CHEVRON RICHMOND REFINERY MODERNIZATION PROJECT
CUP CONDITION H5 ANNUAL COMPLIANCE REPORT

March 29, 2019

LEAD AGENCY
CITY OF RICHMOND
450 CIVIC CENTER PLAZA
RICHMOND, CA 94804

EXECUTIVE SUMMARY

This Annual Compliance Report provides an update on the calendar year 2018 status of Chevron's compliance with the conditions of approval and mitigation adopted as part of the Chevron Richmond Modernization Project (Project), which was approved by the City of Richmond on July 29, 2014.[1] All litigation concerning the Project was resolved on April 3, 2015. Chevron commenced Project construction in June 2016 and began hydrogen plant commissioning activities in October 2018. Since approval and commencement of construction, the Project has:

- Spent over $885 million on wages associated with contractors working on the Project, which equates to more than 4,200 employees, and has worked closely with the City to identify and employ as many local residents as possible.

- Invested $40 million dollars towards funding the Community GHG Reduction Program, the Richmond Promise Scholarship Program, and additional City programs pursuant to the Environmental and Community Investment Agreement (ECIA).

- Completed construction and placed into service a tank dome on T-3225 to reduce organic compound emissions

- Coordinated with the City throughout the construction period to implement modified traffic controls as needed

- Helped facilitate the 17th annual county-wide CAER Shelter in Place drill for 18 local schools.

- Entered into a lease with MCE Clean Energy (MCE) pursuant to which MCE has developed a 10.5-megawatt solar project on 60 acres of Chevron land. The MCE Solar One project has been completed and the facility is currently operating.

- Put into service two newly constructed Suez Max ships and one newly constructed tug boat consistent with the project design features included as part of the Project, the effect of which is to lower emissions associated with shipping activity at the Chevron Long Wharf.

- Upgraded 17 piping circuits and four partial piping circuits and valves to 9-Chrome as part of its 2017 No. 4 Crude Unit turnaround, as committed to in the Chevron Modernization Project Reliability Program approved as part of the Project.

- Worked with the City of Richmond and other agencies to implement and monitor the requirements of the conditional use permit, mitigation monitoring and reporting program, and Chevron Richmond Reliability Program. Chevron provides the City with regular

[1] Quarterly reports previously submitted provide detailed information regarding Chevron's compliance in 2018. The most recent submittal is attached to this Report. See Attachment 1.

reports on its implementation of the Project-related requirements, including quarterly updates on the status of pre-construction and construction-related mitigation measures.

Construction of the Project is ongoing. Chevron anticipates that commissioning of the new Hydrogen Plant will be completed by June 17, 2019, with the other project components to follow soon thereafter.

BACKGROUND

On July 29, 2014, the City of Richmond approved Conditional Use Permit and Design Review Permit No. PLN11-089 (CUP) authorizing construction and operation of the Project. On February 11, 2015, the Bay Area Air Quality Management District (District) reissued Authority to Construct (ATC) No. 12842 authorizing the same. In approving the CUP and the ATC, the City and the District relied upon the Final Environmental Impact Report (EIR) certified by the City on July 29, 2014, inclusive of the MMRP adopted by the City to mitigate Project-related impacts to less than significant. The EIR analyzed, and the CUP and ATC approved, the Reduced Sulfur Processing/No Increase in Refinery Greenhouse Gas Emissions Alternative, generally referred to as Alternative 11. Alternative 11 includes construction of a new hydrogen plant, various so-called sulfur removal improvements (including modifications to the Refinery's existing sulfur recovery units (SRUs)), and related infrastructure and tie-ins, and requires the Refinery to achieve no net increase (NNI) in criteria air pollutants and health risks from toxic air contaminants (TACs), and no physical increase in greenhouse gas (GHG) emissions.

On April 3, 2015, the Contra Costa Superior Court discharged the writ of administrative mandamus issued in 2009 concerning the prior version of the Project. Starting in second quarter 2015, Chevron began the process for obtaining internal project approval and funding. Once obtained, Chevron undertook a competitive bidding process to identify and select engineering and construction firms to implement the Project. Once those selections were made, Chevron undertook updates to all of its design engineering drawings to ensure compliance with the Project approvals.

This report is submitted pursuant to CUP condition, H5, which provides:

> "On or before March 31 of each year beginning after the first full year of Project construction, Chevron shall submit to the City both an annual compliance report, and payment of an amount sufficient to cover staff costs (including time) associated with the compliance review, documenting compliance with the conditions of approval of this Conditional Use Permit and the mitigation measures and improvement measures as shown in the Mitigation Monitoring and Reporting Program, and to cover costs and fees (including time) of third party experts retained by the City pursuant to any mitigation measure of the Project or condition of approval. Chevron shall submit payments to the County and BAAQMD for their respective costs (including County and BAAQMD staff time, and time, costs, and fees of third party experts retained by the County pursuant to any mitigation measure of the Project), in accordance with a payment schedule determined by the County and BAAQMD. Following the first compliance report and

payment from Chevron, and prior to March 31 of the next year, the City shall provide Chevron on an annual basis an accounting of the City's expenditure of the compliance review payment, which at a minimum shall include the City staff who worked on the compliance review, the time spent, and a general description of the work performed. The annual compliance reports shall contain supporting information from other regulatory agencies, as applicable. For each condition and mitigation measure, the report shall identify the status of compliance, times and dates of the monitoring and whether further action is required. The Planning Commission will hold hearings at a frequency of once each year to review Chevron's compliance with the conditions of approval of this Conditional Use Permit, including compliance with the mitigation measures and improvement measures. If, in the opinion of the Planning Commission, Chevron has completed all mitigation measures and improvement measures, and has complied with all conditions of approval, no further reports shall be necessary. The Planning and Building Services Department shall notify Chevron in writing when the Planning Commission has determined that annual reports will no longer be necessary pursuant to this Condition."

This report is the second Annual Compliance Report (Report) and updates the City concerning status of construction and compliance with the conditions of approval of the CUP and the mitigation measures and improvement measures included in the MMRP for the period beginning in January 2018 and ending December 2018.[2]

PROJECT STATUS

Construction of the new Hydrogen Plant commenced in June 2016, and construction of the other project components commenced later that year. To date, the Project has spent over $885 million on wages associated with contractors, including engineers, working on the Project, which equates to approximately 4,200 employees. Chevron works closely with the City to identify and employ as many local residents as possible, though the number fluctuates based on the availability of candidates with the necessary skills to fill positions that may be available at any given time. See Attachment 8.

Chevron began commissioning the new hydrogen plant in October 2018. Chevron anticipates that commissioning of the new Hydrogen Plant will be completed by June 17, 2019, with the other project components to follow soon thereafter.

ENVIRONMENTAL AND COMMUNITY INVESTMENT AGREEMENT (ECIA)

On July 29, 2014, Chevron and the City of Richmond entered into an Environmental and Community Investment Agreement (ECIA). Pursuant to the ECIA, Chevron agreed to provide the equivalent of $30 million dollars in funding for local GHG reduction projects, as well as an additional $60 million in other community programs such as the newly formed Richmond Promise Scholarship Program, over a period of 10 years.

[2] This report updates the City concerning Project activities during the 2018 calendar year, which were primarily construction related and did not include any project operations. Except as otherwise required by individual Mitigation Measures, annual reporting regarding 2019 project operations will occur during the 2020 reporting cycle.

Since 2014, Chevron has invested $31 million dollars pursuant to the ECIA. Chevron also entered into a 25-year lease with MCE pursuant to which MCE has developed a 10.5-megawatt solar project on 60 acres of Chevron land. Pursuant to the ECIA, Chevron is leasing land valued at approximately $10 million over the life of the lease for $1.00 per year. Construction of the MCE Solar One Project has been completed and the facility is currently operating.

PROJECT DESIGN FEATURES & OTHER EMISSION REDUCTION PROJECTS

As part of the Modernization Project, Chevron committed to several emission reduction project design features, which were also incorporated as mitigation measures. Several of these project design features have already been implemented and the emissions reductions are being realized today. Specifically:

- Chevron has put in service two newly built Suez Max ships. The main and auxiliary engines from these ships are required to utilize a level of emission control called Tier 2, pursuant to the International Maritime Organization (IMO) requirements for new engines that have been adopted by US EPA. The two new Chevron ships, names Pegasus Voyager and Polaris Voyager, instead utilize cleaner Tier 3 standard main and auxiliary engines as defined by the IMO. These ships were put into service and engine tests were completed and verified in October 2017.
- Chevron contracted with Foss Tugs to build and put into service a new tugboat utilizing Tier 4 main engines and Tier 3 auxiliary engines, which is more stringent than the Tier 3 main engines required by the current California Air Resources Board rule. Pursuant to Chevron's contract with Foss, this tugboat is prioritized to the Chevron Long Wharf. The new tugboat went into service in July 2017 and the emission reduction benefits are currently being realized.
- Chevron committed to install numerous domes on its storage tanks and completed construction and placed into service one tank dome in 2018 on T-3225. Two additional domes are required to be installed within three years of commencement of Project operations and Chevron has commenced permitting for these domes.
- Chevron committed to installing approximately 6,000 LED lights in its process areas. To date, Chevron has installed approximately 1,600 LED lights. Chevron and the City agreed to the phased installation of the remaining LED lights through 2025, because replacing all the fixtures during the accelerated construction period would have been impractical and unsafe. As part of the agreement to phase installation, Chevron is funding $2 million for the Cogeneration Project at the City's wastewater treatment plant, which will install a biogas fired engine at the plant and result in greenhouse gas reductions of 856 metric tons per year.
- Chevron committed to enroll its commercial electricity accounts with MCE and has done so since 2014.

Chevron is continuing to work to implement the remaining project design features.

COMPLIANCE, REPORTING, AND MONITORING

Pursuant to CUP condition A9, Chevron submitted its initial Compliance Plan on October 5, 2015, and provided subsequent updates to that plan on April 10, 2016, October 7, 2016, and November 4, 2016. Chevron reports its implementation of this plan and compliance with the various CUP and MMRP obligations through a reporting database developed jointly by Chevron and the City of Richmond. Pursuant to this tool, referred to as iEHS, Chevron provides quarterly responses to a questionnaire to document compliance with the applicable conditions of approval and mitigation measures, including providing documentation related to Chevron's completion of various pre-construction obligations and implementation of the various construction-related mitigation requirements. A copy of the most recent iEHS report from 4th quarter 2018 is included in Attachment 1.

In addition to the quarterly iEHS report, Chevron prepares periodic communications, reports, and submittals as required by the CUP, MMRP, and Reliability Program. These are summarized in the table below. A copy of the latest versions of these reports are attached to this report for reference. Prior versions of these reports are available at the City Planning Division for review.

ATTACHMENT	REPORT NAME	REQUIRED BY
2	Monthly Safety Training and Implementation Report	MM 4.13-2b
3	Quarterly Crude Fire Corrective Action Status Report	MM 4.13-13d
4	Quarterly Construction Emissions Report	MM 4.3-2a, 2b, 4.8-1
5	Semi-Annual Construction Progress Report	CUP H3
6	Annual Reliability Program Report	MM 4.13-7a, 7i, 7j, 13f, 13h; IV.A, IV.B, IV.H

Further, CUP condition G2 provides:

> Chevron shall include in its annual compliance reports (required by Condition H5) to the City information regarding the status of any ongoing agency investigations resulting from the August 2012 fire, including US EPA, CSB, Cal/OSHA, BAAQMD, and the County, including County safety audit(s) and safety culture audit(s). These reports shall include a comprehensive list of all findings, and corrective actions identified or requested by the agencies, as well as the status of Chevron's implementation of all such corrective actions. If Chevron determines not to implement any requested corrective action or otherwise not to address an agency finding, it shall explain in detail its rationale and the factual basis for its determination to do so.

Please refer to Attachments 3 and 7, which are the latest versions of reports as required pursuant to mitigation measures 4.13-13a and 13d, which address this obligation.

Pursuant to CUP condition H2 and mitigation measures 4.16-1, 2a, 2b, 4, 7a, 7b, & 7c, Chevron communicates with City staff on at least a quarterly basis, generally via email or telephone conversation, concerning implementation of various traffic-related mitigation measures.

Lastly, pursuant to the ECIA, Chevron submits a Monthly Hires Report. A copy of the December 2018 report is included here as Attachment 8.

Subject to conditions in the Bay Area Air Quality Management District Authorization to Construct No. 12842, Chevron began commissioning the new hydrogen plant in October 2018. Flaring occurred during start-up consistent with Chevron's Flare Minimization Plan approved by the Bay Area Air Quality Management District. Flares are highly regulated safety devices, designed to relieve pressure during the refining processes and help keep equipment and plants operating safely. Chevron anticipates that commissioning of the new Hydrogen Plant will be completed by June 17, 2019, with the other project components to follow soon thereafter. Chevron will provide a further update concerning any Project-related flaring activities prior to the Planning Commission meeting.

PUBLIC OUTREACH

Pursuant to condition IV.G of the Reliability Program, Chevron has conducted four annual community and employee town halls addressing the following topics:

1. The status of the enhanced safety measures being implemented by the Refinery following the August 6, 2012 fire, including actions taken to implement the recommendations made by public agencies that investigated the August 6 incident.
2. The status and/or results of the material upgrades, inspection and monitoring program, and ongoing compliance with the Richmond Industrial Safety Ordinance, including Project-related PHAs, DMRs, LOPAs, and ISSAs.

A third topic, requiring an update on "the results of the reliability review revalidation and the status of any recommendations made as a result of this review," has not been triggered because Project operations have not commenced.

Town halls were held on March 31, 2016, March 30, 2017, February 22, 2018, and March 27, 2019. Transcripts from the 2016 through 2018 meetings are on file with the Planning Division. Chevron plans to submit a transcript of the 2019 town hall upon completing the transcript.

MODERNIZATION CONCLUSION

Chevron continues to work cooperatively with the City to implement the Project and ensure that the various Project benefits are achieved in a safe and timely manner. Construction of the Project is proceeding accordingly, and Chevron looks forward to commencing Project operations late this year. Chevron will continue to provide all reports and complete all compliance actions required by the CUP and MMRP.

CUP 93-40 REPORTS

Chevron submits reports every five years in accordance with CUP 93-40 Condition II-3 for the Reformulated Gasoline and FCC Upgrade Project showing that compliance was completed by July 2001. Since CUP 93-40 regulates construction activities, not operational activities, the report does not change over time. The last report was submitted December 4, 2018. Chevron requests that the City of Richmond sunset condition II-3.

Attachment 1
Quarterly iEHS Report

Chevron Refinery - Chevron Construction Questionnaire 4Q 2018

Survey:	Chevron Construction Questionnaire 4Q 2018
Facility:	Chevron Refinery
Actual Start Date:	
Actual Complete Date:	

Category	Subcategory	Question No.	Question	Answer	Comment
HAVING PROBLEMS WITH THIS APPLICATION?	PLEASE CONTACT THE HELPDESK	IEHS.1.01	1-855-786-2631 or iehshelpdesk.us@anteagroup.com (No response needed to this INSTRUCTION. Proceed to 2.01.01)	N/A	

Category	Subcategory	Question No.	Question	Answer	Comment
GENERAL INSTRUCTIONS	USE OF THIS TOOL	2.1.01	Click the "i" icon the right to view general instructions for completing this questionnaire in the "Requirement" box. (No response needed to this INSTRUCTION - Proceed to 3.1.01)	N/A	

Category	Subcategory	Question No.	Question	Answer	Comment
INSTRUCTIONS FOR GROUND DISTURBING CONSTRUCTION SECTION	INSTRUCTIONS	3.1.01	Click the "i" icon the right to view specific instructions for completing this section of the questionnaire in the "Requirement" box. (No response needed to this INSTRUCTION - Proceed to 4.1.01)	N/A	

Category	Subcategory	Question No.	Question	Answer	Comment
Ground Disturbing Construction Questions	SCREENING QUESTION	4.1.01	Have any ground disturbing construction activities occurred?	Yes	

Category	Subcategory	Question No.	Question	Answer	Comment

Ground Disturbing Construction Questions	Question	4.2.01	Was training regarding discovery of archaeological artifacts/resources provided to workers before ground disturbing activities began? (4.5-1) If no, please explain by entering a comment. If yes please attach proof.	Yes	Chevron has issued an Â“Instructions to ContractorsÂ” (ITC) document (attached) to contractors that specifies the requirements of MM 4.5-1 (see section 2.9 of the ITC). The initial cultural resources training of contractor supervisors and environmental, health and safety contacts was held on April 8, 2016. No additional training has been necessary because the trained personnel overseeing excavation activities have not changed. In the event these personnel leave the project, additional training to new personnel will be provided pursuant to the ITC. To date, no additional sessions have been required. Chevron has also retained the consulting firm CH2M Hill to provide a qualified archaeologist who will be immediately engaged in the event that any prehistoric or historic subsurface cultural resources, such as structural features or unusual amounts of bone or shell, artifacts, human remains, architectural remains (such as bricks or other foundation elements), or historic archaeological artifacts (such as antique glass bottles, ceramics, horseshoes, etc.) are discovered

Category	Subcategory	Question No.	Question	Answer	Comment

Ground Disturbing Construction Questions	Question	4.2.02	Is monitoring being conducted for discovery of archaeological resources during construction? (4.5-1) If no, please explain by entering a comment. If yes please attach proof.	Yes	Chevron has issued an Â“Instructions to ContractorsÂ” (ITC) document (attached to 4.2.01) to contractors that specifies the requirements of MM 4.5-1 (see section 2.9 of the ITC). The initial cultural resources training of contractor supervisors and environmental, health and safety contacts was held on April 8, 2016. No additional training has been necessary because the trained personnel overseeing excavation activities have not changed. In the event these personnel leave the project, additional training to new personnel will be provided pursuant to the ITC. To date, no additional sessions have been required. Chevron has also retained the consulting firm CH2M Hill to provide a qualified archaeologist who will be immediately engaged in the event that any prehistoric or historic subsurface cultural resources, such as structural features or unusual amounts of bone or shell, artifacts, human remains, architectural remains (such as bricks or other foundation elements), or historic archaeological artifacts (such as antique glass bottles, ceramics, horseshoes, etc.) are discovered

Category	Subcategory	Question No.	Question	Answer	Comment
Ground Disturbing Construction Questions	Question	4.2.03	Have all archaeological resources discovered been managed as required? (4.5-1) If no, please explain by entering a comment. If yes please attach proof.	N/A	No archaeological resources have been discovered to date.

Category	Subcategory	Question No.	Question	Answer	Comment

Ground Disturbing Construction Questions	Question	4.2.04	Was training regarding discovery of paleontological resources provided to workers before ground disturbing activities began? (4.5-2) If no, please explain by entering a comment. If yes please attach proof.	Yes	Chevron has issued an Â“Instructions to ContractorsÂ” (ITC) document (attached to 4.2.01) to contractors that specifies the requirements of MM 4.5-1 (see section 2.9 of the ITC). The initial cultural resources training of contractor supervisors and environmental, health and safety contacts was held on April 8, 2016. No additional training has been necessary because the trained personnel overseeing excavation activities have not changed. In the event these personnel leave the project, additional training to new personnel will be provided pursuant to the ITC. To date, no additional sessions have been required. Chevron has also retained the consulting firm CH2M Hill to provide a qualified archaeologist who will be immediately engaged in the event that any prehistoric or historic subsurface cultural resources, such as structural features or unusual amounts of bone or shell, artifacts, human remains, architectural remains (such as bricks or other foundation elements), or historic archaeological artifacts (such as antique glass bottles, ceramics, horseshoes, etc.) are discovered

Category	Subcategory	Question No.	Question	Answer	Comment
Ground Disturbing Construction Questions	Question	4.2.05	Have excavation plans been submitted, if required for all needed excavations? (4.5-2) If no, please explain by entering a comment. If yes please attach proof.	N/A	No paleontological discoveries have been made to date.

Category	Subcategory	Question No.	Question	Answer	Comment
Ground Disturbing Construction Questions	Question	4.2.06	Have all paleontological resources discovered been managed as required? (4.5-2) If no, please explain by entering a comment. If yes please attach proof.	N/A	No paleontological discoveries have been made to date.

Category	Subcategory	Question No.	Question	Answer	Comment
Ground Disturbing Construction Questions	Question	4.2.07	Have any human skeletal remains been discovered? (4.5-3)	No	

Category	Subcategory	Question No.	Question	Answer	Comment
Ground Disturbing Construction Questions	Question	4.2.08	If human skeletal remains have been discovered, have they been managed as required? (4.5-3) If No, please explain by entering a comment. If Yes, please attach proof.	N/A	

Category	Subcategory	Question No.	Question	Answer	Comment
INSTRUCTIONS FOR GHG EMISSIONS SECTION	INSTRUCTIONS	5.1.01	Click the "i" icon the right to view specific instructions for completing this section of the questionnaire in the "Requirement" box. (No response needed to this INSTRUCTION - Proceed to 6.1.01)	N/A	

Category	Subcategory	Question No.	Question	Answer	Comment
GHG Emissions	Question	6.1.01	Have GHG emissions from Project construction activities for a year exceeded 10,000 MT CO2e, after accounting for reductions realized from mitigation measures? (4.8-1l)	Yes	Please see construction emissions report attached to question 19.1.37.

Category	Subcategory	Question No.	Question	Answer	Comment
GHG Emissions	Question	6.1.02	If yes, has Chevron implemented one or more of the specified measures to reduce GHG emissions to below 10,000 MT CO2e? (4.8-1l)If no, please explain by entering a comment. If yes please attach proof.	Yes	Please see construction emissions report attached to question 19.1.37.

Category	Subcategory	Question No.	Question	Answer	Comment
GHG Emissions	Question	6.1.03	Has Chevron implemented mitigation measures 4.8-2a through 4.8-2c to reduce greenhouse gas emissions? (4.8-2) If no, please explain by entering a comment. If yes, please attach proof	N/A	Mitigation Measures 4.8-2a through 4.8-2c address operations emissions and have therefore not been triggered because the Project is not yet operational.

Category	Subcategory	Question No.	Question	Answer	Comment
GHG Emissions	Question	6.1.04	Has Chevron provided its annual contribution to fund the Community Greenhouse Gas Reduction Measures? (4.8-2e) If no, please explain by entering a comment. If yes, please attach proof.	Yes	The CGGRP contribution is included in the funding of under to ECIA. The most recent payment was made in October 2018, check number 0025701523.

Category	Subcategory	Question No.	Question	Answer	Comment
INSTRUCTIONS FOR SOLAR PROJECT SECTION	INSTRUCTIONS	7.1.01	Click the "i" icon the right to view specific instructions for completing this section of the questionnaire in the "Requirement" box. (No response needed to this INSTRUCTION - Proceed to 8.1.01)	N/A	

Category	Subcategory	Question No.	Question	Answer	Comment
Solar Project	SCREENING QUESTION	8.1.01	Has construction of the 2MW (or other) solar project commenced?	SATISFIED-NO RESPONSE REQUIRED	

Category	Subcategory	Question No.	Question	Answer	Comment
Solar Project	Question	8.2.01	If yes, did Chevron submit to City and RWQCB construction plans for the solar project prior to commencing construction? (CGRP Solar Bio 1,2, and Haz 1,2) If no, please explain by entering a comment. If yes please attach proof.	SATISFIED-NO RESPONSE REQUIRED	

Category	Subcategory	Question No.	Question	Answer	Comment
Solar Project	Question	8.2.02	Did Chevron update the Facility emergency response and evacuation plans to account for the presence of the solar site? (CGRP Solar Haz-2) If no, please explain by entering a comment. If yes, please attach proof.	SATISFIED-NO RESPONSE REQUIRED	

Category	Subcategory	Question No.	Question	Answer	Comment
Solar Project	Question	8.2.03	Have standard construction BMPs and other project design features been implemented to treat and minimize discharge of soil and other pollutants into the marsh and vegetated areas during solar site construction? (CGRP Solar Bio-1) If no, please explain by entering a comment. If yes, please attach proof.	SATISFIED-NO RESPONSE REQUIRED	

Category	Subcategory	Question No.	Question	Answer	Comment
Solar Project	Question	8.2.04	Have catch basin inlet protection and straw wattles been used throughout the solar project construction site? (CGRP Solar Bio-1) If no, please explain by entering a comment. If yes, please attach proof	SATISFIED-NO RESPONSE REQUIRED	

Category	Subcategory	Question No.	Question	Answer	Comment
Solar Project	Question	8.2.05	Have all additional BMPs required by RWQCB and BCDC for the solar site been implemented? (CGRP Solar Bio-1) If no, please explain by entering a comment. If yes, please attach proof.	SATISFIED-NO RESPONSE REQUIRED	

Category	Subcategory	Question No.	Question	Answer	Comment
Solar Project	Question	8.2.06	Has exclusion fencing been placed as required? (CGRP Solar Bio-1 and Bio-2) If no, please explain by entering a comment. If yes, please attach proof.	SATISFIED-NORESPONSEREQUIRED	

Category	Subcategory	Question No.	Question	Answer	Comment
Solar Project	Question	8.2.07	Has awareness training been provided for all construction personnel? (CGRP Solar Bio-1) If no, please explain by entering a comment. If yes, please attach proof.	SATISFIED-NO RESPONSE REQUIRED	

Category	Subcategory	Question No.	Question	Answer	Comment
Solar Project	Question	8.2.08	Has bright-colored fencing and signage been installed to identify and restrict construction within environmentally sensitive areas? (CGRP Solar Bio-1) If no, please explain by entering a comment. If yes, please attach proof.	SATISFIED-NO RESPONSE REQUIRED	

Category	Subcategory	Question No.	Question	Answer	Comment
Solar Project	Question	8.2.09	Has a construction monitor/environmental inspector confirmed exclusion fence integrity on a daily basis? (CGRP Solar Bio-1) If no, please explain by entering a comment. If yes, please attach proof.	SATISFIED-NO RESPONSE REQUIRED	

Category	Subcategory	Question No.	Question	Answer	Comment
Solar Project	Question	8.2.10	Have all solar project exclusion fencing repairs and reinforcements been completed immediately? (CGRP Solar Bio-1) If no, please explain by entering a comment. If yes, please attach proof.	SATISFIED-NO RESPONSE REQUIRED	

Category	Subcategory	Question No.	Question	Answer	Comment
Solar Project	Question	8.2.11	Was a qualified biological monitor present during clearing and grubbing activities? (CGRP Solar Bio-2) If no, please explain by entering a comment. If yes, please attach proof.	SATISFIED-NO RESPONSE REQUIRED	

Category	Subcategory	Question No.	Question	Answer	Comment
Solar Project	Question	8.2.12	Did a biological monitor pre-survey solar project disturbance areas to confirm absence of special-status small mammals? (CGRP Solar Bio-2) If no, please explain by entering a comment. If yes, please attach proof.	Yes	In June 2017, Cenergy contracted with Barnett Environmental to conduct surveys for bird nesting, burrowing owls, and small mammals. A copy is attached.

Category	Subcategory	Question No.	Question	Answer	Comment
Solar Project	Question	8.2.13	Has contractor education included species identification and protection information? (CGRP Solar Bio-2) If no, please explain by entering a comment. If yes, please attach proof.	SATISFIED-NO RESPONSE REQUIRED	

Category	Subcategory	Question No.	Question	Answer	Comment
Solar Project	Question	8.2.14	Is a maximum speed limit of 25 mph imposed on construction and maintenance vehicles for solar site construction? (CGRP Solar Bio-2) If no, please explain by entering a comment. If yes, please attach proof.	SATISFIED-NORESPONSEREQUIRED	

Category	Subcategory	Question No.	Question	Answer	Comment
INSTRUCTIONS FOR CONTAMINATED SOIL SECTION	INSTRUCTIONS	9.1.01	Click the "i" icon the right to view specific instructions for completing this section of the questionnaire in the "Requirement" box. (No response needed to this INSTRUCTION - Proceed to 10.1.01)	N/A	

Category	Subcategory	Question No.	Question	Answer	Comment
Contaminated Soil	SCREENING QUESTION	10.1.01	Has Project construction generated any contaminated soil?	Yes	The project has generated contaminated soil. Identification, management, storage, and shipment of this contaminated soil is managed by the RefineryÂ's existing Hazardous Waste Group in accordance with the applicable regulations.

Category	Subcategory	Question No.	Question	Answer	Comment
Contaminated Soil	Question	10.2.01	If yes, has contaminated soil been handled and disposed of as required including covering with plastic sheeting of any soil stockpiles containing contaminants? (4.9-2) If no, please explain by entering a comment. If yes please attach proof.	Yes	Refinery Instructions 505, Excavation Procedures, and 506, Hazardous Waste Management, were included in construction contracts and provide guidance on managing excavations and waste streams. Chevron has issued an Â"Instructions to ContractorsÂ" document to contractors that specifies the requirements of MM 4.13-10a and has reviewed this requirement in the ITC meetings. The Modernization Compliance TeamÂ's regular meetings with contractor representatives include a representative from the Refinery Hazardous Waste Team as needed to support reporting and waste stream management. The Refinery Hazardous Waste Team characterizes and manages soils according to applicable regulations.

Category	Subcategory	Question No.	Question	Answer	Comment
Contaminated Soil	SCREENING QUESTION	10.3.01	Has any contaminated soil been discovered during Project construction? (4.13-10a)	No	No contaminated soils requiring agency notifications have been discovered. See also the response to question 19.1.13.

Category	Subcategory	Question No.	Question	Answer	Comment
Contaminated Soil	Question	10.4.01	If Yes, did Chevron report the discovery to the City and other agencies? (4.13-10a) If no, please explain by entering a comment. If yes please attach proof.	N/A	

Category	Subcategory	Question No.	Question	Answer	Comment
Contaminated Soil	Question	10.4.02	Did Chevron promptly manage, contain, treat, transport, and dispose of it? (4.13-10a) If no, please explain by entering a comment. If yes please attach proof.	N/A	

Category	Subcategory	Question No.	Question	Answer	Comment
Contaminated Soil	Question	10.4.03	Did Chevron use authorized remediation contractors to manage contaminated media discovered during construction? (4.13-10a) If no, please explain by entering a comment. If yes please attach proof.	N/A	

Category	Subcategory	Question No.	Question	Answer	Comment
INSTRUCTIONS FOR NIGHTIME CONSTRUCTION SECTION	INSTRUCTIONS	11.1.01	Click the "i" icon the right to view specific instructions for completing this section of the questionnaire in the "Requirement" box. (No response needed to this INSTRUCTION - Proceed to 12.1.01)	N/A	

Category	Subcategory	Question No.	Question	Answer	Comment
Nighttime Construction	SCREENING QUESTION	12.1.01	Has Project construction included any nighttime construction activities?	Yes	

Category	Subcategory	Question No.	Question	Answer	Comment
Nighttime Construction	Question	12.2.01	Have nighttime construction noise mitigation requirements been implemented? (4.11-1) If no, please explain by entering a comment. If yes please attach proof.	No	Nighttime construction activities include bolt-up and welding of pipe and steel, electrical work, and scaffold building. Chevron is undertaking nighttime construction activities; however, those activities are not the type identified in the EIR as those which would potentially exceed noise significance thresholds. Further, Chevron has not received any noise complaints which would trigger additional mitigation obligations.

Category	Subcategory	Question No.	Question	Answer	Comment
Nighttime Construction	Question	12.2.02	Has there been a verified complaint regarding backup alarm noise during nighttime construction activities?	No	

Category	Subcategory	Question No.	Question	Answer	Comment
Nighttime Construction	Question	12.2.03	If Yes, have administrative controls or different alarms been implemented? (4.11-1b) If no, please explain by entering a comment. If yes please attach proof.	N/A	

Category	Subcategory	Question No.	Question	Answer	Comment
INSTRUCTIONS FOR SPILLS OR RELEASES SECTION	INSTRUCTIONS	13.1.01	Click the "i" icon the right to view specific instructions for completing this section of the questionnaire in the "Requirement" box. (No response needed to this INSTRUCTION - Proceed to 14.1.01)	N/A	

Category	Subcategory	Question No.	Question	Answer	Comment
Spills or Releases	SCREENING QUESTION	14.1.01	Have there been any spills/releases of any hazardous substances?	No	

Category	Subcategory	Question No.	Question	Answer	Comment
Spills or Releases	Question	14.2.01	If Yes, did Chevron report the release within 48 hours to the City? (4.13-5c) If no, please explain by entering a comment. If yes please attach proof.	N/A	

Category	Subcategory	Question No.	Question	Answer	Comment
Spills or Releases	Question	14.2.02	Did Chevron report the release to all required agencies in accordance with applicable regulatory requirements? (4.13-5c) If no, please explain by entering a comment. If yes please attach proof.	N/A	

Category	Subcategory	Question No.	Question	Answer	Comment
Spills or Releases	Question	14.2.03	Was a prompt cleanup conducted? (4.13-5c) If no, please explain by entering a comment. If yes please attach proof.	N/A	

Category	Subcategory	Question No.	Question	Answer	Comment
INSTRUCTIONS FOR THRID PARTY COMPLIANCE AUDIT SECTION	INSTRUCTIONS	15.1.01	Click the "i" icon the right to view specific instructions for completing this section of the questionnaire in the "Requirement" box. (No response needed to this INSTRUCTION - Proceed to 16.1.01)	N/A	

Category	Subcategory	Question No.	Question	Answer	Comment
Third Party Compliance Audit	Question	16.1.01	Has the City or CCHS retained a third-party expert to audit compliance at the facility? (4.13-13c)	No	CCHS personnel have performed onsite verification and have not retained a third-party expert to-date.

Category	Subcategory	Question No.	Question	Answer	Comment
Third Party Compliance Audit	Question	16.1.02	If Yes, Has Chevron reimbursed the City or CCHS for these fees/expenses? (4.13-13c)	N/A	

Category	Subcategory	Question No.	Question	Answer	Comment
INSTRUCTIONS FOR CRUDE UNIT SECTION	INSTRUCTIONS	17.1.01	Click the "i" icon the right to view specific instructions for completing this section of the questionnaire in the "Requirement" box. (No response needed to this INSTRUCTION - Proceed to 18.1.01)	N/A	

Category	Subcategory	Question No.	Question	Answer	Comment
Crude Unit	SCREENING QUESTION	18.1.01	Has the 2017 turnaround of the crude unit occurred?	SATISFIED-NO RESPONSE REQUIRED	

Category	Subcategory	Question No.	Question	Answer	Comment
Crude Unit	Question	18.2.01	Has Chevron submitted closed permits reflecting replacement of 17 circuits and 4 partial components to 9Cr? (Reliability Program III.A) If no, please explain by entering a comment. If yes please attach proof.	Yes	Final inspection reports have been completed on work permits requiring inspection that were associated with the 4 Crude Unit turnaround piping upgrade project. Please see the Reliability Program Annual Report attached to 19.1.40. CCHS verified implementation of III.A in August 2018.

Category	Subcategory	Question No.	Question	Answer	Comment
Crude Unit	Question	18.2.02	Has Chevron either retubed, or inspected/repaired/replaced/monitored the F1100 tubes? (Reliability Program III.C.2) If no, please explain by entering a comment. If yes please attach proof.	Yes	Chevron completed the requirements for Option 1 in III.C2. Please see the Reliability Program Annual Report attached to 19.1.40. CCHS verified implementation of III.C2 in August 2018.

Category	Subcategory	Question No.	Question	Answer	Comment
Crude Unit	Question	18.2.03	Has Chevron inspected and replaced as needed F-1160? (Reliability Program III.C.3) If no, please explain by entering a comment. If yes please attach proof.	Yes	Please see the Reliability Program Annual Report attached to 19.1.40.

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.01	Did Chevron submit a SWPPP to RWQCB at least 10 days prior to commencing construction? (4.9-1a) If no, please explain by entering a comment. If yes, please attach proof.	SATISFIED-NO RESPONSE REQUIRED	

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.02	Have BMPs from the SWPPP been implemented during construction? (4.9-1a) If no, please explain by entering a comment. If yes, please attach proof.	Yes	Chevron issued the BMPs for the Project to contractors on April 10, 2016. Appendix A of the Â"Instructions to ContractorsÂ" (ITC) document (attached to 4.2.01) contains the required SWPPP information and BMPs. Contractors have been provided with copies of the SWPPP. Chevron has conducted regular inspections to ensure that BMPs are in place and functioning.

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.03	If the 4th quarter of 2015 has occurred, has Chevron conducted lab analyses of crudes/blends and H2S evolution to predict corrosion rates? (Reliability Program III.C.4) If no, please explain by entering a comment. If yes please attach proof.	Yes	CCHS verified implementation of III.C.4 in August 2018. Please see the Reliability Program Annual Report attached to 19.1.40.

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.04	Before December 31, 2015, did Chevron install a test platform and sampling port, consistent with BAAQMDs "Guidance for Construction of Particulate Sampling and Test Facilities" on the FCC to allow for supplemental testing of PM10 and PM2.5 pursuant to USEPA Test Method 201a/202? (COA D3) If no, please explain by entering a comment. If yes please attach proof.	SATISFIED-NO RESPONSE REQUIRED	

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.05	Are all required dust control BMPs being implemented consistently? (4.3-1) If no, please explain by entering a comment. If yes please attach proof.	Yes	All required dust control BMPs are being implemented consistently as described in the Instructions to Contractors (ITC) document attached to question 4.2.01.

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.06	Has Chevron implemented the required PM emissions reduction practices for construction activities? (IM 4.3-3) If no, please explain by entering a comment.	Yes	Chevron has implemented Improvement Measure 4.3-3 through the Â“Instructions to ContractorsÂ” (ITC) document. Please see attachment to 4.2.01.

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.07	Have hazardous materials been stored only in City-approved locations? (4.13-2a) If no, please explain by entering a comment.	Yes	Hazardous materials are stored within approved locations as identified within Figure 3-1 of the EIR. Small quantities of consumer products that might be classified as hazardous materials are also stored in OSHA regulated storage cabinets located within construction areas where the City approved construction activities are occurring. All construction activities are subject to the requirements of the City issued building permits.

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.08	Has hazardous waste been stored only in locations approved by the City? (4.13-3a) If no, please explain by entering a comment.	Yes	Chevron has developed a Â“Waste Diversion Plan/Debris Recovery PlanÂ” (Plan) that identifies acceptable waste storage locations. The Plan was approved by the City of Richmond on May 17, 2016 and is attached to the Â“Instructions to ContractorsÂ” document (see 4.2.01). Acceptable waste storage locations are identified in the Plan as referenced under MM 3.13-3a. Contractors have been trained on the Plan and are responsible for complying with all of its provisions.

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.09	Has all hazardous waste been transported off-site to an authorized facility by a licensed transporter within 90 days after the wastes were generated? (4.13-3b) If no, please explain by entering a comment.	Yes	

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.10	Has all non-hazardous waste been transported off-site to an authorized facility by a licensed transporter within 180 days after the wastes were generated? (4.13-3c) If no, please explain by entering a comment.	Yes	

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.11	Has Chevron reviewed and updated its programs and procedures to incorporate damage mechanism reviews and layers of protection analyses? (4.13-7c) If no, please explain by entering a comment. If yes please attach proof.	Yes	Please see Reliability Program Annual Report attached to question 19.1.40. CCHS verified implementation of MM 4.13-7c in May 2018.

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.12	Has Chevron reimbursed the City for any 3rd party experts retained by the City or CCHS to review PHAs, ISSAs, or LOPAs? (4.13-7d)	01 Have Not Received Invoice	CCHS personnel have performed onsite verification and have not retained a third-party expert to-date.

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.13	Has Chevron trained construction workers in recognizing contamination and characterizing/managing any contaminated media? (4.13-10a) If no, please explain by entering a comment. If yes please attach proof.	Yes	Refinery Instructions 505, Excavation Procedures, and 506, Hazardous Waste Management, were included in construction contracts and provide guidance on managing excavations and waste streams. Chevron has issued an Â"Instructions to ContractorsÂ" (ITC) document to contractors (attached to 4.2.01) that specifies the requirements of MM 4.13-10a (see section 2.0 of the ITC) and has reviewed this requirement in ITC meetings. The Modernization Compliance TeamÂ's regular meetings with contractor representatives include a representative from the Refinery Hazardous Waste Team to support reporting and waste stream management. The Refinery Hazardous Waste Team characterizes and manages any contaminated media.

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.14	Has Chevron coordinated with the City and CalTrans to implement modified traffic controls at peak PM hours per the specified methods for the Castro/W-180 westbound ramps? (4.16-1, 3, 6) If No, please explain by entering a comment. If Yes, please enter a comment summarizing coordination.	Yes	Chevron has held periodic traffic coordination and planning meetings with representatives from the City of Richmond Engineering, Police, and Traffic Departments. The purpose of these meetings has been to plan for implementation of the modified traffic controls. The City has contracted with St. Francis Electrical, which has prepared signal timing modifications and other changes to ensure smooth traffic flow for the Castro/W-580 westbound ramps.

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.15	Has Chevron coordinated with the City and CalTrans to implement modified traffic controls at peak PM hours per the specified methods for Richmond Parkway/Gertrude Ave? (4.16-2, 5, 9) If No, please explain by entering a comment. If Yes, please enter a comment summarizing coordination.	Yes	Chevron has held periodic traffic coordination and planning meetings with representatives from the City of Richmond Engineering, Police and Traffic Departments. The purpose of these meetings has been to plan for implementation of the modified traffic controls. The City has contracted with St. Francis Electrical, which has prepared signal timing modifications and other changes to ensure smooth traffic flow for the Richmond Parkway/Gertrude Ave. intersection. See also attachment to 19.1.22.

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.16	For periods during which there is/will be both Project construction-related traffic combined with Other Project construction-related traffic, has Chevron coordinated with the City and CalTrans to implement modified traffic controls at peak PM hours per the specified methods for Castro/Hensley? (4.16-4, 8) If No, please explain by entering a comment. If Yes, please enter a comment summarizing coordination.	Yes	Chevron has held periodic traffic coordination and planning meetings with representatives from the City of Richmond Engineering, Police and Traffic Departments. The purpose of these meetings has been to plan for implementation of the modified traffic controls. The City has contracted with St. Francis Electrical, which has prepared signal timing modifications and other changes to ensure smooth traffic flow for the Castro/Hensley intersection.

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.17	For periods during which there is/will be Project construction-related traffic combined with Other Project construction-related traffic combined with traffic related to a major turnaround, have the traffic measures specified for Castro Street/General Chemical Access been implemented? (4.16-7) If no, please explain by entering a comment. If yes please attach proof.	Yes	As with the Fall 2016 and Winter 2017 major Refinery turnarounds (which occurred after the start of the Modernization Project construction) Chevron will work closely with the City of Richmond Engineering, Police, and Traffic Departments and implement traffic control measures to ensure smooth traffic flow during peak arrival and departure periods. See also attachment to 19.1.22.

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.18	For periods during which there will be Project construction-related traffic combined with Other Project construction-related traffic combined with traffic related to a major turnaround, have the traffic measures specified for County maintained intersections been implemented by Chevron in coordination with the City and County? (4.16-11) If No, please explain by entering a comment. If Yes, please enter a comment summarizing coordination.	Yes	As with the Fall 2016 and Winter 2017 major Refinery turnarounds (which occurred after the start of the Modernization Project construction) Chevron will work closely with the City of Richmond Engineering, Police, and Traffic Departments and implement traffic control measures to ensure smooth traffic flow during peak arrival and departure periods. See also attachment to 19.1.22.

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.19	Has Chevron paid the full costs of modified traffic controls? (4.16-1, 2a, 4, 7, 11) If no, please explain by entering a comment. If yes please attach proof.	Yes	Chevron has paid all invoices to date for St. Francis Electrical, the City of RichmondÂ's traffic management contractor, and is set to pay all future traffic costs.

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.20	Has Chevron hired additional security services as necessary for the increase in personnel on-site during construction? (IM 4.14-1) If No, please explain by entering a comment.	Yes	

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.21	Has Chevron entered into an agreement with the City fire department to ensure training on new equipment and the acquisition of any necessary heavy equipment? (IM 4.14-2) If No, please explain by entering a comment.	No	No additional equipment or training is required for the Project components. Fire protection systems have been designed taking into account the current equipping of Chevron Fire Department, all regional municipal departments, and all regional Petro-Chemical Association Organization departments.

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.22	Has Chevron implemented one or more of the measures specified to further reduce construction traffic impacts by reducing construction-related traffic trips during AM and PM peak hours? (IM 4.16-1 through 9) If No, please explain by entering a comment. If Yes, please enter a comment summarizing the measures implemented.	Yes	Chevron and its contractors have implemented Improvement Measure IM 4.16-1 through 9 as follows: IM 9a: Chevron has staggered the hours of operation of the craft labor so that the construction-related traffic is distributed over the peak and nonpeak hours of traffic operation. IM 9b: Chevron and its contractors have promoted the use of car sharing by the craft labor force, including the use of incentives. IM 9c: Chevron has coordinated the schedule among construction of the Modernization project, other projects and major facility turnarounds. See attached.

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.23	Has Chevron communicated on a weekly basis to site management and City management regarding the week's construction plans and schedule? (4.13-2b) If No, please explain by entering a comment.	Yes	The Modernization Project Director meets weekly with the Refinery Leadership team regarding construction plans and schedule. ChevronÂ's construction plans and permitting teams are in daily contact with the CityÂ's building inspection department concerning ongoing permitting and construction activities. In addition, the Refinery General Manager meets with the City management monthly to review the Modernization project status and other matters.

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.24	Has Chevron submitted monthly reports regarding safety training? (4.13-2b) If no, please explain by entering a comment. If yes please attach proof.	Yes	See attached Transmittals #18.20 (October 2018), #18.21 (November 2018), and #18.22 (December 2018).

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.25	Has Chevron implemented the Leak Response Protocol? (4.13-2b) If No, please explain by entering a comment. If Yes, please enter a comment describing implementation.	No	Chevron adopted and implemented its new Leak Response Protocol (LRP) in 2013. The LRP provides guidance to ChevronÂ's employees, including emergency responders and operators, on the appropriate steps to take in the event of a loss of containment. However, LRP training is not being provided to any contractors because the LRP is a Chevron-owned and executed process. The contractorsÂ' only connection to the LRP is to act in a HAZWOPER Awareness Level role. They are trained to report any evidence of leaks or spills through their Company Supervision, Chevron contact, Refinery Emergency call numbers, or their orange radio button if they are issued a refinery radio. Other than that, they have no role in the Leak Response Protocol. See attachment to 19.1.24.

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.26	Has Chevron implemented one or more of the specified NOx emissions reduction measures for construction activities? (4.3-2a) If No, please explain by entering a comment. If Yes, please enter a comment describing what has been implemented and how.	Yes	Chevron has implemented mitigation measures 4.3-2a through the Â"Instructions to ContractorsÂ" (ITC) document. Please see attachment to 4.2.01.

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.27	Has Chevron implemented one or more of the specified ROG emissions reduction measures for construction activities? (4.3-2b) If No, please explain by entering a comment. If Yes, please enter a comment describing what has been implemented and how.	Yes	Chevron has implemented mitigation measures 4.3-2b through the Â"Instructions to ContractorsÂ" (ITC) document. Please see attachment to 4.2.01.

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.28	Has Chevron implemented the GHG mitigation measures specified for construction activities? (4.8-1a through 4.8-1k) If No, please explain by entering a comment. If Yes, please enter a comment describing implementation efforts.	Yes	Chevron has implemented mitigation measures 4.8-1a through 4.8-1k through the Â"Instructions to ContractorsÂ" (ITC) document. Please see attachment to 4.2.01.

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.29	Have stockpiles of soil containing contaminants been kept covered with plastic sheeting? (4.9-2) If no, please explain by entering a comment. If yes, please attach proof.	Yes	Chevron has issued an Â"Instructions to ContractorsÂ" (ITC) document to contractors that specifies the requirements of MM 4.9-2 (see section 2.0 of the ITC) including Best Management Practices. Please see attachment to 4.2.01. The Chevron Modernization Compliance Team verifies compliance with these requirements.

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.30	Has Chevron secured a permit amendment from BAAQMD reducing the annualized throughput limit of the SDA to 50,000 barrels/day? (4.3-5h) If no, please explain by entering a comment. If yes, please attach proof.	Yes	Chevron received the amended permit to operate to reduce the maximum permitted throughput limits for the SDA to 50,000 barrels/day annual average on September 7, 2018. See attached.

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.31	Were any trees removed during September 1 and March 31? (4.4-1c)	No	No trees were removed. A survey by a qualified biologist (Entomological Consulting Services) determined that no monarch butterfly roosting habitat existed, and no mitigations were needed for vegetation removal.

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.32	If yes, has Chevron submitted a pre-construction survey report for Monarch roost habitat? (4.4-1c) If no, please explain by entering a comment. If yes, please attach proof.	N/A	

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.33	Has Chevron updated PHAs (including ISSAs, damage mechanism reviews, and LOPAs) for all new and modified Project components, and notified City and CCHS of their availability for review? (4.13-4a, 4.13-7b) If no, please explain by entering a comment. If yes, please attach proof.	Yes	Chevron has provided pre-operational Process Hazard Analyses (PHAs) inclusive of inherently safer systems analyses (ISSAs), damage mechanism reviews (DMRs) and layers of protection analyses (LOPAs) for Modernization Project components to CCHS as part of the pre-operations verification process. Chevron is not aware of any outstanding issues at this time. All PHAs and related documentation are available onsite for review.

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.34	Has Chevron funded the costs of a qualified expert in refinery safety to be selected and retained by County or City to review ISSAs, PHAs, LOPAs and other safety documentation (until such time as funded via RISO)? (4.13-13b) If no, please explain by entering a comment. If yes, please attach proof.	Yes	The County has selected the qualified expert. Chevron will pay invoices for this expert upon receipt. See attachment to 19.1.43.

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.35	Has Chevron submitted quarterly reports to City (and copies to CCHS) on the status of corrective actions taken to implement agency recommendations resulting from August 2012 fire as well as corrective actions taken by Chevron as a result of its own investigation? (4.13-13d) If no, please explain by entering a comment. If yes, please attach proof.	Yes	The fifteenth quarterly 4.13-13d report is attached.

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.36	Has Chevron funded the City's coordination with CSB, CalOSHA, BAAQMD, and EPA on their investigations? (4.13-13e) If no, please explain by entering a comment. If yes, please attach proof.	No	Chevron has not been invoiced for, nor notified of, the CityÂ's coordination with CSB, CalOSHA, BAAQMD, and EPA on their investigations.

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.37	Has Chevron submitted its most current quarterly mitigation measure compliance report demonstrating compliance with the required NOx, ROG, and GHG measures? (4.3-2a, 2b, 4.8-1) If no, please explain by entering a comment. If yes please attach proof.	Yes	See Transmittal #19.8 attached.

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.38	Has a third-party retained by Chevron quantified and verified the GHG emissions reductions achieved by the specified mitigation measures for construction activities? (4.8-1l) If no, please explain by entering a comment. If yes please attach proof.	No	Chevron has worked with the CityÂ's independent environmental consultant, Ramboll, to develop a construction emissions tracking tool that takes into account quantifiable reductions. Pursuant to the construction emissions report, Chevron did exceed the 10,000 MT CO2e threshold and is currently investigating mitigation options consistent with MM 4.8-1l. Please see the attachment to question 19.1.37 for an update concerning current construction emissions.

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.39	Has Chevron submitted an annual report for the most current reporting period verifying GHG emissions reductions from construction activities, reductions achieved through mitigation, and compliance with mitigation requirements? (4.8-1l) If no, please explain by entering a comment. If yes please attach proof.	No	Please see the attachment to question 19.1.37 for an update concerning current construction emissions.

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.40	Has Chevron submitted an annual Reliability Program report for the most current reporting period? (4.13-7a) If no, please explain by entering a comment. If yes please attach proof.	Yes	On September 4, 2018, Chevron submitted an annual Reliability Program Report in Transmittal #31 prior to the commencement of Project operations. See attached.

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.41	Has Chevron submitted annual compliance reports by March 31 of each year (starting after the first full year of construction) to the City regarding the status of any ongoing agency investigations resulting from the August 2012 fire, including EPA, CSB, Cal/OSHA, BAAQMD, and the County, including County safety audit(s) and safety culture audit(s), including a comprehensive list of all findings, corrective actions identified/requested by the agencies, and status of implementation by Chevron of the corrective actions? (COA G2, H5) If no, please explain by entering a comment. If yes please attach proof.	Yes	On March 30, 2018, Chevron submitted the first annual compliance report in Transmittal #25. See attached.

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.42	Has Chevron submitted payment to the City to cover all staff/3rd party expert costs and fees for review and verification of compliance with all mitigation measures, improvement measures, and conditions of approval? (COA H5)	02 Payment is in Progress	Chevron has received and paid two invoices, HM-Richmond-Chevron-101 in the amount of $28,388.00 and HM-Richmond-Chevron-102 in the amount of $29,482.75.

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.43	Has Chevron submitted payment to the County to cover all County costs, staff time, and third party fees and costs associated with any mitigation measure in accordance with a payment scheduled determined by the County? (COA H5)	02 Payment is in Progress	Chevron has received and paid four invoices. Payment for these invoices were dated 12/26/17, 4/17/18, 8/9/18, and 11/16/18 in the amounts of $77,569.66, $67,615.34, $63,028.00, and $55,219.00, respectively. Invoice 1705, paid 11/16/18, is attached for reference.

Category	Subcategory	Question No.	Question	Answer	Comment
Miscellaneous	Question	19.1.44	Has Chevron submitted payment to the BAAQMD to cover all BAAQMD costs, staff time, and third party fees and costs associated with any mitigation measure in accordance with a payment scheduled determined by the BAAQMD? (COA H5)	01 Have Not Received invoice	

Category	Subcategory	Question No.	Question	Answer	Comment
Final Certifications	Attestation	20.1.01	I (Enter name or names in text box to the right) certify that this response and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of those who manage the system or who gather the information, I attest on behalf of Chevron that all information provided in this response is, to the best of my knowledge and belief, true, accurate, and complete.	Laurie Mintzer for Shawn Lee	

Attachment 2
Monthly Safety Training and Implementation Report

Chevron Modernization MM 4.13-2b
February 2019

Introduction

This summary is provided as a monthly update per Mitigation Measure 4.13-2b for training provided to contractors during demolition and construction activities. The training obligations have not changed since commencement of construction.

Summary

In accordance with standard Refinery procedures and requirements, workers are being trained on applicable requirements and Refinery Instructions, including, but not limited to, emergency response, hot work, and contractor refinery instructions.

RI-366 Contractor Safety is the Refinery's guiding document for contractor management. Section 5 describes contractor training requirements. Section 10 describes CHESM audit requirements. The CHESM Database contains audit results. Undocumented audits are conducted regularly by many different parties including Company Reps, Field Safety Coordinators, Supervisors and Management. These audits are intended to insure safe work practices are being executed to Chevron Standards. Documented Field/Site audits (WIP – Work In Progress) are conducted and recorded in the CHESM Database. Appendix IV in RI-366 contains the Field Audit form. Contractor Office HES Audits are conducted at least annually for Medium and High Risk contractors and the results are recorded in the CHESM Database. Appendix VI in RI-366 contains the Office HES Audit form which includes training records. Audit Participants are defined in Section 10 of RI-366, and typically include a Contract Owner and a CVX rep familiar with the work being conducted.

The contractor must complete three training elements for entry. There are two proctored Bay Area Refinery and Richmond Refinery Computer Based Training (CBT) that are delivered through a number of independent companies. The majority of our contractors use OSCA in Martinez. A two-hour instructor led course (IIFI) is conducted at the refinery. To receive a Chevron badge for refinery entry, the three courses must be completed, and they can be found printed on the back of a contractor's badge. These CBTs and the instructor led training focus on Safe Work Practices, Plant Entry, Emergency Response, Refinery Safety Rules, etc.

Each contractor has prepared a Construction Safety, Health, Environmental and Security Plan. These plans are highly detailed and provide specific information on a number of important and relevant topics. These plans are updated as necessary to address new issues and/or incorporate new or revised regulatory or Chevron requirements. Contractor personnel have been and will continue to be trained on standard Chevron procedures and Refinery Instructions, and on Construction Safety, Health, Environmental and Security Plan.

Leak Response Protocol (LRP) training will not be provided to any contractors. The Leak Response Protocol is a Chevron-owned and executed process. The contractors' only connection to the LRP is to act in a HAZWOPER Awareness Level role. They are trained to report any

evidence of leaks or spills through their Company Supervision, Chevron contact, Refinery Emergency call numbers, or their orange radio button, if they are issued a refinery radio.

All contractors working on site have received this training. Through March 3, 2019, more than 2,649 contractors have been trained.

Attachment 3
Quarterly Crude Fire Corrective Action Status Report

CHEVRON RICHMOND REFINERY MODERNIZATION PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM, SECTION 4.13-13d
FIFTEENTH QUARTERLY REPORT

JANUARY 3, 2019

LEAD AGENCY
CITY OF RICHMOND
450 CIVIC CENTER PLAZA
RICHMOND, CA 94804

I. INTRODUCTION

Chevron U.S.A. Inc. ("CUSA" or "the Company") submits this report to comply with Mitigation Measure 4.13-13d, which provides:

> Chevron will report to the City quarterly, and shall provide a copy of this report to the County, after Project approval on the status of the corrective actions taken to implement agency recommendations to Chevron resulting from the August 6, 2012 fire, as well as any corrective actions taken by Chevron as a result of its own investigation. To the extent that Chevron elects not to implement a recommendation made by an agency, Chevron shall include in these quarterly reports a detailed explanation of its rationale for doing so.

This is the fifteenth report prepared under the quarterly reporting requirement.

II. BACKGROUND

The Richmond Refinery experienced an accidental release from the atmospheric distillation column of the No. 4 Crude Unit on August 6, 2012. The failure involved an 8" carbon-steel piping component in the No. 4 sidecut that carried light gas oil. The approximate duration of the release was 7 hours, 24 minutes.

All required agency notifications were made. Responding agencies included Cal/OSHA, CCHS, Bay Area Air Quality Management District, California Office of Spill Prevention and Response, the U.S. Environmental Protection Agency, the Richmond Police Department, and the U.S. Chemical Safety and Hazard Investigation Board ("CSB"). The CSB conducted an investigation concerning the fire. In April 2013, the CSB issued its Interim Investigation Report: Chevron Richmond Refinery Fire ("Interim Report"), which included two recommendations to CUSA. In January 2015, the CSB issued its Final Investigation Report Chevron Richmond Refinery Pipe Rupture and Fire ("Final Report"), which included three recommendations to CUSA. CUSA conducted its own investigation into the August 6, 2012 incident ("CUSA Investigation"), and identified a series of recommended actions to address what had been identified as causal factors and additional considerations.

III. STATUS OF CORRECTIVE ACTIONS TAKEN TO IMPLEMENT AGENCY RECOMMENDATIONS

The CSB issued two recommendations (2012-03-I-CA-R1 and 2013-03-I-CA-R2) to CUSA in its Interim Report. The CSB issued an additional three recommendations (2012-03-I-CA-R33, 2012-03-I-CA-R34, and 2012-03-I-CA-R35) to CUSA in its Final Report.

Set forth below are the CSB's recommendations from the Interim Report and Final Report, and CUSA's response to each recommendation.

Recommendation No. 2012-03-I-CA-R1: *At all Chevron U.S. refineries, engage a diverse team of qualified personnel to perform a documented damage mechanism hazard review. This review shall be an integral part of the Process Hazard Analysis cycle and shall be conducted on all PSM-covered process piping circuits and process equipment. The damage mechanism hazard review shall identify potential process damage mechanisms and consequences of failure, and shall ensure safeguards are in place to control hazards presented by those damage mechanisms. Analyze and incorporate into this review applicable industry best practices, Chevron Energy Technology Company findings and recommendations, and inherently safer systems to the greatest extent feasible.*

CUSA's Response: The Richmond Refinery modified and further developed its work processes for the review of damage mechanisms. Specifically, CUSA issued a refinery standard ("Damage Mechanism Review Instruction – Manufacturing 520," or "MFG 520") for conducting a damage mechanism review ("DMR") to assess corrosion threats and other applicable damage mechanisms. MFG 520 sets forth a DMR work process that was designed in accordance with industry practices and recommendations, and American Petroleum Institute ("API") Recommended Practice 571, *Damage Mechanisms Affecting Fixed Equipment in the Refining Industry*. CUSA also considered API Recommended Practice 584, *Integrity Operating Windows*, while this recommended practice was in development. MFG 520 requires:

- Completion of a DMR work process for piping circuits and equipment in applicable units so as to formalize the evaluation of known damage mechanisms, the consequences of a failure, and the safeguards necessary to mitigate failures and other potential risks from those damage mechanisms;
- Development of CUSA standard templates for refinery-common units;
- Creation of a DMR schedule aligned with Process Hazard Analysis ("PHA") schedules for all piping circuits and equipment in applicable units so that damage mechanisms can be considered during PHAs;
- Establishment of multi-disciplinary DMR teams;
- Evaluation of piping circuits and equipment in applicable units against potential damage mechanisms in connection with assessment triggers;
- Consideration of consequences of failures and safeguards identified by the DMR work process;
- Consideration of CUSA and applicable industry best practices;
- Creation of DMR reports, which includes recommendations as appropriate;
- Development of action plans to address DMR recommendations; and
- Provision of DMR work product to the applicable PHA team for consideration.

Inherently safer systems have been incorporated into the DMR template design and evaluated, as appropriate. For example, there are damage mechanism assessment questions that help determine whether or not a change or upgrade in metallurgy would be recommended to prevent or better manage a particular damage mechanism.

In 2013, the Richmond Refinery took a lead role in piloting DMRs as this work process was developed. In 2014, the Refinery began adopting the DMR program by conducting selected DMRs prior to completing the applicable PHA. The Refinery employed the learnings from these initial DMRs and PHAs, and information from internal and external subject matter experts, to further develop its DMR work processes. On January 1, 2014, the Refinery instituted a requirement that all PHA teams consider applicable DMRs when conducting PHAs for covered plants.

The Refinery has now completed DMRs for applicable PSM-covered process piping and process equipment.

Additionally, consistent with and building upon MFG 520, CUSA has developed an asset strategy standard ("Fixed Equipment Asset Strategies Standard--Manufacturing Standard 525," or "MFG 525"). This standard sets expectations for asset strategies that are designed to optimize mechanical availability and prevent and mitigate losses of containment in fixed equipment. A project is underway at the Refinery to create asset strategies per MFG 525.

Recommendation 2012-03-I-CA-R2: *At all California Chevron U.S. refineries, report leading and lagging process safety indicators, such as the action item completion status of recommendations from damage mechanism hazard reviews, to the federal, state, and local regulatory agencies that have chemical release prevention authority.*

CUSA's Response: The subject of process safety indicators is complex and has been the focus of prior agency recommendations (*e.g.*, Recommendation No. 2005-4-I-TX-6 to the API and United Steelworkers). Despite many years of effort by a diverse group of interested parties, including individual companies, safety and industry groups, organized labor, and regulators, there is no consensus on process safety indicators. The CSB acknowledged this lack of consensus during a Safety Performance Indicators public hearing it held in Houston, Texas on July 23 and 24, 2012. CUSA understands the CSB's interest in continuing to drive this process forward.

The Refinery already internally tracks numerous leading and lagging indicators through its Operational Excellence and Reliability Intelligence ("OERI") system. OERI is a reporting system that tracks various metrics, including safety, operations, and reliability metrics, by automatically pulling data from the Refinery's information management systems. These systems contain information pertaining to (1) reliability, including design safety and inspection schedules and history, and (2) maintenance management data, including the status of preventative maintenance and safety activities. OERI also tracks the Management of Change process, PHA process recommendations, and regulatory compliance action items.

In addition to other tracking mechanisms, the Refinery uses OERI to provide organizational visibility of the Refinery's maintenance, reliability, and process safety performance, and overdue and upcoming safety, maintenance, and regulatory compliance items. Refinery personnel have ready access to OERI and it is reviewed by the Refinery's management on a routine basis.

OERI also is used during Unit Reliability Briefs ("URBs"), which are cross-functional meetings attended by management, reliability analysts, maintenance, operations, technical, and other relevant internal stakeholders. URBs are regularly conducted by each business area to manage process safety and reliability performance threats in a risk-informed manner. OERI is utilized during URBs to track and prioritize reliability threats.

To further address the CSB's recommendation, however, CUSA played a major role in coordination with multiple interested parties, including the CSB, USW, Contra Costa Health Services ("CCHS"), and others in industry to develop "consensus" process safety indicators during the CCHS Industrial Safety Ordinance ("ISO") and the City of Richmond ISO revision process. As part of these discussions, the parties conferred on the selection of appropriate indicators, potential reporting format, and the frequency of reporting, among other items. These revisions to the ISO and RISO became effective on September 30, 2014.

Consistent with the revised ordinances, the Refinery, along with industry and the County, is tracking process safety indicators in connection with CCHS's annual reporting obligation, which comes due on June 30 of each year. ISO and RISO process safety performance indicator requirements include reporting on overdue inspections for piping and pressure vessels, overdue PHA recommendations, overdue incident investigations recommendations, and overdue API and American Chemistry Counsel Tier I and II incident investigation recommendations.

On July 15, 2016, the Department of Industrial Relations released its proposed new regulation for Process Safety Management for Petroleum Refineries for public review, substantially completing the current work of the California PSM Advisory Committee. CUSA has and will continue to remain involved with other PSM reform groups and will continue to participate in the development of consensus process safety indicators at the state, local, and federal level.

Recommendation No. 2012-03-I-CA-R33: *Develop a method to assign accountability at Chevron to determine whether any new Energy Technology Company (ETC) recommended program or industry best practice, such as API guidance must be followed to ensure process safety or employee personal safety. This method shall include monitoring of these practices and guidance at a refining system level and at the refinery level. Develop a tracking system to monitor the progress of implementing these selected practices and guidance to completion.*

CUSA's Response: CUSA previously recognized the value of providing for the uniform implementation of recommended programs or industry best practices. For this reason, CUSA has developed and implemented a "Manufacturing Technical Authority Process" ("MTA Process") to assess mechanical integrity and other process safety-related ETC advisories, as well as industry standards, guidance, and best practices (collectively, "Advisories and Standards"). The MTA Process is designed to determine which Advisories and Standards are applicable and appropriate for CUSA's Manufacturing facilities to develop those Advisories and Standards into new Manufacturing Standards, and to direct and monitor their subsequent implementation by appropriate personnel. The MTA Process engages senior executives and managers with process safety and operational experience.

A brief overview of the MTA Process is as follows:

- Under the MTA Process, new Advisories and Standards are identified from a wide variety of sources.
- If new Advisories and Standards are applicable to Manufacturing facilities and are not already adequately addressed, the new Advisories and Standards will move forward in the process.
- The MTA Process assigns the new Advisories and Standards to the appropriate Manufacturing organization or SMEs to develop the methods and milestones for implementation, and to track and verify that implementation is completed according to plan.
- The appropriate refinery leadership team (*e.g.*, Operations, Maintenance and Reliability, or Technical) assigns responsibility for executing the Manufacturing Standards.
- For Manufacturing Standards that the MTA Process determines to be critical for the prevention of fatalities and high-consequence loss of containment events, any extensions and exceptions will require approval of the President of Manufacturing.
- The MTA Process also uses a centralized database to track and monitor the development and implementation of Manufacturing Standards developed pursuant to the MTA process.

Recommendation No. 2012-03-I-CA-R34: *Develop an auditable process to be available for all recommended turnaround work items necessary to address mechanical integrity deficiencies or inspection recommendations that are denied or deferred. This process shall provide the submitter of the denied or deferred recommendation with the option to seek further review by his or her manager, who can further elevate and discuss the recommendation with higher level management, such as the Area Business Unit Manager. Maintain an auditable log of each of these potential turnaround work items, including the ultimate determination of approval, deferral, or rejection, justification determination, and the person or team responsible for that decision.*

CUSA's Response: CUSA's Richmond Refinery has developed and implemented a process for tracking turnaround work items necessary to address inspection recommendations concerning fixed equipment (*e.g.*, process piping) identified by the Company's API certified inspectors, including any turnaround work items that are denied or deferred.

On September 20, 2014, the State of California enacted Senate Bill 1300 that imposes on California refineries certain notification obligations regarding turnaround work. 2014 Cal. Stat. ch. 519 (S.B. 1300) (codified at Cal. Lab. Code § 7872). Among other provisions, S.B. 1300 requires a petroleum refinery employer to make available upon request to Cal/OSHA "[n]otification and description of all repairs, design modifications, or process changes described in a corrosion report, risk-based inspection report, process hazard analysis, boiler permit schedule, management of change record, work order, or other document listed in paragraphs (1) to (6), inclusive, *that the petroleum refinery employer has deferred to a subsequent operational period or turnaround*." Cal. Lab. Code § 7872(c)(7) (emphasis added).

The Richmond Refinery's turnaround tracking process is consistent with S.B. 1300 and establishes the process by which the Refinery maintains the information required by California law. Among the information that the Refinery maintains is a Turnaround Database of potential turnaround work items that include the ultimate determination of deferral or rejection of the item. The Turnaround Database allows personnel to search the status of any turnaround work item, generate a report that demonstrates the approval status of turnaround work items, and review any denied or deferred work items. Additionally, the Turnaround Database identifies the name of the supervisor and the name of employee(s) who provided comments or made a determination regarding approval status. When action is taken on a Living Worklist ("LWL") item, the originator receives an email notification regarding the change in status. The notification includes the LWL item number, the status change, and a link to the Turnaround Database entry for viewing Decision Notes and Decision Attendees. CUSA encourages employees to raise any concerns about a denial or deferral with their supervisor or their supervisor's manager.

In addition, CUSA has implemented improvements to the Turnaround Database and improvements to guidance materials that further emphasize the ability of the originator to seek additional review of deferred or denied turnaround work items. The updated Turnaround Database Approval Process Flow Chart, which serves as an implementation guidance document for the Turnaround Database, and the revised turnaround work item status change email notification further reiterate and reinforce CUSA's policy that the originator of a work item has the option to seek further review of denied or deferred recommendations with higher level management.

Recommendation No. 2012-03-I-CA-R35: *Develop an approval process that includes a technical review that must be implemented prior to resetting the minimum alert thickness to a lower value in the inspection database.*

CUSA's Response: This recommendation was made in the CSB's final report released January 2015. CUSA developed and distributed a manufacturing instruction ("Manufacturing Instruction for Establishing Piping Minimum Alert Thickness" or "MFG 540") in May 2016 (revised July 2018), which includes a documented technical review and approval process when a piping minimum alert thickness is changed to a lower value within the inspection database.

IV. CORRECTIVE ACTIONS IMPLEMENTED BY CUSA IN RESPONSE TO ITS OWN INVESTIGATION

The Richmond Refinery's own investigation team identified a series of recommended actions to address what had been identified as causal factors and additional considerations. Operational and process changes that resulted from this investigation are set forth below.

A. RECOMMENDATIONS TO ADDRESS CAUSAL FACTORS ("CF")

***CF Recommendation 1**: Revise Refinery policies and checklists to ensure appropriate information—including Process Safety and Inspection information—is considered when evaluating leaks and addressing the issue of whether to shut down or continue operation of equipment.*

CUSA's Response: The Refinery has implemented an updated protocol for evaluating process leaks with simple guidance to assist in making necessary and rapid decisions concerning leak response and further enhancing situational awareness skills. This protocol identifies scenarios that trigger the use of the protocol and recognizes that there may be other scenarios in high consequence services where a leak has not yet occurred but has a potential for loss of containment if conditions are not addressed.

Pursuant to the protocol, subject matter experts ("SMEs") from various disciplines, including process safety and inspections, gather to evaluate the leak. The protocol provides discussion questions about process safety information, including information related to past inspections, for the SMEs to consider when determining the response plan. The type of process safety information to consider includes the identity of the leaking material, location, temperature and emergency shutdown procedures, as well as an understanding of the potential damage mechanism involved.

The protocol is published on the Company's internal Manufacturing website under Manufacturing Standards, and a training program has been developed that tracks completion of required training.

The leak response protocol was shared with CCHS, Cal/OSHA, CSB, as well as other refineries and industrial facilities in the County and beyond.

CF Recommendation 2: *Enhance the Refinery's Mechanical Integrity program to ensure the Refinery properly identifies and monitors piping circuits for appropriate damage mechanisms using a standardized methodology and documentation system.*

CUSA's Response: The Refinery is strengthening its reliability program for piping and equipment in an effort to ensure it covers potential damage mechanisms applicable to those systems. As part of this effort, the Refinery is implementing an enhanced process for regular DMRs of piping circuits in applicable units in order to formalize the evaluation of known damage mechanisms, the consequences of a failure, and the safeguards necessary to mitigate failures and other potential risks from those damage mechanisms. As discussed in response to CSB Recommendation 2012-03-I-CA-R1, CUSA issued a standard, MFG 520, for conducting DMRs to assess corrosion threats and other applicable damage mechanisms. MFG 520 establishes a DMR work process that will, where appropriate, be completed for piping circuits and equipment in applicable units using the applicable damage mechanism information outlined in the API Recommended Practice 571.

The Refinery modified its PHA procedures to better integrate DMRs into the PHA review process. MFG 520 requires alignment of the DMR schedule with the PHA schedules for piping circuits and equipment in applicable units so that damage mechanisms can be considered during PHAs. The Refinery took a lead role in piloting DMRs as this work process was developed. On January 1, 2014, the Refinery instituted a requirement that all PHA teams consider applicable DMRs when conducting PHAs for covered plants.

MFG 520 recognizes that the DMR work process will undergo continuous improvement as internal and external guidance is developed. Concurrent with development of the DMR work process and in response to a corrective action from its own investigation, CUSA has developed an asset strategy standard, MFG 525, which is used where applicable. As described above in CUSA's response to CSB Recommendation 2012-03-I-CA-R1, MFG 525 sets the expectations for asset strategies that are designed to optimize mechanical availability and prevent and mitigate losses of containment in fixed equipment. MFG 525 defines an asset strategy as the documented plan for operating, monitoring, and maintaining fixed equipment to preserve its integrity (pressure containment) function and sustain its process (service) function. An asset strategy identifies applicable damage mechanisms; determines the need for and defines operating limits known as integrity operating windows; and prescribes inspection, testing and preventative maintenance, including tasks and frequencies, required to manage the integrity and process functions.

As described above, the MTA Process prioritizes and acts upon mechanical integrity-related recommendations from internal and external technical experts, including industry standards and alerts. CUSA's response to CSB Recommendation 2012-03-I-CA-R33, describes the MTA Process, which was established for the purpose of assessing new Advisories and Standards, determining which are applicable and appropriate for CUSA's Manufacturing facilities, and monitoring their subsequent implementation.

The Refinery also developed the Fixed Equipment Integrity Manager position, with responsibility for developing, implementing, and stewarding the fixed equipment program.

CF Recommendation 3: *Review and enhance the requirements for inspector training and competency.*

CUSA's Response: The Refinery is improving its mechanical integrity training as a way to further support our leaders, inspectors, operating groups, and engineers. To that end, the Refinery has developed a standard to guide and promote the establishment of essential training and competencies for individuals who are performing a Fixed Equipment Inspector or Analyst role.

The specific training for each Fixed Equipment Inspector position is defined for that specific position based on a training plan that is developed in an effort to ensure that the needed competencies are developed within an established timeframe per certification or training from start of a new position. The implementation of the training plan is tracked through the individual's annual performance monitoring plan and monitored by the individual's supervisor. Additionally, the Refinery maintains a matrix for each inspector that tracks completion of required certifications and training. Recognizing that Fixed Equipment Inspector training is an ongoing process, and new or updated trainings are regularly required, all personnel in Fixed Equipment Inspector positions are current in the trainings identified for the inspections they perform or perform those inspections under the supervision of someone with the necessary certifications and/or training. The training standard, as well as the compliance matrices, are housed on the Refinery's intranet.

CF Recommendations 4 and 5*: Develop and implement a process for additional oversight of mechanical integrity-related recommendations and inspection plans, and the escalation of recommendations. Develop and implement a process to review and act upon mechanical integrity-related recommendations from industry alerts, ETC, and other subject-matter experts.*

CUSA's Response: The Refinery is implementing a manufacturing instruction for addressing mechanical integrity-related inspection recommendations, including development of mitigation plans, timelines for completion, and the assignment of roles and responsibilities. MFG 530, Fixed Equipment Integrity Threat Recommendation and Resolution Instruction, establishes a process for identifying integrity threats and issuing recommendations, and developing associated resolution plans designed to prevent and mitigate loss of containment due to fixed equipment degradation. Under MFG 530, a fully developed integrity threat recommendation, among other things:

- Is a high-quality, data-driven recommendation for deficiencies discovered on in-scope fixed equipment.
- Includes a resolution plan with agreed-upon completion dates.

- Includes a mitigation plan if mitigation is required to enable continued Operation until final resolution can be achieved.
- Defines clear handoffs to work prioritization, planning, and execution processes.
- Verifies and documents completion of resolution and mitigation plans.
- Provides input to maintain evergreen asset strategies for fixed equipment.

MFG 530 is applicable to most types of fixed equipment used in the refinery process, including pressure vessels, boilers, on-plot and off-plot piping, atmospheric storage tanks, and furnaces. The objective is to guide the development of integrity threat recommendations to prevent loss of containment events of higher consequence. The instruction and supporting procedures provide detail to support the mechanical integrity program.

Pursuant to the process established in MFG 530, for integrity threats to fixed equipment, all resolutions and/or mitigation plans, if mitigation is required, and target completion dates, must be approved by both the Operations Management for the affected unit and Fixed Equipment Integrity Lead/Manager ("FEIM"). If Operations Management and the FEIM do not on agree on the resolution/mitigation plan or the target completion dates, the FEIM shall escalate the decision to the Refinery General Manager. All open integrity threats are tracked in OERI in an effort to ensure the resolution/mitigation plan are implemented prior to the target completion date. Any employee may raise any concern about the resolution/mitigation plan or the target completion date with their supervisor or their supervisor's manager, or may use their personal stop work authority.

In addition to the actions CUSA has taken in response to its own investigation, CUSA's responses to CSB Recommendation 2012-03-I-R34 and CSB Recommendation 2012-03-I-CA-R35, described above, are also enhancing the Refinery's assessment, decision-making, and oversight of mechanical integrity-related inspection recommendations.

Further, the response to CSB Recommendation 2012-03-I-R33 above describes how new Advisories and Standards are considered, developed into manufacturing instructions as appropriate, implemented, and tracked.

***CF Recommendations 6 and 7**: Inspect 4CU piping that falls under the ETC Sulfidation Inspection Guidelines criteria for sulfidation corrosion prior to restarting the 4CU. Implement the ETC Sulfidation Inspection Guidelines for the remainder of the Refinery.*

CUSA's Response: The Refinery conducted 100% component inspection of carbon steel piping systems identified as potentially susceptible to sulfidation corrosion. Over 12,000 individual piping components were inspected. As part of these inspections, the Refinery implemented inspections to identify components of carbon steel piping circuits that did not have sufficient thickness to remain in service until the next scheduled turnaround; implemented generally accepted engineering practices with respect to components of insufficient thickness;

documented solutions with respect to components of insufficient thickness; established an inspection frequency for carbon steel piping circuits based upon measured corrosion rates, remaining life calculations, and current process conditions, including sulfur content and temperature; and maintained records of all carbon steel piping circuits potentially susceptible to sulfidation corrosion.

CF Recommendation 8: *Ensure relevant technical studies and inspection data are considered for the Refinery's equipment reliability plans and incorporated into the ROI/IPR [Reliability Opportunity Identification/Intensive Process Review] process.*

CUSA's Response: The ROI/IPR process has been revised to include known failure mechanisms, relevant technical studies and industry incidents in the pre-read for ROI/IPR study. Impacted employees are being trained on these changes.

B. RECOMMENDATIONS TO ADDRESS ADDITIONAL CONSIDERATIONS ("AC")

AC Recommendation 1: *Review the Pre-Fire Plan to ensure sufficient guidance is provided on equipment positioning.*

CUSA's Response: The Refinery reviewed and updated its Pre-Incident Scenario Analysis with apparatus placement modifications and shared the revised plans with CUSA Industrial Fire Chiefs.

AC Recommendation 2*: Review company/industry loss history on large fractionating towers to determine if internal Engineering Standard FRS-DU-5267 (Emergency Isolation and Depressuring Valves) adequately addresses mitigation of accidental releases from these systems. Revise the standard as warranted by the findings of this review.*

CUSA's Response: The Company completed a review of loss history for large fractionating towers. No revisions to FRS-DU-5267 were warranted by this review.

AC Recommendation 3: *Ensure Refinery business plans provide for the appropriate implementation of Process Safety recommendations (such as the ETC Sulfidation Inspection Guidelines).*

CUSA's Response: See the response above to CSB Recommendation No. 2012-03-I-CA-R33, which describes the MTA Process.

AC Recommendation 4: *Ensure sufficient organizational capacity and competency for minimum thickness Fitness for Service determinations.*

CUSA's Response: Manufacturing Instruction for Minimum Required Pipe Wall Thickness ("MFG 510") was revised in March 2018. This instruction "outlines the work process and calculation

methods for determining minimum *required* pipe wall thickness of ferritic and austenitic steel piping systems within limits set by accepted piping codes and standards." MFG 510 also addresses the qualification and documentation requirements for personnel involved in establishing minimum required pipe wall thickness. The Richmond Refinery maintains a record of engineers qualified to execute these calculations.

ETC facilitates an instructor-led course entitled "Fitness for Service – Level 1 Practitioner Training." The course format is a two-day instruction/workshop followed by an additional day of testing and certification. The course is based on API 579-1/ASME FFS-1 and is structured as a workshop, using example problems to demonstrate FFS procedures using CUSA's ETC Level 1 software. The training is designed for design engineers. Certifications are issued to those who complete the training course and pass the test. Only certified personnel are authorized to perform a second level review and approve FFS Level 1 assessments, and only ETC is authorized to perform FFS Level 2 and 3 assessments. Richmond Refinery keeps a log of the active personnel certified to perform a second level review and approve FFS Level 1 assessments.

AC Recommendation 5: *Consider additional training on expectations under the "Richmond Refinery Piping Inspection Guidelines" and "RFMS Piping Data Entry (Reliability Focused Maintenance System) and ACD (Add/Change/Delete) Guideline."*

CUSA's Response: See the response above to the third CUSA Investigation CF recommendation, which discusses inspector training and competency.

AC Recommendation 6: *Review and modify the PHA procedures to ensure that teams consider known corrosion threats/mechanisms.*

CUSA's Response: See the responses above to CSB Recommendation 2012-03-I-CA-R1 and the second CUSA Investigation CF recommendation, which discuss the DMR work process.

AC Recommendation 7: *Consider a project to evaluate the purpose and methods of various project safety management (PSM) reviews (PHA, ROI/IPR, AOA, COA, sRCM, RBI, etc.) to determine if these activities can be combined or better sequenced to improve risk understanding across the various functions and promote better process safety outcomes.*

CUSA's Response: The Refinery has mapped out the work processes under PSM and other safety standards to identify potential efficiencies that can be gained or outcomes enhanced by re-sequencing, combining, or modifying processes.

V. CONCLUSION

Operating safely is one of CUSA's core values. CUSA is also committed to learning from the August 6, 2012 fire to prevent a recurrence. To this end, CUSA has worked closely and cooperatively with local, state, and federal agencies, including the City, to determine the root

causes of the fire. CUSA is committed to considering recommendations from all agency investigations, and taking appropriate actions in response.

CUSA's efforts to improve safety and reliability at its refineries are ongoing. CUSA is continues to evaluate and undertake efforts to enhance mechanical integrity and safe operations at the Refinery.

APPENDIX A – ACRONYMS

ACC	American Chemistry Counsel
API	American Petroleum Institute
BIN	Business Improvement Network
Cal/OSHA	California Division of Occupational Safety and Health
CCHS	Contra Costa Health Services
CCHMP	Contra Costa County Hazardous Materials Program
CSB	U.S. Chemical Safety Board
CUSA	Chevron U.S.A. Inc.
DMR	Damage Mechanism Review
EIR	Environmental Impact Report
ETC	Energy Technology Company
ISO	Industrial Safety Ordinance
MFG	Manufacturing Standard
MM	Mitigation Measure
MTA	Manufacturing Technical Authority
OERI	Operational Excellence and Reliability Intelligence
PHA	Process Hazard Analysis
PSM	Process Safety Management
RISO	City of Richmond Industrial Safety Ordinance
S.B.	Senate Bill
SME	Subject Matter Expert
URB	Unit Reliability Brief
USW	United Steelworkers

Attachment 4
Quarterly Construction Emissions Report

CHEVRON RICHMOND REFINERY MODERNIZATION PROJECT
Construction Emissions Report
Fourth Quarter 2018

January 25, 2019

LEAD AGENCY
CITY OF RICHMOND
450 CIVIC CENTER PLAZA
RICHMOND, CA 94804

Pursuant to the Chevron Richmond Refinery Modernization Project (Project) Mitigation Monitoring and Reporting Program (MMRP), Chevron is required to provide quarterly compliance reports for emissions of NO_x (mitigation measure (MM) 4.3-2a), ROG (MM 4.3-2b), and greenhouse gases (GHG) (MM 4.8-1) during Project construction. This is the Construction Emissions Report for construction activity that occurred through the fourth quarter 2018 (4Q2018).[1]

Chevron tracks construction emissions using the Construction Emissions Module (Module) developed in conjunction with the City of Richmond's environmental consultant, Ramboll Environ, Inc. (Ramboll). The Module calculates emissions from On-Road Onsite Only vehicle use, On-Road Onsite and Offsite vehicle use, Off-Road Equipment, and Architectural Coating and Paving activities. Chevron has been working with Ramboll to refine the Module to ensure that the data generated is accurate. The latest update to the Module, version 7.0, was issued to Chevron on January 23, 2017. Data from the Module is available for review at the Refinery.

Construction of the project is beginning to ramp down as the hydrogen plant nears completion. Chevron anticipates that active construction of the hydrogen plant and sulfur removal improvements, exclusive of demolition, will be complete by the end of 3Q2019.

As explained further below, based on current data and projections, Chevron anticipates that emissions of NO_x and ROG will be significantly lower than projected in the EIR. As the Project is still under construction, Chevron does not have enough data to predict whether the average daily emissions of NO_x and ROG will exceed the thresholds of significance once Project construction is complete.[2] Therefore, the Project is implementing MM 4.3-2a and MM 4.3-2b, as described below. For GHG emissions, the Project has exceeded the annual threshold for 2018 due to the extended construction schedule. Chevron continues to implement MM 4.8-1a – 4.8-1k, as described below and is also working to identify and evaluate options to mitigate construction-related GHG emissions consistent with this measure. Chevron plans to present proposed mitigation options to the City in the near future.

Construction Emissions Summary

Several factors are contributing to actual emissions from Project construction being lower than projected in the EIR.

First, when estimating construction emissions from the Project, the EIR conservatively assumed that all Project components would be constructed during a two-year construction period. (Draft EIR, p. 3-39; see also Table 3-2.) Chevron has elected to defer construction of the FCC FHT improvements (Draft EIR, p. 3-25) and improvements to one of the sulfur recovery units (SRU), resulting in less intensive construction during the initial construction period than was estimated in the EIR.[3] Further, the construction schedule for the remaining Project components, exclusive of the dismantling of the existing Hydrogen Plant, is approximately three years

[1] Pursuant to Impact 4.3-3 of the Environmental Impact Report (EIR) prepared for the Project, emissions of PM_{10} and $PM_{2.5}$ from construction activities are less than significant without mitigation, though the EIR includes Improvement Measure 4.3-3 requiring certain best practices to be implemented. Further, the EIR did not analyze or require tracking or mitigation of CO during construction activities. However, Chevron uses the Construction Emissions Module to track PM_{10}, $PM_{2.5}$, and CO emissions, and maintains this data at the Refinery.

[2] For purposes of assessing potential impacts from the Project's construction-related emissions, the EIR utilized the California Environmental Air Quality Act Air Quality Guidelines promulgated by the Bay Area Air Quality Management District (BAAQMD CEQA Guidelines).

[3] Pursuant to Condition A7 of the Condition Use Permit (CUP), Chevron has ten (10) years in which to complete construction of the Project, with one automatic, two-year extension. Chevron has not yet determined when it might pursue construction of the remaining Project components.

from start of construction on June 12, 2016.[4] This means the total number of days during the construction period by which total emissions of NOx and ROG will be divided to determine the respective average daily emissions will be greater than used in the EIR.

Further, because the EIR did not have specific data concerning the fleet to be used during construction, it made a conservative assumption that the majority of engines were Tier 2 and Tier 3. In the case of off-road equipment, emissions from equipment with higher tier engines (i.e., of equal horsepower) are generally less than emissions from equipment with lower tier engines[5]. Higher tier engines are associated with a lower emission factor, resulting in lower emissions when compared to emissions from lower tier engines. Actual data shows that ~88% of engines in the cumulative fleet since the beginning of project construction are Tier 4 Interim or Tier 4 Final.[6] Of the remaining ~12% of the engines, 9.8% are Tier 3, and 1.7% are Tier 2, with a negligible quantity of Tier 1 engines in the fleet (i.e., below 1%). Therefore, the Project's use of Tier 4 Interim and Tier 4 Final engines, where possible, has contributed to actual Project construction emissions that are lower than the emissions projected in the EIR.[7]

Ozone Precursors

Pursuant to the BAAQMD CEQA Guidelines, the potential significance of construction-related emissions of NO_x and ROG is assessed by comparing the total average daily emissions from the Project to the threshold of significance. In order to calculate total average daily emissions, total Project construction-related emissions will be divided by the total number of days during the construction period. The total daily average is then compared to the threshold of significance. Based on current data from the Module, as well as Chevron's projected construction schedule and levels of activity, Chevron believes that emissions of NO_x and ROG will be significantly lower than those projected in the EIR. Nevertheless, as the project is still under construction, it is impossible to predict with certainty whether total emissions of NO_x and ROG over the life of construction will result in the Project exceeding the thresholds of significance. Chevron is therefore implementing MM 4.3-2a and MM 4.3-2b, as follows:

MM 4.3-2a Implementation	
MM 4.3-2a Part(s)	Implementation Status
Chevron shall reduce construction-related NO_x emissions to less-than-significant levels by implementing one or more of the following feasible mitigation measures, all of which have been found to result in emissions reduction for construction projects:	
• Using lower emitting construction equipment, increasing carpooling or otherwise reducing	• As described above, ~88% of the engines in the cumulative construction fleet since the beginning

[4] The SRU improvements are the final Project component scheduled to be constructed during the initial construction period, and Chevron anticipates construction of these improvements will be complete by the end of third quarter 2019. Chevron has also yet to determine exactly when it will begin dismantling the existing Hydrogen Plant.

[5] Source: CalEEMod User Guide. OFFROAD Emission Factor Based on Engine Tier. http://caleemod.com/

[6] The calculation for percentage of equipment associated with each engine tier is based on actual weekly contractor equipment counts received from May 9, 2016 through December 24, 2018.

[7] This likelihood was recognized in the EIR, Appendix 4.3-CST, p. 6, n. 2: "Chevron Data Transmittal #36O (Rev#3), 2014 provides equipment data for eight consecutive quarters. Because the exact start date of future construction is uncertain, the emissions analysis conservatively uses emission factors for 2014 for the first four quarters of construction, and 2015 emission factors for the last four quarters of construction. A construction start date later than January 2014 would lead to lower emissions that than predicted here as the emissions profile of the construction fleet is cleaner, due to the implementation of regulations requiring lower emissions engines."

MM 4.3-2a Implementation	
construction-worker automobile use in daily commutes, extending the duration of construction by 1 year by delaying the modifications required to increase the throughput capacity of the FCC FHT until after construction of the hydrogen plant and amine contractor, or reducing the hours of use of construction equipment;	of project construction are Tier 4 Interim or Tier 4 Final, compared to the EIR, which assumed the majority of the fleet would have engines in Tiers 2 and 3. • Chevron has extended the initial construction period from two years to three years.
• Reducing operations and/or emissions from portable generators at the Facility during the construction period, and thereby reducing NO_x emissions;	• The number of portable diesel generators used during construction has been reduced by, for example, utilizing solar-powered light standards for certain work areas. Approximately 2% of the cumulative hours for light plants since the beginning of project construction are attributed to light plants operating on solar power.
• Installing the low-NO_x burners included in the Modernization Project in the first 6 months of the construction period, thereby reducing net NO_x emissions from the Facility while construction of the Modernization Project continues;	• Chevron has not elected to pursue this option as it does not believe it will be necessary to mitigate NO_x emissions to less-than-significant.
• Retiring permanent NO_x emission reduction credits to offset this temporary NO_x construction increase, in an amount sufficient to offset construction period NO_x emissions; or	• Chevron is prepared to retire NO_x emissions reduction credits as necessary to mitigate NO_x emissions.
• Implementing a combination of two or more of the above measures in an amount sufficient to offset construction-period NO_x emissions to less-than-significant levels.	• See above.

MM 4.3-2b Implementation	
MM 4.3-2b Part(s)	Implementation Status
Chevron shall reduce construction-related ROG emissions to less-than-significant levels by implementing one or more of the following feasible mitigation measures, all of which have been found to result in emissions reduction for construction projects:	
• Installing the tank dome Project Design Feature, and installing one additional tank dome, in the first 6 months of Project construction, thereby reducing net ROG emissions from the Facility before completing construction of the hydrogen plant or sulfur removal components of the Modernization Project;	• Chevron has not elected to pursue this option as it does not believe it will be necessary to mitigate ROG emissions to less-than-significant. However, Chevron has separately pursued construction of T-3225 tank dome consistent with MM 4.3-5f addressing operation emissions.
• Using lower emitting construction equipment, increasing carpooling or otherwise reducing construction-worker automobile use in daily commutes, extending the duration of construction by 1 year by delaying the modifications required to increase the throughput capacity of the FCC	• As described above, ~88% of the engines in the cumulative construction fleet since the beginning of project construction are Tier 4 Interim or Tier 4 Final, compared to the EIR, which assumed the majority of the fleet would have engines in Tiers 2 and 3.

MM 4.3-2b Implementation	
FHT until after construction of the hydrogen plant and amine contractor, or reducing the hours of use of construction equipment;	• Chevron has extended the construction period from two years to three years.
• Retiring permanent ROG emission reduction credits to offset this temporary ROG construction increase, in an amount sufficient to offset construction-period ROG emissions; or	• Chevron is prepared to retire ROG emissions reduction credits as necessary to mitigate ROG emissions to less-than-significant.
• Implementing a combination of the above measures, in an amount sufficient to offset construction-period ROG emissions to less-than-significant levels.	• See above.

Details concerning implementation of the above measures can be found in Chevron's Compliance Plan, revised in October 7, 2016, as well as responses to the quarterly ANTEA reports, submitted with this report for fourth quarter 2018.

GHG

Pursuant to the BAAQMD CEQA Guidelines, the potential significance of construction-related emissions of GHG is assessed by comparing total annual emissions of GHG to the threshold of significance (10,000 $MTCO_2e$ per year). Table 4Q2018-GHG shows total construction-related GHG emissions for 2016, 2017, and 2018, not including reductions associated with implementation of MM 4.8-1a – 4.8-1k. Because GHGs are tracked on an annual basis, the cumulative total for construction-related GHG emissions reset to zero in January 2017 and January 2018.

Table 4Q2018 – GHG Emissions from Construction

Year	Cumulative Total (in MT CO2e/yr)	BAAQMD Threshold of Significance (in MT CO2e/yr)
2016[1]	1,195.8	10,000
2017	7,638.1	10,000
2018	11,959.0	10,000

[1] Based on data collected beginning May 9, 2016 and ending December 31, 2016

Total construction-related GHG emissions in 2016 and 2017 did not exceed the threshold of significance. For GHG emissions, the Project has exceeded the annual threshold for 2018 due to the extended construction schedule. Chevron continues to implement MM 4.8-1a – 4.8-1k, as described below, and is also working to identify and evaluate options to mitigate construction-related GHG emissions consistent with this measure. Chevron plans to present proposed mitigation options to the City in the near future.

MM 4.8-1 Implementation	
MM 4.8.1 Part(s)	Implementation Status[1]
Consistent with air quality mitigation measures for construction activities, Chevron would be required to implement the following mitigation measures to reduce its	

MM 4.8-1 Implementation	
Project construction emissions. Implementation of the mitigation measures would result in further reductions in greenhouse gas emissions.	
a. All vehicle speeds on unpaved roads shall be limited to 15 miles per hour.	• Done
b. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California Airborne Toxic Control Measure (Title 13 of California Code of Regulations [CCR], Section 2485). Clear signage shall be provided for construction workers at all access points.	• Done
c. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified visible emissions evaluator.	• Done
d. The idling time of diesel-powered construction equipment shall be limited to 2 minutes.	• Done
e. The Project shall develop a plan demonstrating that the off-road equipment (more than 50 horsepower) to be used in construction (i.e., owned, leased, and subcontractor vehicles) would achieve a Project-wide fleet-average 20% nitrogen oxide reduction and 45% particulate matter reduction compared to the most recent CARB fleet average. Acceptable options for reducing emissions include the use of late model engines, Low-emission diesel products, Alternative fuels, Engine retrofit technology, After-treatment products, Add-on devices such as particular filters, and/or Other options as such become available. (Several of these measures would also reduce greenhouse gas emissions.)	• Done
f. All contractors shall be required to use equipment that meets CARB's most recent certification standard for off-road heavy-duty diesel engines.	• Done
g. Reuse and recycle construction and demolition waste (including, but not limited to, soil, vegetation, concrete, lumber, metal, and cardboard).	• Done
h. Enforce and follow limits on idling time for commercial vehicles, including delivery and construction vehicles.	• Done
i. Using alternative fueled (e.g., biodiesel, electric) construction vehicles/equipment on at least 15% of the fleet.	• Done
j. Using local building materials of at least 10%.	• Done
k. Recycling or reusing at least 50% of construction waste or demolition materials.	• Done

MM 4.8-1 Implementation	
l. For each year of Project construction, Chevron shall hire, at commercially reasonable rates and at Chevron's expense, a qualified third-party entity reasonably acceptable to the City to quantify and verify in writing whether the reductions achieved from the above described construction greenhouse gas mitigation measures for that year of Project construction adequately mitigated this potentially significant impact, which report shall be subject to City's reasonably approval. For any year of construction for which construction-related diesel emissions are not reduced to or below the 10,000-MT CO_2e per year significance threshold, Chevron shall implement one or more of the following measures in an amount sufficient to reduce construction period greenhouse gas emissions to less-than-significant levels: (i) Reduce diesel emissions from other equipment at the Facility, such as a diesel-powered generator, in an amount equal to the construction-related greenhouse gas emissions in excess of 10,000 MT CO_2e per year for any calendar year of Project construction, which reduced emission level Chevron shall maintain for the following two years. (ii) Permanently retire, or retrofit from diesel to electric power, one or more Facility sources that emit more than 300 MT CO_2e per year.	• For GHG emissions, the Project has exceeded the annual threshold for 2018 due to the extended construction schedule. Chevron continues to implement MM 4.8-1a – 4.8-1k, and is also working to identify and evaluate options to mitigate construction-related GHG emissions consistent with this measure. Chevron plans to present proposed mitigation options to the City in the near future.

Details concerning implementation of the above measures can be found in Chevron's Compliance Plan, revised in October 7, 2016, as well as responses to the quarterly ANTEA reports, submitted with this report for fourth quarter 2018.

Attachment 5
Semi-Annual Construction Progress Report

CHEVRON RICHMOND REFINERY MODERNIZATION PROJECT
Condition of Approval H3 Semi-Annual Construction Report

March 28, 2019

LEAD AGENCY
CITY OF RICHMOND
450 CIVIC CENTER PLAZA
RICHMOND, CA 94804

INTRODUCTION

This report is submitted pursuant to the Conditional Use Permit (CUP) for the Chevron Modernization Project, Section H, Monitoring, Record Keeping, Reporting and Public Notification, Condition of Approval H3, which states:

> "Chevron shall submit semi-annual construction progress reports to the Planning and Building Services Department on March 31 and October 31 during all phases of project construction."

This is the sixth semi-annual construction progress report and provides a general overview on the status of construction for the Modernization Project.

REPORT

Construction Summary

Construction is nearing completion on the new Hydrogen Plant, and commissioning activities are in progress. Construction continues on the Sulfur Removal Improvements (including the 6H2S plant and the SRUs) and project tie-in components (e.g. pipe racks). A total of 203 building, fire, instrumentation and electrical (I&E), and significant temporary construction permit packages have been issued by the City of Richmond, and special inspections are ongoing daily. Chevron continues to work with the City to prioritize and coordinate permitting to support construction.

Over 296,000 man hours have been worked year to date. Approximately 700 personnel are supporting the Project. Personnel have continued to decrease from 1,600, as reported in the October 2018 Semi-Annual Construction Report, as the new Hydrogen Plant transitions from construction to commissioning activities.

Decommissioning activities, including blinding, cleaning, and removal of catalyst, for the old Hydrogen Plant also began in first quarter 2019.

As initially reported to the City on June 16, 2016, and quarterly thereafter via the City's Antea software, Chevron is implementing all construction-related mitigation measures from the Chevron Modernization Project Environmental Impact Report certified by the City on July 29, 2014, with oversight from the City. The Fourth Quarter 2018 Modernization Construction Questionnaire was submitted to the City via Antea software on January 28, 2019.

More than 50% of total waste project streams are being recycled or reused, as required by Mitigation Measure 4.8-1k. The construction equipment fleet is exceeding targets for reduced emissions of oxides of nitrogen (NOx) and particulate matter (PM) compared to CARB fleet averages, as required by Mitigation Measure 4.8-1e. Chevron continues to track construction emissions using the Construction Emissions module provided by the City's consultant, Ramboll. Pursuant to the MMRP, a separate quarterly construction emissions report is submitted to the City as part of the ANTEA quarterly update.

Chevron anticipates construction will continue through 2019.

Attachment 6
Annual Reliability Program Report

CHEVRON RICHMOND REFINERY MODERNIZATION PROJECT
Mitigation Measure 4.13-7a Pre-Operations Report Regarding Implementation of the Modernization Project Reliability Program

September 4, 2018

LEAD AGENCY
CITY OF RICHMOND
450 CIVIC CENTER PLAZA
RICHMOND, CA 94804

INTRODUCTION

This report is submitted pursuant to section IV.H of the Modernization Project Reliability Program (Program), as incorporated by mitigation measure (MM) 4.13-7a of the Modernization Project Mitigation Monitoring and Reporting Program (MMRP). Pursuant to section IV.H:

> "As part of its ongoing reporting obligation under the [MMRP] adopted by the City, Chevron shall report on the status of all requirements of this Reliability Program on an annual basis in a form acceptable to the City."

Pursuant to MM 4.13-7a, "an initial Reliability Program report shall be submitted to the City and County prior to Project construction. Annual reports shall be submitted thereafter, including a report prior to the commencement of Project operations…"

Chevron submitted its initial Program report on June 16, 2016 and provided an update to that report on October 7, 2016 and submitted its second Program report on June 14, 2017. This report is the third annual Program report and provides a general overview regarding the status of Chevron's implementation of Sections II – IV of the Program.[1] A copy of the Program is submitted herewith for purposes of tracking the responses below with the Program commitments. Refer to Attachment 1.

Many of the Program's obligations are triggered by "commencement [or start] of project operations." Chevron currently anticipates that the Hydrogen Plant will commence project operations as defined in the EIR by the end of 2018.

Chevron also recognizes that there are Reliability Program-related CUP and MMRP obligations which are to be included as part of this Reliability Program report. Attachment 2 includes the status of Chevron's implementation of these requirements.

This report is submitted following the pre-operations verification by Contra Costa Health Services ("CCHS").

REPORT

II. General Recommendations and Refinery Actions to Address

In response to the general recommendations, please see Attachment 3.

III. Project Recommendations

Section III includes project-specific recommendations that are being implemented as a result of the Reliability Analysis.

[1] Section I of the Reliability Program is the Introduction and does not contain any recommendations or action items.

A. Schedule and Report on Upgrades to Identified Piping Circuits

Chevron has separately submitted a report to the City pursuant to this requirement on August 15, 2018. Refer to Attachment 4 of this report. CCHS verified implementation of this measure in August 2018.

B. Installation and Monitoring of Additional Permasense® Monitors on Identified Circuits

As part of the work to upgrade the piping circuits per III.C.2 of this Reliability Program, which included identification of new locations for Permasense® monitors on 4CU piping circuits, Chevron completed an upgrade of the Permasense® monitors and system for the upgraded and existing piping circuits. Hot work for installation of the upgraded Permasense® monitors was completed during the 4CU turnaround in 4Q2016. These installations include a total of 118 monitoring locations, of which 9 are located on the outlet piping of F-1100A/B to C-1100. CCHS reviewed records demonstrating compliance with this measure in August 2018.

The Refinery has committed to the installation of 25 additional Permasense® monitors on carbon steel circuits in the Solvent De-Asphalter (SDA). Pursuant to letter dated July 31, 2018, Chevron requested the authority to install these monitors during its next scheduled turnaround in 2Q2019. The City approved this request on August 30, 2018. See Attachment 5. The monitors will be installed in the SDA to help confirm the predictive model results that there will be little-to-no sulfidation corrosion in the SDA post-Project. Chevron will be reporting on the progress of this recommendation in subsequent submittals of the Reliability Program Report.

C. Crude Unit Recommendations

The following preventative measures were included in the Program based on the belief that operational and feedstock changes from the Project could result in increased damage mechanism activity in the Crude Unit post-Project:

1. Since the Modernization Project did not commence operation prior to the referenced "2017 turnaround", this obligation is moot.

2. Chevron has separately submitted a report to the City pursuant to this requirement on August 15, 2018. Refer to Attachment 4 of this report. CCHS verified completion of this measure in August 2018.

3. Chevron has separately submitted a report to the City pursuant to this requirement on August 15, 2018. Refer to Attachment 4 of this report. CCHS verified completion of this measure in May 2018.

4. Tests have been run by Chevron on crude samples and crude blends to improve our understanding of the effects of sulfur speciation and H_2S evolution on sulfidation corrosion. The results of this testing are considered Confidential Business Information and were review by CCHS as part of its pre-operations verification in August 2018.

5. The integrity operating window (IOW) program has been implemented for critical Crude Unit parameters per API 584, with IOW table, alarm and alert structure, corrective actions, required bypass mitigations, and training. CCHS reviewed records demonstrating compliance with this measure in May 2018.

6. This obligation requires that, within one year of commencement of Project operations, Crude Splitter software predicted results be verified if identified trigger points (2.25 wt% and 2.75 wt % sulfur) are reached. Chevron is currently implementing a Crude Sulfur Monitoring process that will monitor the average monthly sulfur content of the crude being fed to the crude unit and alert Reliability Program task owners when crude sulfur triggers of 2.25 wt% or 2.75% are reached. This process assigns responsibilities across various organizations including Strategic Planning, Oils Planning, Finance, Technical, and OE/PSM, and will include periodic checks by key process owners within these organizations. Oils Planning will take a lead role in providing a look ahead for the Refinery to identify when it is anticipated that the trigger will be reached. This commitment will be implemented following commencement of Project operations, if triggered.

7. Chevron has revised the Asset Integrity Plans for V-1100 Crude Unit Atmospheric Column Reflux Drum, V-1190 Stabilizer Column Reflux Drum, and V-1160 Vacuum Column Overhead Seal Drum, to include inspection for Wet H_2S damage. Chevron has completed an external Automatic Ultrasonic Testing inspection of representative sections of the "water wet" portions of V-1100, V-1160, and V-1190 vessels and records demonstrating completion of this condition were reviewed by CCHS in May 2018. Chevron will complete this inspection again within one year of Project start-up. Further, a one-time internal inspection of these same vessels will be conducted at the first regularly scheduled maintenance turnaround after commencement of Project operations, using approved internal inspection techniques per the Chevron Wet H2S program.

8. Chevron has developed and implemented the following process monitoring and sampling plans in the Crude Unit overhead to observe impacts of increased sulfur levels post-startup of the Modernization Project.
   - The Crude Unit atmospheric column overhead accumulator, V-1100, is sampled for pH, chlorides, iron, and H2S (sulfides) which are recorded and monitored in the Crude Unit Process Monitoring and Optimization (PMO) workbook. In addition, IOWs are currently in place for these parameters.
   - The Crude Unit desalter, V-1102, is monitored for pH pursuant to a contract with Nalco, a specialty chemicals contractor, reported to the Crude Unit Process Engineer and other unit personnel on a periodic basis, and discussed as needed monthly in the Unit Reliability Brief (URB) meetings. URB meetings are attended by Area Business Unit management and subject matter experts in the areas of reliability and operations to review reliability topics relative to current operation.
   - Measuring H2S (sulfides) in the water of V-1100 and monitoring in the PMO workbook will allow Chevron to analyze the atmospheric tower post-Modernization to quantify if there is increased H2S in the overhead system.

- Pursuant to condition III.C10, Chevron conducted a historical review of mercaptan in jet cuts of crude and crude blends to establish flags in the crude acceptance tool. The refinery's crude acceptance tool includes flags in the jet cut for high mercaptans. If a flag is reached, Materials Engineering will review the asset integrity plan and consider the potential for increased corrosion. While this condition references a "kerosene cut", the Refinery's Crude Unit does not produce kerosene and no "kerosene cut" was identified in the Environmental Impact Report (EIR).
- The asset integrity plan for the Crude Unit identifies the locations of the Permasense® probes installed pursuant to condition III.B. The data collected from these probes is considered as part of Chevron's review of the asset integrity plan per MFG 525.

Records demonstrating completion of this condition were reviewed by CCHS in May 2018.

9. Chevron currently has the following controls and processes to assure carbon steel piping components downstream of high sulfur streams operating > 500F are not inadvertently placed into continuous service.
   - Manufacturing 520 (or MFG 520), Damage Mechanism Review Instruction, sets forth work processes to identify applicable damage mechanisms per equipment and piping class metallurgy. This standard incorporates industry practices and recommendations including API Recommended Practice 571, Damage Mechanisms Affecting Fixed Equipment in the Refinery Industry and API Recommended Practice 584, Integrity Operating Windows.
   - Manufacturing 525 (or MFG 525), Fixed Equipment Asset Strategies Standard sets expectations for asset strategies designed to prevent and mitigate losses of containment in fixed equipment and describes the process for creating and maintaining these strategies.
   - Refinery Instruction, RI-302, Color Identification and Labeling of Equipment and Pipelines, requires all drop out spools and temporary piping to be painted with purpose colored bands for easy identification.
   - One of the Phase 4 deliverables in the IMPACT process is the development of the Temporary Connections List. Each item on the list is also tracked on the turnaround blind list and the Quality Control database to ensure removal prior to startup after a maintenance turnaround event. Chevron utilizes the IMPACT process to schedule, plan, and execute maintenance activities for planned maintenance turnaround events for each process unit.
   - Refinery Instruction, RI-370, Management of Change, requires an MOC be reviewed by appropriate subject matter experts when any type of metallurgy change is requested.

   Records demonstrating implementation of this condition were reviewed by CCHS in May 2018.

10. In 2017, Chevron conducted a 10-year historical review of purchased crudes and processed crude blends. Maximum mercaptan concentrations for jet cuts were calculated for the representative year of 2016. A review of the Permasense® data for the historical periods of time when these maximum concentrations were exceeded noted

no increases in corrosion rates. As a result of this analysis, Chevron elected to incorporate a mercaptan flag for jet cut into its crude acceptance tool which would trigger an MOC action item to perform a lookback on the period of time where higher mercaptans in jet cut were processed. The MOC action item specifies that the Materials Engineer complete a review of the Permasense® data for the period of time. This is recorded in an MOC addendum called the "MOC for Crude Review [Required for RMP Compliance Plan]". Records will be attached to the MOC. Records were reviewed by CCHS in May 2018 and August 2018.

11. The Crude Unit atmospheric overhead piping was metallurgically upgraded in 4Q 2016, so that all piping is now either Hastelloy clad/overlay or solid Hastelloy, from the outlet of C-1100 to the inlet of E-1101s.

    The other piping circuit in the Crude Unit having a dissimilar metal interface (similar to that of the overhead line prior to the upgrade), is the transfer line from the atmospheric furnace to the atmospheric column. This piping has an interface between 316 SS and 5CR as it heads towards the atmospheric column. The inspection plan for this circuit includes multiple CMLs immediately downstream of the interface in order to monitor for corrosion in that location.

    Records demonstrating completion of this condition were reviewed by CCHS in May 2018.

D. Hydroprocessing Recommendations

1. Chevron has committed to monitoring post-Project sulfur content of crudes being fed to the crude unit and use 2.25% sulfur content of feed as a trigger to conduct a review of "inspections plans for the distillation section of the hydroprocessing units where sulfidation corrosion rates have been 'erratic' and uncertain, per API 939-C". This process assigns responsibilities across various organizations including Strategic Planning, Oils Planning, Finance, Technical, and OE/PSM and will include periodic checks by key process owners within these organizations. Oils Planning will take a lead role in providing a look ahead for the Refinery to identify when it is anticipated that the trigger will be reached. Chevron has confirmed that, since Project approval, average sulfur content of crude has been consistent with baseline levels and has not exceeded 2.25 wt%.

2. Chevron has separately submitted a letter to the City pursuant to this requirement on August 3, 2017. Refer to Attachment 6 of this report. Records demonstrating completion of this condition were reviewed by CCHS in May 2018.

3. Chevron has developed and implemented the process monitoring and sampling plans in the hydroprocessing units to observe applicable damage mechanisms as identified in the EIR post-startup of the Modernization Project. The hydroprocessing units implicated by this measure are: NHT, JHT, DHT, TKN, TKC, LNC, and HNC. Process conditions are monitored to adhere to equipment metallurgical limits with respect to ammonium

bisulfide corrosion in the reactor effluent air coolers (REAC) of hydroprocessing units. These process conditions are monitored through the Refinery's IOW program.

Process parameters which effect ammonium bisulfide corrosion include H2S partial pressure, ammonium bisulfide concentration, water dew point temperature upstream of wash water injection, water fluid phase of water at injection site, and fluid velocity downstream of wash water injection. Records demonstrating implementation of this condition were reviewed by CCHS in May 2018.

4. The integrity operating windows (IOWs) program has been implemented for critical hydroprocessing reliability variables such as the wash water rate for NH4HS corrosion control with IOW table, alarm and alert structure, corrective actions, required bypass mitigations, and training. Records demonstrating implementation of this condition were reviewed by CCHS in May 2018.

5. The REAC Corrosion Control Project was substantially completed during the 2014 TKN turnaround, resulting in extensive metallurgy upgrades. Current operations of certain TKN systems not modified by the Modernization Project are being managed per the HP-002 Reactor Effluent Air Cooler (REAC) Piping and Equipment Corrosion Control Guidelines (i.e., the "REAC best practice guidelines") through ongoing inspections to help ensure corrosion rates will remain under the REAC best practice guidelines and, if determined to be necessary, targeted upgrades during the next TKN turnaround. Records demonstrating completion of this condition were reviewed by CCHS in May 2018.

E. SDA Recommendations

1. Chevron has selected and scheduled inspection for appropriate wet H2S cracking detection in a SDA vessel within 1 year of Project operation.

2. Chevron is currently implementing a Crude Sulfur Monitoring process that will monitor the average monthly sulfur content of the crude being fed to the crude unit and alert Reliability Program task owners when crude sulfur triggers of 2.25 wt% or 2.75% are reached. This process assigns responsibilities across various organizations including Strategic Planning, Oils Planning, Finance, Technical, and OE/PSM and will include periodic checks by key process owners within these organizations. Oils Planning will take a lead role in providing a look ahead for the Refinery to identify when it is anticipated that the trigger will be reached. This condition requires that a water boot analysis of corrosive constituents be conducted in the SDA upon triggering 2.25 wt% and 2.75 wt% sulfur of crude oil processed at the Refinery.

3. This obligation requires that, within one year of commencement of Project operations, predicted results be verified for the SDA if identified trigger points (2.25 wt% and 2.75 wt % sulfur) are reached. Chevron is currently implementing a Crude Sulfur Monitoring process that will monitor the average monthly sulfur content of the crude being fed to the crude unit and alert Reliability Program task owners when crude sulfur triggers of 2.25 wt% or 2.75% are reached. This process assigns responsibilities across various

organizations including Strategic Planning, Oils Planning, Finance, Technical, and OE/PSM and will include periodic checks by key process owners within these organizations. Oils Planning will take a lead role in providing a look ahead for the Refinery to identify when it is anticipated that the trigger will be reached.

4. Chevron has scheduled a follow-up smart pig inspection of F-100 and F-120 furnace tubes for the first planned maintenance after the SDA following at least 1 year of post-Modernization Project operating conditions. Because the next SDA turnaround is scheduled for 2Q2019 which will not occur in a timeframe that will reflect post-project operating conditions, this obligation will be completed during the next SDA turnaround currently planned for 2023.

5. The Refinery has committed to the installation of 25 additional Permasense® monitors on carbon steel circuits in the Solvent De-Asphalter (SDA) during its next scheduled turnaround in 2Q2019. The monitors will be installed in the SDA to help confirm the predictive model results that there will be little-to-no sulfidation corrosion in the SDA post-Project. Chevron will be reporting on the progress of this recommendation in subsequent submittals of the Reliability Program Report. See Attachment 5.

6. The integrity operating windows (IOWs) program for the SDA unit has been implemented consistent with API RP-584 for the identified damage mechanisms in the SDA unit as referenced in Appendix 4.13-REL with IOW table, alarm and alert structure, corrective actions, required bypass mitigations, and training. CCHS reviewed documents demonstrating implementation of this condition in May 2018.

7. Process monitoring and sampling for post-Modernization Project operations for the SDA unit will be completed prior to the commencement of Project operations. Chevron has developed and implemented process monitoring and sampling plans for the SDA to observe applicable damage mechanisms as identified in the EIR post-startup of the Modernization Project. These plans include feed sulfur monitoring as well as sour water pH and sulfide content. Records demonstrating implementation of this condition were reviewed by CCHS in May 2018.

F. Amine Systems Recommendation

Chevron currently monitors amine loading and heat stable amine salts (HSAS) in the amine system and is collecting pre-project data for purposes of comparison. Records demonstrating implementation of this condition were reviewed by CCHS in May 2018. Following commencement of project operations, Chevron will continue to collect sampling data for one year and then will undertake a comparison to the pre-project data set.

G. Sulfur Recovery Unit Recommendation

The liquid oxygen injection facility is partially built from the previous construction phase and located near the SRU bullpen. Chevron has confirmed from the liquid oxygen vendor that the equipment design utilizes the design and installation best practice details common in industry for

oxygen piping systems. The project anticipates that stainless steel piping will have to be cleaned after the time it has been in the field and has currently engaged the liquid oxygen vendor to assist in conducting an equipment review and developing commissioning activities for this system prior to startup.

H. Sour Gas System Recommendations

Chevron is developing its implementation strategy for the sour gas system recommendations which mature following commencement of Project operations. Chevron is in the process of conducting reviews and developing its Fixed Equipment Asset Strategies for each refinery process unit, including the sour gas systems. The development of these strategies follows Chevron's Manufacturing Standard (MFG-525) which is intended to prevent and mitigate loss of containment in fixed equipment, by identifying damage mechanisms, establishing IOWs, and prescribing inspection plans. Chevron intends to utilize this program implementation to meet the elements of this requirement.

1. This obligation requires a review of post-Project assumptions regarding ammonium bisulfide concentrations, dew points and potential for salt condensation in the sour gas piping if identified crude trigger points (2.25 wt% and 2.75 wt % average annual sulfur content) are reached. Chevron is currently implementing a Crude Sulfur Monitoring process that will monitor the average monthly sulfur content of the crude being fed to the crude unit and alert Reliability Program task owners when crude sulfur triggers of 2.25 wt% or 2.75% are reached. This process assigns responsibilities across various organizations including Strategic Planning, Oils Planning, Finance, Technical, and OE/PSM and will include periodic checks by key process owners within these organizations. Oils Planning will take a lead role in providing a look ahead for the Refinery to identify when it is anticipated that the trigger will be reached.

2. The integrity operating windows (IOWs) program for the sour gas system has been implemented per API RP 584 for the identified damage mechanisms in the sour gas system as referenced in Appendix 4.13-REL with IOW table, alarm and alert structure, corrective actions, required bypass mitigations, and training. CCHS reviewed documents demonstrating implementation of this condition in May 2018.

I. Sour Water System Recommendations

1. Chevron completed a P&ID and Inspection Isometric level review of the existing inspections plans for the applicable sour water piping systems. Inspection plans were reviewed against applicable damage mechanisms as well as applicable Chevron standards, including HP-002 REAC Piping and Equipment Corrosion Control Guidelines to ensure appropriateness of CML placement and selected NDE methods. In addition, sour water piping within identified process units including WWT, TKC, TKN, LNC, HNC, and SWC, has been analyzed according to the Chevron Manufacturing Standard MFG-525 for Fixed Equipment Asset Strategies (FEAS). Inspection plans for these piping circuits were updated to align with the inspection strategy for ammonium bisulfide

corrosion. CCHS reviewed records demonstrating compliance with this measure in August 2018.

2. This obligation requires that monitoring and sampling of ammonium bisulfide concentrations and velocities in the sour water piping and H2S concentrations in the H2S Stripper and NH3 Stripper overhead systems be conducted if identified crude trigger points (2.25 wt% and 2.75 wt % average annual sulfur content) are reached. Chevron is currently implementing a Crude Sulfur Monitoring process that will monitor the average monthly sulfur content of the crude being fed to the crude unit and alert Reliability Program task owners when crude sulfur triggers of 2.25 wt% or 2.75% are reached. This process assigns responsibilities across various organizations including Strategic Planning, Oils Planning, Finance, Technical, and OE/PSM and will include periodic checks by key process owners within these organizations. Oils Planning will take a lead role in providing a look ahead for the Refinery to identify when it is anticipated that the trigger will be reached.

3. This obligation requires that within 1 year after commencement of Project operations, Chevron will review assumptions regarding the severity of wet H2S damage in the overhead systems to determine if a change in the Category 2 Wet H2S vessels is warranted and if so, to conduct a wet H2S cracking inspection. This will be completed following commencement of Project operations.

4. Chevron will continue existing inspection techniques for all the overhead piping from the NH3 stripper to the reflux drum. CCHS reviewed records demonstrating compliance with this measure in August 2018.

5. The integrity operating windows (IOWs) program for the sour water system has been implemented per API RP 584 for the identified damage mechanisms in the sour water system as referenced in Appendix 4.13-REL with IOW table, alarm and alert structure, corrective actions, required bypass mitigations, and training. CCSH reviewed documents demonstrating implementation of this condition in May 2018.

J. Recovered Oil Recommendations

Chevron reviewed CML locations at the C-710 injection nozzle and adjacent C-710 tower shell. Chevron utilized existing CML locations on the C-710 injection nozzle and modified CML locations on the C-710 tower shell. These changes have been implemented to inform inspections post-Project startup. CCHS reviewed records demonstrating compliance with this measure in May 2018.

IV. Ongoing Regulatory Review and Reporting

A. Re-evaluate and Report Post-Project Operating Assumptions from Reliability Review

Chevron is currently implementing a Crude Sulfur Monitoring process that will monitor the average monthly sulfur content of the crude being fed to the crude unit and alert Reliability Program task owners when crude sulfur triggers are reached. This process assigns responsibilities across various organizations including Strategic Planning, Oils Planning, Finance, Technical, and OE/PSM and will include periodic checks by key process owners within these organizations. Oils Planning will take a lead role in providing a look ahead for the Refinery to identify when it is anticipated that the trigger will be reached.

B. Report Inspection Results for Identified Circuits in Service Susceptible to High-Temperature Sulfidation Corrosion and other Damage Mechanisms Effected by the Project

This obligation will be triggered beginning 1 year from commencement of Project operations.

C. Process Hazard Analyses (PHA) Revalidation

Chevron has completed pre-construction Process Hazard Analyses (PHAs) inclusive of inherently safer systems analyses (ISSAs), damage mechanism reviews (DMRs) and layers of protection analyses (LOPAs) for Modernization Project components which were reviewed by CCHS in August 2016, May 2018, and August 2018. Post-construction PHAs for the Hydrogen Plant and related hydrogen project components were reviewed by CCHS in May 2018 and August 2018. Remaining post-construction PHA documents for sulfur related project scope will be made available for verification prior to the startup of those components.

D. Share Schedule for and Report Results of Process Hazard Analyses (PHAs) Considering Damage Mechanisms

Chevron has separately submitted a report pursuant to this requirement on December 21, 2017. Refer to Attachment 7 of this report.

E. Updated Safety Program List

A list of programs, procedures, and other Refinery documentation used to implement this Reliability Program or the corrective actions described in Section II has been updated. Chevron maintains this list at the Refinery and will make it available to the County during audits, inspections, or upon request.

F. Other Reporting Obligations

1. Probation Terms Reporting

Pursuant to the conditions of probation, the probationary period ended in February 2017. During the probationary period, Chevron did not receive any notices from the State or Cal/OSHA that Chevron was in violation of any term of probation. Therefore, no further annual reports are necessary. CCHS verified compliance with this measure in May 2018.

2. RISO Audits

Chevron shall provide the required annual report following commencement of Project operations.

G. Community Engagement

Chevron has separately submitted an email to the City pursuant to this requirement on May 3, 2018. Refer to Attachment 8 of this report.

H. Reporting Obligation

This annual Reliability Program Report has been prepared to provide the status of all requirements of this Reliability Program. This report is being submitted to meet the annual reporting obligation. Subsequent reports will continue to be submitted annually, including a report prior to the start of Project operations.

Attachments-
Attachment 1. Modernization Project Reliability Program
Attachment 2. Reliability Program-Related CUP and MMRP Commitments
Attachment 3. Reliability Program Implementation of General Recommendations
Attachment 4. Reliability Program Update for Conditions III.A, III.C2 and C3
Attachment 5. City of Richmond Acceptance of Alterations to CUP Conditions
Attachment 6. Reliability Program Update for Condition III.D2
Attachment 7. Reliability Program Update for Condition IV.D
Attachment 8. Reliability Program Update for Condition IV.G

ATTACHMENT 1
Modernization Project Reliability Program

ATTACHMENT 2
Reliability Program-Related CUP and MMRP Commitments

ATTACHMENT 3
Reliability Program Implementation of General Recommendations

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Reliability Program Update for Conditions III.A, III.C2 and C3

ATTACHMENT 5
City of Richmond Acceptance of Alterations to CUP Conditions

ATTACHMENT 6
Reliability Program Update for III.D2

ATTACHMENT 7
Reliability Program Update for Condition IV.D

ATTACHMENT 8
Reliability Program Update for Condition IV.G

Attachment 7
MM4.13-13a Report

Jeff Hartwig
Project Director
Richmond Refinery

Richmond Refinery
Chevron Products Company
841 Chevron Way
Richmond, CA 94801

Date May 3, 2016

Lina Velasco, Senior Planner
City of Richmond
450 Civic Center Plaza
Richmond, CA 94804

Re: Richmond Modernization Project Mitigation Monitoring and Reporting Program. MM 4.13-13a

Dear Lina:

The Chevron Richmond Refinery ("CUSA") submits this letter to comply with the pre-construction reporting requirement in mitigation measure ("MM") 4.13-13a of the Richmond Modernization Project Mitigation Monitoring and Reporting Program. MM 4.13-13a provides:

> Prior to restarting construction of the Modernization Project, and again prior to commencement of Project operations, Chevron shall submit to the City a report describing the status of its compliance with all corrective action measures (including, but not limited to, compliance with probationary terms) imposed or agreed to as a result of the agency proceedings relating to the August 6, 2012 fire. As part of this report, Chevron shall describe its ongoing consultations with the agencies that investigated the August 6, 2012 fire, including Cal/OSHA, the CSB, and Contra Costa County, including any feedback or direction that has been provided by those agencies concerning implementation of the corrective action and agency recommendations and Chevron's response thereto.

CUSA has previously submitted reports to comply with MM 4.13-13d updating the City concerning the corrective actions taken by CUSA to address recommendations from the U.S. Chemical Safety Board ("CSB"), as well as in response to CUSA's own investigation. The most recent report, which was submitted on April 4, 2016 and is attached hereto, describes the status of compliance with corrective actions taken to implement agency recommendations and corrective actions implemented by CUSA in response to its own investigation.

This letter updates the City concerning CUSA's ongoing consultations with the California Department of Industrial Relations, Division of Occupational Safety and Health ("Cal/OSHA"), as well as CUSA's ongoing implementation of the terms and conditions of probation in the case of *People v. Chevron U.S.A. Inc.*, No. 162745-4 (Cal. Sup. Ct, Aug. 5, 2013).

Cal/OSHA

On January 30, 2013, Cal/OSHA issued citations following two inspections at the Refinery.

Cal/OSHA Inspection No. 314331877 resulted in Cal/OSHA issuing 17 citations, which relate to the August 6, 2012 fire. The citations generally fall into four categories: emergency response, process safety documentation, Injury and Illness Prevention Program, and mechanical integrity under the process safety management ("PSM") standards. These citations are currently the subject of an administrative appeal.

Cal/OSHA Inspection No. 314332370 resulted in Cal/OSHA issuing 8 citations, which did not relate to the August 6, 2012 fire. The appeal of these citations was heard by the Administrative Law Judge, who issued an opinion on January 29, 2015, vacating four of the eight citations, and re-classifying the remaining four citations from "serious" and "serious willful" to "general." Penalties were reduced from $180,500 to $2,810. The Occupational Safety and Health Appeals Board issued a Decision After Reconsideration ("DAR"), which overturned the Administrative Law Judge's opinion. CUSA has appealed the DAR through a petition for a writ of mandate to the Superior Court, which is currently pending.

***People v. Chevron U.S.A. Inc.*, No. 162745-4 (Cal. Sup. Ct, Aug. 5, 2013)**

On August 5, 2013, CUSA entered a *nolo contendere* plea to six misdemeanor counts of violations of the California Labor Code and the California Health and Safety Code in connection with the August 6, 2012 fire. As terms and conditions of probation, CUSA agreed to the implementation of a 100% component inspection of carbon steel piping systems identified as susceptible to sulfidation corrosion; the modification of work processes for the review of damage mechanisms for PSM-covered processes; the tracking of certain fixed equipment recommendations submitted during turnaround planning; and the development and implementation of enhanced training. CUSA also agreed to pay a fine of $1,280,000, and a total of $720,000 in restitution payments to Richmond BUILD ($145,369), the Bay Area Air Quality Management District ($185,000), Cal/OSHA ($299,631), and the California Attorney General's Office ($90,000). To date, the Refinery has met every implementation deadline in the terms and conditions of probation.

Please feel free to contact me with any questions.

Sincerely,

Jeff Hartwig

Attachment 8
Monthly Hires Report

human energy®

modernization project monthly hires report

chevron richmond refinery
December 2018

contents

tables

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1 purpose

In accordance with the Local Content Agreement and Environmental and Community Investment Agreement dated August 4, 2014, for the Richmond Refinery Modernization Project, Chevron U.S.A. Inc. (“CUSA”) is providing this monthly update on local hiring.

2 training and workforce readiness programs

Chevron continues to support programs to train residents of Richmond and unincorporated North Richmond for work at the Richmond Refinery and on the Modernization Project.

3 local hiring

Chevron continues to work with construction contractors and non-construction suppliers in attempt to employ Richmond residents on the Modernization Project. Section 4. A. (3) (c) of the ECIA states, “The requirements of sections (a) and (b) shall not apply to hours of work performed by residents of states other than the State of California, and such hours shall not be considered determining satisfaction of percentage requirements described herein.”. Therefore, the following metrics are for the State of California.

3.1 Metrics

Below are the ECIA, Section 4. A. (3) (b) metrics for the State of California.

Table 1: Modernization Hires

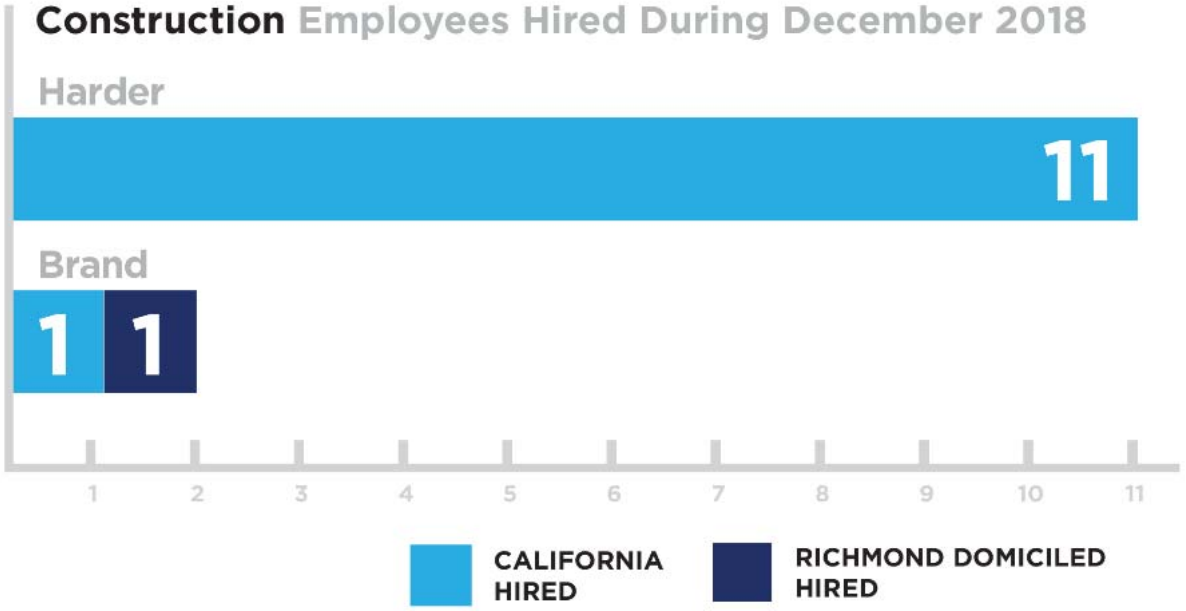

Table 2: Percentage Richmond Domiciled Modernization Hires

Table 3: Modernization Project Jobs

Modernization Project Job Descriptions

Table 4: Wage Bill

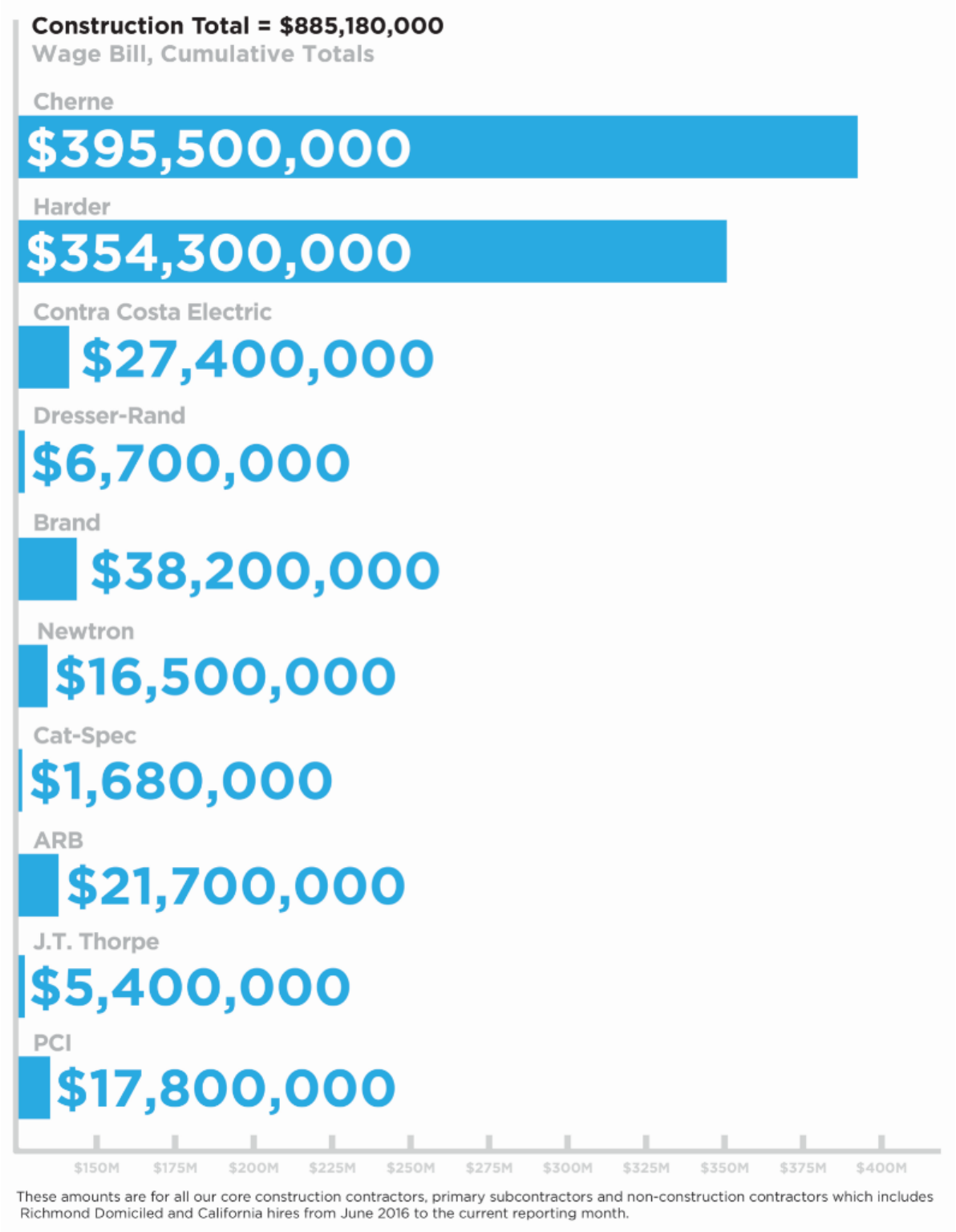

Table 5: Community Programs

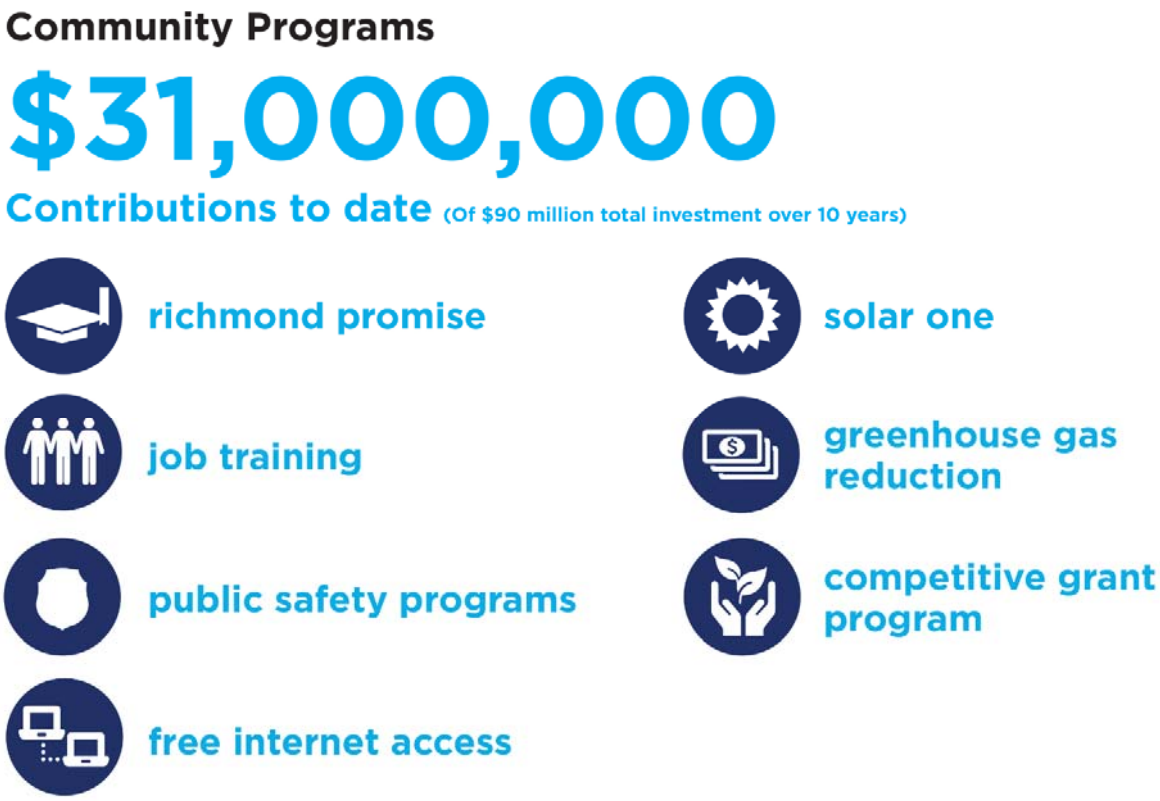

Table 6: Cumulative Modernization Hires

Table 7: Cumulative Percentage Richmond Domiciled Modernization Hires

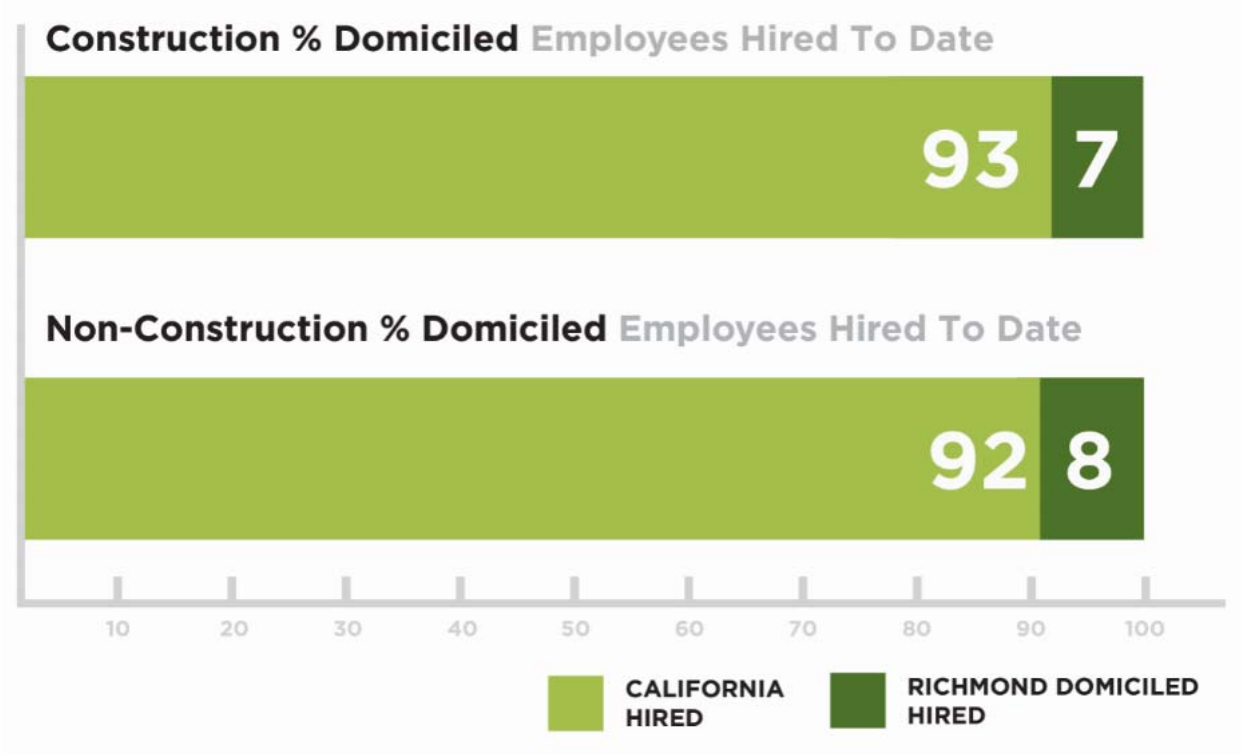

Table 8: Total Modernization Hires