DOCKETED

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Investigation Report of 2017 Turbine Failure and Fire

Delta Energy Center (98-AFC-03C)

INVESTIGATION REPORT	
Allegation(s)/Issue(a)	Steam turbine failure and fire at Calpine's Delta Energy Center (DEC) in Pittsburg, January 29, 2017.
Name of facility subject to investigation	Delta Energy Center 1200 Arcy Lane Pittsburg, CA 94565
Name of complainant (if appropriate)	N/A
Investigator(s)	• Anwar Ali, STEP Division Compliance Project Manager (CPM) • Geoff Lesh, STEP Division Senior Mechanical Engineer

Executive Summary

On January 29, 2017, Delta Energy Center (DEC) experienced a steam turbine generator failure event during startup which caused a fire inside the steam turbine generator containment building. This event resulted in damage to the steam turbine and steam turbine generator which rendered the facility inoperable.

The cause of the steam turbine generator failure and fire was investigated independently by Calpine, the California Public Utility Commission (CPUC), and the California Energy Commission (Energy Commission). The Energy Commission staff (staff) conducted four investigatory site visits.

Calpine implemented the emergency response procedure during the event. Calpine also notified the relevant federal, state, and local agencies of the occurrence of the event.

Staff conducted its own investigation of the event. Staff cannot definitively define the failure mechanism. Staff did not find evidence of any violation of the Energy Commission Conditions of Certification by Calpine as a result of the steam turbine generator failure and fire.

Staff also reviewed Calpine's root cause analysis (RCA)/investigation report. Calpine's RCA did not determine the exact trigger for the event. However, the RCA determined that the first blade in the low pressure section (L-0) of the steam turbine failed. The report determined that erosion and pitting from cavitation had caused subsurface fatigue cracks that weakened the blade. The extreme vibration resulting from imbalance in the rotating turbine due to the failure (breakage) of the blade at full speed caused propagating damage throughout the whole turbine and co-rotating equipment, including the generator. Destruction of shaft bearings led to the release of bearing lube oil and generator cooling hydrogen gas, both of which ignited and contributed to the subsequent fire. Therefore, theRCA determined that sudden blade

failure is the only scenario supported by the combination of information (on-site, operational, and metallurgical). Metallurgical testing showed no evidence of physical manufacturing defects.

Calpine notified the United States Army Corps of Engineers (USACOE), San Francisco Bay Regional Water Quality Control Board (RWQCB), Contra Costa County Hazardous Materials Programs, and California Department of Fish and Wildlife (CDFW) of the spill of lube oil-water mixture into the Dowest Slough during the turbine failure and as a result of activities associated with the containment of the fire. The spill of lube oil-water mixture was cleaned up under the guidance of CDFW. Subsequently, the slough was deemed clean and free of contamination.

Compliance History of Project

None relating to steam turbines generator failure and fires.

Scope of Investigation

This investigation was initiated to gather facts pertaining to the root cause of the steam turbine generator failure and fire, the required environmental clean-up, and to confirm compliance with Energy Commission Conditions of Certification.

Investigation Sequence of Events

January 29, 2017. Energy Commission CPM received Calpine's e-mail notification that a steam turbine generator failure event had occurred, which resulted in a fire inside the steam turbine generator containment building. The notification indicated that the turbine failure and fire was limited to the facility and there was no risk or danger to the neighboring communities. The local fire department responded to the site and there were no injuries to any employees or first responders. Calpine also indicated that the cause of the event was not known and that they mobilized a team to conduct a complete and thorough assessment (**Appendix 1**).

January 30, 2017. CH2MHILL, Calpine's consultant, prepared a Technical Memorandum concerning Calpine Delta Energy Center Oil Discharge Site Observations and Response Recommendations, January 30, 2017 (**Appendix 2**).

January 31, 2017. Staff conducted a site visit to DEC to investigate the event and fire which had occurred on January 29, 2017. The first visit was to verify early reports (the Calpine notification and various media news reports) and to obtain more details about the steam turbine failure and the fire from Calpine. Unfortunately, at the time of this visit, other than the initial response by the fire department, no details relating to the cause of the incident or its consequences were known. At the time of this visit, the entire turbine enclosure and the area beneath it were taped-off and inaccessible to any personnel while determinations of whether the area was structurally sound were being

made. Calpine personnel had not yet been inside the steam turbine containment building where the incident occurred.

Details of the incident are provided in Site Visit Report (**Appendix 3**). The following information was provided by Calpine during the site visit:

- On Sunday, January 29, 2017 at approximately 4:00 pm, a steam turbine generator failure triggered a fire during plant startup. After ramping up the three combustion turbines for two hours, steam turbine roll was initiated. Due to over speeding of the steam turbine, the operators initiated a manual trip. Immediately after, a loud "boom" was heard from the steam turbine enclosure. The fire sensors alarmed and the water deluge systems activated.
- During the incident, on one side of the steam turbine containment building, smoke and flames were seen coming out of the louvered vents located high on the outside wall.
- The Contra Costa County Fire Department arrived within a few minutes. The fire department began a deluge of water on and around the steam turbine enclosure. The fire was fully contained by 6:30 pm.
- Lube oil mixed with fire water spilled and drained from the turbine containment building into the curbed secondary containment area immediately below. An estimated 150 gallons of oil-water mixture overflowed the secondary containment and flowed through the storm drains to the storm water outfall located at Dowest Slough. The rest of the lube oil-water mixture was pumped into an onsite temporary storage tank.
- Calpine notified CDFW, USACOE, RWQCB, and Contra Costa County Hazardous Materials Programs, about the spill and impact to the Dowest Slough. The residual lube oil on the asphaltic concrete was pressure washed and the wash liquid vacuumed into a tank truck for disposal and recycling. Oil absorbent pads were placed around each storm drain, at the outfall, at an undercrossing next to the railroad track, and before and at the end of Dowest Slough.
- During this site visit, power production at the plant was completely shut down. Staff was told that until damage assessment and repair schedules were made, when the plant will be operational again was unknown.

January 31, 2017. Calpine notified USACOE of the event and requested authorization to implement Emergency Response Measures (placement of absorbent booms) for a discharge of water mixed with lubricating oil into Dowest Slough, owned by Dow Chemical Company.

February 1, 2017. Calpine submitted 72-Hour Report to Contra Costa County Hazardous Materials Programs for discharge of lubrication oil to Dowest Slough

(**Appendix 4**).

February 2, 2017. USACOE submitted a letter to Calpine Delta Energy Center concerning the Department of Army authorization to implement emergency response measures for discharge of water mixed with lubricating oil into Dowest Slough (**Appendix 5**).

February 13, 2017. Staff conducted a follow up site visit to DEC. The purpose of the visit was to observe and collect information on areas of the facility which were not accessible during the first site visit on January 31, 2017. The steam turbine generator upper casing and the rotor had been removed from the steam turbine, enabling staff to view the extent of damage that had occurred. Details of this visit are provided in the Site Visit Report (**Appendix 6**). The following is the summary of staff's observations during the site visit:

- Severe damage to the steam turbine generator; needs rotor replacement.
- Severe damage to the steam turbine; needs rotor and casing refurbished.
- No structural damage was apparent to the building and turbine foundation.
- The exact cause of the turbine failure and the sequence of events leading to the turbine failure were still unconfirmed at this point.
- Staff did not see any evidence that lube-oil and hydrogen gas had burned.
- Absorbent booms were deployed at the slough and the cleaning efforts to prevent further discharge of lubrication oil to the slough have been successful. Calpine's contractor was on site to ensure periodic replacement of the absorbent booms when needed and as directed by the CDFW, the lead agency for the lube oil discharge and clean-up effort.

February 22, 2017. Delta Energy Center, LLC, filed a Petition to Amend (PTA) with the Energy Commission to modify DEC. The petition sought the Energy Commission's approval to make temporary modifications to the steam turbine condenser to operate the facility in simple cycle mode to enable DEC to return to service to support the California Independent System Operator in resource planning for the summer of 2017, and allow simultaneous repairs to the steam turbine and enclosures.

February 28, 2017. Calpine submitted a 30-Day Update Report to Contra Costa County Hazardous Materials Programs (**Appendix 7**).

March 8, 2017. At the Business Meeting, the Energy Commission approved DEC's Petition to Amend to modify the facility to allow for temporary operation in simple cycle mode. The main objective was to have DEC be available for peak demand for the summer of 2017, as requested by California Independent System Operator (CAISO).

March 15, 2017. Calpine's submitted an Emergency Response Final Report to USACOE and RWQCB. (**Appendix 8**).

March 30, 2017. Calpine's submitted the Second 30-Day Update Report to Contra

Costa County Hazardous Materials Programs (**Appendix 9**).

April 20, 2017. Details of the staff site visit are provided in the Site Visit Report (**Appendix 10**).

May 30, 2017. Calpine submitted the Third 30-Day Update Report to Contra Costa County Hazardous Materials Programs (**Appendix 11**).

December 8, 2017. Calpine submitted the Investigation Summary for Calpine Delta Steam Turbine Generator Failure Event.

February 15, 2018. Staff conducted a site visit to review the Calpine's Root Cause Analysis (RCA)/Investigation Report prepared by its consultant Structural Integrity Associates, Inc. For details, refer to the Site Visit Report **(Appendix 12)**.

April 12, 2018. Calpine submitted the Delta Steam Turbines-Generator Failure Event Investigation Summary (**Appendix 13**).

Conditions of Certification / Laws, Ordinances, Regulations, Standards (LORS) Conformance

SOIL & WATER-1:
Prior to beginning any clearing, grading, or excavation activities associated with project construction, the project owner will develop and implement a Storm Water Pollution Prevention Plan.

Verification: At least 30 days prior to the start of construction, the project owner will submit to the Energy Commission Compliance Project Manager (CPM) a copy of the Storm Water Pollution Prevention Plan.

SOIL & WATER-2:
Prior to the initiation of any earth moving activities, the project owner shall submit an Erosion Control and Storm Water Management Plan for City of Pittsburg Community Development Department review and Energy Commission staff approval. The final plan shall contain all the elements of the draft plan with changes made to address the final design of the project.

Verification: The final Erosion Control and Storm Water Management Plan shall address all comments of the City of Pittsburg Community Development Department and be submitted to the Energy Commission CPM for approval at least 30 days prior to the initiation of any earth moving activities.

Findings and Conclusions

Summary of the staff's findings and conclusions:

- On January 29, 2017, a steam turbine generator failure occurred at DEC, which caused damage to the steam turbine generator and steam turbine, including rotating components and bearings.
- Calpine plant personnel responded by immediately calling 911 and let the fire

department handle the emergency situation. There were three employees on site at the time of the steam turbine failure and fire. No Calpine employees or members of the public were injured during the event.

- Calpine followed several steps in notifying the federal, state, and local agencies of the incident. Calpine notified USACOE, RWQCB, Contra Costa County Hazardous Materials Programs, and CDFW of the spill of lube oil-water mixture into the Dowest Slough during the turbine failure and as a result of activities associated with the containment of the fire. The spill of lube oil-water mixture was cleaned up under the guidance of CDFW. Subsequently, the slough was deemed clean and free of contamination.
- An independent investigator contracted by Calpine Corporation assisted with the failure investigation and provided input on Calpine's overall root cause assessment. The investigator initiated site work on February 7, 2017, and developed a cause map, and followed a systematic guide for investigating the cause(s) of the turbine failure by thorough consideration and examination of multiple potential causes or contributing factors.
- Staff performed an on-site review of the Calpine's RCA. The RCA did not determine the exact trigger for the event. However, it was determined that the first blade in the low pressure section (L-0) of the steam turbine failed. The report determined that erosion and pitting from cavitation caused subsurface fatigue cracks that weakened the blade. The extreme vibration resulting from imbalance in the rotating turbine due to the failure (breakage) of the blade at full speed caused propagating damage throughout the whole turbine and co-rotating equipment, including the generator. Destruction of shaft bearings lead to release of bearing lube oil and generator cooling hydrogen gas, both of which ignited and contributed to the subsequent fire. The RCA determined that sudden blade failure is the scenario supported by a combination of information (on-site, operational, and metallurgical). Metallurgical testing showed no evidence of physical manufacturing defects.
- Staff conducted its own investigation of the event and did not find evidence of any violation of Energy Commission Conditions of Certification by Calpine as a result of the steam turbine generator failure and fire.
- Staff cannot definitively define the failure mechanism for the steam turbine generator.

Appendices

- **Appendix 1**. Calpine's E-mail Notification of Fire at Delta Energy Center on January 29, 2017.
- **Appendix 2**. CH2MHILL'sTechnical Memorandum- DEC Oil Discharge Site Observations and Response Recommendations. January 30, 2017.

- **Appendix 3**. January 31, 2017 Site Visit Report.
- **Appendix4**. Calpine's 72-Hour Report for DEC Fire Incident. February 1, 2017.
- **Appendix 5.** Letter from United States Army Corps of Engineers to Calpine Delta Energy Center concerning the Department of Army authorization to implement emergency response measures for discharge of water mixed with lubricating oil into Dowest Slough. February 2, 2017.
- **Appendix 6**. February 13, 2017 Site Visit Report.
- **Appendix 7.** Calpine's 30-Day Update Report to Contra Costa County Hazardous Materials Programs. February 28, 2017.
- **Appendix 8.** Calpine's Emergency Response Final Report to United States Army Corps of Engineers and Regional Water Quality Control Board. March 15, 2017.
- **Appendix 9.** Calpine's Second 30-Day Update Report to Contra Costa County Hazardous Materials Programs. March 30, 2017.
- **Appendix 10.** April 20, 2017 Site Visit Report.
- **Appendix 11.** Calpine's Third 30-Day Update Report to Contra Costa County Hazardous Materials Programs. May 30, 2017.
- **Appendix 12.** February 15, 2018 Site Visit Report. On-site Review of Calpine's Investigation Report.
- **Appendix 13.** Calpine's Delta Steam Turbines- Generator Failure Event Investigation Summary. Submitted on April 12, 2018.

Signed by Compliance Office Manager	Christine Root
Date	4/24/18

Appendix 1. Calpine's E-mail Notification of Fire at Delta Energy Center on January 29, 2017.

Ali, Anwar@Energy

From: Barbara McBride <Barbara.McBride@calpine.com>
Sent: Sunday, January 29, 2017 7:29 PM
To: Ali, Anwar@Energy; mbostick@baaqmd.gov
Subject: Delta Energy Center Fire

Please be advised that there was a fire today at Calpine's Delta Energy Center in Pittsburg. The fire was contained to our facility and there is no risk or danger from the fire to the neighboring community. The local fire department reported to the site and there were no injuries to any employees or first responders. At this time we do not know the cause of the event ,but we have mobilized a team to conduct a complete and thorough assessment. Please contact me directly with any questions.

Barbara McBride
Director Environmental Services
Calpine Corporation
925-570-0849

Appendix 2. CH2MHILL, Calpine's Consultant, Technical Memorandum- Calpine Delta Energy Center Oil Discharge Site Observations and Response Recommendations. January 30, 2017.

TECHNICAL MEMORANDUM

Calpine Delta Energy Center Oil Discharge - Site Observations and Response Recommendations.

PREPARED FOR:	Barbara McBride/Calpine
COPY TO:	Anne Estabrook/CH2M, Doug Davy/CH2M, Dave Hodson/CH2M
PREPARED BY:	Michael Clary/CH2M
DATE:	January 30, 2017

This technical memorandum documents observations and recommendations made during a site visit conducted at the Dow Chemical Company (Dow) facility, located at 901 Loveridge Road in Pittsburg, California. At 3:43 PM on January 29, 2017, a fire was reported in a steam turbine generator on the adjacent Calpine Delta Energy Center. The Delta Energy Center is a natural gas-fired, combined-cycle power plant consisting of three combustion turbines, three heat recovery steam generators and one steam turbine. Suppressing the fire resulted in the discharge of approximately 5000 gallons of water and 150 gallons of lubricating oil to a stormwater inlet grate. The inlet grate is connected to a subsurface drainage system that flows to Dowest Slough on property owned by Dow, resulting in a discharge to Dowest Slough.

Following the discharge, Calpine personnel notified U.S. Coast Guard National Response Center (SEQNO 1169801) and the Contra Costa Fire District notified the California Office of Emergency Services (Control# 17-0882). The Office of Emergency Services notified several additional agencies of the discharge including the California Department of Fish and Wildlife Office of Spill Prevention and Response, the California Department of Toxic Substances Control, the Regional Water Quality Control Board, the U.S. EPA, and the U.S. Fish and Wildlife Service, as well as several other state and local agencies (OES, 2017).

The National Weather Service forecasts a rain event, beginning February 1, 2017 and lasting through February 3, 2017, that will bring approximately 0.95 inches of rain to the Pittsburg area (NOAA, 2017a). At the request of Dow, CH2M conducted the site visit to identify an appropriate course of action to minimize the immediate threat to Dowest Slough wetlands and the adjoining Kirker Creek, New York Slough, and San Joaquin River from the additional discharge dispersal that could result from the rain event.

Site Observations

The site visit was conducted on January 30, 2017 between 2:40 and 3:40 PM. Weather during the site visit was approximately 60 degrees Fahrenheit with winds at 0-2 miles per hour from the northeast. Visibility was greater than 10 miles but moderately hazy.

Vegetation in Dowest Slough is characterized by dense saltgrass (*Distichlis spicata*) on the saturated margins with emergent tule (*Schoenoplectus acutus* var. *occidentalis*) and narrowleaf cattail (*Typha angustifolia*) in the inundated center of the slough (Photo 1). California blackberry (*Rubus ursinus*) is present along the eastern banks (Photo 2). Great blue heron (*Ardea herodias*), green heron (*Butorides*

virescens), American coot (*Fulica americana*), and red-winged blackbird (*Agelaius phoeniceus*) were observed in Dowest Slough during the site visit.

Surface water in portions of Dowest Slough downstream of the Delta Energy Center was observed to have a surface film consistent with oil (Photo 1), with the most visible film observed in unvegetated areas beneath and downstream of the BNSF Railway bridge crossing.

Calpine personnel indicated the location of the storm water outlet to Dowest Slough at Location A, as shown on Figure 1 (Photo 3). An unculverted access road spanning Dowest Slough to the south of the outlet appears to be functioning as a barrier limiting the current southward extent of oil migration (Figure 1 Location B, Photo 4). From the outlet, water was observed flowing north beneath the BNSF bridge crossing (Figure 1 Location C, Photo 5); however, surface water was observed flowing to the south from the easternmost of two approximately 72-inch diameter culverts at 5th Street (Location D, Photo 6), indicating a rising tide during the site visit. A faint sheen was observed in Kirker Creek at the East 3rd Street crossing (Photo 7), but it is unclear if this is related to the Calpine discharge.

Tide charts (NOAA, 2017b) indicate the tide in New York Slough was approximately 3.75 feet relative to mean lower low water (mllw) during the site visit, with a high tide of 4.24 feet above mllw occurring at 4:07 PM on January 30, 2017. A high tide of 4.41 feet above mllw occurred at 3:21 PM on January 29, 2017, just prior to the fire at the Delta Energy Center, suggesting that water in Dowest Slough was relatively high during the discharge event and that the subsequent low tide may have resulted in oil migrating toward Kirker Creek.

Response Recommendations

To maximize the removal of oil from surface water while avoiding additional disturbance to sensitive wetlands and habitat, CH2M recommends that oil absorbent floating booms be properly installed prior to the forecasted rain event at the following five specific locations throughout Dowest Slough:

- The stormwater drain outfall to Dowest Slough (Figure 1 Location A). This location is recommended because it represents the point of discharge to Dowest Slough.
- The access road crossing south of the stormwater drain outfall (Figure 1 Location B). This location is recommended in case the forecasted rain event results in water overtopping the access road and rising tides push water to the south.
- The BNSF Bridge crossing at the margins of the BNSF right of way (Figure 1 Location C). This location is recommended because it is in proximity to the outfall and is relatively accessible. Because tidal action may move oil in multiple directions at this location, we recommend that absorbent booms be deployed along both the north and south sides of the bridge.
- The culverts at East 5th Street (Figure 1 Location D). This location is recommended because it is an easily accessible constriction in Dowest Slough. Because tidal action may move oil in multiple directions at this location, we recommend that absorbent booms be deployed along both the north and south ends of each culvert.
- The bridge at East 3rd Street (Figure 1 Location E). This location is recommended because it is a relatively accessible constriction in Dowest Slough.

A vacuum truck should be deployed to the stormwater outfall to remove as much residual oil from the subsurface drainage system as possible. The vacuum truck should remain on firm compacted soil outside of Dowest Slough.

Anticipating that temporary deployment of oil absorbent booms in the Dowest Slough might be considered placement of regulated fill under the Clean Water Act, CH2M contacted Frances Malamud-Roam of the U.S. Army Corps of Engineers to determine how to proceed with plans to do the same. The

Corps advised CH2M that a permit is not required for such activities in such areas. Nevertheless, out of an abundance of caution, Calpine personnel elected to comply with the notice requirements for immediate Repair and Protection Activities in Emergency Situations, which are covered under Regional General Permit Number 5. This memorandum includes the Contents of Notification required in General Condition 2.b., items (1)-(5), of General Permit 5. Subsequent cleanup activities may qualify under Nationwide Permit 20 - Response Operations for Oil and Hazardous Substances.

As required in General Condition 2.b., Item 1, the Designated POC for response activities is Barbara McBride at Calpine Delta Energy Center, 1200 Arcy Lane in Pittsburg, CA 94565 (925-570-0849, Barbara.McBride@calpine.com).

References

NOAA. 2017a. National Weather Service forecast for Lat/Lon: 38.0180/-121.8690 (Elev. 30 ft) Pittsburg CA. Online: http://www.wrh.noaa.gov/forecast/wxtables/index.php?lat=38.02278260325083&lon=-121.86408519744873&clrindex=0&table=custom&duration=7&interval=6. Accessed January 30, 2017.

NOAA. 2017b. NOAA Tides and Currents for Pittsburg, New York Slough, CA. Station Id: 9415096. Online: https://tidesandcurrents.noaa.gov/noaatidepredictions/NOAATidesFacade.jsp?Stationid=9415096&bmon=01&bday=29&byear=2017&edate=&timelength=daily. Accessed January 30, 2017.

OES. 2017. Governor's Office of Emergency Services Hazardous Material Spill Update CONTROL#: 17-0882. Online: https://w3.calema.ca.gov/operational/malhaz.nsf/f1841a103c102734882563e200760c4a/a6b23146d1a2fc2c882580b8007f004e?OpenDocument Accessed January 30, 2017.

Figure 1


E 3rd St
Dowest Slough
Location E. East 3rd Street Bridge
Location D. East 5th St. Culverts
Location C. BNSF Bridge Crossing
Location A. Stormwater Oufall
Location B. Access Road Crossing
Google earth
© 2016 Google
N
1000 ft

Site Photographs

Photo 1. View from the west bank of Dowest Slough to the east showing saltgrass in the foreground and tule in midframe. Oily film presumed to be from the Calpine discharge is visible in midframe.

Photo 2. View of the Dowest Slough to the southeast from the East 5th Street Bridge showing a margin of California blackberry at the toe of the east bank. A dense mat of iceplant (Carpobrotus sp.) is on the bank slopes.

Photo 3. View from the stormwater drain outfall to the north, showing Dowest Slough in the foreground and the BNSF Bridge crossing in the background. Silt fencing that borders the outfall is visible in midframe; however, the outfall is out of frame to the left (west).

Photo 4. View to the west from the access road that crosses Dowest Slough north of the stormwater outfall. Silt fencing that borders the low point in the road is visible in midframe.

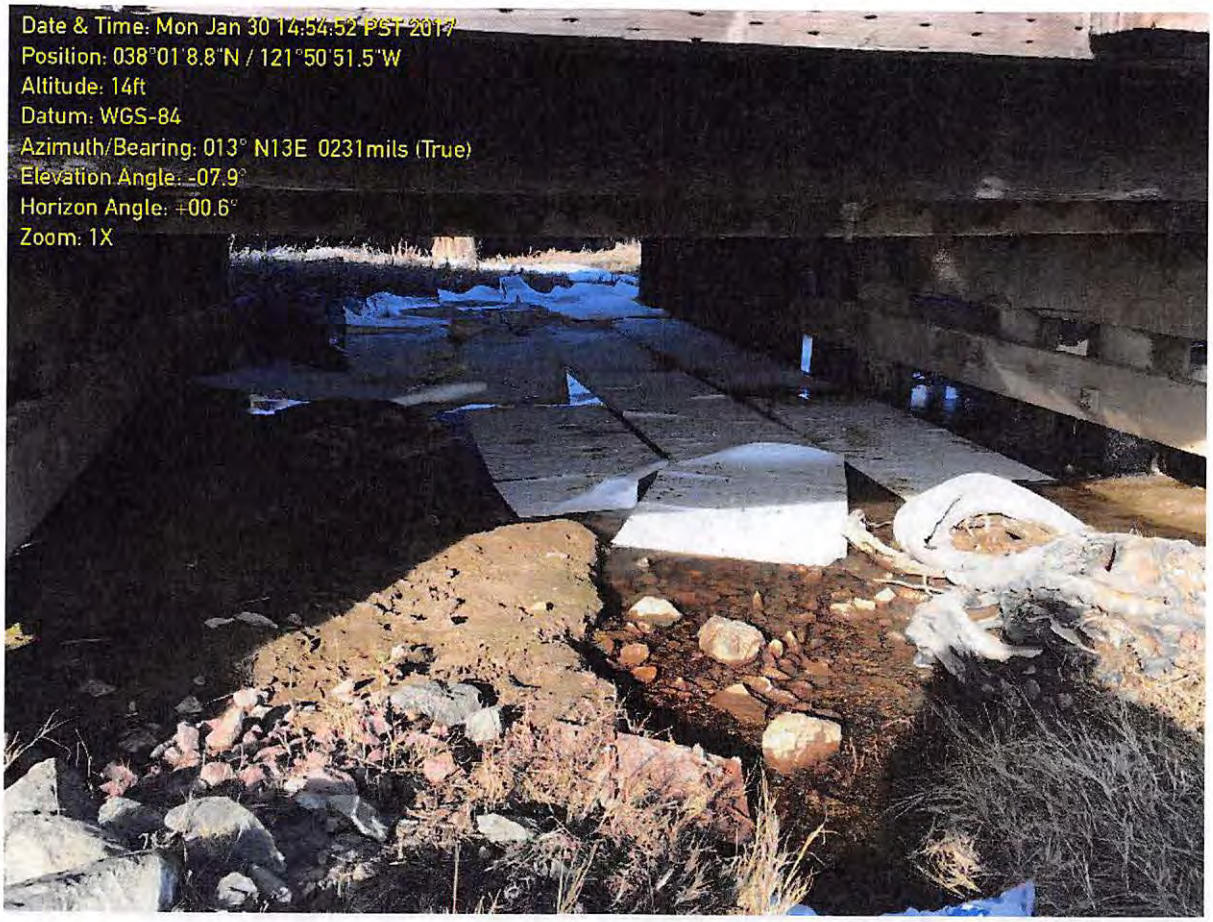

Photo 5. View to the north showing flow in Dowest Slough beneath the BNSF bridge crossing. Absorbent materials visible in midframe were temporarily placed in unvegetated areas beneath the bridge when the discharge was initially identified.

Photo 6. View to the north from Dowest Slough showing large culverts beneath East 5th Street. The culvert to the east is partially hidden behind tule and cattail that border the low flow channel. At the time of this photograph, flow to the south was observed through the east culvert.

Appendix 3. January 31, 2017 Site Visit Report.

CALIFORNIA ENERGY COMMISSION

REPORT OF COMPLIANCE SITE VISIT Page *1 of 9*

Siting, Transmission and Environmental Protection Division	**DOCKET #: 98-AFC-03C**	
	PROJECT NAME: Delta Energy Center	
SITE CONTACT (s): **Name :** Barbara McBride, Director of Environmental Health and Safety **Company :** Calpine **Address:** 1200 Arcy Lane, Pittsburg, CA 94565 **Phone:** 925-570-0849 **Email:** Barbara.McBride@calpine.com	**PROJECT LOCATION:** 1200 Arcy Lane Pittsburg, CA 94565	
CPM: Anwar Ali, Ph.D. **Staff Performing the Site Visit:** Geoff Lesh, PE, Senior Mechanical Engineer Brett Fooks, PE, Mechanical Engineer Christopher Dennis, PG, Engineering Geologist	**DATE:** January 31, 2017	**TIME:** 10:00 am – 2:00 pm
PURPOSE (check one) ☐ **Routine Compliance** ☐ **Construction or Demolition** ☒ **Emergency Response** ☐ **Follow-up/Re-inspection** ☐ **Complaint**		

BACKGROUND

The Compliance Project Manager (CPM), Anwar Ali, received an email notification from Calpine's Barbara McBride on Sunday January 29, 2017 at 7:28 pm that a turbine failure that lead to a fire had occurred on the Delta Energy Center (DEC) on January 29, 2017. The notification said that there was no risk to the neighboring community and no injuries to the plant's staff or the first responders.

California Energy Commission staff (staff) visited the site on January 31, 2017, to ascertain more information about the cause of the turbine failure and the fire and their impacts to the site. This is the staff's first site visit since the turbine failure and fire incident that had occurred on January 29, 2017.

Additional background on the plant can be found below:

- DEC is an 880 MW capacity power plant. The plant used to operate as a base-load, combined cycle plant until 2016. This year's utilization of the plant will be about 35%, the same as last year.

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Capacity Factor	70%	61%	67%	53%	55%	76%	75%	69%	61%	35%

- The power plant uses three combustion turbines each with a Heat Recovery Steam Generator (HRSG). The HRSGs generate steam to drive the single steam turbine-generator set. It was in this steam turbine-generator set where the fire occurred.

SITE VISIT AGENDA

The purpose of this first visit was to verify and confirm early reports (both from Calpine notification and various early media news reports) and to obtain more details about the incident from Calpine. Unfortunately, at the time of this visit, other than the initial response by the fire department, no details relating to the cause of the incident or its consequences were known yet. At the time of this visit, the entire turbine enclosure and the area beneath it were taped-off and inaccessible to any personnel while determinations of whether the area was structurally sound were being made. Calpine personnel had not yet been inside the steam turbine enclosure where the fire occurred.

Follow-up visits by Energy Commission staff to learn more and monitor repairs progress are planned.

OPENING CONFERENCE

Introductions were made between staff and Calpine personnel. Geoff Lesh explained to Calpine that when an incident requiring either a forced outage or emergency services response occurs at an Energy Commission-permitted power plant, a compliance investigation may be initiated to gather facts pertaining to its handling, cause, impacts, resulting timelines for plant recovery and any required environmental cleanup, and whether any Conditions of Certification had been violated. Energy Commission staff explained the need to gather information so that we can respond effectively to media and other agencies' information requests.

INFORMATION PROVIDED BY CALPINE DURING THE SITE VISIT

- On Sunday, January 29, 2017 at 3:42 pm, a turbine failure led to an accidental fire during plant startup. The plant was approximately about two hours into its six hour start up cycle. After ramping output of the three combustion turbines for two hours, steam turbine roll was initiated. Immediately, a loud "boom" was heard from the steam turbine enclosure. Then, the fire sensors alarmed and the water deluge systems activated. The plant startup was stopped, and the control room called local 911 immediately to report the fire to emergency services. The fire alarm system also notified a Calpine-wide central notification center off-site, which also called 911. The steam turbine enclosure houses the steam power turbine which turns the hydrogen-cooled electrical generator attached to one end and sits approximately 30-40 feet above grade on a concrete pedestal.
- During the incident, on one side of the steam turbine enclosure, smoke and flames were seen coming out of the louvered vents located high on the wall.
- The Initial response from the Contra Costa County Fire Department arrived within a few minutes. Eventually, six fire trucks and two hazmat trucks with crews were on-site. Fire fighters closed off the flow of hydrogen to the electrical generator, and initiated a carbon dioxide purge to remove all of the remaining hydrogen from the electrical generator. A fire water stream was directed at the hydrogen supply tanks (located at ground level beneath the steam turbine enclosure) to keep them cool and prevent an over-pressure release of flammable hydrogen. The fire department began a deluge of water on and around the steam turbine enclosure. Fire fighters did not enter the steam turbine enclosure. The fire was fully extinguished by 18:30, and the fire department left.
- Due to operating fire suppression systems and fire-fighting efforts, lube oil mixed with fire water spilled/drained from the turbine enclosure into the curbed secondary containment area immediately below.
- The fire water filled the secondary containment and some of it (including some mixed-in lube oil) overflowed on the surrounding pavement. Some of the oil/water mixture flowed into the non-contact storm water drains. The non-contact storm water drains are designed to take water that has not come into contact with onsite equipment and route it to the outfall in the cattail marsh (Dowest Slough) off-site. Storm water that comes into contact with onsite equipment is routed to an oil/water separator and then discharged to Delta Diablo sewer pipeline and treatment facility.
- An estimated 150 gallons of oil in the oil/water mixture flowed through the drains to the storm water outfall located in a cattail marsh. The rest of oil/water was pumped into an onsite poly tank. The poly tank is waiting for removal to a disposal/recycle facility.
- It appears that plant personnel responded appropriately. They immediately called 911 and let the fire department handle the emergency situation. There were three employees on site at the time of the fire. There was one in the control room, one working in the water treatment area, and a maintenance person. There were no injuries.
- California Department of Fish & Wildlife, the United States Army Corps of Engineers, and San Francisco Bay Regional Water Quality Control Board (RWQCB) were notified about the spill and impact to the wetlands. A "Phase II" investigation is required to determine the extent of the impact and method to

remediate it (and may involve subsurface work). No oil/water mixture flowed into the San Joaquin River and none is expected to.

- Calpine is currently managing the oil/water with the expectation of rains coming later tonight (January 31, 2017). The residual oil on the asphaltic concrete has been pressure washed and the wash liquid vacuumed into a truck for disposal/recycling. Oil absorbent pads have been placed around each storm drain, at the outfall, at an undercrossing next to the railroad track, and before and at the end of Dowest Slough. An aerial map of the DEC showing the overall outfall has been attached (Figure 1).
- Power production at the plant is completely shut down. Due to the plant's current configuration, the combustion turbines cannot operate unless the steam turbine is also operating. The extent of damage to the steam turbine and generator is unknown, but damage is anticipated by Calpine. Damage assessment is beginning immediately. It will not be known when the plant will be operational again until damage assessment and the repair schedules are known. Staff estimates that if any major damage is found, it will require more than two months to repair.
- The photographs (Figures 2 -8) that were taken at staff's direction by Calpine are attached.

CONCLUSIONS

Staff held a closing conference and thanked Calpine for the opportunity to view the site and for the timely notification. Staff reminded Calpine that Energy Commission staff would have more questions during its investigation, and the Energy Commission would be monitoring the progress of repairs.

The following next steps were discussed:

- Calpine has a report due to the California Public Utilities Commission within 30 days and they were willing to forward a copy of the report to the CPM.
- Calpine is still investigating the cause of the accident and does not have a root cause analysis at this time. They also do not have a full damage assessment yet and do not know how long it will take to repair the damage.
- According to preliminary indications, it appears the fire originated in the electrical generator-end of the steam turbine generator set following the turbine failure event. The exact cause and location where the fire initiated is not yet determined by Calpine.

Figure 1. Site Map of Showing Locations of Storm Water Drains and Marshes Impacted by Lube Oil Spill

Figure 2. Lube Oil Cleanup Contractors Pressure Washing And Vacuuming Of Paved Areas

Figure 3. A Blocked Outfall Drain On West Side Of The Steam Generator Turbine Enclosure During Clean-up

Figure 4. The Marsh Area at Dowest Slough Off-Site Of DEC Property Near Storm Drain Outfall

Figure 5. Steam Turbine Generator Enclosure East Side Showing Louvers With Smoke Deposits

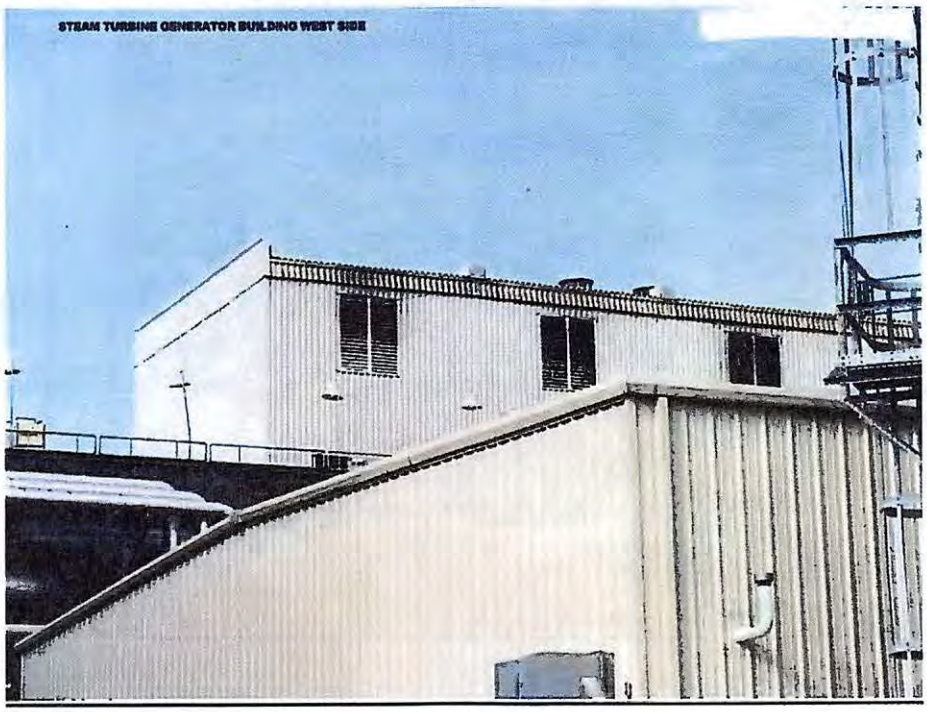

Figure 6. Curbed Lube Oil Containment Area beneath Steam Turbine Generator

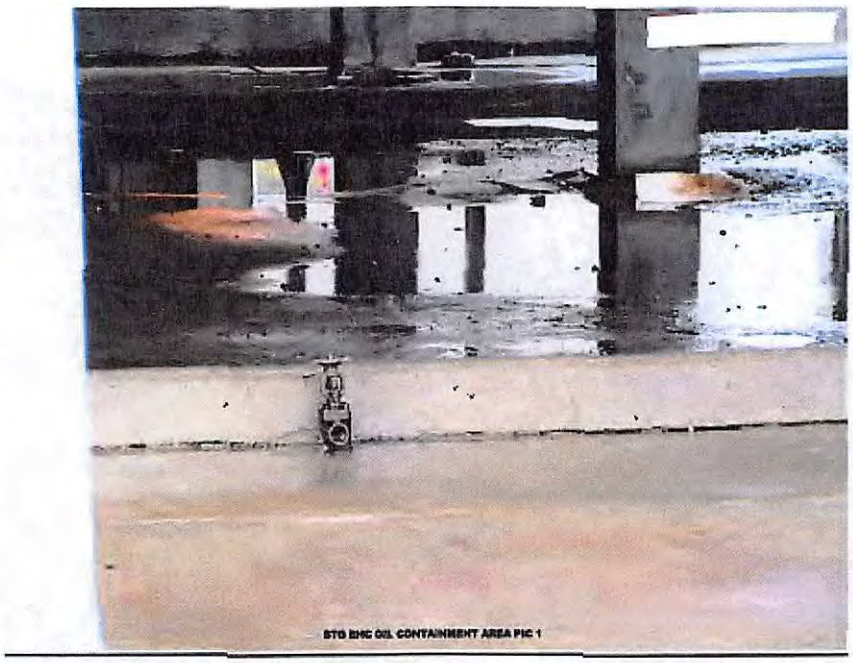

Figure 7. Steam Turbine Generator Main Lube Oil Tank

Figure 8. Drainage from the Cattail Marsh at the Dowest Slough, under Railroad Tracks Northwest of DEC Property

cc:	Staff: Anwar Ali, Geoff Lesh, Brett Fooks, and Christopher Dennis
	Signed: DATE 4/13/2018 4/17/2018
	Office Manager: Christine Root 4/17/18
	Signed: DATE

Appendix 4. Calpine's 72-Hour Report for DEC Fire Incident. February 1, 2017.

ATTACHMENT B
72 HOUR FOLLOW-UP NOTIFICATION REPORT FORM
CONTRA COSTA HEALTH SERVICES

INSTRUCTIONS:

A hardcopy and an electronic copy of this report is to be submitted for all Level 2 and 3 incidents or when requested by CCHS. See Attachment B-1 for suggestions regarding the type of information to be included in the report. Attach additional sheets as necessary. Forward the completed form to:

ATTENTION:

Randall L. Sawyer
Chief Environmental Health and Hazardous Materials Officer
Contra Costa Hazardous Materials Programs
4585 Pacheco Boulevard, Suite 100
Martinez, CA 94553

INCIDENT DATE: January 29, 2017

INCIDENT TIME: 15:42

FACILITY: Delta Energy Center

PERSON TO CONTACT FOR ADDITIONAL INFORMATION

Barbara McBride Phone number (925) 570-0849

I. SUMMARY OF EVENT:

On Sunday, January 29, 2017, at approximately 15:42, the Delta Energy Center experienced a fire inside the steam turbine generator compartment that resulted in the deployment of the fire department to the facility. The Delta Energy Center is a natural gas-fired, combined-cycle power plant consisting of three combustion turbines, three heat recovery steam generators and one steam turbine and steam turbine generator. There were no injuries associated with the event. The incident is currently under active investigation and the impacted area and equipment is still in the process of being safely secured. Accordingly, a full assessment of the damage and the equipment involved is only in its initial phase.

The event resulted in the discharge of approximately 150 gallons of lubricating oil, and approximately 5000 gallons of water attendant to fire suppression, to the stormwater drainage system. This resulted in a discharge to the Dowest Slough located on adjacent property owned by The Dow Chemical Company, where the discharge is currently contained. CH2M and Clean Harbors were deployed within 24 hours and the removal of the oil from the surface water is underway.

CALPINE®

P.O. BOX 551
PITTSBURG, CA 94565-0055
925.756.0789
925.252.2078 (FAX)

February 1, 2017

Mr. Randall L. Sawyer
Chief Environmental Health and Hazardous Materials Officer
Contra Costa Hazardous Materials Programs
4585 Pacheco Boulevard, Suite 100
Martinez, CA 94553

RE: 72-Hour Report: January 29, 2017 Delta Energy Center Incident

Dear Mr. Sawyer:

As requested by Contra Costa County Health Services and in accordance with the Contra Costa County Health Services (CCCHS) Department of Hazardous Materials Incident Notification Policy, Delta Energy Center, LLC is hereby providing this 72 hour report for an event that occurred at the Delta Energy Center on January 29, 2017.

If you have any questions, please contact me at 925-570-0849

Sincerely,

Barbara McBride
Director, Environmental Health & Safety

II. AGENCIES NOTIFIED, INCLUDING TIME OF NOTIFICATION:

Agency	Date	Time
National Response Center	1/29/2017	18:45
Contra Costa Health Services	1/29/2017	16:27
San Francisco Water Quality Control Board	1/29/2017	18:30
BAAQMD	1/29/2017	16:30
California Energy Commission	1/29/2017	18:50
California Fish and Wildlife Service	1/29/2017	19:10
Office of Emergency Services	1/29/2017	Notified by Contra Costa County Fire Department
California Public utilities Commission	1/29/2017	19:18

III. AGENCIES RESPONDING, INCLUDING CONTACT NAMES AND PHONE NUMBERS:

Agency	Contact	Phone Number
Contra Costa County Fire Department	Peter Marshall	925-383-5049
Contra Costa County Hazardous Materials	Melissa Hagen	925-250-7837

IV. EMERGENCY RESPONSE ACTIONS:

Contra Costa County Fire Department was notified of the fire at 15:43 for response to the fire.

V. IDENTITY OF MATERIAL RELEASED AND ESTIMATED OR KNOWN QUANTITIES:

Approximately 150 gallons of turbine lube oil was released to the storm water outfall. A copy of the MSDS is attached.

VI. METEOROLOGICAL CONDITIONS AT TIME OF EVENT including wind speed, direction, and temperature:

Wind speed	3 mph
Wind Direction	45 deg from NE
Precipitation	None
Temperature	58 F

VII. DESCRIPTION OF INJURIES:

There were no employee or emergency responder injuries as a result of the event.

VIII. **COMMUNITY IMPACT including number of off-site complaints, air sampling data during event, etc.:**

There were no reported complaints as a result of the event.

IX. **INCIDENT INVESTIGATION RESULTS Is the investigation of the incident complete at this time?**

_____Yes _____X___No

If the answer is no, submit a 30 day final or interim report.

If the answer is yes, complete the following:

X. **SUMMARIZE INVESTIGATION RESULTS BELOW OR ATTACH COPY OF REPORT:**

An incident investigation team was deployed on January 30, 2017. The investigation is not yet complete.

XI. **SUMMARIZE PREVENTATIVE MEASURES TO BE TAKEN TO PREVENT RECURRENCE INCLUDING MILESTONE AND COMPLETION DATES FOR IMPLEMENTATION:**

An incident investigation team was deployed on January 30, 2017 to begin the investigation. The incident is currently under active investigation and the impacted area and equipment is still in the process of being safely secured. Accordingly, a full assessment of the damage and the equipment involved is only in its initial phase. An interim report will be submitted to the county within 30-days, as required.

SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Oil mist, mineral	Not Assigned	TWA (Mist)	5 mg/m3	AU OEL
Oil mist, mineral	Not Assigned	TWA ((inhalable fraction))	5 mg/m3	US. ACGIH Threshold Limit Values
Oil mist, mineral	Not Assigned	TWA (Mist)	5 mg/m3	Australia. Workplace Exposure Standards for Airborne Contaminants.
Oil mist, mineral	Not Assigned	TWA (Mist)	5 mg/m3	OSHA Z-1
	Not Assigned	TWA (Inhalable fraction)	5 mg/m3	ACGIH

Biological occupational exposure limits

No biological limit allocated.

Monitoring Methods

Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate.
Validated exposure measurement methods should be applied by a competent person and samples analysed by an accredited laboratory.
Examples of sources of recommended exposure measurement methods are given below or contact the supplier. Further national methods may be available.
National Institute of Occupational Safety and Health (NIOSH), USA: Manual of Analytical Methods http://www.cdc.gov/niosh/
Occupational Safety and Health Administration (OSHA), USA: Sampling and Analytical Methods http://www.osha.gov/
Health and Safety Executive (HSE), UK: Methods for the Determination of Hazardous Substances http://www.hse.gov.uk/
Institut für Arbeitsschutz Deutschen Gesetzlichen Unfallversicherung (IFA) , Germany http://www.dguv.de/inhalt/index.jsp
L'Institut National de Recherche et de Securité, (INRS), France http://www.inrs.fr/accueil

Engineering measures : The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include:
Adequate ventilation to control airborne concentrations.

Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated.

General Information:
Define procedures for safe handling and maintenance of controls.
Educate and train workers in the hazards and control measures relevant to normal activities associated with this product.
Ensure appropriate selection, testing and maintenance of equipment used to control exposure, e.g. personal protective equipment, local exhaust ventilation.
Drain down system prior to equipment break-in or maintenance.
Retain drain downs in sealed storage pending disposal or subsequent recycle.
Always observe good personal hygiene measures, such as washing hands after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned.
Practice good housekeeping.

Personal protective equipment

Protective measures

Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.

Respiratory protection	:	No respiratory protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid breathing of material. If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter. Select a filter suitable for the combination of organic gases and vapours [Type A/Type P boiling point >65°C (149°F)].
Hand protection Remarks	:	Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739) made from the following materials may provide suitable chemical protection. PVC, neoprene or nitrile rubber gloves Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended.

Safety Data Sheet

Shell Turbo Oil T 32

Version 2.2 | Revision Date 19.08.2016 | Print Date 20.08.2016

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Shell Turbo Oil T 32

Product code : 001A9782

Manufacturer or supplier's details

Supplier : Viva Energy Australia Pty Ltd
(Formerly: The Shell Company of Australia)
(ABN 46 004 610 459)
720 Bourke Street
Docklands
Victoria 3008
Australia

Telephone : +61 (0)3 8823 4444 ;
Telefax : +61 (0)3 8823 4800

Emergency telephone number : 1800 651 818 (Australia). POISONS INFORMATION CENTRE: 13 11 26 (Australia).

Recommended use of the chemical and restrictions on use

Recommended use : Turbine oil.

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

Not a dangerous substance or mixture according to the Globally Harmonised System (GHS).

GHS label elements

Hazard pictograms : No Hazard Symbol required

Signal word : No signal word

Hazard statements : PHYSICAL HAZARDS:
Not classified as a physical hazard under GHS criteria.
HEALTH HAZARDS:
Not classified as a health hazard under GHS criteria.
ENVIRONMENTAL HAZARDS:
Not classified as an environmental hazard under GHS criteria.

Precautionary statements :

Prevention:
No precautionary phrases.

Response:
No precautionary phrases.

Storage:
No precautionary phrases.

Disposal:

No precautionary phrases.

Sensitising components : Contains N-phenyl-1-naphthylamine.May produce an allergic reaction.

Other hazards which do not result in classification

Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin resulting in disorders such as oil acne/folliculitis.Used oil may contain harmful impurities.Not classified as flammable but will burn.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature : Highly refined mineral oils and additives.
The highly refined mineral oil contains <3% (w/w) DMSO-extract, according to IP346.

: * contains one or more of the following CAS-numbers: 64742-53-6, 64742-54-7, 64742-55-8, 64742-56-9, 64742-65-0, 68037-01-4, 72623-86-0, 72623-87-1, 8042-47-5, 848301-69-9.

Hazardous components

Chemical name	CAS-No.	Classification	Concentration [%]
N-phenyl-1-naphthylamine	90-30-2	Acute Tox.4; H302 Skin Sens.1B; H317 STOT RE2; H373 Aquatic Acute1; H400 Aquatic Chronic1; H410	0.1 - 0.24
Interchangeable low viscosity base oil (<20,5 cSt @40°C) *	Not Assigned	Asp. Tox.1; H304	0 - 90

For explanation of abbreviations see section 16.

SECTION 4. FIRST-AID MEASURES

General advice : Not expected to be a health hazard when used under normal conditions.

If inhaled : No treatment necessary under normal conditions of use.
If symptoms persist, obtain medical advice.

In case of skin contact : Remove contaminated clothing. Flush exposed area with water and follow by washing with soap if available.
If persistent irritation occurs, obtain medical attention.

In case of eye contact : Flush eye with copious quantities of water.

If persistent irritation occurs, obtain medical attention.

If swallowed	:	In general no treatment is necessary unless large quantities are swallowed, however, get medical advice.
Most important symptoms and effects, both acute and delayed	:	Oil acne/folliculitis signs and symptoms may include formation of black pustules and spots on the skin of exposed areas. Ingestion may result in nausea, vomiting and/or diarrhoea.
Protection of first-aiders	:	When administering first aid, ensure that you are wearing the appropriate personal protective equipment according to the incident, injury and surroundings.
Notes to physician	:	Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	:	Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.
Unsuitable extinguishing media	:	Do not use water in a jet.
Specific hazards during firefighting	:	Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Carbon monoxide may be evolved if incomplete combustion occurs. Unidentified organic and inorganic compounds.
Specific extinguishing methods	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Special protective equipment for firefighters	:	Proper protective equipment including chemical resistant gloves are to be worn; chemical resistant suit is indicated if large contact with spilled product is expected. Self-Contained Breathing Apparatus must be worn when approaching a fire in a confined space. Select fire fighter's clothing approved to relevant Standards (e.g. Europe: EN469).
Hazchem Code	:	NONE

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Avoid contact with skin and eyes.
Environmental precautions	:	Use appropriate containment to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers.

Local authorities should be advised if significant spillages cannot be contained.

Methods and materials for containment and cleaning up	:	Slippery when spilt. Avoid accidents, clean up immediately. Prevent from spreading by making a barrier with sand, earth or other containment material. Reclaim liquid directly or in an absorbent. Soak up residue with an absorbent such as clay, sand or other suitable material and dispose of properly.
Additional advice	:	For guidance on selection of personal protective equipment see Chapter 8 of this Safety Data Sheet. For guidance on disposal of spilled material see Chapter 13 of this Safety Data Sheet.

SECTION 7. HANDLING AND STORAGE

General Precautions	:	Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.
Advice on safe handling	:	Avoid prolonged or repeated contact with skin. Avoid inhaling vapour and/or mists. When handling product in drums, safety footwear should be worn and proper handling equipment should be used. Properly dispose of any contaminated rags or cleaning materials in order to prevent fires.
Avoidance of contact	:	Strong oxidising agents.
Product Transfer	:	This material has the potential to be a static accumulator. Proper grounding and bonding procedures should be used during all bulk transfer operations.

Storage

Other data	:	Keep container tightly closed and in a cool, well-ventilated place. Use properly labeled and closable containers. Store at ambient temperature.
Packaging material	:	Suitable material: For containers or container linings, use mild steel or high density polyethylene. Unsuitable material: PVC.
Container Advice	:	Polyethylene containers should not be exposed to high temperatures because of possible risk of distortion.

For continuous contact we recommend gloves with breakthrough time of more than 240 minutes with preference for > 480 minutes where suitable gloves can be identified. For short-term/splash protection we recommend the same, but recognize that suitable gloves offering this level of protection may not be available and in this case a lower breakthrough time maybe acceptable so long as appropriate maintenance and replacement regimes are followed. Glove thickness is not a good predictor of glove resistance to a chemical as it is dependent on the exact composition of the glove material. Glove thickness should be typically greater than 0.35 mm depending on the glove make and model.

Eye protection	:	If material is handled such that it could be splashed into eyes, protective eyewear is recommended.
Skin and body protection	:	Skin protection is not ordinarily required beyond standard work clothes. It is good practice to wear chemical resistant gloves.
Thermal hazards	:	Not applicable

Environmental exposure controls

General advice	:	Take appropriate measures to fulfill the requirements of relevant environmental protection legislation. Avoid contamination of the environment by following advice given in Chapter 6. If necessary, prevent undissolved material from being discharged to waste water. Waste water should be treated in a municipal or industrial waste water treatment plant before discharge to surface water. Local guidelines on emission limits for volatile substances must be observed for the discharge of exhaust air containing vapour.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Liquid at room temperature.
Colour	:	Clear pale yellow
Odour	:	Slight hydrocarbon
Odour Threshold	:	Data not available
pH	:	Not applicable
pour point	:	<= -22 °C / <= -8 °FMethod: ASTM D97
Melting / freezing point		Data not available
Initial boiling point and boiling range	:	> 280 °C / 536 °Festimated value(s)
Flash point	:	>= 215 °C / >= 419 °F Method: ASTM D92

Evaporation rate	:	Data not available
Flammability (solid, gas)	:	Data not available
Upper explosion limit	:	Typical 10 %(V)
Lower explosion limit	:	Typical 1 %(V)
Vapour pressure	:	< 0.5 Pa (20 °C / 68 °F) estimated value(s)
Relative vapour density	:	> 1estimated value(s)
Relative density	:	0.840 (15 °C / 59 °F)
Density	:	840 kg/m3 (15 °C / 59 °F) Method: ASTM D4052
Solubility(ies)		
Water solubility	:	negligible
Solubility in other solvents	:	Data not available
Partition coefficient: n-octanol/water	:	Pow: > 6(based on information on similar products)
Auto-ignition temperature	:	> 320 °C / 608 °F
Viscosity		
Viscosity, dynamic	:	Data not available
Viscosity, kinematic	:	32 mm2/s (40.0 °C / 104.0 °F) Method: ASTM D445 5.45 mm2/s (100 °C / 212 °F) Method: ASTM D445
Explosive properties	:	Not classified
Oxidizing properties	:	Data not available
Conductivity	:	This material is not expected to be a static accumulator.
Decomposition temperature	:	Data not available

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	The product does not pose any further reactivity hazards in addition to those listed in the following sub-paragraph.

Chemical stability	:	Stable.
Possibility of hazardous reactions	:	Reacts with strong oxidising agents.
Conditions to avoid	:	Extremes of temperature and direct sunlight.
Incompatible materials	:	Strong oxidising agents.
Hazardous decomposition products	:	Hazardous decomposition products are not expected to form during normal storage.

SECTION 11. TOXICOLOGICAL INFORMATION

Basis for assessment	:	Information given is based on data on the components and the toxicology of similar products.Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).
Exposure routes	:	Skin and eye contact are the primary routes of exposure although exposure may occur following accidental ingestion.

Acute toxicity

Product:

Acute oral toxicity	:	LD50 rat: > 5,000 mg/kg Remarks: Expected to be of low toxicity:
Acute inhalation toxicity	:	Remarks: Not considered to be an inhalation hazard under normal conditions of use.
Acute dermal toxicity	:	LD50 Rabbit: > 5,000 mg/kg Remarks: Expected to be of low toxicity:

Skin corrosion/irritation

Product:

Remarks: Expected to be slightly irritating., Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin resulting in disorders such as oil acne/folliculitis.

Serious eye damage/eye irritation

Product:

Remarks: Expected to be slightly irritating.

Respiratory or skin sensitisation

Product:

Remarks: Not expected to be a skin sensitiser.

Components:

N-phenyl-1-naphthylamine:
Remarks: May cause an allergic skin reaction in sensitive individuals.

Chronic toxicity

Germ cell mutagenicity

Product:

: Remarks: Not considered a mutagenic hazard.

Carcinogenicity

Product:

Remarks: Not expected to be carcinogenic.

Remarks: Product contains mineral oils of types shown to be non-carcinogenic in animal skin-painting studies., Highly refined mineral oils are not classified as carcinogenic by the International Agency for Research on Cancer (IARC).

Material	GHS/CLP Carcinogenicity Classification
Highly refined mineral oil	No carcinogenicity classification.

Reproductive toxicity

Product:

:

Remarks: Not expected to impair fertility., Not expected to be a developmental toxicant.

STOT - single exposure

Product:

Remarks: Not expected to be a hazard.

STOT - repeated exposure

Product:

Remarks: Not expected to be a hazard.

Aspiration toxicity

Product:

Not considered an aspiration hazard.

Further information

Product:

Remarks: Used oils may contain harmful impurities that have accumulated during use. The concentration of such impurities will depend on use and they may present risks to health and the environment on disposal., ALL used oil should be handled with caution and skin contact avoided as far as possible.

Remarks: Slightly irritating to respiratory system.

SECTION 12. ECOLOGICAL INFORMATION

Basis for assessment : Ecotoxicological data have not been determined specifically for this product.
Information given is based on a knowledge of the components and the ecotoxicology of similar products.
Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).(LL/EL/IL50 expressed as the nominal amount of product required to prepare aqueous test extract).

Ecotoxicity

Product:

Toxicity to fish (Acute toxicity) :
Remarks: Expected to be practically non toxic: LL/EL/IL50 > 100 mg/l

Toxicity to crustacean (Acute toxicity) :
Remarks: Expected to be practically non toxic: LL/EL/IL50 > 100 mg/l

Toxicity to algae/aquatic plants (Acute toxicity) :
Remarks: Expected to be practically non toxic: LL/EL/IL50 > 100 mg/l

Toxicity to fish (Chronic toxicity) : Remarks: Data not available

Toxicity to crustacean (Chronic toxicity) : Remarks: Data not available

Toxicity to microorganisms (Acute toxicity) : Remarks: Data not available

Components:
N-phenyl-1-naphthylamine :

M-Factor : 1

Persistence and degradability

Product:

Biodegradability : Remarks: Expected to be not readily biodegradable., Major constituents are expected to be inherently biodegradable, but contains components that may persist in the environment.

Bioaccumulative potential

Product:

Bioaccumulation	:	Remarks: Contains components with the potential to bioaccumulate.
Partition coefficient: n-octanol/water	:	Pow: > 6Remarks: (based on information on similar products)

Mobility in soil

Product:

Mobility	:	Remarks: Liquid under most environmental conditions., If it enters soil, it will adsorb to soil particles and will not be mobile. Remarks: Floats on water.

Other adverse effects

no data available

Product:

Additional ecological information	:	Product is a mixture of non-volatile components, which are not expected to be released to air in any significant quantities., Not expected to have ozone depletion potential, photochemical ozone creation potential or global warming potential. Poorly soluble mixture., May cause physical fouling of aquatic organisms. Mineral oil is not expected to cause any chronic effects to aquatic organisms at concentrations less than 1 mg/l.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues	:	Waste product should not be allowed to contaminate soil or ground water, or be disposed of into the environment. Waste, spills or used product is dangerous waste. Disposal should be in accordance with applicable regional, national, and local laws and regulations. Local regulations may be more stringent than regional or national requirements and must be complied with.
Contaminated packaging	:	Dispose in accordance with prevailing regulations, preferably to a recognized collector or contractor. The competence of the collector or contractor should be established beforehand. Disposal should be in accordance with applicable regional, national, and local laws and regulations.

SECTION 14. TRANSPORT INFORMATION

National Regulations

ADG
Not regulated as a dangerous good

International Regulations

IATA-DGR
Not regulated as a dangerous good

IMDG-Code
Not regulated as a dangerous good

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Pollution category	: Not applicable
Ship type	: Not applicable
Product name	: Not applicable
Special precautions	: Not applicable

Special precautions for user

Remarks	: Special Precautions: Refer to Chapter 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.
Additional Information	: MARPOL Annex 1 rules apply for bulk shipments by sea.

SECTION 15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP)	: No poison schedule number allocated

Product classified as per Work Health Safety Regulations – Implementation of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) 2012 and SDS prepared as per national model code of practice for preparation of safety data sheet for Hazardous chemicals 2011 based on Globally Harmonized Classification version 3.

National Model Code of Practice for the Labelling of Workplace Hazardous Chemicals (2011).

Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG code).

Other international regulations

The components of this product are reported in the following inventories:

EINECS	: All components listed or polymer exempt.
TSCA	: All components listed.
AICS	: All components listed.

SECTION 16. OTHER INFORMATION

Full text of H-Statements

H302	Harmful if swallowed.
H304	May be fatal if swallowed and enters airways.
H317	May cause an allergic skin reaction.

H373	May cause damage to organs through prolonged or repeated exposure if swallowed.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

Full text of other abbreviations

Acute Tox.	Acute toxicity
Aquatic Acute	Acute aquatic toxicity
Aquatic Chronic	Chronic aquatic toxicity
Asp. Tox.	Aspiration hazard
Skin Sens.	Skin sensitisation
STOT RE	Specific target organ toxicity - repeated exposure

Abbreviations and Acronyms : The standard abbreviations and acronyms used in this document can be looked up in reference literature (e.g. scientific dictionaries) and/or websites.

Date of preparation or review : 19.08.2016

Further information

Other information : A vertical bar (|) in the left margin indicates an amendment from the previous version.

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

Appendix 5. Letter from United States Army Corps of Engineers to Calpine Delta Energy Center concerning the Department of Army authorization to implement emergency response measures for discharge of water mixed with lubricating oil into Dowest Slough. February 2, 2017.

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
1455 MARKET STREET
SAN FRANCISCO, CALIFORNIA 94103-1398

FEB 02 2017

Regulatory Division

SUBJECT: File Number 2017-00076S

Ms. Barbara McBride
Calpine Delta Energy Center
1200 Arcy Lane
Pittsburg, California 94565

Dear Ms. McBride:

This letter is written in response to your submittal of January 31, 2017, concerning Department of the Army authorization to implement emergency response measures (placement of absorbent booms) for a discharge of water mixed with lubricating oil into Dowest Slough. The project is located at 901 Loveridge Road in Pittsburg, Contra Costa County, California (lat. 38.02309, long. -121.84589).

Based on a review of the information you submitted, your project qualifies for authorization under Department of the Army Regional Permit (RGP) No. 5 - *Emergency Repairs*, pursuant to Section 404 of the Clean Water Act (33 U.S.C. Section 1344). See Enclosure 1. All work shall be completed in accordance with your project description included in the technical memorandum titled "Calpine Delta Energy Center Oil Discharge – Site Observations and Response Recommendations," dated January 30, 2017. See Enclosure 2.

The project must be in compliance with the General and Special Conditions cited in the RGP for the authorization to remain valid. Non-compliance with any condition could result in the suspension, modification or revocation of the authorization for your project, thereby requiring you to obtain a Nationwide or Individual Permit from the Corps. State Water Quality Certification (WQC) has been issued for work performed under the provisions of the RGP. In order for this authorization to remain valid, you must follow the limitations and conditions stated in the WQC attached to the RGP. This RGP authorization does not obviate the need to obtain other State or local approvals required by law.

This authorization will remain valid until April 1, 2017, unless the RGP is suspended, modified or revoked. All work must be completed by this date and the associated reports forwarded within 45 days of project completion. Upon completion of the project and all associated mitigation requirements, you shall sign and return the enclosed Certification of Compliance, Enclosure 3, verifying that you have complied with the terms and conditions of the permit.

General Condition 4 of the RGP stipulates that projects authorized under this RGP must be initiated within seven days of receiving authorization to proceed. Projects that cannot be initiated within this immediate timeframe would generally not meet the definition of "emergency".

General Condition 9 of the RGP stipulates that project authorization does not allow for the incidental take of any federally-listed species in the absence of a biological opinion with incidental take provisions. As the principal federal lead agency for this project, the Corps initiated emergency consultation with the United States Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) to address project related impacts to listed species, pursuant to Section 7(a) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. § 1531 *et seq*). USFWS has provided preliminary indications that the proposed work is not likely to adversely affect ESA-listed California red-legged frog contingent on minimization, mitigation, and reporting requirements listed in the special conditions below. NMFS has provided preliminary indications that the ESA-listed California central coast steelhead are not present in this system and so are not likely to be affected by the proposed work.

This RGP authorization does not obviate the need to obtain and comply with state regulations and permits.

In order to ensure compliance with this RGP authorization, the following special conditions shall be implemented:

1. You shall adhere to all conditions provided by the National Marine Fisheries Service (NMFS) and included as Enclosure 4 (NMFS Conditions).

2. All standard Best Management Practices shall be implemented to prevent the movement of sediment downstream. No debris, soil, silt, sand, bark, slash, sawdust, cement, concrete, washings, petroleum products, or other organic or earthen material shall be allowed to enter into or be placed where it may be washed by rainfall or runoff into the waterways.

3. You shall adhere to all conditions provided by the San Francisco Bay Regional Water Quality Control Board (RWQCB) and included as Enclosure 5 (RWQCB Conditions).

4. A post construction report shall be submitted 45 days after the conclusion of construction activities. The report shall document construction activities and contain as-built drawings (if different from drawings submitted with application) and include before and after photos.

Should you have any questions regarding this matter, please call Frances Malamud-Roam of our Regulatory Division at 415-503-6792. Please address all correspondence to the Regulatory Division and refer to the File Number at the head of this letter. If you would like to provide comments on our permit review process, please complete the Customer Survey Form available online at http://www.spn.usace.army.mil/Missions/Regulatory.aspx.

Sincerely,

for Rick M. Bottoms, Ph.D.
Chief, Regulatory Division

Enclosures

Copy furnished (without enclosures):

CA RWQCB, Oakland, CA (Attn. T. Sturgis)
US FWS, Bay Delta Office, CA (Attn. Kim Squires)
US NMFS, Santa Rosa, CA (Attn. S. Azat)
CD DFG, Yountville, CA (M. Schommer)
CA RWQCB, Oakland, CA (K. Hart)
CA BCDC, San Francisco, CA (B. McCrae)

Enclosure 1

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, CORPS OF ENGINEERS
1455 MARKET STREET
SAN FRANCISCO, CALIFORNIA 94103-1398

DEPARTMENT OF THE ARMY REGIONAL GENERAL PERMIT NUMBER 5 FOR REPAIR AND PROTECTION ACTIVITIES IN EMERGENCY SITUATIONS

SPONSOR AND ISSUING OFFICE: U.S. Army Corps of Engineers, San Francisco District

PERMIT NUMBER: Regional General Permit (RGP) No. 5 (Corps File No. 28218S)

PERMITTEES: Public agencies, businesses, and private parties (i.e., the public in general)

NOTE: The term "applicant" and its derivatives, as used in this permit, means any entity seeking authorization from the issuing office for emergency repair work. The term "permittee" refers to an applicant that has received authorization to proceed under this permit. The term "this office" refers to the San Francisco District of the Corps of Engineers, which has jurisdiction over the permitted activity, or the appropriate official of this office acting under the authority of the commanding officer (District Engineer).

After applicants receive written approval that their projects comply with the terms and conditions of RGP 5 from this office, they are authorized to perform work in accordance with the General Conditions and any project-specific conditions indicated below.

PROJECT DESCRIPTION: This permit authorizes discharges of dredged or fill material into Waters of the United States, including wetlands, and/or work or structures in Navigable Waters of the United States for necessary repair and protection measures associated with an emergency situation. An "emergency situation" is present where there is a clear, sudden, unexpected, and imminent threat to life or property demanding immediate action to prevent or mitigate loss of, or damage to, life, health, property or essential public services (i.e., a situation that could potentially result in an unacceptable hazard to life or a significant loss of property if corrective action requiring a permit is not undertaken immediately).

PROJECT LOCATION: Within those parts of the State of California subject to regulatory review by the San Francisco District office, including the following areas (see attached map):

- all of Siskiyou, Trinity, Del Norte, Humboldt, Mendocino, Sonoma, Marin, and Napa Counties,
- the western parts of Solano, Contra Costa, and Alameda Counties that include or drain to Suisun Bay west of Sherman Island (HUC 18050001), San Pablo Bay (HUC 18050002), and San Francisco Bay (HUC 18050004)
- all of San Francisco, San Mateo, Santa Clara, Santa Cruz, Monterey, and San Benito Counties.
- The inland portions of San Luis Obispo County northeast of the crests of the Santa Lucia Range, Garcia Mountain, and the La Panza and Caliente Ranges, including the Salinas River watershed (HUC 18060004 and 18060005) and the Carrizo Plain watershed (HUC 18060003).

GENERAL CONDITIONS OF THIS RGP:

1. Time Period Covered: The time limit for completing work authorized by this RGP ends on **August 31, 2019.** The RGP may be reauthorized at that time depending on the degree to which users of the RGP (permittees) comply with the RGP's terms and conditions, and in particular, it's reporting requirements. Time extensions of this permit will be more favorably considered as compliance with the reporting requirements (See General Condition 26 below) on the part of the permittees increases. (i.e., in order for this RGP to be available in the future, permittees **MUST** provide the information requested regarding authorized projects in a timely manner.)

2. **Notification/Communication:**

a. Timing: An applicant must notify** the District Engineer (DE) as early as possible and shall not begin the activity until notified by the DE that the activity may proceed under this RGP with any project-specific special conditions imposed by the District or Division Engineer. This office recognizes there may be situations where imminent threats to life or property occur and an applicant has not received a notice to proceed from the DE. It is not the intention of this office to imply that applicants allow such threat to life or property to result in actual loss. If applicants proceed without such notice from the DE, they must ensure that prior notice of such a unilateral decision to proceed is made to this office by telephone, facsimile, e-mail, delivered written notice, or other appropriate means.

(1) For work in Siskiyou, Trinity, Del Norte, Humboldt, Mendocino, Sonoma, Marin, Napa, and Solano Counties, contact the North Branch Chief, Holly Costa at 415-503-6780 or Holly.N.Costa@usace.army.mil.

(2) For work in San Francisco, San Mateo, Contra Costa, Alameda, Santa Clara, Santa Cruz, Monterey, San Benito, and San Luis Obispo Counties, contact the South Branch Chief, Katerina Galacatos at 415-503-6778 or Katerina.Galacatos@usace.army.mil.

(3) Notification should be sent attn: North/South Branch Chief via fax 415-503-6693 or mail:

U.S. Army Corps of Engineers
San Francisco District
Regulatory Division, CESPN-R
1455 Market Street
San Francisco, CA 94103-1398

b. Contents of Notification: The notification should be in writing and include the following information:

(1) The name, address and telephone number of the applicant and any designated point of contact;

(2) The location of the proposed project in detail, including the identification of any water body affected and its type (ocean, bay, estuary, lake, reservoir, pond, river, stream, riparian area, wetland). This should include a copy of a United States Geologic Survey (USGS) topographic map, Thomas Guide map, or hand-drawn location map with suitable landmarks. The map should have enough detail to clearly indicate the location and extent of the project, as well as detailed directions to the site;

(3) A brief, but clear, description of the imminent threat to life or property and the proposed project's purpose and need;

(4) A brief description of methods anticipated to be used to rectify the situation ("Field Engineering" is not an adequate description. It is presumed if one mobilizes material and a particular piece of equipment to a site, then one probably has a fairly well defined intention for that material and equipment. Plans, drawings or sketches showing the area to be impacted; cross sections showing details of construction; and a short narrative describing how the work is to be completed should be provided as a minimum.); and

(5) A brief description of the existing conditions and anticipated impacts resulting from the proposed work (amount of dredged or fill material, removal of significant vegetation, loss of habitat, etc.).

c. Form of Notification: The standard Application for Department of the Army Permit (Form ENG 4345) available from the District's Website (www.spn.usace.army.mil/regulatory/) may be used as the notification and must include all the information required in General Condition 2.b. Items (1)-(5) above. A letter or fax may also be used. In certain situations where there is an imminent threat to life or property and the applicant is unable to make direct contact with this office, a message shall be left on voice mail or an e-mail message shall be sent. Again those messages should include the information identified in General Condition 2.b. Items (1)-(5) above. Formal written notification should be sent to this office as soon as practicable.

d. Agency Coordination: Upon receipt of a notification, the DE will immediately provide (i.e., by fax, overnight mail, email or other expeditious manner) a copy to the appropriate offices of the Environmental Protection Agency (EPA), the U.S. Fish and Wildlife Service (FWS), the National Marine Fisheries Service (NMFS), the National Marine Sanctuaries, the California Department of Fish and Wildlife (CDFW), the California State Water Resources Control Board (SWRCB)**, the Regional Water Quality Control Boards (RWQCB)**, the California Coastal Commission

****Note:** As one of the conditions of the Water Quality Certification for this RGP, the applicant must directly provide

both the SWRCB and the appropriate RWQCB a copy of the notification, along with the appropriate processing fee ($200 as of December 2014, subject to change) to the SWRCB.

(CCC) or the Bay Conservation and Development Commission (BCDC), and the State Historic Preservation Office (SHPO), as appropriate. These agencies will be requested to telephone or email the DE (c/o the Regulatory Division Project Manager), as expeditiously as possible, a notice indicating whether or not they intend to provide substantive, site-specific comments regarding the proposed project. If notified that comments will be provided by an agency, the DE will allow them to provide their comments in a short timeframe determined by this office on a case-by-case basis to not likely result in loss of life or property before making a decision on the proposed project.

The DE will fully consider any comments from Federal or State agencies, received within the specified timeframe, concerning the proposed activity's compliance with the conditions of their authority and the need for mitigation to reduce the project's adverse environmental effects to a minimal level. The DE will indicate the results of that consideration in the administrative record associated with the notification, and will provide an informal response to the commenting agency by electronic mail, fax or other means, but will not provide a formal response to the agency comments.

e. Mitigation: Discharges of dredged or fill material into Waters of the United States must be avoided or minimized to the maximum extent practicable at the project site. Compensation for unavoidable discharge of fill materials may require appropriate mitigation measures. Factors that the DE will consider when determining the acceptability of appropriate and practicable mitigation will include, but are not limited to:

(1) The approximate functions and values of the aquatic resource being impacted, such as habitat value, aquifer recharge, sediment conveyance or retention, flood storage, etc.;
(2) The permanence of the project's impacts on the resource; and
(3) The potential long-term effects of the action on remaining functions and values of the impacted aquatic resource.

To be practicable, the mitigation must be available and capable of being done considering costs, existing technology, and logistics in light of the overall project purpose. Examples of mitigation that may be appropriate and practicable include, but are not limited to: reducing the size of the project; establishing wetland or upland buffer zones to protect aquatic resource values; replacing the loss of aquatic resource values by creating, restoring, or enhancing similar functions and values; or using bioremediation techniques in conjunction with other methods to offset project impacts. To the extent appropriate, applicants can consider mitigation banking and other forms of mitigation, including contributions to wetland trust funds, "in-lieu" fees to organizations such as The Nature Conservancy, or State or county natural resource management agencies, where such fees contribute to the restoration, creation, replacement, enhancement, or preservation of aquatic resources.

f. District Engineer's Decision: In reviewing the notification for the proposed activity, the DE will determine whether the activity authorized by this RGP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public's interest. The applicant may, as an option, submit a proposed mitigation plan with the notification to expedite the process and the DE will consider any mitigation (See General Condition 2.e. above.) the applicant has included in the proposal in determining whether the net adverse environmental effects for the proposed work are minimal. If the DE determines the activity complies with the terms and conditions of this RGP and the adverse effects are minimal, this office will notify the applicant that his project has been authorized including any project-specific conditions deemed necessary.

If the applicant elects to submit a mitigation plan as part of the proposed project, the DE will expeditiously review the proposed plan also. However, the DE may approve or reject the mitigation proposal after the proposal for the work is approved and project work has commenced.

If the DE determines the adverse effects of the proposed work are more than minimal, the DE will notify the applicant either:

(1) That the project does not qualify for authorization under this RGP and instruct the applicant on the procedures to seek authorization under an individual permit or
(2) That the project is authorized under this RGP subject to the applicant submitting a mitigation proposal that would reduce the adverse effects to the minimal level.

3. **Authorized Work:** Any work authorized by this RGP must be the minimum necessary to alleviate the immediate emergency, unless complete reconstruction does not result in significantly increased impacts to aquatic resources and logistical concerns indicate such reconstruction is as expedient considering the condition of the project site and is limited to in-kind replacement or refurbishment. Moderate upgrading would be considered if the applicant wishes to use bioremediation or other environmentally sensitive solutions. For example, it may be determined that reconstruction of a bridge crossing or a roadway damaged by flood flows, high wind or wave action is a more appropriate course of action than temporarily shoring up the facility to allow an immediate return of its use. When continued public safety is an issue, such reconstruction will remain a viable option for consideration for authorization under this RGP. The RGP may NOT be used to upgrade an existing structure to current standards when that activity would result in additional adverse effects on aquatic resources, except in very unusual and limited circumstances. Such upgrade projects are considered separate activities for which other forms of authorization will be required.

RGP 5 does not authorize work required by property owners as quid pro quo for access through private or public property where such access is contingent upon work conducted by the permittee in waters of the U.S. for the benefit of the property owner. This is absolutely inappropriate and such additional activities are violations of Section 404 of the Clean Water Act unless previously authorized. If a local agency needs to acquire such access from an otherwise uncooperative property owner, existing condemnation procedures should be utilized to acquire the temporary access or permanent easement

4. **Start Work Date:** Any projects authorized under this RGP must be initiated within seven (7) days of receiving authorization to proceed. Projects that cannot be initiated within this immediate timeframe would generally not meet the definition of an "emergency". If the project start time can be delayed for more than a week, the imminent threat of impending loss is likely to have diminished in magnitude as well as immediacy. On the other hand, the RGP could be used to authorize projects as they become discovered, such as with the receding flows of a river some time after a flood event occurred but which likely was the immediate cause of the damage. Further, this RGP cannot be used to authorize long-planned-for projects, nor shall it be used for projects that are likely to have been known to the applicant but for which an application was not submitted in a timely manner. That is, the applicant's failure to act in a timely manner prior to the storm season will not obligate the Corps or other agencies to authorize work because of an "emergency" situation unless we agree that the situation qualifies as an emergency as defined on Page 1.

5. **Access to Site:** The permittee must allow representatives from this office and other agencies to inspect the authorized activity at any time deemed necessary to ensure the project is being or has been accomplished in accordance with the terms and conditions of this RGP.

6. **Tribal Rights:** No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

7. **Water Quality Certification:**

a. For Permittees on Non-tribal Land: A technically conditioned Water Quality Certification (WQC) was issued for this RGP by the SWRCB on December 10, 2014. Permittees must also comply with the conditions specified in that certification as special conditions of this RGP. A copy of the WQC is attached, and the conditions are summarized below:

Standard Conditions:

(1) The WQC can be modified or revoked upon proper review.
(2) The WQC does not apply to any activity involving a hydroelectric facility.
(3) The WQC applies only after the payment of all required fees by the Enrollee.
(4) Violation of the WQC shall be subject to remedies, penalties, process or sanctions.
(5) The WQC may not be used to upgrade an existing structure except in very limited circumstances.
(6) Signatory requirements for all document submittals are presented in Attachment B of the WQC.

Eligibility Conditions:

(1) The WQC is limited to emergency actions that meet the CEQA definition of "emergency."
(2) Projects must meet one or more of five specified CEQA emergency exemption criteria.
(3) Projects must meet time frames and minimum scope appropriate to emergencies.

General Discharge Conditions:

(1) Permitted activities shall not violate any applicable water quality standards.
(2) SWRCB and RWQCB may impose monitoring requirements.

Administrative Conditions:

(1) The State Water Board reserves the right to suspend, cancel, or modify and reissue the WQC, after providing notice to Enrollee, if the State Water Board determines the Project is in non-compliance.
(2) The WQC does not preclude need for other required permits.
(3) The WQC and all of its conditions are not subject to the expiration or retraction of the Clean Water Act section 404 permit.
(4) A copy of the WQC shall be provided to any contractor and all subcontractors conducting the authorized work, and copies shall remain in their possession at the Project site during the life of the Project.
(5) No taking of State or Federal endangered, threatened or candidate species without CDFW and/or USFWS/NMFS authorization.
(6) Enrollee shall grant Water Boards staff or authorized representative entry to any Project site, access to any records required to be kept under conditions of the WQC, inspection of facilities, and to sample or monitor.
(7) Non-compliance with these conditions constitutes violation of Clean Water Act and Porter-Cologne Act.
(8) The Enrollee must pay a review and processing flat fee ($200 as of December 2014, subject to change) to the appropriate RWRCB for review and processing of the Notice of Intent (Attachment D of the WQC).

Construction Conditions:

(1) At all times, materials shall be maintained on-site to contain any spill of materials that may pollute or be considered a nuisance if materials reach waters of the U.S. and/or state.
(2) Fueling, lubrication, maintenance, storage, and staging of vehicles and equipment must not result in a discharge to any waters of the U.S. and/or state, and shall be located outside of waters of the U.S. and/or state.
(3) If construction related materials reach surface waters, a spill response must be initiated as soon as possible and State Water Board staff shall be contacted via email and telephone within twenty-four (24) hours.
(4) All construction materials and debris shall be removed from work areas following completion of project.
(5) Water diversion activities must not result in degradation of beneficial uses or exceedance of water quality objectives of the receiving waters.
(6) All necessary BMPs must be implemented to control erosion and runoff from work area.
(7) The revegetation palette shall not contain any plants listed on the California Invasive Plant Council Invasive Plant Inventory.

Mitigation Conditions:

(1) Permitted activities must first avoid and then minimize adverse impacts on aquatic resources to the maximum extent practicable. Any remaining unavoidable adverse impacts to the aquatic resources may be offset by compensatory mitigation requirements in accordance with the conditions of RGP 5.

Reporting Conditions:

(1) Enrollee must provide 48-hour notification to the SWRCB and appropriate RWQCB.
(2) The Enrollee shall submit copies of the Pre-Construction Notification and Post-Project Construction Reports directly to the SWRCB and the appropriate RWQCB.

b. For Permittees on Tribal Lands: Projects on some tribal lands are certified by the Environmental Protection Agency pursuant to Section 401 of the Clean Water Act. The EPA issued a certification for this RGP by letter dated November 25, 2014, subject to the conditions specified in that certification (attached) and summarized below. Failure to completely comply with these certification conditions may result in the imposition of further case-specific conditions by the EPA, including mitigation and/or restoration.

(1) At all times appropriate materials shall be maintained on site to contain any spill or inadvertent release of pollutants.
(2) Fueling, lubrication, maintenance, storage and staging of vehicles and equipment shall be located outside of waters of the U.S. and must not result in a discharge to any waters of the U.S.
(3) If construction related materials reach surface waters, appropriate spill response procedures must be initiated as soon as the incident is discovers and U.S. EPA shall be notified promptly.

(4) Construction materials and debris from all construction work areas shall be removed following completion of construction.
(5) Water diversion activities must not result in the degradation of beneficial uses or exceedance of water quality objectives of the receiving waters. Any temporary dam or artificial obstruction must result in little or no siltation. Normal flows must be restored to the affected stream immediately upon completion of work.
(6) All necessary "best management practices" (BMPs) to control erosion and runoff shall be implemented. All areas of temporary impact shall be restored to pre-disturbance conditions.
(7) The revegetation plant palette for project sites must include appropriate native species only and California project sites are prohibited from planting any plants listed on the California Invasive Plant Council Invasive Plant Inventory (see http://www.cal-ipc.org/paf/)
(8) A copy of the U.S. EPA's Water Quality Certification for use of RGP 5 on Tribal Lands within the San Francisco District of the U.S. Army Corps of Engineers shall be provided to all contractors and subcontractors.

8. Coastal Zone Management: For those projects affecting uses or resources of the coastal zone, the Federal Coastal Zone Management Act (CZMA) requires that the applicant obtain concurrence from either the CCC or the BCDC that the project is consistent with the State's certified Coastal Management Program. For activities within the coastal zone that require a coastal development permit from the CCC, the applicant should contact the appropriate CCC office to request an emergency permit, and no additional Federal consistency review is necessary. For activities within the coastal zone that require a coastal development permit from a local government with a certified local government coastal program, the applicant should contact the appropriate local government agency. Since a coastal permit issued by a local government agency does not satisfy the Federal consistency requirements of the CZMA, the applicant should also contact Larry Simon, (415) 904-5288, Federal Consistency Coordinator for the CCC, to determine the appropriate emergency procedures. For any activity outside the coastal zone, but with the potential to affect coastal uses or resources, or for any activity conducted by a Federal agency, the applicant should contact Larry Simon, (415) 904-5288, Federal Consistency Coordinator for the CCC to determine the appropriate emergency procedures.

For activities within San Francisco Bay or the Suisun Marsh that require a permit from BCDC, the applicant should contact BCDC to request an emergency permit, and no additional federal consistency review is necessary. For activities within the Suisun Marsh, the applicant should contact the appropriate local government as well as BCDC. For any federal or federally-permitted activity outside the Bay or Marsh, but with the potential to affect coastal uses or resources within the Bay or Marsh, the applicant should contact Robert Batha, Chief of Permits at (415) 352-3612 to determine the appropriate emergency procedure.

Due to the limited time constraints often associated with emergency actions, the Corps will not require the applicant to provide proof of review by the CCC or BCDC, if such an action would result in undue harm to life or property. However, the Corps will require the permittee to provide evidence of consistency upon completion of the project unless the Corps is already aware that a particular project, class of projects, or projects in a particular area described by the CCC or BCDC, have received such determinations or waivers.

Disposal of flood-delivered sediments into the marine environment are not authorized under RGP 5 due to potential adverse effects to the habitat and water quality. If such activity is proposed, it shall be addressed through other permitting procedures.

9. Endangered Species: No activity is authorized under this RGP which is likely to jeopardize the continued existence of a threatened or endangered species or destroy or adversely modify designated critical habitat, as identified under the Federal Endangered Species Act (ESA). Similarly, the requirements of the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) to consult with the NMFS regarding the impacts of a potential project on Essential Fish Habitat (EFH) must be addressed.

Authorization of an activity by this RGP does NOT authorize the "take" of a listed threatened or endangered species, as defined under the Federal ESA or adversely affect EFH defined by the MSFCMA. The applicant shall notify the DE if any listed or proposed species or designated or proposed critical habitat might be affected by or is in the vicinity of the project. The applicant shall not begin work on the activity until notified by the DE that the requirements of the ESA have been satisfied and the activity is authorized. In all circumstances, the applicant should, if aware of the potential presence of listed or proposed species or designated or proposed critical habitat, make considerable efforts to contact this office and/or personnel at FWS and/or NMFS. In some cases the FWS and NMFS may be able to make *a priori* determinations

that listed species are not present.

Information on the location of listed or proposed threatened or endangered species and their designated or proposed critical habitat can be obtained directly from the FWS or NMFS or from their Websites at:

FWS - http://www.fws.gov/endangered

NMFS - http://www.nmfs.noaa.gov/prot_res/overview/es.html

To the extent possible, this office will implement any programmatic biological opinions and incidental take statements that may be available. Any terms and conditions inherent to these documents will become conditions on a particular applicant's authorization under this RGP.

In many cases information on the presence of listed or proposed species at a specific project site may not be available. In such cases the nature of the emergency may prevent an applicant from conducting the surveys necessary to make a reasonable determination. Therefore, the applicant may assume the species is present, if suitable habitat occurs onsite, and request that the emergency provisions of Section 7 of the ESA be implemented.

10. National Marine Sanctuaries: This RGP does not authorize the discharge or deposit of materials or other matter within a National Marine Sanctuary; nor does it authorize discharge or deposit of materials or other matter outside a National Marine Sanctuary that subsequently enters the Sanctuary and injures a Sanctuary resource. The San Francisco District includes Cordell Bank, Gulf of the Farallones, and Monterey Bay National Marine Sanctuaries. The applicant shall notify the DE and seek approval from the appropriate Sanctuary Manager/Superintendent if such a discharge will take place. The applicant shall not begin work until either such approval is obtained or the Sanctuary Manager/ Superintendent notifies the applicant and the DE that no such approval is required.

11. Wild and Scenic Rivers: No activity may occur in a component of the National Wild and Scenic River System or in a river officially designated by Congress as a "study river" for possible inclusion in the system while that river is in an official study status; unless the appropriate Federal agency with direct management responsibility for that river has determined in writing that the proposed activity would not adversely effect the Wild and Scenic River designation or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency in the area (e.g., FWS, National Park Service, US Forest Service, Bureau of Land Management). Currently the only designated Wild and Scenic River systems in the San Francisco District are the Eel (including the Van Duzen, Black Butte, and Cold Creek), the Klamath (including the Salmon, the Scott, and Wooley Creek), the Smith (including most major tributaries), the Trinity (including the New), and the Big Sur River.

12. Historic Properties: Impacts to historic properties listed, proposed for listing, or potentially eligible for listing in the National Register of Historic Places will be avoided to the maximum extent practicable. If such resources are impacted as a result of actions authorized under this RGP, the permittee shall provide a full report of the action and the impacts incurred by the resource to this office within 45 days after completion of the action. The Corps, the SHPO and/or the Advisory Council for Historic Preservation will then jointly make a determination as to appropriate procedures and/or mitigation to be addressed.

If permittees discover any previously unknown historic or archeological remains while implementing the activities authorized by this RGP, they must immediately notify this office of what they have found. We will initiate the Federal and State coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

13. Equipment: When feasible, and if personnel would not be put into any additional potential hazard, heavy equipment working in wetlands must be placed on mats, or other measures, such as use of wide-tread tires or floatation devices on equipment, must be taken to minimize soil disturbance.

14. Suitable Material: No discharge of dredged or fill material may consist of unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.) and material discharged must be free from toxic pollutants in toxic amounts. (See Section 307 of the Clean Water Act (CWA).)

15. Erosion and Siltation Controls: Every effort must be made to ensure any material dredged or excavated from Waters of the United States is not likely to be washed back into any Waters of the United States. When feasible, erosion and siltation controls, such as siltation or turbidity curtains, sedimentation basins, and/or straw (or hay) bales or other means designed to minimize turbidity in the watercourse above background levels existing at the time of construction, shall be used and maintained in effective operating condition during construction unless conditions preclude their use, or if conditions are such that the proposed work would not increase turbidity levels above the background level existing at the time of the work. All exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be stabilized at the earliest practicable date to preclude additional damage to the project area through erosion or siltation.

16. Aquatic Life Movements: No activity may substantially disrupt the movement of those species of aquatic life indigenous to the water body, including those species that normally migrate through the area. Culverts placed in streams must be installed to maintain low flow conditions.

17. Shellfish Production: No discharge of dredged or fill material may occur in areas of concentrated natural or commercial shellfish production, unless the discharge is directly related to a shellfish harvesting activity authorized by the Corps' Nationwide Permit (NWP) 4.

18. Spawning Areas: Discharges in spawning areas during spawning seasons must be avoided to the maximum extent practicable.

19. Waterfowl Breeding Areas: Discharges into breeding areas for migratory waterfowl must be avoided to the maximum extent practicable.

20. Navigation: No activity may cause more than a minimal adverse effect on the course or capacity of a navigable water. Permittees understand and agree that, if future operations by the United States require the removal, relocation, or other alteration of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, they will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expenses to the United States. No claim shall be made against the United States on account of any such removal or alteration.

21. Water Supply Intakes: No discharge of dredged or fill material may occur in the proximity of a public water supply intake except where the discharge is for repair of the public water supply intake structures or adjacent bank stabilization.

22. Obstruction of High Flows: To the maximum extent practicable, discharges must not permanently restrict or impede the passage of normal or expected high flows or cause the relocation of the water except within the existing river plain (unless the primary purpose of the fill is to impound waters).

23. Adverse Effects from Impoundments: If the discharge creates an impoundment of water, adverse effects on the aquatic system caused by the accelerated passage of water and/or the restriction of its flow shall be minimized to the maximum extent practicable.

24. Proper Maintenance: Any structure or fill authorized by this RGP shall be maintained, including maintenance to ensure public safety, unless it is later determined that the structure is further contributing to other adverse conditions to private or public property. In such situations corrective measures will be taken to rectify these adverse conditions, including removal and/or redesign of the original emergency corrective action, or appropriate mitigation as determined through coordination with the permittee and the appropriate Federal and State agencies. Temporary levees constructed to control flows shall not be maintained beyond the current storm season (i.e., maintenance of temporary levees is not authorized after the storm season in which the need arose).

25. Regional and Project-Specific Conditions: The activity must comply with any regional conditions added by the Division Engineer (See CFR Section 330.4(e).) and with any project-specific conditions added by the District Engineer.

26. Post-Activity Reports: The permittee shall provide a written report to this office** as soon as practicable (within 45 days of completing the project) after completion of any action conducted under this RGP. **PROVIDING THIS REPORT IS MANDATORY.** This office has additional responsibilities pursuant to consultation with the FWS and NMFS under Section 7 of the ESA. Further, these reports enable us to track the use of this RGP to verify that the minimal effects determination is being met as required by Section 404(e) of the CWA. Failure to provide timely reports following responses to emergency situations is non-compliance with the General Conditions of this RGP and would be considered a violation (33 CFR Section 326.4(d)). **Failure to provide these post-activity reports will jeopardize the possibility of renewing this permit when it expires.** At a minimum this post project report shall include the following:

a. The name, address and telephone number of the permittee and the permittee's agent, if appropriate.

b. A full description of the activity including:
- (1) a description of the emergency and the potential for loss of life or property
- (2) the purpose of the activity and the final goal of the entire activity
- (3) the location of the activity (e.g., area maps, latitude/longitude, township/range)
- (4) the size and description of the project area including maps and drawings showing the areal and linear extent of the project
- (5) the type and quantities of materials used
- (6) information on receiving water body(ies) impacted including:
  - (a) name(s) of water body(ies)
  - (b) type(s) of water body(ies) (e.g., ocean, bay, estuary, lake, reservoir, pond, river, stream, riparian area, wetland)
  - (c) temporary and permanent adverse impacts in acres, cubic yards and/or linear feet
  - (d) compensatory mitigation provided in acres, cubic yards and/or linear feet
  - (e) other steps taken to avoid, minimize and/or compensate for impacts
- (7) information on Federally listed or proposed endangered species or designated or proposed critical habitat including:
  - (a) temporary and permanent adverse impacts
  - (b) compensatory mitigation provided
  - (c) other steps taken to avoid, minimize and/or compensate for impacts
- (8) pre- and post- construction photographs

If there are a substantial number of projects and this requirement would be unreasonably burdensome, the permittee may, as an option, submit a comprehensive report providing all of the information required in the notification condition (Item 2.b.) above for each project. The report shall include a description of the emergency and the potential for loss of life or property, maps to the project location, maps or drawings showing the areal and lineal extent of the project, quantities of material used, and pre- and post-construction photographs. If the project was conducted in an area known to harbor Federally listed or proposed endangered species or designated or proposed critical habitat, the permittee must include a list of measures taken to minimize harm to the species and/or habitat and provide a copy of the report to the FWS and/or the NMFS, as appropriate. If mitigation was determined to be appropriate for a specific project or group of projects, a mitigation proposal must be submitted to this office for review and approval. We will forward the report to the appropriate agencies for their review and comment.

27. Removal of Temporary Fills: Temporary fills shall be removed in their entirety and the affected areas returned to their pre-existing elevations and revegetated with appropriate native riparian or wetland vegetation common to the area. If an area impacted by such a temporary fill is considered likely to naturally re-establish native riparian or wetland vegetation to a level similar to pre-project or pre-event conditions within two years, the permittee will not be required to do so.

****Note:** As one of the conditions of the Water Quality Certification for this RGP, the permittee shall directly provide both the SWRCB and the appropriate RWQCB a copy of the Post-Activity Report.

FURTHER INFORMATION:

1. **Congressional Authorities:** Activities are authorized by this RGP pursuant to:
   (X) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).
   (X) Section 404 of the Clean Water Act (33 U.S.C. 1344).

2. **Limits of this authorization:**
   a. This permit does not obviate the need to obtain other Federal, State, or local authorizations required by law.
   b. This permit does not grant any property rights or exclusive privileges.
   c. This permit does not authorize any injury to the property or rights of others.
   d. This permit does not authorize interference with any existing or proposed Federal project.

3. **Limits of Federal Liability:** In issuing this permit, the Federal Government does not assume any liability for the following:
   a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.
   b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.
   c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.
   d. Design or construction deficiencies associated with the permitted work.
   e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. **Reliance on Applicant's Data:** The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information provided by the applicant.

5. **Reevaluation of Permit Decision:** This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:
   a. The permittee fails to comply with the terms and conditions of this permit.
   b. The information provided by an applicant in support of a permit application proves to have been false, incomplete, or inaccurate. See Item 4 above.
   c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring a permittee to comply with the terms and conditions of the permit and for the initiation of legal action where appropriate. Permittees will be required to pay for any corrective measures ordered by this office, and if they fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill permittees for the cost.

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

Jane M. Kluesner for
John C. Morrow
Lieutenant Colonel, US Army
District Engineer

12/10/14
Date

California Map of U.S. Army Corps of Engineers Regulatory Boundaries

Prepared by the San Francisco District, 10/2000

DEC 10 2014

Ms. Jane Hicks
Chief, Regulatory Division
San Francisco District
U.S. Army Corps of Engineers
1455 Market Street
San Francisco, CA 94103-1398

Dear Ms. Hicks:

RE: CLEAN WATER ACT SECTION 401 WATER QUALITY CERTIFICATION FOR REGIONAL GENERAL PERMIT 5 FOR EMERGENCY ACTIONS (SB14008IN)

Enclosed please find a 401 Water Quality Certification (Certification), authorized by State Water Board Executive Director, Mr. Thomas Howard, issued to the U.S. Army Corps of Engineers San Francisco District for Regional General Permit 5 (Project). Attachments A through E of the Enclosure are also part of the Certification. You may proceed with your Project according to the terms and conditions of the enclosed Certification.

If you require further assistance, please contact me at (916) 341-5462 or Brian.Dailey@waterboards.ca.gov . You may also contact Mr. Bill Orme, Chief of the 401 Certification and Wetlands Protection Unit, at (916) 341-5464 or Bill.Orme@waterboards.ca.gov.

Sincerely,

Brian Dailey
Environmental Scientist
Division of Water Quality – 401 Certification and Wetlands Unit

Enclosures (1): 401 Water Quality Certification for RGP 5 for Emergency Actions

electronic cc (w/ enclosure):

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CLEAN WATER ACT SECTION 401 WATER QUALITY CERTIFICATION

Reg. Meas. ID:	398527
Place ID:	809955
SWRCB ID:	SB14008IN
USACOE#:	28218S

Effective Date: December 10, 2014

Expiration Date: December 10, 2019

Program Type: Fill/Excavation

Project: Regional General Permit 5 for Repair and Protection Activities in Emergency Situations (Project)

Applicant: U.S. Army Corps of Engineers, San Francisco District

Applicant Contact:
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Chief, Regulatory Division
San Francisco District
U.S. Army Corps of Engineers
1455 Market Street
San Francisco, CA 94103-1398
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Applicant's Agent:
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State Water Board Staff:
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Environmental Scientist
State Water Resources Control Board
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Phone: (916) 341-5462
Email: Brian.Dailey@waterboards.ca.gov

State Water Board Contact Person:
If you have any questions, please call State Water Resources Control Board (State Water Board) Staff or (916) 341-5569 and ask to speak with the 401 Certification and Wetlands Unit Program Manager.

Table of Contents

I. Certification Action

This Certification Order serves as a Clean Water Act (CWA) Section 401 Water Quality Certification (Certification) and responds to the request on behalf of the U.S. Army Corps of Engineers, San Francisco District (Corps), for Certification for the Project. This Certification is for the purpose and design described in the application submitted by the Corps. The application for Certification was received on October 9, 2014. The State Water Board provided public notice of the application pursuant to California Code of Regulations, title 23, section 3858 on October 9, 2014, via the State Water Board website. The State Water Board did not receive any comments during the twenty-one (21) day comment period.

II. Project Purpose and Description

The Corps is proposing to re-issue Regional General Permit (RGP) 5, which would allow expedited authorization for discharges or work in waters of the United States within the District for repair or protection activities in emergency situations. This permit authorizes discharges of dredged or fill material into waters of the United States, including wetlands, and/or work or structures in navigable waters of the United States for necessary repair and protection measures associated with an emergency situation.

III. Project Location

Within those parts of the State of California subject to regulatory review by the Corps San Francisco District office, including the following areas:

- All of Siskiyou, Trinity, Del Norte, Humboldt, Mendocino, Sonoma, Marin, and Napa Counties;
- The western parts of Solano, Contra Costa, and Alameda Counties that include or drain to Suisun Bay west of Sherman Island (HUC 18050001), San Pablo Bay (HUC 18050002), or San Francisco Bay (HUC 18050004);
- All of San Francisco, San Mateo, Santa Clara, Santa Cruz, Monterey, and San Benito Counties; and
- The inland portions of San Luis Obispo County northeast of the crests of the Santa Lucia Range, Garcia Mountain, and the La Panza and Caliente Ranges, including the Salinas River watershed (HUC 18060004 and 18060005) and the Carrizo Plain watershed (HUC 18060003).

A map depicting the general Project location is located in Attachment A of this Certification.

IV. Receiving Waters Information

Definition "Waters of the United States" means surface water and water bodies as defined by United States Environmental Protection Agency (USEPA) regulations (e.g., 40 C.F.R. § 122.2). This definition, which establishes the limits of federal jurisdiction over state waters, does exclude some surface water and water body types recognized under the California Water Code. The latter defines "waters of the state" more broadly as "any surface water or ground water, including saline waters, within the boundaries of the state." [Wat. Code, § 13050, subd. (e)]. Waters of the state that fall outside of federal jurisdiction are nonetheless fully protected under the state Water Code.

According to California Code of Regulations, title 23, chapter 28, article 1, section 3831, a "water quality certification" means a certification that any discharge or discharges to waters of the United States, resulting from an activity that requires a federal license or permit, will

comply with water quality standards and other appropriate requirements. As such, this Certification is issued in response to a proposed Project discharge or discharges to waters of the United States, and ensures that the water quality standards for all waters of the state impacted by the Project are met. Discharges shall be delineated according to Corps delineation methods.

The Project is located within the jurisdiction of the North Coast, San Francisco Bay, Central Coast, and Central Valley Regional Water Quality Control Boards (Regional Water Boards). The receiving waters and beneficial uses of those waters potentially impacted by this Project are outlined in water quality control plans (Basin Plan) for the regions and other plans and policies which may be accessed online at: http://www.waterboards.ca.gov/plans_policies/.

V. California Environmental Quality Act (CEQA) Findings

State Water Board staff has determined that the Project is exempt from review under the California Environmental Quality Act (CEQA) pursuant to California Code of Regulations, title 14, section 15061, subd. (b). Specifically, the issuance of this Certification is exempt by statute pursuant to Public Resources Code section 21080, subsections (b)(2)-(4). Additionally, State Water Board staff concludes that no exceptions apply to the activities approved by this Certification. The State Water Board will file a Notice of Exemption in accordance with the California Code of Regulations, title 14, section 15062 the date this order becomes effective.

VI. Conditions

The State Water Board has independently reviewed the record of the Project to analyze impacts to water quality and designated beneficial uses within the watersheds of the Project. In accordance with this Order, the Applicant may proceed with the Project under the following terms and conditions.

A. Standard Conditions

1. This Certification action and Order is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to Water Code section 13330, and California Code of Regulations, title 23, chapter 28, article 6 (commencing with section 3867).

2. This Certification action and Order is not intended and shall not be construed to apply to any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license, unless the pertinent Certification application was filed pursuant to subsection 3855(b) of chapter 28, title 23 of the California Code of Regulations, and the application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.

3. This Certification is conditioned upon total payment of any fee required under title 23 of the California Code of Regulations and owed by the Enrollee (i.e. the person or entity proposing enroll under the Corps' RGP 5 to conduct activities which may result in a discharge to a water of the United States).

4. In the event of any violation or threatened violation of the conditions of this Certification, the violation or threatened violation shall be subject to any remedies, penalties, process, or sanctions as provided for under state and federal law. For purposes of Clean Water

Act, section 401(d), the applicability of any state law authorizing remedies, penalties, processes, or sanctions for the violation or threatened violation constitutes a limitation necessary to assure compliance with the water quality standards and other pertinent requirements incorporated into this Certification Order.

B. General Conditions

1. Signatory requirements for all document submittals required by this Certification are presented in Attachment B of this Certification.

2. This certification is limited to emergency actions that meet the California Environmental Quality Act (CEQA) (Public Resources Code, § 21000 et seq.) definition of an "emergency," which is defined as follows:

> *A sudden, unexpected occurrence, involving a clear and imminent danger, demanding immediate action to prevent or mitigate loss of, or damage to, life, health, property, or essential public services. Emergency includes such occurrences as fire, flood, earthquake, or other soil or geologic movement, as well as such occurrences as riot, accident, or sabotage.*
> [Pub. Resources Code, § 21060.3 (emphasis added).]

Emergency actions must meet the above definition of "emergency" and demonstrate an imminent threat to qualify for this Certification. For actions that do not qualify for enrollment under this Certification, the Enrollee must contact either the State Water Board or the applicable Regional Water Board to apply for an individual water quality certification.

3. This Certification is limited to projects that satisfy one or more of the following exemption criteria as defined by the CEQA Guidelines [Cal. Code Reg., tit. 14, § 15269.]:

   a. Projects to maintain, repair, restore, demolish, or replace property or facilities damaged or destroyed as a result of a disaster in a disaster stricken area in which a state of emergency has been proclaimed by the Governor pursuant to the California Emergency Services Act, commencing with section 8550 of the Government Code.

   b. Emergency repairs to publicly or privately owned service facilities necessary to maintain service essential to the public health, safety, or welfare.

   c. Specific actions necessary to prevent or mitigate an emergency. This does not include long-term projects undertaken for the purpose of preventing or mitigating a situation that has a low probability of occurrence in the short-term.

   d. Projects undertaken, carried out, or approved by a public agency to maintain, repair, or restore an existing highway damaged by fire, flood, storm, earthquake, land subsidence, gradual earth movement, or landslide, provided that the project is within the existing right of way of that highway and is initiated within one year of the damage occurring. This does not apply to highways designated as official State scenic highways, nor any project undertaken, carried out, or approved by a public agency to expand or widen a highway damaged by fire, flood, storm, earthquake, land subsidence, gradual earth movement, or landslide.

   e. Seismic work on highways and bridges pursuant to section 180.2 of the Streets and Highways Code, section 180 et seq.

4. This certification is limited only to sudden, unexpected emergency situations defined in General Conditions 2 and 3 above that: (1) have occurred, or (2) have a high probability of occurring in the short term as a result of recently discovered factors or events not related to known or expected conditions. Additionally, the sudden, unexpected emergency situation must have the potential to result in an unacceptable hazard to life or a significant loss of property if corrective action requiring a permit is not undertaken within a time period less than the normal time needed to process the application under standard procedures.

5. Emergency repairs and reconstruction must commence within seven (7) calendar days of receiving a notice of applicability (i.e., the notification from the Water Board that the Enrollee has successfully enrolled under this Certification) and shall be completed within six (6) months of the enrollment date pursuant to this water quality certification. **If it is anticipated that work will not be completed prior to the expiration of enrollment, the Enrollee shall request an extension at least thirty (30) days prior to the expiration date.** The request shall include justification for the extension.

6. All repairs and reconstruction shall be kept to the minimum necessary to alleviate the immediate emergency and limited to in-kind replacement or refurbishment of on-site features. Minor upgrading may be considered if the Enrollee uses bioremediation or other environmentally sensitive solutions. Permanent restoration work other than that performed as an associated part of the emergency operations, including any minor upgrades, shall not be performed without prior approval and authorization by the Water Boards.

7. Permitted actions must not cause a violation of any applicable water quality standards, including impairment of beneficial uses for receiving waters as adopted in the Basin Plans by any applicable Regional Water Board or any applicable State Water Board (collectively Water Boards) water quality control plan or policy. The Water Boards may impose monitoring requirements at any time in order to ensure that permitted discharges and activities comport with any applicable effluent limitations, water quality standards, and/or other appropriate requirement of state law.

8. Emergency work under this Certification may not be used to upgrade an existing structure to current standards when that activity would result in additional adverse effects on aquatic resources, except in very unusual and limited circumstances. Such upgrade projects are considered separate activities for which other forms of authorization will be required.

9. This Certification does not authorize work required by property owners as quid pro quo for access through private or public property where such access is contingent upon work conducted by the Enrollee in waters of the United States for the benefit of the property owner.

C. Administrative Conditions

1. The State Water Board reserves the right to suspend, cancel, or modify and reissue this Certification, after providing notice to the Applicant, if the State Water Board determines that the Project fails to comply with any of the terms or conditions of this Certification.

2. The State Water Board may add to or modify the conditions of this Certification, as appropriate, to implement any new or revised water quality standards and

implementation plans adopted or approved pursuant to the Porter-Cologne Water Quality Control Act (Wat. Code, § 13000 et seq.) or Clean Water Act section 303 (33 U.S.C. § 1313).

3. This Certification Order and all of its conditions contained herein are not subject to the expiration or retraction of the Clean Water Act section 404 (33 U.S.C. §1344) permit issued by the Corps for this Project. This Certification Order and all of its conditions contained herein shall remain in full effect, and are enforceable until deemed complete by the State Water Board. For purposes of Clean Water Act, section 401(d), the completion of all conditions contained in this Certification Order constitutes a limitation necessary to assure compliance with the water quality standards and other pertinent requirements of state law.

4. A copy of this Certification shall be provided to any contractor and all subcontractors conducting the construction work, and copies shall remain in their possession at the Project site during the life of the Project. The Enrollee shall be responsible for work conducted by its contractor and any subcontractors.

5. This Certification does not authorize any act which results in the taking of a threatened, endangered or candidate species or any act, which is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish & G. Code, §§ 2050-2097) or the federal Endangered Species Act (16 U.S.C. §§ 1531-1544). If a "take" will result from any act authorized under this Certification held by the Corps, the Corps and/or the Enrollee must obtain authorization for the take prior to any construction or operation of the portion of the Project that may result in a take. The Corps is responsible for meeting all requirements of the applicable endangered species act for the Project authorized under this Certification.

6. The Corps and/or the Enrollee shall grant Water Boards staffs or an authorized representative (including an authorized contractor acting as a Water Boards representative), upon presentation of credentials and other documents as may be required by law, permission to:

   a. Enter upon any project or compensatory mitigation site(s) premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this Certification;

   b. Have access to and copy any records that must be kept under the conditions of this Certification;

   c. Inspect any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Certification; and

   d. Sample or monitor for the purposes of assuring Certification compliance.

7. Failure to comply with any condition of this Certification shall constitute a violation of the Clean Water Act and the Porter-Cologne Water Quality Control Act. Any activities enrolled pursuant to this Certification previously granted, shall immediately be revoked and any or all discharges shall cease. The Corps and/or the Enrollee may then be subject to administrative and/or civil liability pursuant to Water Code section 13385.

D. Construction Conditions

1. At all times, appropriate types and sufficient quantities of materials shall be maintained on-site to contain any spill or inadvertent release of materials that may cause a condition of pollution or nuisance if the materials reach waters of the United States and/or state.

2. Fueling, lubrication, maintenance, storage, and staging of vehicles and equipment must not result in a discharge to any waters of the United States and/or state, and shall be located outside of waters of the United States and/or state in areas where accidental spills are not likely to enter or affect such waters.

3. If construction related materials reach surface waters, appropriate spill response procedures must be initiated as soon as the incident is discovered. In addition, the State Water Board staff contact identified in this Certification must be notified via email and telephone within twenty-four (24) hours of the occurrence.

4. Construction materials and debris from all construction work areas shall be removed following completion of an enrolled project.

5. Water diversion activities must not result in the degradation of beneficial uses or exceedance of water quality objectives of the receiving waters. Any temporary dam or other artificial obstruction constructed must only be built from materials such as clean gravel which will cause little or no siltation. Normal flows must be restored to the affected stream immediately upon completion of work at that location.

6. All necessary best management practices (BMPs) must be implemented to control erosion and runoff from areas associated with the emergency project. All areas of temporary impacts and all other areas of temporary disturbance which could result in a discharge or a threatened discharge to waters of the United States and/or state must be restored. Restoration must include grading of disturbed areas to pre-project contours and revegetation with native species.

7. The revegetation palette must not contain any plants listed on the California Invasive Plant Council Invasive Plant Inventory, which can be found online at: http://www.cal-ipc.org/ip/inventory/weedlist.php

E. Mitigation Conditions

Permitted activities must first avoid and then minimize adverse impacts on aquatic resources to the maximum extent practicable. Any remaining unavoidable adverse impacts to the aquatic resources may be offset by compensatory mitigation requirements in accordance with the conditions of RGP 5.

VII. Notice of Intent and Fee Requirements

A. The prospective Enrollee must notify the State Water Board and the applicable Regional Water Board at least forty-eight (48) hours prior to initiating the emergency project. Notification may be via telephone, e-mail, delivered written notice, or other verifiable means. **This notification must be followed within three (3) business days by submission of all of the information in the notice of intent (NOI) form, provided in Attachment D.**

B. Notification may be via telephone, e-mail, delivered written notice, or other verifiable means. A staff directory that includes contact information for the State and Regional Program Managers is found at:

http://www.waterboards.ca.gov/water_issues/programs/cwa401/docs/staffdirectory.pdf

For Regional Water Board map boundaries, see:
http://www.waterboards.ca.gov/waterboards_map.shtml

Electronic Submittal

- Locate the email addresses of the "**State Program Manager**" and the appropriate "**Region Program Manager**" from the staff directory link above.

- Address email to the state program manager and appropriate region program manager and include in the subject line: (Attention - RGP 5 Notice of Intent)

Hardcopy Submittal Addresses

ATTN: Program Manager
CWA Section 401 WQC Program
Division of Water Quality
State Water Resources Control Board
1001 "I" St. 15th Floor
Sacramento, CA 95814

ATTN: Program Manager
CWA Section 401 WQC Program
Insert mailing address of appropriate Regional Water Board, obtained from:
http://www.waterboards.ca.gov/water_issues/programs/cwa401/docs/staffdirectory.pdf

C. The Water Boards recognize there may be situations where imminent threats to life or property occur and the Enrollee has not received a notice of applicability. If immediate, specific actions, as defined in the California Code of Regulations, title 14, section 15269(c), are required by the Enrollee and prior notice to the State Water Board and the applicable Regional Water Board is not possible, then the Enrollee must contact the State Water Board and the applicable Regional Water Board within one (1) business day of the action. **As provided above, this notification must be followed within three (3) business days by submission of all of the information in the NOI, provided in Attachment D.**

D. The Enrollee must provide to the appropriate Regional Water Board the fee for review and processing of the NOI (**Attachment D**) in accordance with California Code of Regulations, title 23, section 2200 within forty-eight (48) hours of project initiation. Failure to promptly pay the correct fee amount may result in a disqualification for enrollment pursuant to this Certification.

E. The fee amount is calculated using the "**Emergency Projects authorized by a Water Board General Order**" fee category within the **Dredge and Fill Fee Calculator** located at: http://www.waterboards.ca.gov/water_issues/programs/cwa401/index.shtml As of December 1, 2014, the fee is $200.00. Note that this fee is adjusted periodically and may vary from this amount. Enrollees should confirm the correct fee amount prior to submitting an NOI.

F. Once the Water Board receives a completed NOI and the correct fee from the Enrollee, the Water Board will transmit a Notice of Applicability (NOA) to the Enrollee verifying enrollment in this Certification.

VIII. Notice of Completion Reporting Requirements

A. The Enrollee must provide the State Water Board and the applicable Regional Water Board copies of all correspondence and reports that are submitted to the Corps to satisfy the requirements of RGP 5. In addition, the Enrollee must file the notice of completion (NOC) form provided in Attachment E. **A completed NOC must be submitted to the State Water Board and appropriate Regional Water Quality Control Board within 45 calendar days of completion of any action conducted under RGP 5.**

B. **Failure to submit a complete NOC within 45 calendar days of completion of any action conducted under this water quality certification may result in the imposition of administrative and/or civil liability pursuant to Water Code section 13385.**

IX. Water Quality Certification

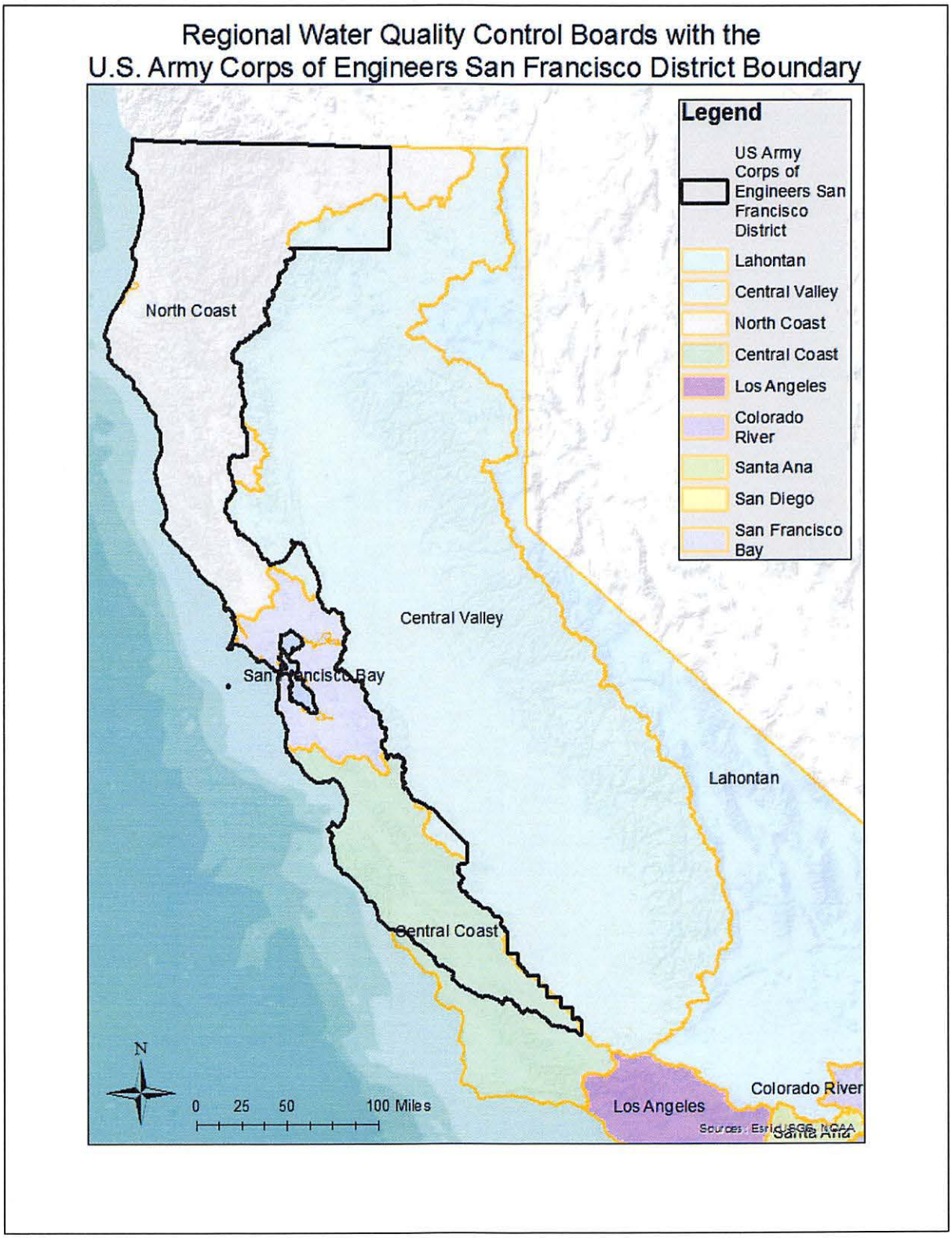
I hereby issue the Certification for Regional General Permit 5 for Repair and Protection Activities in Emergency Situations, SB14008IN, certifying that as long as all of the conditions listed in this Certification are met, any discharge from the referenced Project will comply with the applicable provisions of Clean Water Act sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 303 (Water Quality Standards and Implementation Plans), 306 (National Standards of Performance), and 307 (Toxic and Pretreatment Effluent Standards). This discharge is also regulated pursuant to State Water Board Water Quality Order No. 2003-0017-DWQ which authorizes this Certification to serve as Waste Discharge Requirements pursuant to the Porter-Cologne Water Quality Control Act (Wat. Code, § 13000 et seq.).

Except insofar as may be modified by any preceding conditions, all Certification actions are contingent on (a) the discharge being limited and all proposed mitigation being completed in strict compliance with the conditions of this Certification and the attachments to this Certification, and (b) compliance with all applicable requirements of Statewide Water Quality Control Plans and Policies, and the Regional Water Boards' Water Quality Control Plans and Policies.

Thomas Howard
Executive Director
State Water Resources Control Board

12/10/14
Date

Attachment A	RGP 5 Area Map
Attachment B	Signatory Requirements
Attachment C	Applicant's Project Description
Attachment D	Notice of Intent Form
Attachment E	Notice of Completion Form


Regional Water Quality Control Boards with the
U.S. Army Corps of Engineers San Francisco District Boundary
Legend
US Army Corps of Engineers San Francisco District
Lahontan
Central Valley
North Coast
Central Coast
Los Angeles
Colorado River
Santa Ana
San Diego
San Francisco Bay
North Coast
Central Valley
San Francisco Bay
Lahontan
Central Coast
Los Angeles
Colorado River
N
0 25 50 100 Miles
Sources: Esri, USGS, NOAA

SIGNATORY REQUIREMENTS

All Documents Submitted In Compliance With This Order Shall Meet The Following Signatory Requirements:

1. All applications, reports, or information submitted to the State Water Resources Control Board (State Water Board) must be signed and certified as follows:

   a) For a corporation, by a responsible corporate officer of at least the level of vice-president.
   b) For a partnership or sole proprietorship, by a general partner or proprietor, respectively.
   c) For a municipality, or a state, federal, or other public agency, by either a principal executive officer or ranking elected official.

2. A duly authorized representative of a person designated in items 1.a through 1.c above may sign documents if:

   a) The authorization is made in writing by a person described in items 1.a through 1.c above.
   b) The authorization specifies either an individual or position having responsibility for the overall operation of the regulated activity.
   c) The written authorization is submitted to the State Water Board Executive Director.

3. Any person signing a document under this section shall make the following certification:

   "I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

See RGP5 Issued by SF Distric on December 10, 2014 at the following website:
http://www.spn.usace.army.mil/Missions/Regulatory/PublicNotices.aspx

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NOTICE OF INTENT (NOI) FORM FOR REGIONAL GENERAL PERMIT (RGP) 5 FOR REPAIR AND PROTECTION ACTIVITIES IN EMERGENCY SITUATIONS

(Attach fee check here)

Instructions for Notice of Intent (Attachment D)

The prospective Enrollee must notify the State Water Board and the applicable Regional Water Board at least forty-eight (48) hours prior to initiating the emergency project. Notification may be via telephone, e-mail, delivered written notice, or other verifiable means. **This notification must be followed within three (3) business days by electronic or written submission of all of the information in this notice of intent (NOI).**

Locate the Regional Water Quality Control Board your emergency project is located in at:
http://www.waterboards.ca.gov/waterboards_map.shtml

Locate the contact information for the "**State Program Manager**" and the appropriate "**Region Program Manager**" from the website:
http://www.waterboards.ca.gov/water_issues/programs/cwa401/docs/staffdirectory.pdf

- Address notification email to the state program manager and appropriate region program manager and include in the subject line: (Attention: RGP 5 – Notice of Intent); or
- Call the state program manager and appropriate region program manager; or
- Send written notification to the following addresses:

  ATTN: Program Manager
  CWA Section 401 WQC Program
  Division of Water Quality
  State Water Resources Control Board
  1001 "I" St. 15th Floor
  Sacramento, CA 95814

  ATTN: Program Manager
  CWA Section 401 WQC Program
  Insert address of appropriate Regional Water Board, obtained from:
  http://www.waterboards.ca.gov/water_issues/programs/cwa401/docs/staffdirectory.pdf

The Enrollee must provide to the appropriate Regional Water Board the fee for review and processing of the NOI in accordance with California Code of Regulations, title 23, section 2200 within forty-eight (48) hours of project initiation. Failure to promptly pay the correct fee amount may result in a disqualification for enrollment pursuant to this water quality certification.

The fee amount is calculated using the "**Emergency Projects authorized by a Water Board General Order**" fee category within the **Dredge and Fill Fee Calculator** located at:
http://www.waterboards.ca.gov/water_issues/programs/cwa401/index.shtml

The Water Boards recognize there may be situations where imminent threats to life or property occur and the Enrollee has not received a notice of applicability (i.e., the notification from the Water Board that the Enrollee has successfully enrolled under this Certification). If immediate, specific actions, as defined in the California Code of Regulations, title 14, section 15269(c), are required by the Enrollee and prior notice to the State Water Board and the applicable Regional Water Board is not possible, then the Enrollee must contact the State Water Board and the applicable Regional Water Board within one (1) business day of the action. **As provided above, this notification must be followed within three (3) business days by electronic or written submission of all of the information in this NOI.**

NOTICE OF INTENT (NOI) FORM FOR REGIONAL GENERAL PERMIT (RGP) 5 FOR REPAIR AND PROTECTION ACTIVITIES IN EMERGENCY SITUATIONS

PROPERTY OWNER		
Name:	Phone Number:	
Mailing Address:		
City:	State:	ZIP Code:
Contact Person:	E-Mail:	

PROSPECTIVE ENROLLEE (If different from owner)		
Name:	Phone Number:	
Mailing Address:		
City:	State:	ZIP Code:
Contact Person:	E-Mail:	

PROJECT SITE LOCATION	
Street (include address, if any):	
Nearest Cross Street(s):	
County:	Total size of project site (acres):

Latitude/Longitude (Center of Discharge Area) in degrees/minutes/seconds (DMS) to the nearest ½ second OR decimal degrees (DD) to four decimals (0.0001 degree)

DMS: N. Latitude Deg. _____ Min. _____ Sec. _____

W. Longitude Deg. _____ Min. _____ Sec. _____

DD: N. Latitude _____

W. Longitude _____

Map Attached: ☐Yes ☐ No

Photos Attached: ☐Yes ☐ No

DISCHARGE INFORMATION	
Names of Receiving Water(s):	
Receiving Water Types:	
☐Lake/Reservoir ☐Ocean/Estuary/Bay ☐River/Streambed	☐Riparian Area ☐Vernal Pool ☐Wetland
Emergency Project Description:	

NOTICE OF INTENT (NOI) FORM FOR REGIONAL GENERAL PERMIT (RGP) 5 FOR REPAIR AND PROTECTION ACTIVITIES IN EMERGENCY SITUATIONS

Proposed Solution to Emergency:
Erosion and Sediment Control Measures Proposed:
Description of how Emergency Definition is Satisfied: (i.e., unexpected; potential loss of life or property)
Which of these criteria does the project satisfy? (Check all that apply)

- ☐ Projects to maintain, repair, restore, demolish, or replace property or facilities damaged or destroyed as a result of a disaster in a disaster stricken area in which a state of emergency has been proclaimed by the Governor pursuant to the California Emergency Services Act, commencing with section 8550 of the Government Code.
- ☐ Emergency repairs to publicly or privately owned service facilities necessary to maintain service essential to the public health, safety, or welfare.
- ☐ Specific actions necessary to prevent or mitigate an emergency. This does not include long-term projects undertaken for the purpose of preventing or mitigating a situation that has a low probability of occurrence in the short-term.
- ☐ Projects undertaken, carried out, or approved by a public agency to maintain, repair, or restore an existing highway damaged by fire, flood, storm, earthquake, land subsidence, gradual earth movement, or landslide, provided that the project is within the existing right of way of that highway and is initiated within one year of the damage occurring. This does not apply to highways designated as official State scenic highways, nor any project undertaken, carried out, or approved by a public agency to expand or widen a highway damaged by fire, flood, storm, earthquake, land subsidence, gradual earth movement, or landslide.
- ☐ Seismic work on highways and bridges pursuant to section 180.2 of the Streets and Highways Code, section 180 et seq.

Fill and Excavation Discharges: For each aquatic resource type listed below indicate in acres, cubic yards, and linear feet the estimated discharge to waters of the state, and identify the impact(s) as permanent and/or temporary.

Aquatic Resource Type	Temporary Impact			Permanent Impact		
	Acres	*Cubic Yards*	*Linear Feet*	*Acres*	*Cubic Yards*	*Linear Feet*
Lake/Reservoir						
Ocean/Estuary/Bay						
Riparian Zone						
Stream Channel						
Vernal Pool						
Wetland						

CERTIFICATION

"I certify under penalty of law that this document and all attachments were prepared under my direction and supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. In addition, I certify that the provisions of this Certification and Corps Regional General Permit No. 5 will be complied with."

Signature of Discharger	Title
Printed or Typed Name	Date

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Instructions for Notice of Completion Form

The Enrollee must provide the State Water Board and the applicable Regional Water Board copies of all correspondence and reports that are submitted to the Corps to satisfy the requirements of RGP 5. In addition, the Enrollee must file this notice of completion (NOC) form. **This information must be submitted to the State Water Board and appropriate Regional Water Quality Control Board within 45 calendar days of completion of any action conducted under RGP 5.**

Failure to submit a complete NOC within 45 calendar days of completion of any action conducted under this water quality certification may result in the imposition of administrative and/or civil liability pursuant to Water Code section 13385.

Notice of Completion Form and Document Submittal Information

Electronic Submittal:

- Locate the email addresses of the "**State Program Manager**" and the appropriate "**Region Program Manager**" from the website: http://www.waterboards.ca.gov/water_issues/programs/cwa401/docs/staffdirectory.pdf
- Address email to the state program manager and appropriate region program manager and include in the subject line: (Attention - RGP 5 Notice of Completion)

Hardcopy Submittal Addresses:

ATTN: Program Manager
CWA Section 401 WQC Program
Division of Water Quality
State Water Resources Control Board
1001 "I" St. 15th Floor
Sacramento, CA 95814

ATTN: Program Manager
CWA Section 401 WQC Program
Insert mailing address of appropriate Regional Water Board, obtained from:
http://www.waterboards.ca.gov/water_issues/programs/cwa401/docs/staffdirectory.pdf

PROPERTY OWNER		
Name:	Phone Number:	
Mailing Address:		
City:	State:	ZIP Code:
Contact Person:	E-Mail:	

BILLING ADDRESS		
Name:	Phone Number:	
Mailing Address:		
City:	State:	ZIP Code:
Contact Person:	E-Mail:	

ENROLLEE (If different from owner)		
Name:	Phone Number:	
Mailing Address:		
City:	State:	ZIP Code:
Contact Person:	E-Mail:	

PROJECT SITE LOCATION	
Street (include address, if any):	
Nearest Cross Street(s):	
County:	Total size of project site (acres):
Photos Attached: ☐Yes ☐ No	

Latitude/Longitude (Center of Discharge Area) in degrees/minutes/seconds (DMS) to the nearest ½ second OR decimal degrees (DD) to four decimals (0.0001 degree)

DMS: N. Latitude Deg. _____ Min. _____ Sec. _____

W. Longitude Deg. _____ Min. _____ Sec. _____

DD: N. Latitude _____

W. Longitude _____

Attach a map of at least 1:24000 (1" = 2000') detail of the impact site(s).

Indicate the map format used (listed in order of preference):

☐ **GIS shapefiles**. The shapefiles must depict the boundaries of all project areas and extent of aquatic resources impacted. Each shape should be attributed with the aquatic resource type. Features and boundaries should be accurate to within 33 feet (10 meters). Identify datum/projection used and if possible, provide map with a North American Datum of 1983 (NAD38) in the California Teale Albers projection.

☐ **Google KML files** saved from Google Maps: My Maps (free) or Google Earth Pro (not free). Maps must show the boundaries of all project areas and extent/type of aquatic resources impacted.*

☐ Aquatic resource maps marked on paper USGS 7.5 minute **topographic maps** or DOQQ printouts. Maps must show the boundaries of all project areas and extent/type of aquatic resources impacted.

*** If using Google Maps: My Maps or similar, provide URL(s) of maps.**

DISCHARGE INFORMATION	
Project Start Date:	Project Completion Date:
Names of Receiving Water(s):	
Receiving Water Types:	
☐Lake/Reservoir ☐Ocean/Estuary/Bay ☐River/Streambed	☐Riparian Area ☐Vernal Pool ☐Wetland
Regulatory Agencies with Jurisdiction Over Project and Associated Permits/Agreements:	
Emergency Project Description: (e.g. discharge of riprap; discharge of fill; excavation for a utility line)	
Purpose of the Entire Project Activity: (e.g. stream-bank erosion control; maintain, repair, or restore damaged property)	
Erosion and Sediment Control Measures Implemented:	
Pollution Prevention Measures Implemented:	

Fill and Excavation Discharges: For each aquatic resource type listed below indicate in acres, cubic yards, and linear feet the actual discharge to waters of the state, and identify the impact(s) as permanent and/or temporary.

Aquatic Resource Type	**Temporary Impact**			**Permanent Impact**		
	Acres	*Cubic Yards*	*Linear Feet*	*Acres*	*Cubic Yards*	*Linear Feet*
Lake/Reservoir						
Ocean/Estuary/Bay						
Riparian Zone						
Stream Channel						
Vernal Pool						
Wetland						

COMPENSATORY MITIGATION	
Required: ☐ Yes ☐ No	Photos Attached: ☐Yes ☐ No
Compensatory Mitigation Description (include aquatic resource type and acres and linear feet):	

MITIGATION SITE LOCATION
Street (include address, if any):
Nearest Cross Street(s):
County:

Latitude/Longitude (Center of Mitigation Area) in degrees/minutes/seconds (DMS) to the nearest ½ second OR decimal degrees (DD) to four decimals (0.0001 degree)

DMS: N. Latitude Deg. _____ Min. _____ Sec. _____

W. Longitude Deg. _____ Min. _____ Sec. _____

DD: N. Latitude _____

W. Longitude _____

Attach a map of at least 1:24000 (1" = 2000') detail of the mitigation site.

Indicate the map format used (listed in order of preference):

☐ **GIS shapefiles**. The shapefiles must depict the boundaries of all project(s) and extent of aquatic resources. Each shape should be attributed with the aquatic resource type. Features and boundaries should be accurate to within 33 feet (10 meters). Identify datum/projection used and if possible, provide map with a North American Datum of 1983 (NAD38) in the California Teale Albers projection.

☐ **Google KML files** saved from Google Maps: My Maps (free) or Google Earth Pro (not free). Maps must show the boundaries of all project(s) and extent/type of aquatic resources.*

☐ Aquatic resource maps marked on paper USGS 7.5 minute **topographic maps** or DOQQ printouts. Maps must show the boundaries of all project(s) and extent/type of aquatic resources.

*** If using Google Maps: My Maps or similar, provide URL(s) of maps.**

CERTIFICATION	
"I certify under penalty of law that this document and all attachments were prepared under my direction and supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. In addition, I certify that the provisions of this Certification and Corps Regional General Permit No. 5 will be complied with."	
Signature of Discharger	Title
Printed or Typed Name	Date

Enclosure 4

National Marine Fisheries Service Conditions for Dowest Slough Emergency Response project

Thank you for providing NMFS notice via email of an emergency action to be undertaken by Calpine Delta Energy Center (Calpine) to address a discharge of water contaminated with lubricating oil into Dowest Slough which is located near 901 Loveridge Road in the town of Pittsburg, Contra Costa County California.

NMFS provides the following discretionary special conditions to US Army Corps of Engineers (Corps) and Calpine to avoid or minimize potential project-related impacts to spring and winter run Chinook salmon (Onchorhynchus tschawytscha), steelhead (Onchorhynchus mykiss) and green sturgeon (Acipenser medirostris), their critical habitats and essential fish habitat (EFH). These special conditions are discretionary in light of the urgency to complete the emergency action:

1. Maintain oil absorbent booms, as proposed, for the duration of wet weather to prevent further discharge.

2. Minimize the area of disturbance to protect habitat.

As soon as practicable after the emergency is under control, the Corps may need to initiate formal consultation with NMFS. At that time, we can assist in determining if formal consultation is needed. If formal consultation is needed, the Corps will need to prepare a post-project assessment report. At a minimum the report should contain:

a. A description of the construction activity performed;

b. A description of the measures implemented to avoid adverse effects to listed species, designated critical habitat, and essential fish habitat;

c. Pre (if available) and post color photographs of the site;

d. Report any observations of listed species site during the emergency project;

e. A description of the amount of in-water, bank, and riparian habitat affected by the emergency action.

Enclosure 5

San Francisco Bay Regional Water Quality Control Board Staff's Conditions for Dowest Slough Emergency Response Project

In response to the notice of intent to issue an emergency permit to Calpine Delta Energy Center (the Applicant) to conduct emergency oil spill mitigation work in the vicinity of Dowest Slough in Contra Costa County (Project), the Water Board requests the following conditions be included in the emergency permit:

* Within 10 days of completing the Project activities the Applicant shall submit a report to the Water Board documenting the work that was completed. The report shall include a detailed description, with mapping, of the areas impacted by the oil spill, and a description of the areas of actual disturbance during Project implementation. The report shall clearly identify and illustrate the Project site, the locations and areal extent of the impact (both acreage and square feet), and a description of remaining cleanup activities that will be necessary to remove residual oil, mitigate for all impacts, and restore the wetlands and waters to pre-spill conditions. This report shall include detailed information on the type of oil spilled and the composition of the oil, including any additives and constituents of concern for water quality and wildlife exposure;

* As needed based on consultation with the resource agencies, the Applicant shall develop and implement a sampling and analysis plan to evaluate the presence of residual oil in the affected water bodies, including wetlands;

* Within 15 days of completing Project activities, the Applicant shall submit a cleanup and abatement plan for removal of residual oil from the wetlands and open water areas at the site. This plan shall be developed in consultation with the resource agencies;

* The Applicant shall provide compensatory mitigation for all permanent and temporary impacts associated with the Project work. The impacted area shall be quantified, and shall include an assessment of the overall spread of the oil to surrounding areas and waterways, including an assessment of the impacts associated with rainfall that occurred after the spill;

* Within 30 days of completing Project activities, the Applicant shall submit a Mitigation Plan for the Project's permanent and temporary impacts to waters of the State, including wetlands. The Mitigation Plan shall include a summary of the Project's impacts and a thorough description of onsite mitigation opportunities. The Mitigation Plan shall include an assessment of the Applicant's site with respect to providing a greater degree of protection from oil spills should there be situations where water use on site (or storm events) exceeds the capacity of the secondary containment systems (e.g., evaluate whether additional berms or other features are needed to provide adequate spill protection);

* The Applicant shall submit a Notice of Intent (NOI) to the Water Board pursuant to Section VII. Notice of Intent and Fee Requirements of the Clean Water Act Section 401 Water Quality Certification for Regional General Permit 5 for Emergency Actions (SB14008IN) (issued December 10, 2014). The Applicant shall also submit the appropriate fee amount for the "Emergency Projects authorized by a Water Board General Order" fee category within the Dredge and Fill Fee Calculator located at: Blockedhttp://www.waterboards.ca.gov/sanfranciscobay/certs.shtml. As of November 16, 2016, the fee is $720;

* No debris, rubbish, creosote-treated wood, soil, silt, sand, cement, concrete, or washings thereof, or other construction-related materials or wastes, oil or petroleum products, or other organic or earthen material shall be allowed to enter into, or be placed where it may be washed by rainfall or runoff into wetlands and open water areas. Any of these materials placed within or where they may enter waters of the State by the Applicant or any party working under contract, or with the permission of the Applicant shall be removed immediately. When construction is completed, any excess material shall be removed from the work area and any areas adjacent to the work area where such material may be washed into waters of the State. During placement of absorbent material in the wetlands and open water areas, the contractor and/or Applicant shall not dump any litter or construction debris within the wetland and open water areas. All such debris and waste shall be picked up daily and properly disposed of at an appropriate site;

* All work performed within waters of the State shall be completed in a manner that minimizes impacts to beneficial uses and habitat; measures shall be employed to minimize disturbances along waters of the State that will adversely impact the water quality of waters of the State;

* No equipment shall be operated in areas of flowing or standing water; no fueling, cleaning, or maintenance of vehicles or equipment shall take place within waters of the State, or within any areas where an accidental discharge to waters of the State may occur; construction materials and heavy equipment must be stored outside of the wetlands and open water areas;

* The Applicant shall establish a minimum of fifteen (15) photo-documentation points at Project site, including the point of discharge to the marsh/wetlands/sloughs, and all areas impacted by the oil spill including downstream receiving waters. The photo-documentation points shall be used to track the conditions of the wetland and open water areas impacted by the spill. channel stability. The Applicant shall prepare a site map with photo-documentation points clearly marked. Prior to and following placement of absorbent booms, the Applicant shall photographically document the immediate pre- and-post application condition of the wetlands and open waters (with the exception of the areas where absorbent material has already been placed) where Project work is being conducted. These post-construction photographs and map shall be submitted, along with a post-implementation report, to the Water Board within 15 days of Project implementation;

* The Mitigation Plan shall include documentation that the Applicant understands the reporting requirements for the discharge of hazardous materials and/or oil spills. In addition to reporting oil spills to the United States Coast Guard, all oil spills shall be reported to the California Department of Fish and Wildlife, Office of Spill Prevention and Response. The information reported shall clearly indicate whether oil has been discharged to a water body and/or wetlands. In addition, spills shall be reported to the Regional Water Quality Control Board's Spill and Complain Hotline at (510) 622-2369.

Appendix 6. February 13, 2017 Site Visit Report.

CALIFORNIA ENERGY COMMISSION

REPORT OF COMPLIANCE SITE VISIT Page 1 of 8

Siting, Transmission and Environmental Protection Division	**DOCKET #: 98-AFC-03C**	
	PROJECT NAME: Delta Energy Center	
SITE CONTACT (s): **Name :** Barbara McBride, Director of Environmental Health and Safety **Company :** Calpine **Address:** 1200 Arcy Lane, Pittsburg, CA 94565 **Phone:** 925-570-0849 **Email:** Barbara.McBride@calpine.com	**PROJECT LOCATION:** 1200 Arcy Lane Pittsburg, CA 94565	
CPM: Anwar Ali, Ph.D. **Staff Performing the Site Visit:** Anwar Ali, Ph.D., Compliance Project Manager Geoff Lesh, PE, Senior Mechanical Engineer	**DATE:** February 13, 2017	**TIME:** 10:00 am – 12:30 pm
PURPOSE (check one) ☐ **Routine Compliance** ☐ **Construction or Demolition** ☐ **Emergency Response**		☒ **Follow-up/Re-inspection** ☐ **Complaint**

BACKGROUND

The Compliance Project Manager (CPM), Anwar Ali, received an email notification from Calpine's Barbara McBride on Sunday January 29, 2017 at 7:28 pm that a turbine failure and a fire had occurred

at the Delta Energy Center (DEC) on January 29, 2017. The notification said that there was no risk to the neighboring communities and no injuries to the plant's staff or the first responders.

California Energy Commission staff's first visit to the site occurred on January 31, 2017, to ascertain more information about the cause of the fire and its impacts to the site.

FEBRUARY 13, 2017 SITE VISIT AGENDA

Staff's second site visit occurred on February 13, 2017 to collect more detailed information about the turbine failure and fire incident at Calpine's DEC.

On this visit, Energy Commission staff (staff) was allowed to tour accessible areas of the facility accompanied by DEC personnel as Calpine had by then declared them safe for entry. The steam turbine enclosure had been removed, and the upper casing and rotor had been removed from the steam turbine, enabling the staff to view the extent of damage that had occurred.

OPENING CONFERENCE

Introduction was made between staff and Calpine personnel. Staff explained the purpose of the site visit and what areas they wanted to visit. Prior to the touring the facility, staff attended safety training offered by Calpine personnel. Calpine personnel accompanying the site visit were Barbara McBride, Calpine's Director Environmental Services, Rosemary Silva, Environmental Specialist, and Katherine Piper, Legal Counsel.

CONCLUSIONS

This site visit confirmed what staff had been told by Calpine personnel on their first site visit on January 31, 2017:

- Exact cause and sequence of failures are still unconfirmed;
- Steam turbine generator was severely damaged;
- Damages to rotating components and bearings were observed;
- Steam turbine was severely damaged with rotor and casing likely need refurbishing;
- There were no apparent structural damages caused by the fire;
- Absorbent booms were deployed at the Slough and the cleaning efforts to prevent discharge of lubrication oil to slough have been successful. Calpine contractor was on site to ensure periodical change of the absorbent boom when needed and as directed by the California Department of Fish and Wildlife which took the lead of oil discharge project.

Figure 1. Cross-sectional Drawing of similar model Toshiba Steam Turbine (Source: *http://www.toshiba.co.jp/thermal-hydro/en/thermal/products/turbines/steamidx.htm*)

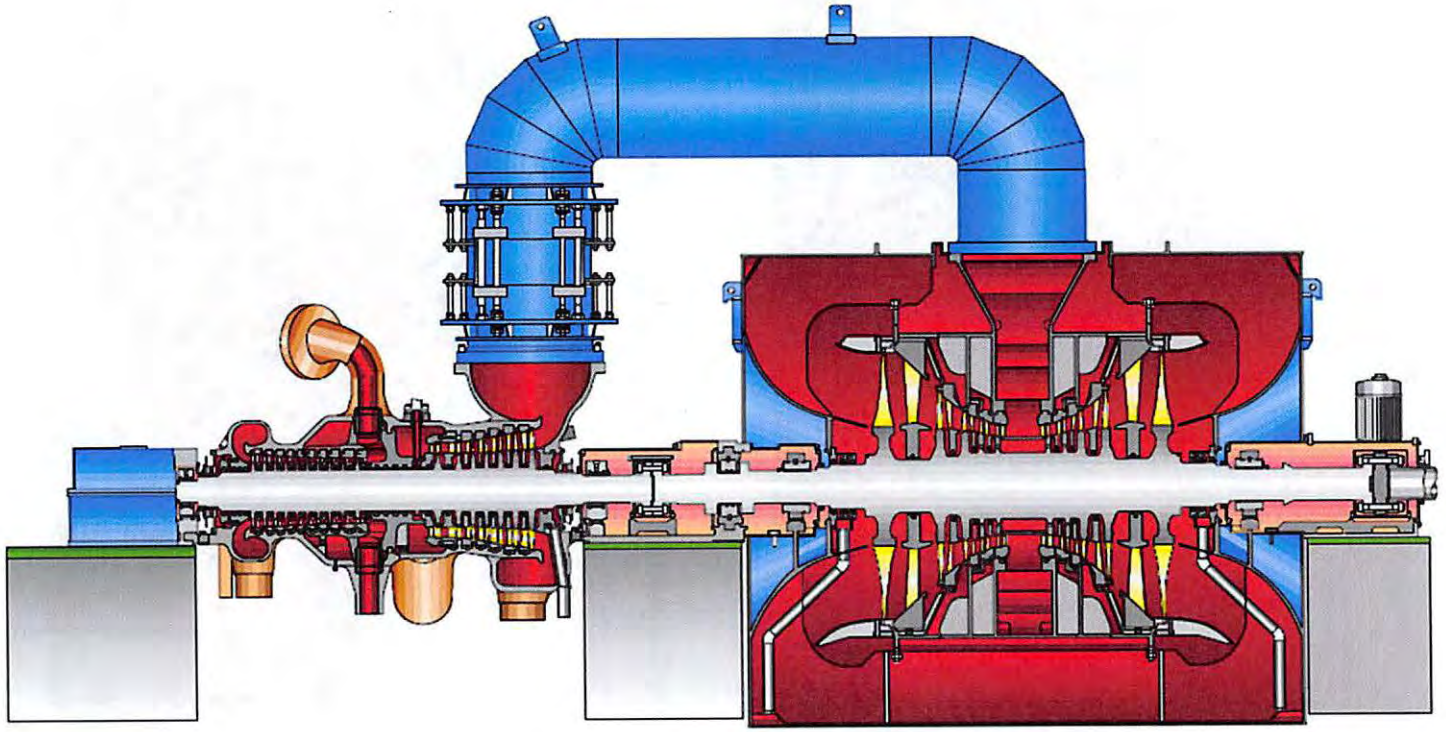


Figure 2. Steam Turbine Building with the overhead lifting crane

Figure 3. Steam Turbine Housing that has been removed

Figure 4. Outlet end of the Low Pressure Steam Turbine section showing damage to casing and entrance to steam condenser

Figure 5. Another view of the damaged turbine blades

Figure 6. Exciter-end of generator shaft showing fracture

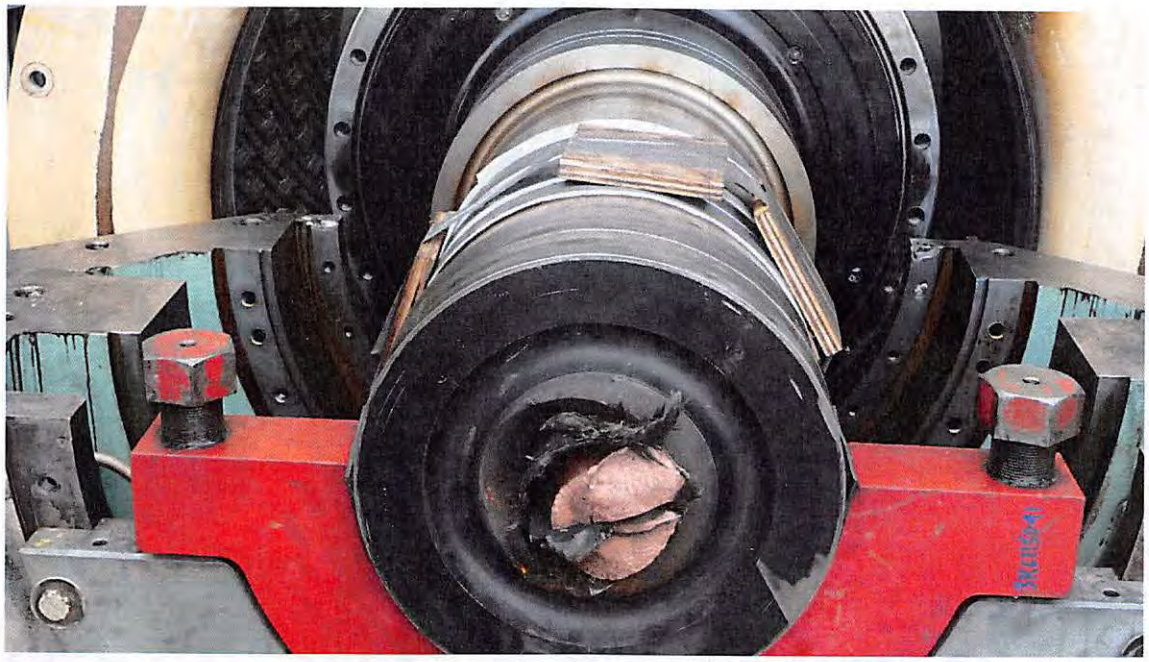


Figure 7. Exciter-end of opened electrical Generator

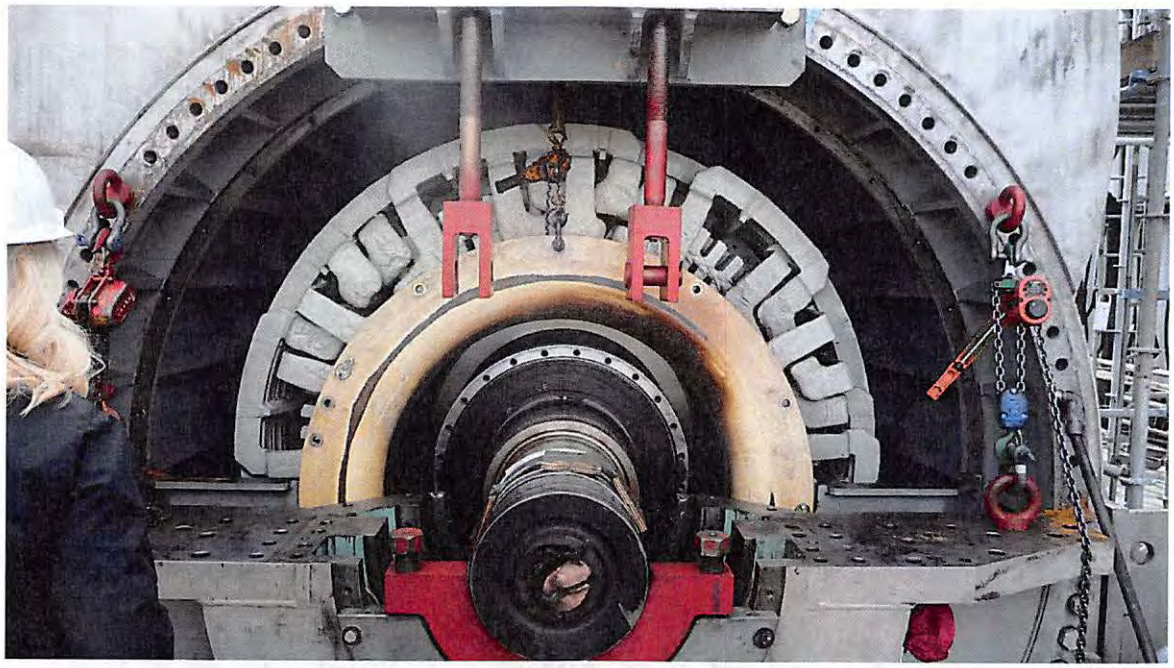


Figure 8. Steam Turbine Rotor removed for repair showing severely damaged blades

Figure 9. Steam Turbine Building with roof and steam turbine removed

cc:	**Staff: Anwar Ali and Geoff Lesh**
	Signed: Anwar Ali **DATE** 4/13/2018
	Geoff Lesh 4/17/2018
	Office Manager: Christine Root
	Signed: **DATE**
	Christine Root 4/17/18

Appendix 7. Calpine's 30-Day Update Report to Contra Costa County Hazardous Materials Programs. February 28, 2017.

CALPINE®

P.O. BOX 551
PITTSBURG, CA 94565-0055
925.756.0789
925.252.2073 (FAX)

February 28, 2017

Mr. Randall L. Sawyer
Chief Environmental Health and Hazardous Materials Officer
Contra Costa Hazardous Materials Programs
4585 Pacheco Boulevard, Suite 100
Martinez, CA 94553

RE: 30-Day Update Report: January 29, 2017 Delta Energy Center Incident

Dear Mr. Sawyer:

As requested by Contra Costa County Health Services and in accordance with the Contra Costa County Health Services (CCCHS)Department of Hazardous Materials Incident Notification Policy, Delta Energy Center is providing this 30 day report for an event that occurred at the Delta Energy Center on January 29, 2017.

If you have any questions, please contact: Barbara McBride at 925-570-0849.

Sincerely,

Barbara McBride
Director Environmental, Health and Safety
Calpine Corporation

ATTACHMENT C
30-DAY FOLLOW-UP NOTIFICATION REPORT FORM
CONTRA COSTA HEALTH SERVICES

INSTRUCTIONS: A hardcopy and an electronic copy of this report is to be submitted for all Level 2 and 3 incidents or when requested by CCHS. See Attachment C-1 for suggestions regarding the type of information to be included in the report. Attach additional sheets as necessary. This form is to be used for update reports after the initial 30-day report has been submitted. Forward the completed form to:

ATTENTION:

Randall L. Sawyer
Chief Environmental Health and Hazardous Materials Officer
Contra Costa Hazardous Materials Programs
4585 Pacheco Boulevard, Suite 100
Martinez, CA 94553

INCIDENT DATE: January 29, 2017

INCIDENT TIME: 15:42

FACILITY: Delta Energy Center

PERSON TO CONTACT FOR ADDITIONAL INFORMATION

Barbara McBride Phone number: 925-570-0849

I. SUMMARY OF EVENT:

On Sunday, January 29, 2017, at approximately 15:42, the Delta Energy Center experienced a fire inside the steam turbine generator compartment that resulted in the deployment of the fire department to the facility. The Delta Energy Center is a natural gas-fired, combined-cycle power plant consisting of three combustion turbines, three heat recovery steam generators and one steam turbine and steam turbine generator. There were no injuries associated with the event. The incident is currently under active investigation. An outside contractor has been secured to conduct the investigation and the results are pending. The timing of the final report is not yet known.

The event resulted in the discharge of approximately 150 gallons of lubricating oil, and approximately 5000 gallons of water attendant to fire suppression, to the stormwater drainage system. This resulted in a discharge to the Dowest Slough located on adjacent property owned by The Dow Chemical Company, where the discharge is currently contained. CH2M and Clean Harbors were deployed within 24 hours and the removal of the oil from the surface water. A copy of the

project implementation report submitted to the Regional Water Quality Control Board is attached here as Attachment 1. Since this report was issued, the remediation has been completed and a closure report is being prepared that will be submitted to the Regional Water Quality Control Board and Army Corp of Engineers. Contra Costa County Hazardous Materials Division will be copied on the report when it is issued.

PROVIDE ANY ADDITIONAL INFORMATION THAT WAS NOT INCLUDED IN THE 72- HOUR REPORT WHEN THE 72-HOUR REPORT WAS SUBMITTED, INCLUDING MATERIAL RELEASED AND ESTIMATED OR KNOWN QUANTITIES, COMMUNITY IMPACT, INJURIES, ETC.:

1. INCIDENT INVESTIGATION RESULTS Is the investigation of the incident complete at this time? _____Yes _____x____No If the answer is no, when do you expect completion of the Investigation? At this time, the incident investigation is ongoing and is expected to be extensive. The results are not yet available. If the answer is yes, complete the following:

SUMMARIZE INVESTIGATION RESULTS BELOW OR ATTACH COPY OF REPORT:

An outside contractor has been retained to assist with the post-incident investigation. This contractor has observed the disassembly of the steam turbine and steam turbine generator, and has performed initial visual inspections of equipment and components during removal. Various components have been identified for further inspection and potential metallurgical testing, and numerous others have been preserved for potential testing at a later date. No testing has yet been completed and the results of the ongoing investigation are not yet available.

SUMMARIZE PREVENTATIVE MEASURES TO BE TAKEN TO PREVENT RECURRENCE INCLUDING MILESTONE AND COMPLETION DATES FOR IMPLEMENTATION:

Corrective actions will be determined as part of the incident investigation. When the investigation is complete, the correct actions will be listed in the follow up report.

STATE AND DESCRIBE THE ROOT-CAUSE(S) OF THE INCIDENT:

The root cause of the incident is not yet available.

Delta Energy Center
Permit No. 2017-00076S

Project Implementation Report

This report and update is being submitted in conformance with Permit #2017-00076S issued by the Army Corp of Engineers on February 2, 2017, in response to the *Calpine Delta Energy Center Oil Discharge – Site Observations and Response Recommendations Technical Memorandum* submitted on January 30, 2017. As a condition of the permit, the San Francisco Regional Water Quality Control Board requested an update and photo-documentation report to be submitted 15 days after implementation of the project. This report summarizes the activities conducted to date and includes the requested photos.

Incident Summary

On Sunday, January 29, 2017, at approximately 15:42, the Delta Energy Center ("Facility") experienced a fire inside the steam turbine generator compartment that required the deployment of the fire department. The Delta Energy Center is a natural gas-fired, combined-cycle power plant consisting of three combustion turbines, three heat recovery steam generators and one steam turbine. Suppressing the fire resulted in the discharge of approximately 5000 gallons of water and 150 gallons of lubricating oil to a stormwater inlet grate on the Facility site. The inlet grate is connected to a subsurface drainage system that flows to Dowest Slough on property owned by The Dow Chemical Company (Dow), resulting in a discharge to Dowest Slough.

The following agencies were notified as part of the emergency notification:

Agency	Date	Time
National Response Center	1/29/2017	18:45
Contra Costa Health Services	1/29/2017	16:27
San Francisco Water Quality Control Board	1/29/2017	18:30
BAAQMD	1/29/2017	16:30
California Energy Commission	1/29/2017	18:50
California Department of Fish and Wildlife Service	1/29/2017	19:10
Office of Emergency Services	1/29/2017	Notified by Contra Costa County Fire Department
California Public utilities Commission	1/29/2017	19:18

Emergency Response

As a result of the oil release to the neighboring wetlands, Calpine consulted with a contract wetlands biologist from CH2M. In conformance with the memorandum attached hereto as **Attachment 1**, the following initial emergency response activities were implemented.

January 31, 2017

Oil absorbent floating booms were installed at the following locations:

- The stormwater drain outfall to Dowest Slough (Figure 1 Location A, in **Attachment 1**).
- The access road crossing south of the stormwater drain outfall (Figure 1 Location B, **Attachment 1**)
- The BNSF Bridge crossing at the margins of the BNSF right of way (Figure 1 Location C, **Attachment 1**).
- The culverts at East 5th Street (Figure 1 Location D, **Attachment 1**).
- The bridge at East 3rd Street (Figure 1 Location E, **Attachment 1**).
- A vacuum truck was deployed to the stormwater outfall to remove as much residual oil from the subsurface drainage system as possible.

February 2, 2017 (Site Visit)

On February 2, 2017, California Fish and Wildlife Service representatives arrived on site and conducted an inspection of the oil remediation activities. The following attendees were present at the site during the visit:

Attendees:
Calpine: Barbara McBride and Maria Barroso
CH2M: David Hodson
Dow: Justin Smith
California Department of Fish and Wildlife (CDFW): Michael Schommer, Angel Tapia (Game Warden), and 2 other colleagues

An inspection was conducted at the outfall and at the locations on the Dow facility where the booms were deployed. The following observations were made:

- Clean Harbors was onsite monitoring the condition of adsorbent boom and pads previously deployed.
- Absorbent material was in good condition and deployed at the appropriate locations and in the appropriate manner.

- Insignificant oil and sheen was observed consistent with the observations presented in the January 30, 2017 *Calpine Delta Energy Center Oil Discharge – Site Observations and Response Recommendations Technical Memorandum* (TM).

CDFW presented the following observations and directives:

- CDFW will take regulatory lead on this project. Specifically, the Game Warden (Angel Tapia) will be the primary caseworker.
- No additional work should be performed with respect to potentially impacted media beneath the rail trestles. Specifically, no soil should be removed.
- Rail safety is a primary concern. Calpine should ensure BNSF is informed of incident response activities conducted within 25 feet of the rail line.
- Small pools (depressions of approximately footprint size) containing oil were observed in the vicinity of the stormwater outfall near the Delta Energy Center (Location A in the TM)
- CDFW directed the deployment of adsorbent pads at the locations where oil was observed within the observed small pools.
- Removal of any vegetation was not advised.
- No impacted fauna was observed. CDFW must be notified immediately if impacted fauna is observed.
- An assessment inspection was to be conducted by CDFW on either 2/5/2017 or 2/6/2017.
- A conference call with all stakeholders was to be conducted on 2/7/2017.
- Development of "end points" (i.e., criteria for determining when incident response should be discontinued) shall be conducted and presented to the CDFW.

February 7, 2017 (Site Visit)

On February 7, 2017, California Department of Fish and Wildlife Services conducted a follow up visit to determine how the remediation activities were progressing on the site. The following is a list of attendees that were present at the site visit:

Attendees:
Calpine: Barbara McBride and Maria Barroso
CH2M: David Hodson
CCCHMD: Melissa Hagen
CDFW: Michael Schommer

The following observations were made during the site walk:

- The boomed containments were observed to have contained the oil and prevented it from spreading further underneath the railroad tracks

- The rain events experienced over the prior several days had caused some natural flushing of the oil that had been trapped in the wetlands and this was being absorbed by the pads and booms
- Clean Harbors had made good progress in absorbing the small pools of oil that had been scattered throughout the wetlands

CDFW presented the following observations and directives:

- Some free oil product was still visible in small pools throughout the wetlands and CDFW instructed that Clean Harbors should strategically use pads and a pipette to remove the oil in these areas
- A boom should be placed by the fence between the wetlands and the railroad tracks
- The target should be to remove all the free oil from the wetlands
- The booms should remain in place for an extended period of time until all the oil has been flushed from the wetlands

As discussion of "end points" occurred during the site visit and CDFW recommended that the end points be qualitative and not quantitative. CDFW will return to the Facility site in a few days to evaluate the progress of the remediation. These recommendations from CDFW were implemented on February 7, 2017.

February 7, 2017 (Interested Parties Conference Call)

A conference call with all the interested parties was held on February 7, 2017. The conference call was to inform the SFRWCB and the Army Corp of Engineers of the wetlands clean up progress.

Participants:	Mike Schommer –	CA FWS
	Kathryn Hart -	SFRWQCB
	Frances Malamud-Roam	Army Corp
	Melissa Hagen	CCCHSD
	Barbara McBride	Calpine Corp.
	Maria Barroso	Calpine Corp
	Michael Clarity	CH2M

The conference call started with an update on the clean-up efforts and discussion of next steps. CDFW indicated that the remediation activities were progressing well. SFWQCB was not ready at this time to determine what the proper end points, but deferred to the judgment of CDFW. SFWQCB informed the Facility that, at this time the reporting required under the Regional General Permit No. would be deferred until more information was received. A follow-up site visit by the CDFW and CCCHSD will occur on Monday, February 13, 2017 at 1:00 pm, with a follow-up conference call to be scheduled with the group of interested parties.

February 8, 2017

On Wednesday, February 8, 2017, CDFW requested that an underflow dam be installed at Location C to ensure that, with the heavy rains, that no oil would migrate past the railroad tracks. The underflow damn was completed on Thursday February 9, 2017. Pictures of the damn are attached to this report.

Further Action
Remediation activities are continuing at the site and a further assessment of progress will occur on Monday, February 13 at 1:00 pm.

ATTACHMENT A

Location A – Stormwater Outfall


Location A - North Stormwater Outfall


Location A -East Stormwater Outfall


Location B. Access
Road Crossing


Location B - Road Crossing


Location C. BNSF
Bridge Crossing


Location C – down stream


Location C. BNSF Bridge
Crossing


Location C/D - Dow Storm Pond


Location D - East
5th St. Culverts


Location E. East 3rd Street Bridge


Location E - 3rd Street

ATTACHMENT B

Appendix 8. Calpine's Emergency Response Final Report to United States Army Corps of Engineers and Regional Water Quality Control Board. March 15, 2017.

DELTA ENERGY CENTER, LLC

717 TEXAS AVENUE
SUITE 1000
HOUSTON, TX 77002

March 15, 2017

Frances Malamud-Roam
Regulatory Project Manager
South Branch
US Army Corps of Engineers
1455 Market Street, #16
San Francisco, CA 94103

Katie Hart, P.E.
Watershed Management Division
SF Bay Regional Water Quality Control Board
1515 Clay St., Suite 1400
Oakland, CA 94612

Subject: Delta Energy Center Oil Discharge – Emergency Response Final Report

Dear Ms. Malamud-Roam and Ms. Hart,

On behalf of Calpine, CH2M HILL, Inc. prepared this *Emergency Response Final Report* to present the observations and results of emergency response activities conducted at the Delta Energy Center ("Facility," located on the 1200 block of Arcy Lane in Pittsburg, California).

Please contact Barbara McBride at (925) 570-0849 or by email at bmcbride@calpine.com if you have any questions.

Sincerely,

Barbara McBride
Calpine Corporation
Director, Environmental, Health and Safety

REPORT

Delta Energy Center Oil Discharge – Emergency Response Final Report

Prepared for

Delta Energy Center, LLC

March 2017

CH2M HILL
150 Spear 7th Floor
San Francisco, CA 94105

Contents

Acronyms and Abbreviations

BNSF	Burlington Northern Santa Fe
CDFW	California Department of Fish and Wildlife
Dow	The Dow Chemical Company
Facility	Delta Energy Center
USACE	U.S. Army Corps of Engineers
Water Board	California Regional Water Quality Control Board, San Francisco Bay Region

SECTION 1

Introduction

On Sunday, January 29, 2017, at approximately 15:42, the Delta Energy Center ("Facility," located on the 1200 block of Arcy Lane in Pittsburg, California) experienced a failure of the steam turbine and steam turbine generator. The failure resulted in a lube oil fire inside the steam turbine generator compartment that required the deployment of the fire department. The Facility is a natural gas-fired, combined-cycle power plant consisting of three combustion turbines, three heat recovery steam generators, and one steam turbine. Suppressing the fire resulted in the discharge of approximately 5,000 gallons of water and 150 gallons of lubricating oil to a stormwater inlet grate on the Facility site. The inlet grate is connected to a subsurface drainage system that flows to Dowest Slough on property owned by The Dow Chemical Company (Dow), resulting in potential discharge to Dowest Slough.

This report) provides a "post-construction report" as required by the U.S. Army Corps of Engineers (USACE) in its February 2, 2017, letter (File Number 2017-00076S) that authorized emergency response activities in Dowest Slough under *Department of the Army Regional Permit Number 5 Emergency Repairs*. This report concurrently provides the "completion report" required by the California Regional Water Quality Control Board, San Francisco Bay Region (Water Board) and the "post-project assessment report" required by the National Marine Fisheries Service, enclosures 4 and 5 of the USACE letter, respectively.

•

SECTION 2

Emergency Response Activities

The emergency response activities and site inspections are summarized below.

- On January 29, 2017, Contra Costa Hazardous Materials Division responded to the incident, and assisted Delta Energy Center in deploying booms and pig mats in the outfall area and downstream of the outfall at Location C on Figure 1. The pig mats and absorbent booms were inspected every 2 hours and replaced with new booms, as appropriate, as they absorbed the oil.
- On January 30, 2017, Delta Energy Center contained a wetlands biologist from CH2M and requested that they inspect the outfall area and neighboring wetlands. It was determined at that time that the oil had been contained and had not reached the Antioch Slough. Additionally, Clean Harbors was contracted to assist with the oil clean-up at the Facility and in the wetlands. USACE was also contacted and notified that an application would be submitted for coverage under the *Department of Army Regional General Permit 5 for Repair and Protection Activities in Emergency Situations.*
- On January 31, 2017, oil absorbent floating booms were installed at the stormwater drain outfall to waters connected to Dowest Slough (Figure 1, Location A), the access road crossing south of the stormwater drain outfall (Figure 1, Location B), the Burlington Northern Santa Fe (BNSF) bridge crossing at the margins of the BNSF right-of-way (Figure 1 Location C), the culverts at East 5th Street (Figure 1, Location D), and the bridge at East 3rd Street (Figure 1, Location E). A vacuum truck was also deployed to the stormwater drain outfall to remove as much residual oil from the subsurface drainage system as possible. A summary of initial site observations, emergency response activities, and recommendations was presented in the *Calpine Delta Energy Center Oil Discharge - Site Observations and Response Recommendations* dated January 31, 2017. In addition, a permit application was submitted to USACE and the Water Board for the General Permit.
- On February 2, 2017, a site inspection was conducted by California Department of Fish and Wildlife (CDFW) staff, which confirmed that the absorbent material was in good condition and was deployed at the appropriate locations and in the appropriate manner. CDFW staff, led by Mr. Michael Schommer, directed the deployment of additional adsorbent pads at locations in waters connected to Dowest Slough where oil was observed within small pools (less than 1 square foot). The *Department of Army Regional General Permit 5 for Repair and Protection Activities in Emergency Situations* was issued by USACE.
- On February 7, 2017, a follow-up site inspection was conducted by CDFW, at which time the boomed containments were observed to have contained the oil and to have effectively prevented oil from spreading further underneath the BNSF bridge crossing. Rain events experienced over the prior several days had caused some natural flushing of oil that had been trapped in vegetation near the stormwater drain outfall, and this was being contained and absorbed by the pads and booms. Additionally, good progress had been made in absorbing the small pools of oil that had been identified.

  CDFW observed that some oil was still visible in small pools (less than 1 square foot) in the vegetation near the stormwater drain outfall, and CDFW provided direction that pads and a pipette should be strategically used to remove the oil in these areas. CDFW also directed that a boom should be placed by the fence immediately south of the BNSF bridge crossing, and that the booms should remain in place for an extended period of time, with the goal of removing as much oil associated with this release as practicable.

- On February 8, 2017, CDFW requested that an underflow dam be installed at Location C (Figure 1) to reduce potential migration of oil beyond the BNSF bridge crossing that could be caused by forecasted heavy rains.
- On February 9, 2017, installation of the underflow dam was completed.
- On February 13, 2017, CDFW recommended application of water to the vegetation near the stormwater drain outfall to flush residual oil from the release area into the absorbent pads and booms.
- On February 14 through 15, 2017, Calpine flushed the release area with approximately 50,000 gallons of water obtained from New York Slough to flush any residual oil into the absorbent pads and booms.
- On February 16, 2017, flushing activities were halted following the onset of rain.
- On February 24, 2017, a final site inspection was conducted by CDFW. During the site visit, Mr. Michael Schommer concluded that emergency response activities had been adequately conducted and all qualitative endpoints had been achieved. Mr. Schommer concluded that remediation was completed and authorized removal of remaining emergency response materials (for example, absorbent booms and pads). A photographic summary of post-emergency-response conditions is provided in Appendix A.

SECTION 3

Conclusions and Recommendations

Substantial emergency response activities implemented immediately following the release and continuing for more than 1 month in accordance with CDFW guidance appear to have successfully mitigated any potential adverse effects from the release, including preventing the spread of the release into Dowest Slough.

Based upon the results of emergency response activities described here and the direction from CDFW, all qualitative endpoints for the remediation have been achieved. Therefore, no further action is necessary.

Figure

FIGURE 1

Site Figure
Calpine Delta Energy Center Oil Discharge - Emergency Response Closeout
Calpine Delta Energy Center, Pittsburg, California

ch2m

Appendix A
Representative Site Photographs

Photograph 1. Under the Burlington Northern Santa Fe Bridge Crossing (Location C). February 28, 2017.

Photograph 2. The Outfall (Location A). February 28, 2017.

Photograph 3. The Outfall (Location A). February 28, 2017.

Photograph 4. Post Boom and Dam Removal (Location B). February 28, 2017.

Photograph 5. Post Boom and Dam Removal (Location C). February 28, 2017.

Photograph 6. Under the Burlington Northern Santa Fe Bridge Crossing (Location C). February 28, 2017.

Photograph 7. Gravel Road near the Outfall (Location A). February 21, 2017.

Photograph 8. Gravel Road near the Outfall (Location A). February 15, 2017.

Photograph 9. The Burlington Northern Santa Fe Bridge (Location B). February 6, 2017.

Photograph 10. Under the Burlington Northern Santa Fe Bridge (Location C). February 4, 2017.

Photograph 11. The Outfall (Location A). February 4, 2017.

Appendix 9. Calpine's Second 30-Day Update Report to Contra Costa County Hazardous Materials Programs. March 30, 2017.

CALPINE®

P.O. BOX 551
PITTSBURG, CA 94565-0055
925.756.0789
925.252.2073 (FAX)

March 30, 2017

Mr. Randall L. Sawyer
Chief Environmental Health and Hazardous Materials Officer
Contra Costa Hazardous Materials Programs
4585 Pacheco Boulevard, Suite 100
Martinez, CA 94553

RE: Second 30-Day Update Report: January 29, 2017 Delta Energy Center Incident

Dear Mr. Sawyer:

As requested by Contra Costa County Health Services and in accordance with the Contra Costa County Health Services (CCCHS)Department of Hazardous Materials Incident Notification Policy, Delta Energy Center is providing a second 30 day report for an event that occurred at the Delta Energy Center on January 29, 2017.

If you have any questions, please contact: Barbara McBride at 925-570-0849.

Sincerely,

Barbara McBride
Director Environmental, Health and Safety
Calpine Corporation

ATTACHMENT C
30-DAY FOLLOW-UP NOTIFICATION REPORT FORM
CONTRA COSTA HEALTH SERVICES

INSTRUCTIONS: A hardcopy and an electronic copy of this report is to be submitted for all Level 2 and 3 incidents or when requested by CCHS. See Attachment C-1 for suggestions regarding the type of information to be included in the report. Attach additional sheets as necessary. This form is to be used for update reports after the initial 30-day report has been submitted. Forward the completed form to:

ATTENTION:

Randall L. Sawyer
Chief Environmental Health and Hazardous Materials Officer
Contra Costa Hazardous Materials Programs
4585 Pacheco Boulevard, Suite 100
Martinez, CA 94553

INCIDENT DATE: January 29, 2017

INCIDENT TIME: 15:42

FACILITY: Delta Energy Center

PERSON TO CONTACT FOR ADDITIONAL INFORMATION

Barbara McBride Phone number: 925-570-0849

I. SUMMARY OF EVENT:

On Sunday, January 29, 2017, at approximately 15:42, the Delta Energy Center experienced a failure of the steam turbine and steam turbine generator. The failure resulted in a lube oil fire inside the steam turbine generator compartment that resulted in the deployment of the fire department to the facility. The Delta Energy Center is a natural gas-fired, combined-cycle power plant consisting of three combustion turbines, three heat recovery steam generators and one steam turbine and steam turbine generator. There were no injuries associated with the event. The incident is currently under active investigation. An outside contractor has been secured to conduct the investigation and the results are pending. The timing of the final report is not yet known.

Suppressing the fire resulted in the discharge of approximately 5,000 gallons of water and 150 gallons of lubricating oil to a stormwater inlet grate on the Facility site. The inlet grate is connected to a subsurface drainage system that flows to Dowest Slough on property owned by The Dow Chemical Company (Dow), resulting in potential discharge to Dowest Slough. CH2M and Clean

Harbors were deployed within 24 hours and the removal of the oil from the surface water. The clean up has subsequently been completed and a final report issued to the Regional Water Quality Control Board and the Army Corp of Engineers and is attached here as Attachment 1.

PROVIDE ANY ADDITIONAL INFORMATION THAT WAS NOT INCLUDED IN THE 72- HOUR REPORT WHEN THE 72-HOUR REPORT WAS SUBMITTED, INCLUDING MATERIAL RELEASED AND ESTIMATED OR KNOWN QUANTITIES, COMMUNITY IMPACT, INJURIES, ETC.:

1. INCIDENT INVESTIGATION RESULTS Is the investigation of the incident complete at this time? _____Yes _____x____No If the answer is no, when do you expect completion of the Investigation? At this time, the incident investigation is ongoing and is expected to be extensive. The results are not yet available. If the answer is yes, complete the following:

SUMMARIZE INVESTIGATION RESULTS BELOW OR ATTACH COPY OF REPORT:

Currently the root cause analysis into the event is ongoing. Preliminary indications are that there was a mechanical failure of one of the steam turbine (ST) and steam turbine generator (STG), which resulted in a fire that was contained to the ST and STG collector compartment. The fire appears to have also been fueled, in part, by hydrogen from the STG. At this time, the fire is believed to have been a result of the main event and not a causal factor.

The root cause analysis into the ultimate cause of the event remains ongoing with both internal and external experts fully engaged. Given the extent of the event, it is expected that the root cause analysis, including various forms of metallurgical and other testing, will continue for several months.

On March 8, the California Energy Commission (CEC) approved the Facility's request to install specific temporary safety modifications to allow the option for steam turbine repairs to be performed while the facility is in operation in steam bypass mode. The facility is currently working with the assigned Certified Building Official (CBO) and the CEC on the plans for these temporary modifications and expect that they will be in place prior to June.

SUMMARIZE PREVENTATIVE MEASURES TO BE TAKEN TO PREVENT RECURRENCE INCLUDING MILESTONE AND COMPLETION DATES FOR IMPLEMENTATION:

Corrective actions will be determined as part of the incident investigation. When the investigation is complete, the correct actions will be listed in the follow up report.

STATE AND DESCRIBE THE ROOT-CAUSE(S) OF THE INCIDENT:

The root cause of the incident is not yet available.

Appendix 10. April 20, 2017 Site Visit Report.

CALIFORNIA ENERGY COMMISSION

Siting, Transmission and Environmental Protection Division	**DOCKET #: 98-AFC-03C** **PROJECT NAME: Delta Energy Center**	
SITE CONTACT (s): **Name :** Barbara McBride, Director of Environmental Health and Safety **Company :** Calpine **Address:** 1200 Arcy Lane, Pittsburg, CA 94565 **Phone:** 925-570-0849 **Email:** Barbara.McBride@calpine.com	**PROJECT LOCATION:** 1200 Arcy Lane Pittsburg, CA 94565	
CPM: Anwar Ali, Ph.D. **Staff Performing the Site Visit:** • Anwar Ali, Ph.D., Compliance Project Manager (CPM) • Geoff Lesh, PE, Senior Mechanical Engineer • Brett Fooks, PE, Mechanical Engineer	**DATE:** April 20, 2017	**TIME:** 10:30 am – 12:00 pm
PURPOSE (check one) ☐**Routine Compliance** ☐**Construction or Demolition** ☐**Emergency Response**	☒**Follow-up/Re-inspection** ☐**Complaint**	

BACKGROUND

On January 29, 2017, the Compliance Project Manager (CPM), Anwar Ali, received an email notification from Calpine's Barbara McBride that a turbine failure and a fire had occurred on the Delta Energy Center (DEC). The notification indicated that there was no risk to the neighboring communities and no injuries to the plant's staff or the first responders. Staff conducted site visits

on January 31 and February 13, 2017. During these previous site visits, staff observed severe damage to the steam turbine generator as well as damage to the steam turbine. Staff also observed damage to the rotating components and bearings. However, staff did not observe any apparent structural damage. Staff toured the Dowest Slough (Slough) and observed the cleaning efforts being performed to prevent discharge of lubrication oil to the Slough. Calpine staff indicated that California Department of Fish and Wildlife (CDFW) had visited the site several times and provided directions to Calpine's contractor for the required remediation work. CDFW instructed the contractor to periodically change the deployed absorbent booms to ensure the site is fully remediated.

SITE VISIT AGENDA

The site visit agenda focused on touring the areas of the facility which were not accessible to staff during the previous site visits, gathering more information, and taking additional photographs to observe closely the extent of damages to the various components of the facility. Additionally, staff visited the lube oil remediation site at the Slough. The remediation had been deemed complete by Calpine and CDFW.

OPENING CONFERENCE

Following a brief introduction between the Energy Commission staff and Calpine personnel, staff explained that the purpose of the visit was to collect more detailed information about the turbine failure incident that led to a fire at DEC. Staff requested to tour the areas of the facility which were not accessible and declared unsafe for entry during the previous two site visits; specifically the areas of the steam turbine generator and the steam condenser. Staff also requested to tour the remediation site at the Slough, a cattail marsh wetland, located off site.

OBSERVATIONS

Calpine personnel Barbara McBride and Maria Barroso accompanied staff during the site visit. Staff toured accessible areas including the steam turbine generator. Staff observed that the turbine enclosure had been removed (Photograph 1). The steam turbine's upper casing and the rotor had also been removed (Photograph 2) enabling staff to view the extent of damage that had occurred to the steam turbine. Staff observed evidence of smoke on the steam turbine enclosure (Photograph 3).

Staff viewed the area which was being prepared for the installation of the blanking plate assembly (Photograph 4) as part of the ongoing project modification to enable the facility to operate in a simple cycle mode (i.e. without steam turbine operation) until final repairs of the steam turbine and generator are completed.

Staff inspected the location where of the hydrogen tanks are installed and did not observe any signs of damage to the hydrogen tanks or associated piping network (Photographs 5 and 6).

Staff toured the Slough and observed the results of the remediation efforts to clean-up the discharges of lubricating oil from the facility's storm water inlet connected to a subsurface drainage system that flows into the Slough. At the time of staff's visit, the Calpine contractor assigned for remediation work was not onsite. Staff observed that all oil absorbent booms and pads, which were deployed previously, had been removed. The water discharge flowing from the facility through the storm water outfalls into the Slough and under the Burlington Northern Santa Fe Bridge was clean and free of visible oil contamination (Photographs 7 through 9). According to Calpine staff, CDFW had deemed the site completely remediated and directed the removal of the absorbent booms and pads.

The CPM verified that CDFW had deemed the remediation and clean-up effort complete. On February 24, 2017, CDFW conducted a final site inspection and determined that the emergency response activities at the site had been adequately conducted and concluded that the remediation was complete.

CONCLUSIONS

- The steam turbine has been disassembled, and major parts have been shipped off-site for repair.
- Modifications are underway to the steam condenser to allow for simple cycle operation of the combustion turbine units until the steam turbine repairs are complete.
- The hydrogen storage tanks do not appear to have suffered any damage from the incident.
- The oil runoff to the local marsh has been remediated and approved by CDFW.

Photograph 1. View of Rotor Bearings Showing Rotor and Upper Casing Have Been Removed

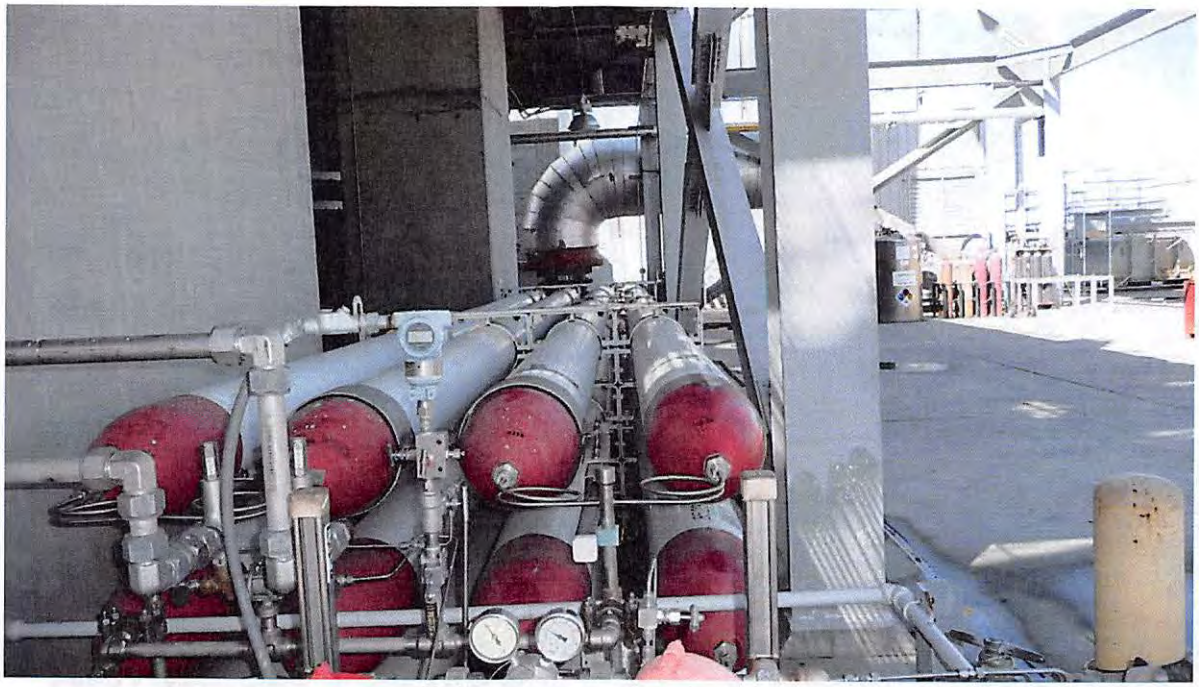
Photograph 2. View of Low Pressure Turbine Area Downward Steam Entrance to Condenser

Photograph 3. Steam Turbine Enclosure Housing with Evidence of Smoke

Photograph 4. Top to Bottom View of the Location for Blanking Plate Installation

Photograph 5. Location of Hydrogen Storage Tanks

Photograph 6. Hydrogen Tanks (end view)



Photograph 7. View of remediated Cattail Marsh (Dowest Slough)

Photograph 8. Clean storm water through Dowest Slough towards Burlington Northern Santa Fe Bridge Crossing locate northwest of DEC Property

Photograph 9. Clean Water from Cattail Marsh draining under the Burlington Northern Santa Fe Bridge Crossing located northwest of DEC Property

cc:	Anwar Ali and Geoff Lesh
	Signed: Anwar Ali 4/10/18 **DATE** Geoff Lesh 4/10/18
	Office Manager:
	Signed: Christine Root 4/10/18 **DATE**

Appendix 11. Calpine's Third 30-Day Update Report to Contra Costa County Hazardous Materials Programs. May 30, 2017.

May 30, 2017

Mr. Randall L. Sawyer
Chief Environmental Health and Hazardous Materials Officer
Contra Costa Hazardous Materials Programs
4585 Pacheco Boulevard, Suite 100
Martinez, CA 94553

RE: Third 30-Day Update Report: January 29, 2017 Delta Energy Center Incident

Dear Mr. Sawyer:

As requested by Contra Costa County Health Services and in accordance with the Contra Costa County Health Services (CCCHS)Department of Hazardous Materials Incident Notification Policy, Delta Energy Center is providing a third 30 day report for an event that occurred at the Delta Energy Center on January 29, 2017.

If you have any questions, please contact: Barbara McBride at 925-570-0849.

Sincerely,

Barbara McBride
Director Environmental, Health and Safety
Calpine Corporation

Enclosure

ATTACHMENT C
30-DAY FOLLOW-UP NOTIFICATION REPORT FORM
CONTRA COSTA HEALTH SERVICES

INSTRUCTIONS: A hardcopy and an electronic copy of this report is to be submitted for all Level 2 and 3 incidents or when requested by CCHS. See Attachment C-1 for suggestions regarding the type of information to be included in the report. Attach additional sheets as necessary. This form is to be used for update reports after the initial 30-day report has been submitted. Forward the completed form to:

ATTENTION:

Randall L. Sawyer
Chief Environmental Health and Hazardous Materials Officer
Contra Costa Hazardous Materials Programs
4585 Pacheco Boulevard, Suite 100
Martinez, CA 94553

INCIDENT DATE: January 29, 2017

INCIDENT TIME: 15:42

FACILITY: Delta Energy Center

PERSON TO CONTACT FOR ADDITIONAL INFORMATION

Barbara McBride Phone number: 925-570-0849

I. SUMMARY OF EVENT:

On Sunday, January 29, 2017, at approximately 15:42, the Delta Energy Center experienced a failure of the steam turbine and steam turbine generator. The failure resulted in a lube oil fire inside the steam turbine generator compartment that resulted in the deployment of the fire department to the facility. The Delta Energy Center is a natural gas-fired, combined-cycle power plant consisting of three combustion turbines, three heat recovery steam generators and one steam turbine and steam turbine generator. There were no injuries associated with the event. The incident is currently under active investigation. An outside contractor has been secured to conduct the investigation and the results are pending. The timing of the final report is not yet known.

Suppressing the fire resulted in the discharge of approximately 5,000 gallons of water and 150 gallons of lubricating oil to a stormwater inlet grate on the Facility Site. The inlet grate is connected to a subsurface drainage system that flows to Dowest Slough on property owned by The Dow Chemical Company (Dow), resulting in potential discharge to Dowest Slough. CH2M and Clean Harbors were deployed within 24 hours and the removal of the oil from the surface water. The clean up has subsequently been completed and a final report issued to the Regional Water Quality Control Board and the Army Corp of Engineers. The Notice Of Completion was submitted in support

of the Department of Army Regional Permit No. 5 – Emergency Repairs No. 2017-00076S on April 25, 2017 and the matter is not closed.

PROVIDE ANY ADDITIONAL INFORMATION THAT WAS NOT INCLUDED IN THE 72- HOUR REPORT WHEN THE 72-HOUR REPORT WAS SUBMITTED, INCLUDING MATERIAL RELEASED AND ESTIMATED OR KNOWN QUANTITIES, COMMUNITY IMPACT, INJURIES, ETC.:

1. INCIDENT INVESTIGATION RESULTS Is the investigation of the incident complete at this time? _____Yes _____x____No If the answer is no, when do you expect completion of the Investigation? At this time, the incident investigation is ongoing and is expected to be extensive. The results are not yet available. If the answer is yes, complete the following:

SUMMARIZE INVESTIGATION RESULTS BELOW OR ATTACH COPY OF REPORT:

Currently the root cause analysis into the event is ongoing. Preliminary indications are that there was a mechanical failure of one of the steam turbine (ST) and steam turbine generator (STG), which resulted in a fire that was contained to the ST and STG collector compartment. The fire appears to have also been fueled, in part, by hydrogen from the STG. At this time, the fire is believed to have been a result of the main event and not a causal factor.

The root cause analysis into the ultimate cause of the event remains ongoing with both internal and external experts fully engaged. Given the extent of the event, it is expected that the root cause analysis, including various forms of metallurgical and other testing, will continue for several months.

On March 8, the California Energy Commission (CEC) approved the Facility's request to install specific temporary safety modifications to allow the option for steam turbine repairs to be performed while the facility is in operation in steam bypass mode. The facility is currently working with the assigned Certified Building Official (CBO) and the CEC, and on the installation of these temporary modifications and expect that they will be in place in June.

SUMMARIZE PREVENTATIVE MEASURES TO BE TAKEN TO PREVENT RECURRENCE INCLUDING MILESTONE AND COMPLETION DATES FOR IMPLEMENTATION:

Corrective actions will be determined as part of the incident investigation. When the investigation is complete, the correct actions will be listed in the follow up report.

STATE AND DESCRIBE THE ROOT-CAUSE(S) OF THE INCIDENT:

The root cause of the incident is not yet available.

Appendix 12. February 15, 2018 Site Visit Report. On-site Review of Calpine's Root Cause Analysis (RCA)/Investigation Report.

Siting Transmission and Environmental Protection Division

Compliance Site Visit/Inspection Report

PROJECT INFORMATION

DOCKET NO.:	98-AFC-03C
PROJECT NAME:	Delta Energy Facility
PROJECT LOCATION:	1200 Arcy Lane, Pittsburg, CA 94565
SITE VISIT DATE/TIME:	February 15th 2018 @ 11:00 a.m. to 2:30 p.m.
COMPLIANCE PROJECT MANAGER:	Anwar Ali
SITE VISIT REPORT NUMBER:	98-AFC-03C-2-15-18

ENERGY COMMISSION STAFF

NAME:	**TITLE:**
Geoff Lesh	Senior Mechanical Engineer
Anwar Ali	Compliance Program Manager (CPM)
Tim Smith	Mechanical Engineer

PROJECT OWNER PARTICIPANTS

NAME:	Barbara McBride	Dale Donmoyer	
TITLE:	Director Environmental Service	General Manager	
COMPANY:	Calpine Corp.	Calpine Corp.	
ADDRESS:	1200 Arcy ln. Pittsburg, CA 94565	1200 Arcy ln. Pittsburg, CA 94565	
PHONE:	925-570-0849	Direct: 925-252-2096 Cell: 864-921-8511	
EMAIL:	Barbara.McBride@calpine.com	ddonmoyer@calpine.com	

REASON FOR SITE VISIT (CHECK ONE)

☐ Operations Compliance ☐ Complaint Inspection ☐ Incident/Emergency Response

☐ Construction or Demolition ☒ Follow-up ☐ Other

PROJECT BACKGROUND

The Delta Energy Center project is an 880 megawatt (MW) power plant owned by Calpine Corporation. It is a natural gas-fired, combined cycle electric generation facility located on an undeveloped 20 acre parcel at the Dow Chemical Company facility located generally north and west of the Delta Diablo Sanitation District treatment facility in Pittsburg, California. The project was approved by the Energy Commission in February 2000 and commenced commercial operation on June 17, 2002.

Previous site visits by Energy Commission staff include the following:

- 01/31/2017 – Investigate the cause of the steam turbine-generator failure.
- 02/13/2017 – Investigate the cause of the steam turbine-generator failure.
- 04/20/2017 – Investigate the cause of the steam turbine-generator failure.
- 11/17/2017 – Examine steam turbine and associated equipment repairs.

PURPOSE OF SITE VISIT

The main purpose of this site visit was to review Calpine's Root Cause Analysis (RCA)/Investigation Report for the steam turbine-generator failure that had occurred at the Delta Energy Facility on January 29, 2017. The investigation of, and preparation of the report on, the turbine's failure was done by Structural Integrity Associates, Inc.

SITE VISIT AGENDA

- 11:00 a.m.: introductions and Structural Integrity Associates' RCA review.
- 2:30 p.m.: leave site.

OPENING CONFERENCE

Anwar Ali, Compliance Program Manager (CPM), and Geoff Lesh conducted the opening conference. The purpose of the visit was to review RCA for the January 29, 2017 major steam turbine-generator failure event that occurred during the start-up.

BACKGROUND, OBSERVATIONS AND INTERVIEWS

Failure Analysis:

The Toshiba steam turbine generator is in an enclosed building, on an upper floor of a steel structure. The turbine and generator, rated at 3,600 rpm were manufactured in 2001 and commissioned in June 2002. At the time of the failure on January 29, 2017, the steam turbine had 520 starts and 112,730 total operating hours.

Initial examination of the damages was performed by Calpine and Toshiba. This consisted of mapping, collecting, and storage of debris from locations around the turbine.

An independent investigator contracted by Calpine Corporation assisted with the failure investigation and provided input on Calpine's overall root cause assessment. The investigator initiated site work on February 7, 2017, and developed a cause map, and followed a systematic guide for investigating the cause(s) of the turbine failure by thorough consideration and examination of multiple potential causes or contributing factors.

The RCA determined the exact trigger for the failure was unknown. However, it was determined that the first blade in the low pressure section (L-0) of the steam turbine failed. The erosion and pitting from cavitation had caused subsurface fatigue cracks that weakened the blade. The extreme vibration resulting from imbalance in the rotating turbine due to the failure (breakage) of the blade at full speed caused propagating damage throughout the whole turbine and co-rotating equipment, including the generator. Sudden destruction of shaft bearings lead to release of bearing lube oil and generator hydrogen cooling gas, both of which ignited and contributed to the subsequent fire.

Therefore, the investigators determined sudden blade failure is the only scenario supported by the combination of information (on-site, operational, and metallurgical). Metallurgical testing showed no evidence of physical manufacturing defects.

Conclusions

Staff conducted an on-site review of Calpine's RCA. Multiple conceived potential failure scenarios and possible contributing factors were studied and evaluated against the operational and physical scene evidence.

Staff found the RCA to be clear, concise, and thorough. The RCA concluded that the presence of a critical-sized fatigue crack in a steam turbine blade lead to the sudden mechanical failure of the turbine.

Action Items / Follow Up

None.

CLOSING CONFERENCE AND CONCLUSIONS

Anwar Ali and Geoff Lesh held the closing conference.

ATTACHMENT(S):

- ☐ Compliance File Review Summary Table
- ☐ Documents from Site Visit
- ☐ Complaint
- ☐ Other

cc:	**CPM**: Anwar Ali	
	Signature: Anwar Ali	**Date**: 4/17/18
	Office Manager: Christine Root	
	Signature: Christine Root	**Date**: 4/17/18

Appendix 13. Calpine's Delta Steam Turbines- Generator Failure Event- Investigation Summary. Submitted on April 12, 2018.

Ali, Anwar@Energy

From: Barbara McBride <Barbara.McBride@calpine.com>
Sent: Thursday, April 12, 2018 1:35 PM
To: Ali, Anwar@Energy; Root, Christine@Energy
Cc: Katherine Piper
Subject: FW: Final Summary for CEC of Delta Event
Attachments: CEC Investigation Report re Delta 2017 ST Event_FINAL.pdf

Pursuant to your request and conversations with CEC Staff counsel, attached is the non-confidential investigation summary for the 2017 Delta blade failure event. Please let me know if you have any questions.

Katherine Piper
Senior Counsel
CALPINE CORPORATION
Phone: (925) 557-2252
Email: katherine.piper@calpine.com

Delta Energy Center, LLC

717 Texas Avenue, Suite 1000
Houston, Texas 77002

Investigation Summary
Delta Steam Turbine-Generator
Failure Event
January 29, 2017

I. Introduction

Delta Energy Center is a natural gas-fired 3x1 combined cycle plant rated at approximately 880 MW total output, owned by Delta Energy Center, LLC. The steam turbine-generator (STG) is situated in an enclosed room on the upper floor of a steel structure at the plant site. The steam turbine is a tandem-compound, dual-flow design. The turbine and generator were manufactured in 2001 and commissioned in June 2002.

At approximately 3:42 pm PST on Sunday, January 29, 2017, a turbine failure event occurred during a startup at the Delta facility, which resulted in a fire. As a result of the failure event, extensive damage was incurred by the steam turbine sections (including both stationary and rotating members), the collector, bearings, seals, sensors, casing and bearing cover bolts, couplings, the turning gear, and associated piping systems. Damage was also incurred by the generator, the hydrogen cooling system, the condenser, the turbine support structure and bolting, and other peripheral and auxiliary systems.

Operators at the plant called emergency personnel to the site, including the fire department, to address the resultant fire. Suppressing the fire resulted in the discharge of approximately 5,000 gallons of water and 150 gallons of lubricating oil to a stormwater inlet grate. The inlet grate is connected to a subsurface drainage system that flows to Dowest Slough on property owned by Dow, resulting in potential discharge to Dowest Slough.

Immediately after the ensuing fire was extinguished, and over the course of the next few days, preliminary cleanup and damage assessment was initiated, and preliminary examination and documentation of the plant site was performed. In addition to the immediate cleanup of the lube oil discharge,[1] preliminary site work was performed, including mapping, collection, and storage of debris from locations around the turbine.

An Independent Evaluator (IE) was hired to investigate the mechanical failure and provide an investigation report (the "Investigation Report"). The IE initiated site work on February 7, 2017, and substantially completed the IE's site work on February 24, 2017. Thereafter, return trips were carried out by the IE for specific tasks related to collection of information or examination and documentation of specific samples located on site for the Investigation Report.

Metallurgical, non-destructive, and other mechanical testing and modeling of the L-0 blade rows to assess the blades under various loading and other conditions, were all performed. Numerous potential causes or contributing factors were identified, individually evaluated and, where applicable, eliminated by the IE. In most cases these potential causes or contributing factors were evaluated and then eliminated, leading to the conclusions presented and discussed below.

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[1] Emergency response and cleanup activities addressing the lube oil discharge were conducted under the supervision of the California Department of Fish and Wildlife, in coordination with the U.S. Army Corps of Engineers, and as reported to the California Regional Water Quality Control Board, San Francisco Bay Region and Commission Staff.

II. Investigation Report Conclusions

The Investigation Report identified three factors that are considered to have contributed to the turbine failure event:

1. Erosion of the trailing edge regions of the titanium L-0 (last row) blades in the LP turbine, which led to cavitation pits;
2. Fatigue cracks emanating from the cavitation pits within the erosion features, and
3. A normal (coincidental) impulse load associated with a manual turbine trip, which affected the *timing* of the failure event.

The causal factors identified by the Investigation Report as being relevant to the overall turbine failure event suggest that the entire failure event was caused by a fatigue failure in the L-0 blade row at the turbine end of the LP turbine. The extent of damage identified along the rotor train indicates that a massive imbalance occurred when the blade failed, and that associated sudden, significant lateral movement of the rotor led to widespread damage to the steam turbine and associated equipment. The ensuing fire was attributable to the release of hydrogen gas and lube oil that occurred as a result of the mechanical failure.

With regard to the turbine end L-0 blade row, the identified erosion features included grooves oriented perpendicular to the trailing edge and small pits caused by cavitation. Fatigue cracks were identified at some locations where these erosion pits were observed. One blade (Blade 55) was found to have an approximately 1-inch long fatigue crack, whereas fatigue cracks identified in other blades were on the order of 0.1 inch in length. Each of the observed fatigue cracks emanated from the erosion features, confirming the relationship between erosion features and fatigue crack development.

Although the *timing* of the turbine failure event was coincident with a manual trip that occurred during a start-up, there was no evidence that any abnormal impulse stress occurred when the turbine was tripped. However, the timing of the start of the failure event suggests that the normal (expected) shift within the turbine that occurs when the steam valves close during a manual trip was a likely "coincidental" factor in the timing of the overall failure event.

No evidence of a physical manufacturing defect was observed in any of the examined blade segments. No microstructure abnormalities or mechanical properties were identified that would have caused or contributed to the failure. Other than the contributing factors identified above, no additional causal factors were identified.

As a result, of the extensive investigation, the IE concluded that a sudden mechanical failure of the turbine due to fatigue cracking in the turbine end L-0 blade row is the only scenario supported by the information obtained from the site investigation, the review of operational data, and the findings from the metallurgical testing, as well as the elimination of other potential causal factors that were investigated by the IE.