimus* amounts of hydrocarbons. Any oil encountered during initial drilling and completions are managed in accordance with Colorado Oil and Gas Conservation Commission (COGCC) regulations. Storage ponds are typically used to store filtered produced water containing a limited amount of oil and are therefore managed under the scope of this Plan. Pits and ponds currently managed under this SPCC Plan are identified on the FOS and FD provided in Attachment 3.

The major failure mode associated with pits and ponds involves the failure of a primary liner resulting in a release to the secondary liner or, where double liners are not used, resulting in a release to the ground. Pits and ponds are typically provided with two high-density polyethylene liners (a primary and secondary liner) or a high-density polyethylene liner with a geocomposite underlayment layer. Oxy's largest storage pond is also equipped with a leak detection system. The potential discharge rate of material flow from a leaking liner may range from 1 to 10 bbl/day. Pits are typically monitored through visual inspection. Ponds are monitored by a number of methods, including the use of high level indicators networked to Oxy's SCADA system which provides real-time fluid level data and periodic checks of the interstitial space between liners. These best management practices (BMPs) should ensure that the volume of material likely to be released from a pit before a leak or overflow is identified and corrected is minimal.

4.4 Pipelines

Major failure modes for pipelines include leaks and ruptures. The rate of material flow from a pipeline due to a leak or rupture will depend on the size of the line, rate of flow of material through the line, and the size, location and cause of the leak or rupture. Experience indicates that pipelines are prone to fail at connections, welds, flanged valve points, risers, and any sections of line with turbulent flow and/or differing pressures, such as elbows, reductions, intersections, etc. The estimated rate of flow for a small-sized leak is less than one bbl/min, while the rate of flow associated with the complete rupture of a major transfer pipeline could be in excess of 100 bbl/min. The total amount that could be

discharged in the event of a pipeline rupture will depend on the location and magnitude of the failure and could exceed the maximum capacity of the largest container being transferred (ranging from the smallest container volume to the largest, as identified in Attachment 3).

4.5 Loading/Unloading Operations

At many of the facilities managed under the scope of this Plan, condensate and produced water are transported to and from the site via tank truck. While loading, the potential exists for the truck compartment to overflow, or the transfer hose to malfunction, break or prematurely disconnect during the loading process. In addition, any volume of oil remaining in the transfer hose may inadvertently be drained to the ground while disconnecting from the truck. Although drip pans or loading buckets are provided for truck and tank connections at each production facility, a spill may occur if the release is not immediately controlled or the volume released exceeds the capacity of the drip pad or bucket. The estimated rate of material flow resulting from an overflow or broken hose component is based on the average pump loading rate and is anticipated to be 1 to 10 bbl/min. Should the leak, rupture, disconnection, etc. occur on a line open to the tank or tank truck, the flow rate may be higher.

The total oil quantity that could be discharged will depend on the location and magnitude of the failure. The total volume of oil that could be discharged from a failure at a tank truck connection under a worst-case scenario is 110 bbl, the volume of the largest pump truck utilized at facilities in the Cascade Creek and Collbran Operational Areas. Should a failure occur at or near a tank loading/unloading arm, the spilled oil would likely be contained within the unit's secondary containment structure. However, some loading/unloading connections reside outside the containment structure. In such cases the total volume of oil that could be discharged is estimated to be the volume of the tank being loaded or unloaded.

Because loading and unloading operations are continuously monitored by trucking personnel, the total volume of oil released before the problem is identified and corrected should be limited.

5.0 Containment and/or Diversionary Structures

40 CFR 112.7(a)(3)(iii), 112.7(c), 112.9(c)(2)

Containers and equipment used to store, process and/or transfer oil-containing materials are considered to be primary containment for the oil. Examples of primary containers used in the Cascade Creek and Collbran Operational Areas include storage containers, process vessels, transfer piping, pits/ponds, and portable/temporary containers and equipment. SPCC regulations require that a secondary means of containment be provided for primary containers to prevent a discharge of oil from reaching a waterway. The secondary containment systems used at Oxy facilities include both active and passive methods. Passive measures are permanent installations that don't require deployment, such as berms, dikes, and permanent prefabricated units. Active measures such as the placement of drip pans or sorbent materials may also be used.

General secondary containment is typically achieved through utilization of berms and walls sufficiently impervious to contain oil. The types of containment structures utilized include earthen berms, concrete, metal and HESCO (steel wire mesh containers typically filled with crushed rock/soil) containment structures constructed on-site, prefabricated units such as bladder pods, and prefabricated polyethylene and metal containers (e.g., troughs, stock tanks). Oxy does not maintain bulk oil storage containers in undiked/bermed areas.

The facility-specific information located in Attachments 2 and 3 of this Plan provide details regarding the types and capacities of secondary containment structures in place at each facility. The FDs depict the locations of secondary containment structures and the general flow of surface drainage. The Secondary Containment Calculations Spreadsheet included as Attachment 2 of this Plan provides detailed information regarding the volume, dimensions, and adequacy of containments for individual containers.

5.1 Secondary Containment Specifications

40 CFR 112.9(c)(2) and (c)(6), COGCC 906.e(1), 604a.(4)

Secondary containment structures provided for containers and vessels holding condensate, produced water, fuels, lubricating oils and other oil-containing materials are required to hold, at a minimum, the contents of the largest container present inside the containment area, plus (if exposed to the weather) enough freeboard to hold precipitation from a significant storm event. The amount of freeboard for containment structures located in the Cascade Creek and Collbran Operational Areas was conservatively calculated based on the 25-year 24-hour storm event, which is 0.21 feet (Western US Precipitation Frequency Maps http://www.wrcc.dri.edu/pcpnfreq.html).

Most of the facilities containing 3-phase separators contain multiple produced water tanks that are hard-piped together for equalization purposes and to help prevent freezing during the winter. Additionally some of the sites operate with 2-phase separators that also contain above ground equalization lines. While these facilities with equalization lines are all located within secondary containment, the containment is generally not large enough to hold the volume of all the tanks that are manifolded together. In these instances, Oxy's oil management procedures will consist of removing recoverable oil from produced water tanks not less than semi-annually. Oxy will draw down the produced water tanks and remove recoverable oil prior to the onset of winter and then again in the Spring. Based on operational history, the maximum amount of free-phase oil expected to accumulate inside the container is 60 bbls (2,520 gallons) between semi-annual removal operations. Actual accumulations will vary based on the number of wells on location, tank capacity, and production rates, but in general should not exceed 60 bbls. Oxy will utilize the SCADA system to monitor water and oil volumes and schedule additional oil removal operations as necessary. The maximum amount of oil that will be allowed to accumulate in a produced water tank before removal is 120 barrels, except when poor road conditions and safety considerations preclude truck passage. In that case,

oil will be removed when it is practical and safe to do so. The facilities utilizing 3-phase separators are listed in Appendix D.

In lieu of sized secondary containment for flow-through process vessels such as separators, free water knockouts, gun barrels, heaters and heater treaters, Oxy has provided appropriate containment and/or diversionary structures or equipment to prevent a discharge. Flow-through process units are located on each pad at a such distance from the perimeter that a release from the equipment would be contained on the pad surface until clean up could occur. All pad surfaces are designed flat or sloped to the cut side as to deter runoff of small releases and impacted rainwater. This general containment is assessed annually during the annual regulatory pad inspection process. The maximum volume assumed for a likely release scenario is 10 barrels. Each pad surface has been determined to be capable of containing this volume, in the event of a release, until further response actions can occur. In the event of a release, additional countermeasures in the form of spill response and containment actions will include the construction or deployment of one or more of the following:

- Dikes, berms, or retaining walls sufficiently impervious to contain oil;
- Curbing;
- Culverting, gutters, or other drainage systems;
- Weirs, booms, or other barriers;
- Spill diversion ponds;
- Retention ponds; or
- Sorbent materials.

In addition, flow-through process vessels and associated components (such as dump valves) will be periodically, and on a regular schedule, visually inspected and/or tested for leaks, corrosion, or other conditions that could lead to a discharge. When indicated by regularly scheduled visual inspections, tests, or evidence of an oil discharge, corrective actions will be taken and repairs made to flow- through process vessels and any associated components. Accumulations of oil discharges associated with flow-through process vessels will be promptly removed or actions will be initiated to stabilize and remediate the released materials.

If any facility discharges greater than 1,000 gallons of oil/produced water in a single discharge to navigable waters of the U.S., or greater than 42 gallons of oil/produced water in each of two discharges to navigable waters of the U.S. within any twelve month period from flow-through process vessels, sized secondary containment, capable of containing the entire capacity of the largest single container and sufficient freeboard to contain precipitation, must be installed within six months of the release.

Oxy maintains oil removal records using haul tickets and pumper records, customary with Oxy's regular business practices including the purchasers ticket.

In accordance with 40CFR112.9(c)(6)(v) Oxy will take corrective action within six months from the time that a facility becomes subject to this section.

All newly constructed facilities, or when existing secondary containments are modified, will be provided with sized secondary containment sufficient to contain the multiple volumes of any tanks that are equalized (the largest tank) plus freeboard for precipitation.

Because the majority of containment structures utilized have been constructed in accordance with existing requirements, any tank or piping failures occurring inside of containment are expected to be confined and not discharged to the environment. Double-walled tanks, drip pans, sorbent material and other measures may also be utilized to comply with containment requirements. The containment systems utilized are designed to be capable of containing oil and have been constructed so that material inadvertently released from a container will not escape the containment system before cleanup occurs.

5.2 Flowlines and Intra-facility Gathering Lines

40 CFR 112.9(d)(3)

Active natural gas extraction wells are typically set inside of conductor holes and/or vaults to provide containment for wellhead. The wells operate continuously and produce a stream containing gaseous and liquid phases that flow through gathering and flowlines. The gaseous phase and liquid phase, containing water and oil, is transported a short distance to a three-phase heated separator located at the extraction pad. The gaseous phase is separated by the separation unit and is conveyed via underground piping to a central compression station for distribution and sales. The liquid phase (condensate and produced water is piped to storage containers located at the pad. An Oil Spill Contingency Plan (OSCP) has been developed for intra-facility gathering and flowlines under the scope of this Plan. The OSCP is provided as Appendix F.

Tank-related piping or process equipment is operated in a manner to minimize the potential for leaks or spills and may be located inside secondary containment. Standard discharge prevention practices include the utilization of drip pans for equipment, such as pumps, and loading hose connections that have the potential for drips and leaks during operation. Valve covers are also installed as a best management practice to help minimize the amount of area likely to be impacted by a sudden release. For example, a cover over a valve could help control a spray of oil from a failed gasket that may have otherwise resulted in the oil spray being deposited over a much wider area. Oxy is committed to expeditiously controlling and removing any amount of oil released from facility pipelines or any other source.

5.3 Containment Requirements for High Density Areas

COGCC 603.e

Oxy does not currently operate facilities within high density areas or designated outside activity areas as defined by COGCC Rule 603.b and the definition of designated outside activity areas. If future facility locations are constructed within high density areas or designated outside activity areas, Oxy will comply with all applicable COGCC requirements, including those established for the construction of secondary containment berms.

6.0 Container and Equipment Installation and Construction

40 CFR 112.9 (c)(1), 40 CFR 112.9 (d)(4)(i)

Protocols implemented by the Oxy Facilities Department help ensure that when bulk storage containers are installed or repaired, the materials used for construction/repair of the containers are compatible with the type of stored oil. Maintenance protocols have also been developed for the installation and repair of pipelines, flowlines, intra-facility gathering lines, and their associated valves and equipment. Such protocols ensure that the materials used for line construction are compatible with the types of fluids transferred, their potential corrosivity, volume, pressure, and other conditions expected in the operational environment. For example, gas gathering lines are installed in accordance with ANSI 600 rating requirements to help ensure integrity under varying conditions of field operating pressure. Additional maintenance procedures ensure that containers and piping are constructed such that they will remain structurally sound under varying storage and transfer conditions (i.e., extreme hot and cold temperatures).

6.1 Fire Prevention Measures

COGCC 604.a, COGCC 604a.(4)

When constructing new atmospheric tanks to be utilized for crude oil storage or when redesigning existing crude oil storage areas, the following fire prevention measures are observed, as applicable:

- Tanks shall be a minimum of seventy-five (75) feet from a fired vessel or heater-treater.
- Tanks shall be a minimum of fifty (50) feet from a separator, well test unit, or other non-fired equipment.
- Tanks shall be a minimum of seventy-five (75) feet from a compressor with a rating of 200 horsepower, or more.
- Tanks shall be a minimum of seventy-five (75) feet from a wellhead.
- Gauge hatches on atmospheric tanks used for crude oil storage shall remain closed at all times when not in use.
- Vent lines from individual tanks shall be joined and ultimate discharge shall be directed away from loading racks and fired vessels.
- No potential ignition sources shall be installed inside the secondary containment area unless the containment area encloses a fired vessel.

7.0 Inspections, Testing and Maintenance

40 CFR 112.7(e), 112.9(c)(3), (c)(5), (c)(6), (d)(1), (d)(4)

The following sections discuss the inspection, testing and maintenance activities required by the federal Oil Pollution Act (40 CFR 112), the COGCC, and Oxy policy. In accordance with the Mid-Continent Business Unit Mechanical Integrity (MI) Program, production equipment will be visually inspected and maintained in accordance with the

procedures outlined in Appendix B. The intent of the MI Program is to ensure that process equipment is designed, constructed, installed, and maintained utilizing recognized and generally accepted good engineering practices, to ensure that it remains fit for service over its lifecycle, and to minimize risk of uncontrolled releases. The MI Program includes the following types of process equipment:

- Fired Pressure Vessels
- Unfired Pressure Vessels
- Bulk Storage Containers
- Piping Systems conveying produced water and condensate
- Flare Systems, including piping, vessels, vaporizers, knockout pots, ignition systems, and other process equipment used to collect the discharge of relief vents in emergency events to safely combust flammable gases or liquids with minimal risk to the environment and processes
- Relief Devices, including pressure relief valves, rupture discs, and emergency vents
- Steel Structures (primary structural steelwork, e.g., stairwells, vessel, and column primary supports)

All inspections are performed by qualified inspectors who are knowledgeable of facility operations, the equipment type and its associated components, and the characteristics of the material being stored, transferred, or processed. The inspections and tests performed in accordance with the requirements of this Plan are documented and managed in accordance with Section 7.9 of this Plan. In the event that an inspection or test identifies either the need for repair, evidence of a discharge or is found to be otherwise unsuitable for service, corrective action shall be implemented accordingly. As soon as practicable following the detection of a leak, the affected portion of the line will be isolated and repaired or replaced. In addition, any oil discharges associated with storage containers or associated equipment shall be promptly removed.

It is also Oxy policy that all inspection, testing and maintenance activities be performed in accordance with applicable requirements of the Occupational Safety and Health Administration (OSHA) and company health and safety programs (e.g., control of hazardous energy-LOTO, confined space entry, respiratory protection, hot work, etc.) and any equipment-specific operating procedures.

7.1 Bulk Storage Container Inspection, Testing and Maintenance

40 CFR 112.9 (c)(3) and (c)(6), COGCC 604.a(9)

All aboveground bulk storage containers are maintained in accordance with the Oxy MI Program. Bulk storage containers, containment systems, tank foundations, supports, and associated equipment are inspected and tested in accordance with an established schedule. The inspection and testing schedule for bulk storage containers located in the Cascade Creek and Collbran Operational Areas is maintained at the Grand Junction field office. The type and frequency of inspection and/or testing for individual containers is determined by the container type and size, type of installation, corrosion rate and

previous inspection history. During the visual inspections, the aboveground storage containers, containment systems, surrounding surface areas, piping, valves, and all other applicable equipment are inspected for signs of deterioration and leaks. Tanks are also inspected to ensure that gauge hatches are being maintained in a closed position when not in use as required. Results of the inspections are recorded on the appropriate inspection checklist, provided in Appendix B.

Oxy performs a minimum of three types of inspections for all SPCC-regulated facilities; Annual Inspections, COGCC Inspections and Periodic Observations. Annual Inspections are conducted according to the procedures outlined in Appendix B.2, Oxy Piceance Pad Inspection Procedure. During the Annual Inspections, a thorough visual inspection is conducted, containment dimensions and condition are checked, and the facility-specific information provided on the FOS and FD is updated with any changes. Results of the Annual Inspections are recorded on the Oxy Piceance Pad Inspection Checklist, provided in Appendix B.1. Oxy also performs an inspection of its COGCC facilities on an annual basis as required by COGCC regulations. The results of COGCC Inspections are recorded on COGCC Form 36 reports (Appendix B.5). COGCC Inspections include an assessment of secondary containment structures and other BMPs, including pit liners.

In addition to the annual inspections described above, Oxy also performs observations at SPCC-regulated facilities on a periodic basis, with the frequency of observations not to exceed 30-days. These visual inspections are conducted by qualified field personnel who are familiar with the operation of facility equipment and in accordance with the Oxy Periodic Monitoring Procedure (Appendix B.4).

The requirement for bulk storage container testing is largely dependent upon the adequacy of the container's secondary containment. If a secondary containment structure is determined to have inadequate capacity, the containment shall either be repaired or a program of integrity testing of the containers within the containment shall be implemented. Testing intervals for bulk storage containers and associated valves and piping will be established by the MI Lead using one of three methods shown below:

A. Time-Based Criteria (usually required by jurisdictional rules)
B. Time/Condition-Based Criteria (as detailed in API 653)
C. Risk-Based Criteria (as allowed by API 653)

Note: Fiberglass tanks are inspected in intervals utilizing FTPI 2007-1 for guidance.

Testing intervals established for affected bulk storage containers shall not exceed five years. The inspection and testing schedules for individual containers will be maintained at the Oxy Grand Junction field office.

7.1.1 Produced Water Container Maintenance

40 CFR 112.9 (c)(6)

Produced water containers are constructed with materials compatible with their contents, have been provided with secondary containment, are visually inspected on a periodic

basis, and have been provided with appropriate discharge prevention measures as required by 40 CFR 112.9. The remaining sections of this Plan discuss these requirements and specific methods of conformance in greater detail.

Where produced water containers do not meet the sized secondary containment requirements of 40 CFR 112.9 (c)(6), Oxy has elected to implement the procedure described above in Section 5.1.

7.1.2 Field-constructed Aboveground Container Maintenance

40 CFR 112.7(a)(2), 40 CFR 112.7(i)

Inspection, testing and maintenance procedures specific to field-constructed aboveground containers are provided in Appendix B. Field-constructed aboveground containers are inspected for integrity on a regular schedule and whenever material repairs are made. If a field-constructed ASC undergoes a repair, alteration, reconstruction, or change in service, it will be evaluated for the risk of discharge or failure due to brittle fracture or other catastrophe. Such an evaluation will also be conducted if an ASC has discharged oil or failed due to brittle fracture or other catastrophe. Corrective action will be taken as determined necessary by the evaluation. Qualified contractors and personnel are employed to perform all ASC repair, alteration, and/or reconstruction activities in accordance with accepted industry practices and regulations.

7.2 Portable and Temporary Container Inspection, Testing and Maintenance

40 CFR 112.7(e)

Portable and temporary containers with an oil-containing capacity of 55 gallons or greater are periodically inspected and maintained. When in active use, portable and temporary containers are observed for condition daily by facility operations personnel. Utilizing the same inspection process as described for bulk storage containers, visual inspections of portable and temporary containers are performed on a periodic basis in accordance with the procedures outlined in Appendix B. Testing requirements for portable and temporary containers are determined by the Oxy Facilities Department. The inspection and testing schedule for portable and temporary containers operated in the Cascade Creek and Collbran Operational Areas is maintained at the Grand Junction field office.

7.3 Flow-through Process Vessel Inspection, Testing and Maintenance

40 CFR 112.9(c)(5)

Flow-through process vessels are factory-inspected prior to being placed into service and are provided with secondary containment when feasible. All vessels are visually inspected for deterioration and maintenance needs on a periodic basis as outlined in the Oxy Facility Periodic Monitoring Procedure in Appendix B.4. These vessels are also inspected annually according to the Oxy Piceance Facility Inspection Procedure in Appendix B.2.

Oxy uses MAXIMO, an equipment management database system, to schedule and manage periodic testing of a representative sample of units for corrosion monitoring and testing. These inspections monitor corrosion rates and are used to develop field wide replacement and repair maintenance programs. All flow-through process vessels are maintained in accordance with the Oxy MI Program.

If an individual facility discharges more than 1,000 U.S. gallons (23.8 barrels) of oil in a single spill event, or discharges more than 42 U.S. gallons (1 barrel) of oil in each of two spill events within any twelve month period, from flow-through process vessels within six months from the date of the discharge, sized secondary containment will be provided for all flow-through process vessels at the facility. 40 CFR Part 112.1(b) and Part 110 describe the types of spills that would be reportable under this requirement. Oxy will also comply with other applicable federal and state regulations.

7.4 Oil-filled Operational Equipment Inspection, Testing and Maintenance

40 CFR 112.7(k)

Facility processes may utilize oil-filled operational equipment. Such equipment may include transformers, lubricating systems for compressors, pump jacks, etc. This type of equipment is typically provided with general secondary containment. At facilities where secondary containment is not provided for all oil-filled operational equipment, a procedure has been implemented for inspecting the equipment on a regular basis to detect equipment failure and/or an oil discharge. An outline of the general procedure is as follows.

Prior to use, Oxy personnel or designated contractor will inspect all oil-filled operational equipment, associated facilities, and devices for corrosion and leaks. Also, on a periodic basis, qualified facility operations or contract personnel will visually inspect all oil-filled operational equipment, connecting lines, and associated structures and devices for:

- leaks or other oil discharges;
- signs of corrosion;
- loose bolts or missing plugs;
- accumulation in drip pans; and
- general physical condition of the equipment.

Deficiencies are documented and corrective actions will be taken to repair or replace the damaged equipment as outlined in the Oxy Facility Periodic Monitoring Procedures (Appendix B.4). Testing of oil-filled operational equipment is performed as needed based on operational knowledge and visual inspection.

7.5 Transfer Piping Inspection, Testing and Maintenance

Transfer piping is visually inspected during installation activities in accordance with the Oxy MI Program. All pipeline inspections are performed by qualified inspectors who are knowledgeable of the transfer operation, the type of piping and its associated components, and characteristics of the material being transferred. The inspections, testing and maintenance protocols established for transfer piping are detailed in the following sections.

7.5.1 Pipeline Inspection and Monitoring

40 CFR 112.9 (d), (d)(4)(ii)-(iv)

To reduce the potential for discharges from pipelines, Oxy operates a program of pipeline inspection and monitoring. Examples of the pipelines operated within the Cascade Creek and Collbran Operation Areas include gathering lines from wellheads and central delivery points to compressor stations, condensate and produced water delivery lines to/from separators, tanks and the Central Water Handling Facility. The terms flowline and intra-facility gathering line are used often. For the purposes of this Plan, a flowline refers to a pipeline that connects pads to mainlines and other facilities, such as the Central Water Handling Facility in Cascade Creek. Intra-facility gathering lines refer to those lines located on a particular well pad or facility used to transport material within the facility. For example, intra-facility gathering lines may be utilized to collect gas and liquids from a well head and distribute to a separator located on the well pad. Above ground flow and gathering lines are inspected frequently by qualified production technicians or contract personnel performing routine operations at the facility.

During the periodic inspections conducted for aboveground bulk storage containers, process vessels, portable and temporary tanks, and oil-filled equipment, as described in the sections above, the associated transfer piping is also inspected. Specifically, piping, valves, flange joints, valve glands and bodies, drip pans, pipe supports, pumping well polish rod stuffing boxes, bleeder and gauge valves, and other such items are inspected for signs of deterioration and leaks and recorded on the appropriate periodic inspection checklist.

In accordance with the protocols established by the Oxy Facilities Department, newly installed piping undergoes a thorough quality assurance process that involves x-rays of welds and hydro-testing prior to being placed into service. Pipelines are monitored by facility personnel during periods of operation for general condition, signs of leaks or other potential problems. Pipelines, valves and associated equipment are inspected regularly during the equipment inspections described in earlier sections of this Plan. In addition, wells are provided with constant surveillance via an automated system designed to trigger an alarm in the event of a catastrophic release.

7.5.2 Pipeline Testing and Maintenance

40 CFR 112.9 (d)(4)(i)

Existing pipelines and newly installed pipelines are tested and maintained in accordance with established Oxy protocols including the Oxy MI Program. The management

practices implemented include the utilization of established standards for the selection and installation of pipelines within the Cascade Creek and Collbran Operational Areas. Management practices also include procedures for the routine monitoring, testing and maintenance of pipelines as well as their valves, flanges, and associated devices. To aid in ensuring employee safety and environmental protection, all maintenance and testing activities are performed by personnel who are knowledgeable in facility operations and the specific operation of the equipment being maintained.

General procedures for the maintenance and testing of pipelines with the Cascade Creek and Collbran Operational Areas include the following:

- Prior to installing, replacing, or repairing pipelines, valves, or associated devices, facilities maintenance personnel must ensure that the materials to be transferred are compatible with the construction materials to be employed. Potential concerns involving corrosive production fluids, transfer volumes, line pressure, and other such conditions expected in the operational environment are addressed prior to installation.
- All pipelines are to be identified on facility diagrams and are clearly marked in the field to facilitate access and inspection by Oxy and/or contract personnel.
- Pipelines associated with wells with known or suspected corrosion mechanisms are protected through the utilization of continuous or batch treatment with corrosion inhibitor.
- Cathodic protection is provided on key trunk pipelines.
- Corrosion drip points are present on critical mainlines.
- Where practicable, electric water pumps are enabled with automatic devices that shut down the pump when pressures reach a level that indicate a problem.
- When repairing or reconstructing flowlines, intra-facility gathering lines, and/or associated valves and equipment, the materials used for construction are compatible with the types of production fluids transferred, their potential corrosivity, volume, and pressure, and other conditions expected in the operational environment. The transfer piping and other equipment are constructed such that the lines will contain the materials under varying storage conditions (i.e., extreme hot and cold temperatures).

The general maintenance and testing procedures referenced above are performed on individual sections of lines and associated equipment at a frequency determined by Oxy's Facilities Department. The frequency for maintaining and testing lines located within secondary containment is based on several factors, including the age of the pipeline, known or suspected corrosion issues, materials used in construction, number of elbows, expansions, contractions, etc. The maintenance and testing performed for pipelines that have not been afforded secondary containment is scheduled on a more frequent basis to aid in ensuring that the OSCP developed for Cascade Creek and Collbran Operational Area facilities can be effectively implemented.

7.6 Pit and Pond Inspection and Maintenance

COGCC 902.b and 902.c

Pits and ponds utilized in the Cascade Creek and Collbran Operational Areas are constructed, monitored, and operated to provide for a minimum of two (2) feet of freeboard at all times between the top of the pit wall at its point of lowest elevation and the fluid level of the pit. The methods employed to monitor and maintain freeboard in pits and ponds include the routine visual checks, electronic and traditional level indicators. Corrective action (i.e., pumping of pit or pond) is undertaken as necessary to ensure the required level of freeboard is maintained. In accordance with COGCC Rule 906, any unauthorized release of fluids from a pit will be reported to the appropriate authorities.

Pits and ponds are lined using high-density polyethylene and range from 24 to 60 millimeters thick. During the operation of pits and ponds, if the monitoring equipment or visual check identifies a drop in fluid level, Oxy will drain the fluid to adequately inspect the liner integrity. If holes or tears are identified in the pit liner Oxy will repair the holes following manufacturer specifications. Following the repair of the liner, Oxy will conduct a seam test and hydro-test to ensure adequate integrity of the liner prior to refilling the pit or pond.

Any accumulations of oil or condensate in a pit are removed within twenty-four (24) hours of discovery as required. Operators use skimming, steam cleaning of exposed liners, or other safe and legal methods as necessary to maintain pits in clean condition and to control hydrocarbon odors. *De minimis* amounts of hydrocarbons are allowed to be present in a pit only if the pit has been specifically permitted for oil or condensate recovery or disposal use.

7.7 Saltwater Disposal Facilities Inspections

40 CFR 112.9(d)(2)

Saltwater disposal facilities (SWDs) typically consist of a tank battery, offloading area, filtration pods, and a pump building. At the SWD, produced water is sent to an injection tank battery where it is processed through an additional filter pod assembly and then sent to a tank battery for settling and storage before being processed further.

Visual SPCC inspections are conducted at SWD facilities on a periodic basis. Annual inspections and periodic observations are conducted at SWD facilities in accordance with the procedures outlined in Appendix B. When in active use, SWD facilities are visually inspected daily. Because a sudden change in atmospheric temperature may lead to upset conditions within SWDs, Oxy personnel also conduct a visual inspection of SWDs during routine operational activities. As an additional discharge prevention measure, Oxy has installed high level alarms on tanks at SWD facilities located in the Cascade Creek and Collbran Operational Areas.

7.8 Field Drainage System Inspections

40 CFR 112.9(b)(2)

Inspections of facility drainage systems and road ditches are conducted by an Oxy Stormwater Inspector on a periodic basis utilizing the CDPHE Stormwater Inspection Form. Stormwater inspections are conducted semi-annually as part of Oxy's COGCC stormwater inspection program and annually as part of Oxy's COGCC Form 36 inspections, but may be performed more frequently to aid in compliance with permit-specific requirements. Any observed accumulations of oil are investigated and addressed as needed.

7.9 Recordkeeping

40 CFR 112.7(e)

All inspections and tests conducted to comply with SPCC requirements must be performed in accordance with written procedures that have been developed specifically for facilities within the Oxy Cascade Creek and Collbran Operational Areas. The procedures are outlined in appropriate sections of the Plan and the checklists and procedures listed in Appendix B. Inspection and testing records must be signed by the appropriate supervisor or inspector and must be maintained in the Grand Junction office with the master copy of this Plan for a minimum period of three years. ASC records and certified inspection reports are maintained for the life of the ASC.

8.0 Discharge Prevention

Discharge prevention measures, including procedures for routine handling of products (loading, unloading, facility transfers, etc.), are described in the following sections and in the loading/unloading procedure provided in Appendix E. In summary, condensate and produced water tanks may be loaded/unloaded manually using tank trucks or are loaded/unloaded via Oxy's water pipeline gathering system. Oil transfers are conducted during normal business hours and truck drivers are present during loading/unloading activities to watch for and correct leaks or other issues. If any leaks are detected, the driver will manually close the appropriate valves to control flow and address any spilled material. Tank trucks in service in the Oxy Cascade Creek and Collbran Operational Areas are equipped with a spill response kit. Because of the physical controls and procedures implemented, any spills resulting from loading/unloading operations are expected to be limited in volume and readily cleaned. All releases of oil to the environment are expected to be reported and are subsequently inspected to evaluate the root cause and potential preventative actions.

8.1 Facility Oil Transfer Procedures

40 CFR 112.7(a)(3)(ii)

Individual facilities have implemented operation and equipment-specific procedures for the routine transfer of oil products (fuel, lubricating oils, etc.) and oil-containing materials (produced water, condensate, etc.) between containers. Appendix E details specific procedures that Oxy personnel and contractors follow when transferring oil and oil containing materials between containers. General procedures for the transfer of oil at any location within the Cascade Creek and Collbran Operational Areas are as follows:

1. Before initiating the transfer of oil from one container to another, check level readings to ensure there is adequate free space available in the receiving container
2. Operators must stay in the area (outside of the vehicle) during transfers and monitor equipment and operations closely (checking lines, pumps, hoses, etc. for proper operation and signs of leakage)
3. Operators must inspect transfer equipment and produced water delivery lines prior to, during, and following use, for leaks, oil discharges, corrosion, and other conditions that could lead to a discharge
4. Operators must provide absorbent pads, pans, buckets, etc., as needed to prevent drips from contacting the ground

8.2 Spill Prevention Accountability

40 CFR 112.7(f)(2)

The Operations Manager stationed in the Grand Junction field office, is the individual who has been designated by Oxy as accountable for oil spill prevention at the facilities managed under the scope of this Plan. The Oxy Operations Manager may be contacted by telephone at (970) 263-3600.

8.3 Tank Battery Design

40 CFR 112.9(c)(4)

Standard engineering practices are utilized at both new and existing tank batteries to prevent discharges. Oil storage tanks in the Cascade Creek and Collbran Operational Area, are provided with one or more of the following discharge prevention measures.

- One or more top overflow equalization lines.
- High level sensors that, once the storage tank becomes full, generate and transmit an alarm signal to the electronically controlled automation equipment, which then shuts down the active processes of the well.
- A container capacity adequate to assure that the container will not overfill if an operator or pumper is delayed in making their scheduled rounds.

The facility-specific information provided in Attachment 3 identifies the discharge prevention measures implemented at individual locations.

Prior to the filling or departure of an oil transport vehicle, the lowermost drain and all outlets are closely inspected for discharges. If necessary, caps are tightened, adjusted, or replaced to prevent a discharge of oil while in transit. During loading/unloading operations at each facility, drip pans are placed under connections at the back of the tank trucks where the potential for spills outside secondary containment exists. Truck drivers are required to perform constant monitoring of loading/unloading operations. Each tank truck is required to carry a spill kit in the event that a spill is encountered and any oil that is released to the ground is cleaned up immediately.

8.4 Facility Loading/Unloading Operations

40 CFR 112.7(h)(1), (h)(2), (h)(3)

The facilities managed under the scope of this Plan do not currently utilize loading/unloading rack systems. Tank truck loading and unloading activities occur at transfer facilities and at loading/unloading areas throughout the Cascade Creek and Collbran Operational Areas. Environmental protection is provided in these areas through the use of both passive (i.e., containment structures) and active (i.e., spill kits) secondary containment practices. Facility Drainage

40 CFR 112.9(b)(1)

As a standard practice, the secondary containment structures constructed at the facilities managed under the scope of this Plan are not equipped with drains. Pre-fabricated containment structures (e.g., troughs, stock tanks) may have small drain holes present; however, these drains are not used to empty the containment structure and are maintained closed. As a standard practice, drainage of materials that accumulate in secondary containment to the ground outside of containment is not performed. Secondary containment structures are drained manually using a hand bailer, portable pump or via tank truck. Accumulated rainwater or material resulting from a release within secondary containment structures is transported to the Oxy Central Water Handling Facility for storage, treatment and disposal, in accordance with applicable rules and regulations. Procedures for transferring oil from a storage tank into a tank truck are included in Appendix E of this Plan.

8.5 Oil Drilling and Workover Facilities

40 CFR 112.10(a)-(d)

The following discharge prevention measures are implemented at oil drilling and workover facilities operated within the Cascade Creek and Collbran Operational Areas.

- The site is evaluated to determine the most suitable location for mobile drilling or workover equipment to aid in preventing a discharge to the environment and is positioned accordingly.

- Diversion structures such as absorbent booms and socks are provided at drilling and workover operations to help intercept and contain a discharge of oil.
- A blowout preventer (BOP) assembly and well control system is installed before drilling below any casing string and during workover operations. The BOP assembly and well control system installed are capable of controlling any well-head pressure that may be encountered while that BOP assembly and well control system are on the well.

Oxy personnel responsible for oversight of drilling and workover operations are trained in the requirements of this Plan and ensure that the requirements noted above have been complied with prior to beginning operations. Drilling and workover facilities typically operate in accordance with the controls specified in facility-specific SPCC Plan provided by the drilling and completions operators.

9.0 Oil Spill Control and Countermeasures

40 CFR 112.7(a)(3)(iv), 40 CFR 112.7(a)(3)(v)

Specific procedures for discharge discovery, response, and cleanup are provided in the OSCP that has been developed for the facilities managed under the scope of this Plan. The OSCP is maintained in Appendix F of this Plan and provides information and procedures for reporting a discharge, for taking initial actions to mitigate the effects of the discharge, for determining whether or not an evacuation is needed, and for ensuring that recovered materials are disposed of in accordance with applicable legal requirements.

The OSCP follows the provisions of Oxy's Emergency Response Plan (ERP). The ERP provides guidance for action in a number of emergency scenarios, including a chemical/oil release or spill emergency. The OSCP and ERP are updated annually. Oxy oil-handling personnel are trained on the content of the ERP on a yearly basis. A copy of the current Oxy ERP has been provided for reference in Appendix G.

9.1 Contact & Reporting Information For Discharges

40 CFR 112.7(a)(3)(vi)

Discharges of oil to the environment that occur in the Cascade Creek and Collbran Operational Areas must be reported. Individuals who discover an oil spill have been instructed to immediately report the incident to their Supervisor. The Supervisor then follows the reporting procedure outlined in the ERP and the OSCP. Appendix A provides a quick reference of emergency contact numbers and emergency response procedures. Internal reporting is required for any discharge of oil to the environment, while the need to report discharges to local, state and federal agencies will depend on the magnitude and location of the release. Appendix A of this Plan provides a contact list and phone numbers for Oxy personnel, cleanup contractors, the National Response Center and other regulatory agencies. Also provided in Appendix A is a quick reference procedure for reporting oil discharges. The OSCP located in Appendix F includes detailed information regarding the circumstances requiring reporting, an explanation of

which agencies need to be notified under the different circumstances, the types of reporting required (phone, mail, etc.), time frames for reporting, etc.

Guidance For Identifying Discharges That Need To Be Reported

For the purposes of this Plan, a reportable discharge is defined by **40 CFR 110.3** as "Discharge of oil in such quantities as 'may be harmful'.

a. Discharges of oil in such quantities that the Administrator has determined may be harmful to the public health or welfare or the environment of the United States include discharges of oil that:

(i) Violate applicable water quality standards; or
(ii) Cause a film or sheen upon or discoloration of the surface of the water or adjoining shorelines or cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines.

b. In addition, **40 CFR 112.2 -** Definitions provides useful definitions for common terms. Discharge includes, but is not limited to, any spilling, leaking, pumping, pouring, emitting, emptying, or dumping of oil, but excludes discharges in compliance with a permit…

c. Navigable waters of the United States means "navigable waters" as defined in section 502(7) of the Federal Water Pollution Control Act, and includes:

(i) All navigable waters of the United States and **tributaries** of such waters;
(ii) Interstate waters;
(iii) Intrastate lakes, rivers, and streams which are utilized by interstate travelers for recreational or other purposes;
(iv) Intrastate lakes, rivers, and streams from which fish or shellfish are
(v) taken and sold in interstate commerce.

9.2 Discharge Reporting Requirements

40 CFR 112.7(a)(4), C.R.S. 25-8-601(2), 40 CFR 112.4 (a)-(c)

Under the Oxy reporting procedure, personnel from the Oxy HES and Regulatory Department or Operations Manager is responsible for contacting the appropriate agencies and reporting the release. In the event that a harmful quantity of oil is released or is suspected of having been released to the navigable waters of the U.S.; 40 CFR Part 112.1(b) and Part 110 describe the types of spills that would be reportable under this requirement (see section 9.1.a).

For clarification purposes, the following definitions are provided:

Oil - *Per 40 CFR 112, the term "oil" refers to* oil of any kind or in any form, including, but not limited to: oils, greases, condensate, fuel oil, synthetic oils, or the resulting mixture of oil with other non-oil liquid (i.e., produced water).

Discharge - A "***discharge***" as described in 40 CFR Part 112.1(b) and Part 110, refers to a discharge of oil in quantities that "may be harmful" into or upon navigable waters. The term *discharge*, in general, includes any spilling, leaking, pumping, pouring, emitting, emptying, or dumping of oil. *Navigable waters* include tributaries, streams, rivers and lakes. Per 40 CFR Part 110.3, a discharge of oil in such quantities as "*may be harmful"* include discharges of oil that (a) violate applicable water quality standards; or (b) cause a film or sheen upon or discoloration of the surface of the water or adjoining shorelines or cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines.

Such an event must be immediately reported to the following regulatory agencies:

1) National Response Center
   Washington, D.C.
   800-424-8802 (24 hour phone)

2) Colorado Department of Public Health and Environment
   Water Quality Control Division
   4300 Cherry Creek Dr. South
   Denver, CO
   1-877-518-5608 (24 hour hotline)

3) US Environmental Protection Agency
   Region VIII Response Center
   1595 Wynkoop Street
   Denver, Colorado 80202-1129
   303-293-1788 (24 hour phone)

4) Colorado State Inspector of Oils
   1515 Arapahoe Street
   Denver CO 80202-2117
   303-620-4029

When contacting these agencies, the following information is provided:

- responsible company/person, including exact address and telephone number;
- name of person reporting the release;
- date and time of release;
- designation and location of the facility (coordinates are provided on the FOS);

- telephone number for the facility (provide the contact number on the FOS (970-263-3600) and contact information for the individual reporting the call);
- type of material discharged;
- estimate of the quantity released;
- waterway affected, including amount reaching water;
- source of the discharge;
- a description of all affected media;
- cause of release;
- damages or injuries caused by the discharge;
- action taken to stop, remove, and mitigate the effects of the release;
- whether an evacuation is needed; and
- names and/or organizations who have also been or will be contacted.

Additional agency notifications may include the Colorado State Inspector of Oils, COGCC, U.S. Army Corps of Engineers, and other agencies are listed in Appendix A. Oil spill reporting requirements and procedures are detailed in the OSCP. A copy of the OSCP is provided in Appendix F.

Following a discharge totaling more than 1,000 gallons of oil in a single discharge event, or more than 42 gallons of oil in each of two (2) discharges occurring within a 12-month period, the facility must submit the following information to the U.S. EPA Regional Administrator and the CDPHE within 60 days of the event(s).

- name of facility;
- name of person reporting the release;
- designation and location of the facility (coordinates are provided on the FOS);
- maximum storage or handling capacity of the facility and normal daily throughput
- corrective action and countermeasures you have taken, including a description of equipment repairs and replacements
- an adequate description of the facility, including maps, flow diagrams, and topographical maps, as necessary
- the cause of such discharge, including a failure analysis of the system or subsystem in which the failure occurred
- additional preventive measures you have taken or contemplated to minimize the possibility of recurrence
- other information as the Regional Administrator may reasonable require pertinent to the Plan or discharge.

Spill events that may require the Regional Administrator notification described above will exhibit one or more of the following characteristics:

a. Violate applicable water quality standards; or
b. Cause a film or sheen upon or dis-coloration of the surface of the water or adjoining shorelines or cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines; or
c. May affect natural resources belonging to, appertaining to, or under the exclusive management authority of the United States.

The SPCC Plan must also be amended, as required, following such a discharge(s). The SPCC Plan may also be amended if required by the Regional Administrator. If necessary, an appeal may be made regarding the Regional Administrator's decision to require an amendment to the Plan.

10.0 SPCC Training Program

10.1 Oil-handling Personnel Training

40 CFR 112.7(f)(1)

Oxy provides the following training to oil-handling personnel prior to assuming new job responsibilities and annually thereafter:

- Operation and maintenance of equipment to prevent oil discharges:
  1. Practices to minimize oil discharge, including best management practices to minimize potential for discharge during truck loading;
  2. Applicable oil spill prevention (state and federal) laws, rules, and regulations;
  3. General facility operations;
  4. Discharge procedure protocols; and
  5. The contents of this SPCC Plan.

In addition to the oil-handling personnel training described above, the Oxy SPCC Training Program includes the components outlined below:

- Qualified and experienced personnel conduct the on-the-job training of new and/or inexperienced employees prior to independent assignment.
- Formal training on the operation and maintenance of oil field equipment is provided through company-sponsored training on an "as needed" basis.
- Pollution prevention and applicable regulatory requirements are brought to the attention of employees on a continuing basis in safety meetings, personal consultations, posters, literature distribution, etc.
- To help ensure that facility inspections are performed in accordance with established procedures, any contract or Oxy personnel performing inspections must first receive training in the applicable procedure provided in Appendix B.

Oxy Piceance Pad Inspection Checklist Training

The Oxy Regulatory Department schedules and conducts training for personnel conducting the annual Oxy Rockies Pad Inspections. The training provides all the necessary information for inspection personnel to conduct a thorough inspection, identify existing and potential issues, recommend corrective or preventive actions, and accurately record and report the inspection.

OXY Periodic Monitoring Training

The Oxy Regulatory Department schedules and conducts training for field personnel responsible for implementing the Oxy Periodic Monitoring Program.

The training provides all the necessary information for field personnel to monitor the status and condition of oil storage and processing equipment, identify existing and potential issues, take proper preventive or corrective action, and effectively implement the Oxy Corrective Action Tracking Program.

10.2 Spill Prevention Briefings

40 CFR 112.7(f)(3)

Oxy schedules and conducts prevention briefings for oil-handling personnel who perform work in the Cascade Creek and Collbran Operational Areas at least monthly to assure adequate understanding of this SPCC Plan. These briefings include discussion of known discharges, potential discharges, component malfunctions or failures, and recently developed precautionary measures.

10.3 Training Documentation and Records

Curriculums for the SPCC training and briefing sessions described in the sections above and associated attendance records for oil-handling employees are maintained for a minimum period of three (3) years in the Grand Junction Oxy office.

11.0 Conformance with State and Federal Oil Pollution Prevention Regulations

40 CFR 112.7(d)

The contents of this SPCC Plan conform to state and federal oil pollution prevention regulations applicable to natural gas production facilities. As of the revision date of this Plan, required oil pollution controls are in place or equivalent environmental protection and corrective action plans are in place in the Cascade Creek and Collbran Operational Areas.

Because of the large area traversed by pipelines throughout the Cascade Creek and Collbran Operational Areas, and the fact that much of the piping is underground, Oxy has determined that the installation of secondary containment for all piping is not practicable. Where active and passive containment had not been provided for pipelines, a robust pipeline inspection and maintenance program has been implemented by Oxy to prevent oil discharges (e.g., physical barriers, corrosion inhibitors, etc.), to allow for the prompt detection of problems that may lead to a release (e.g., pigging, testing corrosion coupons, etc.), and to identify leaks (e.g., inspections, remote monitoring, etc.) in a timely manner. An OSCP has been also developed for the facilities managed under the scope of this Plan. The OSCP details procedures for the expeditious control and cleanup of spills. These measures provide a level of environmental protection for piping equivalent to secondary containment.

In the event than an existing oil container is identified without the required discharge prevention measures (i.e. insufficient secondary containment), corrective actions such as

the addition of secondary containment, the repair of damaged containment structures, and/or the expansion of secondary containment structure dimensions will be implemented to provide the necessary capacity. In the interim, environmental protection, including the utilization of active secondary containment measures (e.g., spill kits staged in operational areas), may be provided. Additional protection measures include the implementation of a periodic integrity and leak testing program for the identified containers and their associated equipment (as described in Section 7.0). In addition to regular integrity testing, a rigorous inspection and maintenance program has also been implemented.

Figures

Attachment 1

Document Revision/Amendment Log

Attachment 2

Secondary Containment Calculations Spreadsheet

Attachment 3

List of Facilities
Facility Overview Sheets
Facility Diagrams
Substantial Harm Criteria
Checklist and
PE Certification

Appendix A

Contact Lists and Emergency Response Procedures

Appendix B

Inspection, Maintenance and Testing Protocols

- B.1 Oxy Piceance Pad Inspection Checklist
- B.2 Oxy Piceance Pad Inspection Procedure
- B.3 Oxy Facility Periodic Observation Procedure
- B.4 COGCC Form 36
- B.5 Oxy Mechanical Integrity Standard

B.1 Oxy Piceance Pad Inspection Checklist

B.2 Oxy Piceance Pad Inspection Procedure

B.3 Oxy Periodic Monitoring Procedure

B.4 COGCC Form 36

B.5 Oxy Mechanical Integrity Standard

Appendix C

Oxy Exhibit A

Appendix D

List of Facilities Utilizing 3-Phase Separators

Appendix E

Loading/Unloading Procedures

Appendix F

Oil Spill Contingency Plan

Appendix G

Oxy Emergency Response Plan

Appendix H

Regulation Citations

Appendix I

Facility Change Guidance Document