REFINERY WATERSHED PLAN

Initiator(s)

The Lakefront Shift Supervisor will request that the Shift Optimization Specialist initiate the Refinery Watershed Plan. The Shift Optimization Specialist, as the initiator, shall assure that all steps are being completed correctly. Any changes or deviations from the procedure, as well as any steps that were skipped, must be noted by Shift Optimization Specialist with an explanation on the Deviation Sheet which is located on last page.

Purpose:

To maintain the health of the WWTP, ensure the safety of WWTP operations and maintenance personnel, and maintain compliance with the refinery's NPDES Water Permit.

This procedure should be reviewed in advance by each crew involved.

Safety and Environmental Precautions:

Vapor – Has a trace of light hydrocarbon and benzene. Light hydrocarbons can include benzene levels above acceptable levels. Avoid prolonged contact with eyes, skin and clothing.

- Normal PPE required and chemical resistant non latex gloves.

References:

- 1131-TRN-PR-NO2-00032 Parking Lots and Gate 15 Flood Control
- LF Policy 1248 Refinery Heavy Rain Event Task List
- LF Policy 1259 Lakefront ETL TSS Control
- Remediation Group: Remediation Systems Priority List

Prerequisites:

- None

Document ID WBU-1131-TRN-PR-NO2-00065

Uncontrolled Document. Valid Only at Time of Printing/Download: 05/08/2014

Procedure Description Steps:

Initiating the Refinery Watershed Plan:

The Lakefront Shift Supervisor is responsible for evaluating the need for, and scale of, a Refinery Watershed. When the Lakefront Shift Supervisor determines that a Refinery Watershed is necessary, they will contact the Shift Optimization Specialist (x3777) and will request that the Refinery Watershed Plan be initiated.

The Shift Optimization Specialist is responsible for coordinating the Watershed. They should use this Refinery Watershed Plan as a guideline for implementing the Watershed. The actual implementation shall be based on current refinery operations.

The following is the Watershed RAPID model responsibilities:

Input: Lakefront COS, Process Engineer, Unit Engineer, and Shift Crew
Recommend: Lakefront Shift Supervisor
Decide: Shift Manager
Agree: Lakefront Operations Superintendent
Perform: Refinery Shift Crew

Note: This procedure is not intended to be a stand-alone document. Execution of each step should be done according to unit guidelines and procedures.

Determination of the Refinery Watershed Plan Level:

The Lakefront Shift Supervisor will communicate the reason for the Refinery Watershed request to the Shift Optimization Specialist. The Refinery Watershed level will be based on the estimated water reduction required to alleviate one of the following triggers:

1. Current flow rates are unsustainable for a flow critical piece of equipment:
    a. 7 Separator, AFU, 5004/5005 Clarifiers, or Final Filters
2. Current flow rates are unsustainable for a level critical piece of equipment:
    a. Equalization tanks 5052, 5051, or 5050
3. Current flow rates are unsustainable for a mass critical effluent NPDES permit limit:
    a. Total Suspended Solids, Ammonia, etc.

Document ID WBU-1131-TRN-PR-NO2-00065

Uncontrolled Document. Valid Only at Time of Printing/Download: 05/08/2014

REFINERY WATERSHED PLAN

4. Projected rainfall is in excess of water treatment and storage availability.
5. A planned activity requires storage beyond current availability.
6. Other unplanned activities or catastrophic events.

Note: The three Refinery Watershed Plan levels are cumulative. For example, a Level 2 Watershed event includes actions from both the Level 1 and Level 2 Plans.

Level 1 Watershed Plan: 0 to 2 million gallons per day (MMGD) Reduction

Note: 0 to 1,400 gallons per minute (gpm)

		Date:	Initial:
1. **All Call:** Contact Plant Security and request that the following "All Call" message be delivered on the refinery-wide radio system: "The Refinery Watershed Plan has been initiated. All non-essential draining to the process sewer system must be stopped and any non-routine draining to the process sewer system must be approved by the LF Shift Supervisor."		____	____
2. **Projects:** Stop all non-essential project dewatering systems.	Varies	____	____
3. **Remediation:** Shut down all non-essential remediation systems.	700 gpm	____	____

Level 2 Watershed Plan: 2 to 5 MMGD Reduction

Note: 1,400 to 3,500 gpm

4. **All Units:** Verify that all units have installed storm sewer covers ("bird baths") in areas that do not pose either a personal or process safety risk. *Note: This applies to rain events only.*	--	____	____
5. **All Units:** Shut down all cooling tower blowdowns.	300 gpm per CT	____	____
6. **11 Pipestill:** Verify that 11B cutter water tank 813 is not overflowing.	--	____	____

Document ID WBU-1131-TRN-PR-NO2-00065

Uncontrolled Document. Valid Only at Time of Printing/Download: 05/08/2014

REFINERY WATERSHED PLAN

7.	**11 Pipestill:** Verify that the 11B E-118 coke drum condensate coolers' temperature control valve is not bypassed to the process sewer.	--	____ ____
8.	**11 Pipestill:** Shut off 11B coke truck wash. Use only when needed by stationing and operator in the area.	30 gpm	____ ____
9.	**11 Pipestill:** Reduce 11PS stripping steam rates to minimum.	50 gpm	____ ____
10.	**11 Pipestill:** Remove water from 11PS blowdown stacks.	200 gpm	____ ____
11.	**11 Pipestill:** Remove all DGO from 11A PS and/or 11C PS. *This step must be completed before removing desalter wash water at 11PS.*	--	____ ____
12.	**11 Pipestill:** Remove all wash water to 11A PS and 11C PS desalters. Note: Implement this item only if wash water supply is fire water. If wash water supply is from Tank 8, do not implement this item.	300 gpm	____ ____
13.	**12 Pipestill:** Reduce 12PS desalter wash water to 4% (1.68 gal/bbl).	175 gpm	____ ____
14.	**APS:** Verify that the ALKY OTCW East and West vent tanks are not overflowing to the process sewer.	--	____ ____
15.	**APS:** Verify that condensate pumps at ALKY and SRU are not routed to the process sewer.	--	____ ____
16.	**APS:** Build sour water at the SRU at a rate of 3 feet per day.	175 gpm	____ ____
17.	**Cat Pad:** Stop vacuum truck off-loading at the Cat Pad.	35 gpm	____ ____
18.	**Lakefront:** Verify that Lakefront is controlling storm water runoff at Dickey Lot, WCCC Parking Lot, and Gate 15.	--	____ ____
19.	**Marine Docks:** Stop draining from Dock ballast tanks BT-1 and BT-2.	50 gpm	____ ____

Document ID WBU-1131-TRN-PR-NO2-00065

Uncontrolled Document. Valid Only at Time of Printing/Download: 05/08/2014

20. **OMD:** Verify that OMD is not draining tank dike water to the process sewer.	--	____	____
21. **OMD:** Stop all tank water draws, including those routed to 3600 and 3549 Tanks.	110 gpm	____	____
22. **Utilities:** Verify that overflow from Utilities' BFW tanks 107 and 108 is routed to the OTCW return line.	--	____	____
23. **VRU300:** Verify that condensate pumps at VRU300, ALKY, and SRU are not routed to the process sewer.	--	____	____
24. **VRU300:** Eliminate VRU300 reboiler condensate to the sewer.	10 gpm	____	____
25. **Coker 2:** Verify D-213 water seal drum fresh water replacement activity is not occurring.	--	____	____
26. **Multiple Units:** Reduce waste heat boiler blowdown to TDS targets.	Varies	____	____
27. **Multiple Units:** Shut down satellite control room HVACs that do not impact process or personal safety.	150 gpm	____	____
28. **Multiple Units:** Remove all sour water draining to the process sewer.	Varies	____	____

Level 3 Watershed Plan: Greater than 5 MMGD Reduction

Note: Greater than 3,500 gpm

29. **Shift Manager:** Stand up the Incident Management Team (IMT).	____	____

Note: Routing fire water to tank dikes must be approved by the Environmental Department. This option is not yet explicitly approved in the WBU NPDES permit.

Document ID WBU-1131-TRN-PR-NO2-00065

Uncontrolled Document. Valid Only at Time of Printing/Download: 05/08/2014

REFINERY WATERSHED PLAN

Ending the Refinery Watershed Plan

When the Lakefront Shift Supervisor determines that the need for a Refinery Watershed has subsided, they will notify the Shift Optimization Specialist.

The Shift Optimization Specialist is responsible for coordinating the end of the Watershed. They should use this Refinery Watershed Plan as a guideline for ending the Watershed. The actual end of the Watershed shall be based on current refinery operations.

Note: The order for reintroducing water shall be based on the following priorities: safety, compliance, equipment damage, commercial needs, and optimization.

Ending the Watershed Plan: **Date:** **Initial:**

Safety

1.	**11 Pipestill:** Reintroduce either 11A or 11C PS desalter wash water.	____	____
2.	**11 Pipestill:** Reroute DGO to the 11PS unit with desalter wash water.	____	____
3.	**11 Pipestill:** Reintroduce all 11PS desalter wash water.	____	____
4.	**11 Pipestill:** Reestablish water to the 11PS blowdown stacks.	____	____
5.	**APS:** Reestablish normal sour water processing.	____	____
6.	**OMD:** Resume unit feed tank water draws.	____	____
7.	**Multiple Units:** Restart satellite control room HVACs.	____	____
8.	**Multiple Units:** Remove storm sewer covers (“bird baths”) in areas that pose a safety risk.	____	____

Compliance

9.	**Remediation:** Restart critical remediation systems.	____	____
10.	**Multiple Units:** Restart compliance-driven cooling tower blowdowns.	____	____

Document ID WBU-1131-TRN-PR-NO2-00065

Uncontrolled Document. Valid Only at Time of Printing/Download: 05/08/2014

Equipment Damage

11. **Projects:** Restart critical project dewatering systems.	____	____
12. **Multiple Units:** Restore waste heat boiler blowdowns.	____	____
13. **Coker 2: Resume** D-213 water seal drum fresh water replacement activity as necessary.	____	____

Commercial Needs

14. **Marine Docks:** Resume draining from Dock ballast tanks BT-1 and BT-2.	____	____
15. **OMD:** Resume product tank water draws.	____	____

Optimization

16. **11 Pipestill:** Optimize 11PS stripping steam.	____	____
17. **12 Pipestill:** Optimize 12PS desalter wash water.	____	____
18. **VRU300:** Resume VRU300 reboilder condensate draining.	____	____

Other

19. **11 Pipestill:** Restart the 11B coke truck wash.	____	____
20. **Cat Pad:** Restart vacuum truck operations at the Cat Pad.	____	____

Document ID WBU-1131-TRN-PR-NO2-00065

Uncontrolled Document. Valid Only at Time of Printing/Download: 05/08/2014

REFINERY WATERSHED PLAN

21. **Projects:** Restart all other project dewatering system.	____	____
22. **Remediation:** Restart all other remediation systems.	____	____
23. **Multiple Units:** Restart all other cooling tower blowdowns.	____	____
24. **Multiple Units:** Remove all storm sewer covers ("bird baths") that were installed for the Watershed event.	____	____
25. **All Call:** Contact Plant Security and request that the following "All Call" message be delivered on the refinery-wide radio system: "The Refinery Watershed Plan is no longer in effect. All non-essential draining to the process sewer system can resume. Coordinate non-routine draining to the process sewer system with the Lakefront."	____	____

**** End of Procedure ****

Document ID WBU-1131-TRN-PR-NO2-00065

Uncontrolled Document. Valid Only at Time of Printing/Download: 05/08/2014

REFINERY WATERSHED PLAN

Completed Procedure Routing:	**Date:**	**Initial:**
The Shift Optimization Specialist verifies procedure as complete.	____	____
The Compliance Assurance Specialist receives completed procedure.	____	____

Document ID WBU-1131-TRN-PR-NO2-00065

Uncontrolled Document. Valid Only at Time of Printing/Download: 05/08/2014

Deviation Sheet:

This sheet shall be used by those executing the procedure to record the technical basis and health and safety impact of all deviations (including "N/A's") encountered during procedure execution. Deviations must be assessed with input from a qualified operator via the use of the following checklist questions before execution in the field. (**NOTE: All four questions must be answered "Y" or "N" in the HSSE Impact Evaluation section of the table below for <u>each</u> deviation recorded**):

1. Is this deviation likely to result in unstable process conditions (temperature, pressure, flow) or push critical unit operating parameters outside of Safe Operating Limits (per the unit critical alarm list)?

2. Is this deviation likely to impact the reliability or functionality of any Safety System (ie - Trip, Interlock, Critical Alarm, RV, SIS etc)?

3. Will this deviation result in the routing of process material to an alternate or abnormal location not currently covered in established operating procedures?

4. Is this deviation likely to create process conditions that would increase the risk for a leak, fire, personnel exposure, or explosion?

<u>If the answer is YES to ANY of these questions,</u> Shift Manager review and approval must be obtained to proceed.

<u>If ALL answers are NO</u>, then the deviation may proceed with shift supervisor review and approval.

All deviations must be signed and dated by the unit shift supervisor or shift manager as appropriate prior to proceeding. Additional health and safety impacts or required safeguards identified during the deviation management process shall be documented on the deviation sheet before proceeding.

Document ID WBU-1131-TRN-PR-NO2-00065

Uncontrolled Document. Valid Only at Time of Printing/Download: 05/08/2014

REFINERY WATERSHED PLAN

Page/ Step #	Deviation Technical Basis	HSSE Impact Evaluation (Y/N)	S/S or S/M Initial & Date
Page #:	**Justification:**	**1.**	**Initial/Date:**
	Additional H&S Impacts Identified:	**2.**	
		3.	
Step #:	**Additional Safeguards Required:**	**4.**	
Page #:	**Justification:**	**1.**	**Initial/Date:**
	Additional H&S Impacts Identified:	**2.**	
		3.	
Step #:	**Additional Safeguards Required:**	**4.**	
Page #:	**Justification:**	**1.**	**Initial/Date:**
	Additional H&S Impacts Identified:	**2.**	
		3.	
Step #:	**Additional Safeguards Required:**	**4.**	
Page #:	**Justification:**	**1.**	**Initial/Date:**
	Additional H&S Impacts Identified:	**2.**	
		3.	
Step #:	**Additional Safeguards Required:**	**4.**	

Document ID WBU-1131-TRN-PR-NO2-00065

Uncontrolled Document. Valid Only at Time of Printing/Download: 05/08/2014

REFINERY WATERSHED PLAN

Page/ Step #	Deviation Technical Basis	HSSE Impact Evaluation (Y/N)	S/S or S/M Initial & Date
Page #:	**Justification:**	**1.**	**Initial/Date:**
	Additional H&S Impacts Identified:	**2.**	
		3.	
Step #:	**Additional Safeguards Required:**	**4.**	

Document ID WBU-1131-TRN-PR-NO2-00065

Uncontrolled Document. Valid Only at Time of Printing/Download: 05/08/2014

REFINERY WATERSHED PLAN

Document History

Rev #	Change(s)	Author	Date
0	Origination	Michael J. Hogg	03-13-09
	Reviewed	Michael J. Hogg	07-29-09
1	Reviewed and updated as per MOC R2010079-009	Michael J. Hogg	05-18-11
2	Reviewed and updated as per MOC M20116868-001	Ryan F. O'Larey	12-19-11
3	Reviewed and added clarification for the new 12 PS desalter wash water rate (1.68 gal/bbl)	Dave Moye	4-23-2013
4	Added RAPID model. Removed 12PS and FCU stripping steam as these are routed to Sour Water system at SRU and managed appropriately. Added Coker 2 D-213.	Peter Beronio	11-22-2013

Authored by: P Beronio **Approved by: R O'Larey**

Date: 11-22-2013 **Date: 11-22-2013**

Document ID WBU-1131-TRN-PR-NO2-00065

Uncontrolled Document. Valid Only at Time of Printing/Download: 05/08/2014