


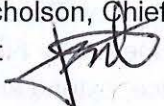


**San Francisco**  
**Water Power Sewer**  
Services of the San Francisco Public Utilities Commission



**DATE:** June 25, 2020

**TO:** Angela Calvillo, Clerk of the Board of Supervisors

**FROM:** Harlan L. Kelly Jr., General Manager of the SFPUC   
Jeanine Nicholson, Chief of the Department, San Francisco Fire Department 

**SUBJECT:** Fiscal Year 2019-2020 Annual Emergency Firefighting Water System Report

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Pursuant to Resolution No. 484-19, the San Francisco Public Utilities Commission and San Francisco Fire Department hereby provide the following report on the City's Emergency Firefighting Water System (EFWS). Resolution No. 484-19 urges the departments provide a consolidated annual report to the Board of Supervisors, "...on the state of the City's EFWS preparedness for a major earthquake and fire and planned funding from the ten-year Capital Plan."

This report addresses the information requested in Resolution No. 484-19 and provides an update on the City's EFWS preparedness.

#### Program Background

The San Francisco EFWS is vital for protecting against the loss of life resulting from multi-alarm fires, as well as the loss of homes and businesses by providing an additional layer of fire protection. The system is used throughout the year for the suppression of multiple-alarm fires. The system delivers water at high pressure to the SFFD for firefighting purposes. The primary source of water is the SFPUC's Hetch Hetchy Regional Water System, which supplies water to one reservoir and two storage tanks. The water is subsequently supplied from the reservoirs and tanks into 135 miles of pipelines. The secondary source of water for the EFWS is the San Francisco Bay. There are two seawater pump stations that can supply seawater into the pipelines, as well as 35 suction connections along the northeastern waterfront, which allow fire engines to pump water from the Bay. Finally, two fireboats are available to supply seawater by pumping into any of the five manifolds connected to pipelines.

In 2010, 2014, and 2020, San Francisco voters approved three Earthquake Safety and Emergency Response (ESER) General Obligation Bonds, allowing

the City to make critical public safety investments and upgrades to emergency response facilities and infrastructure, including the EFWS.

With the passage of each ESER bond, the SFPUC, SFFD, Public Works, and the Office of Resilience and Capital Planning in the City Administrator's Office have made it a high priority to evaluate, plan, repair, upgrade, and expand EFWS infrastructure throughout San Francisco. In addition to ESER funded upgrades, large development projects in San Francisco have also installed EFWS infrastructure within and adjacent to project boundaries.

#### 2020 Earthquake Safety and Emergency Response Bonds

In March of this year, San Francisco voters approved the 2020 Earthquake Safety and Emergency Response General Obligation Bond. That bond's programming included \$153.5 million for the Emergency Firefighting Water System. That funding will be allocated to replace, extend and seismically upgrade system components to increase the ability to provide adequate water throughout the City for firefighting following a major earthquake and during multiple-alarm fires.

With the ESER funding, many upgrades will focus on improving EFWS capabilities in the City's western neighborhoods. The results and recommendations of the 2018 *Westside Emergency Firefighting Water System Options Analysis* planning study will help to inform the selection and design of specific projects to be funded through ESER 2020. Upon the completion of required environmental review, construction will proceed for selected projects.

#### Capital Projects: Fiscal Year 2019 – 2020

During Fiscal Year 2019-2020, ESER bond funds were utilized on a total of 10 capital projects, funding the installation of EFWS infrastructure and/or funding engineering and planning work in advance of installing the infrastructure. Please refer to Table 1 for more information.

**Table 1: ESER Bond Funded EFWS Projects**

Project	Status
Ashbury Bypass EFWS Pipeline	Completed
Terry Francois & Mariposa EFWS Pipeline	
Pump Station No. 1	
Irving Street EFWS Pipeline	
Pump Station No. 2 Upgrades	Under Construction
Terry Francois/Mission Rock/Warriors Way EFWS Pipeline	Construction will begin FY 2020-21
Clarendon Supply EFWS Pipeline	
19 <sup>th</sup> Ave. EFWS Pipeline	
Potable Emergency Firefighting Water System	Planning and Design
Street Valve Motorization	Bidding



Technical Studies	Continuing
Administration	

#### Development Projects: Fiscal Year 2019 – 2020

Additionally, the SFPUC and SFFD coordinate with project sponsors of large development projects to ensure the installation of EFWS infrastructure within and adjacent to their respective projects. Please see Table 2 for development projects that installed or committed to install EFWS infrastructure this Fiscal Year.

**Table 2: Development Projects: EFWS**

Project	Status
Pier 70	Installed EFWS Infrastructure
HopeSF Sunnydale	
Potrero Power Station	EFWS Infrastructure included in Approved Development Agreement.
3333 California	
Balboa Reservoir	EFWS Infrastructure included in Development Agreement (Pending Approval)

#### Active Fires, Trainings, and Inspections: Fiscal Year 2019-2020

Additionally, the SFFD, SFPUC, and other agencies used EFWS infrastructure for trainings and active fires, performed routine inspections, and held joint meetings to discuss emergency response planning and project priorities. A summary of the SFFD's EFWS activities and partners for Fiscal Year 2019-2020 is provided in Table 3.

**Table 3: Summary of SFFD EFWS Activity**

Date	Participants	Activity
11/20/2019	<p><b>SFFD:</b> Fireboat St. Francis, E35, E08, E29, B03, D3, ADC Michael Cochrane, Deputy Chief Victor Wyrsh, Water Supply Officer Brent Stuckert, Division of Training Staff and members of the Bureau of Equipment.</p> <p><b>SFPUC:</b> EFWS Superintendents, Utility Plumbers, Hydrant Gatemen, plumbers and members of the engineering Department</p>	<p><b><i>Pier 90 salt-water inlet manifold drill</i></b></p> <p>The Fireboat St. Francis supplied salt water to a portion of the EFWS that had been isolated by the SFPUC to operate multiple high-pressure hydrants and a deck gun.</p>
12/12/2019	<b>SFFD:</b> Deputy Chief Victor Wyrsh, Deputy Chief Jose Velo, Assistant Deputy Chief Dawn DeWitt, Assistant Chief	<p><b><i>Joint Agency Q&amp;A and group discussion</i></b></p> <p>Improvements made to the EFWS</p>

<b>Date</b>	<b>Participants</b>	<b>Activity</b>
	<p>Brook Baker; Assistant Chief Robert Postel, Water Supply Officer Captain Brent Stuckert, Division of Training Staff and numerous Battalion Chiefs</p> <p><b>SFPUC:</b> Rich Gonzales, Sean Duffy, Kevin O'Connor and Ryan Gabriel.</p>	<p>since the 1989 earthquake, strategies to further improve the system in its current configuration, agency response plans in the event of a large-scale disaster, and interagency drills that will be conducted on a quarterly basis.</p>
02/29/2020	<p><b>SFFD:</b> 4th Alarm Fire at Toland St. / Evans St.</p> <p><b>SFPUC:</b> Gatemen</p>	<p><b>Structure Fire</b></p> <p>EFWS system used for ladder pipe operations for this 4<sup>th</sup> Alarm Fire</p>
3/03/2020	<p><b>SFFD:</b> E01, E35, B03, Water Supply Officer Captain Stuckert.</p> <p><b>SFPUC:</b> Superintendent Rich Gonzales, Utility Plumbers and Hydrant Gatemen, Superintendent of Facilities Operations Brahman Conci</p>	<p><b>Bay Bridge Pump Station and Standpipe drill</b></p> <p>This was a joint operation that required close coordination between the SFFD and the SFPUC and satisfied recommendation R10 of the 2019 Civil Grand Jury Report on the EFWS. The drill simulated a large-scale fire event on the west span of the Bay Bridge that would require more water than the 500 gallons that are carried by a single SFFD engine. This was the first time a drill of this nature has been performed and resulted in new standard operating procedures for disaster events on the Bay Bridge.</p>
05/23/2020	<p><b>SFFD:</b> 4<sup>th</sup> Alarm Fire at Pier 45</p> <p><b>SFPUC:</b> Gatemen</p>	<p><b>Structure Fire</b></p> <p>EFWS system used for ladder pipe operations and to supply 5" hose provide by the hose tenders.</p> <p>The St. Francis Fireboat was put into operation and saved the historic Liberty Ship SS Jeremiah O'Brien from being destroyed by this 4<sup>th</sup> Alarm Fire.</p>
10/26/2019 11/16/2019 12/21/2019 12/28/2019 01/25/2020	<p><b>SFFD:</b> Multiple engine companies and Battalion Chiefs</p>	<p><b>5" Hose drills</b></p> <p>Regularly scheduled drill using 5" hose tenders and high pressure hydrants, ladder pipes and/or</p>



Date	Participants	Activity
02/15/2020 05/04/2020 05/09/2020 05/16/2020		monitor nozzles/deck guns.
In Progress	<p><b>SFFD:</b> Water Supply Officer Captain Brent Stuckert</p> <p><b>Rec &amp; Park:</b> David Iribarne</p>	<p><b>Joint Agency Discussion</b></p> <p>SFFD has contacted Rec and Parks asking them to consider adding more hydrants inside Golden Gate Park. The Urban Tree Canopy is now being taken into consideration in the latest Fire Following Earthquake models, and Golden Gate Park has a large amount of both surface and canopy fuel loads.</p>
In Progress	<p><b>SFFD:</b> Water Supply Officer Captain Brent Stucker</p> <p><b>Port:</b> Shannon Alford</p>	<p><b>Bay Dredging near salt-water inlet manifold.</b></p> <p>SFFD has been working with the SF Port to schedule dredging adjacent to the salt-water inlet manifold located on piers to ensure the St. Francis fireboat has adequate draft to perform pump operations through a complete 24-hour tidal cycle. SFFD has also requested the area near the Pump Station No. 1 inlet tunnel to be included in Port's dredging boundary. This inlet tunnel must be kept clear to allow the Pump Station to provide seawater to the EFWS.</p>
In Progress	<p><b>SFFD:</b> Water Supply Officer Captain Brent Stuckert, B07, 5" Hosetender</p> <p><b>SFPUC:</b> Manager Bill Teahan, Superintendent Rich Gonzales, CDD Engineers.</p>	<p><b>SFFD-SFPUC Joint 5" Hose Drill</b></p> <p>Preparations have begun for a 5" Hose Tender Drill involving SFFD and SFPUC. SFPUC will assist with measuring exact pressures and water flow in the 5" lines to determine optimal placement of the 5" hose and engines for relay pumping operations.</p> <p>Relay pumping will be required to deliver water long distances and to the higher elevations of San Francisco. These preparations will increase the City's resilience by</p>

Date	Participants	Activity
		mitigating the projected multiple post seismic ignitions. (This drill has been delayed due to the pandemic and will be conducted when normal operations can be resumed.)
In Progress	<p><b>SFFD:</b> Water Supply Officer Captain Brent Stuckert</p> <p><b>SFPUC:</b> Manager Bill Teahan, Superintendent Rich Gonzales, CDD Engineering.</p>	<p><b><i>Bay Suction Connection Inspection Program</i></b></p> <p>Inspection and maintenance of the 35 Bay Suction Connections that are situated along the San Francisco Waterfront. These connections are used by SFFD engine companies to draft water from the Bay.</p>
In Progress	<p><b>SFFD:</b> SFFD engine companies, Water Supply Officer Captain Stuckert.</p> <p><b>SFPUC:</b> Manager Bill Teahan, Superintendent Rich Gonzales, CDD Engineering.</p>	<p><b><i>High Pressure Hydrant Inspection Program</i></b></p> <p>A High Pressure Hydrant Inspection program has been implemented. The SFFD and SFPUC are collectively inspecting and repairing the 1,644 High Pressure Hydrants in the City.</p>

#### Maintenance Projects: Fiscal Year 2019 – 2020

Over the past year, the City Distribution Division (CDD) of the SFPUC completed numerous important maintenance activities to ensure that the EFWS is in a state of good repair. A summary of maintenance activities can be found in Table 4 of this report (page 7).

#### Update on Memorandum of Understanding

In 2015, the SFPUC and SFFD signed the *Memorandum of Understanding Regarding the Operation and Maintenance of San Francisco Water Supply Systems Related to Fire Suppression*. The SFPUC and SFFD are actively collaborating to update this Memorandum of Understanding to better detail and memorialize annual emergency response exercises, including simulated disaster and earthquake drills involving the EFWS. The timeline on this update has been delayed due to Coronavirus response; however, SFPUC and SFFD expect this update to be completed in 2020.



**Table 4: Summary of Maintenance Activities**

					Date Range: Jul 1, 2019 - June 15, 2020	
Facility Type	Facility	Activity Category	Type of Activity	Typical Frequency	Work Performed (Labor Hours)	Total Quantity of Maintenance Activities
Hydrants	Low Pressure Hydrants	Maintenance	Hydrant Inspections	Collect Data and Inspect Condition Hydrant and Auxiliary Valve	296	Quantity inspected available upon request
			Condition Assessment*- College Hill Pressure Zone Hydrants and Valves	May 5, 2019 through July 16, 2019	556	932
			Hydrant Corrective Maintenance & Preventative Maintenance Activities	Ongoing	2,413	538
			Replace Caps & Chains and Service Hydrants	SFFD Requests	2,513	Quantity serviced and repaired available upon request
			Hit Hydrants	As Needed	483	57
			Preventative Maintenance	Ongoing by AWSS District	708	Quantity serviced available upon request
			Auxiliary Gate Valve Maintenance	Remove Debris and Uncover Aux. Gate Valves	515.5	98
		New Hydrants Installed	Replace/Install/Relocate Hydrants	As Needed	N/A	233

	High Pressure Hydrants	Maintenance	Hydrant Inspections	Collect Data and Inspect and Document Condition of King Valves	1,793	Quantity inspected available upon request
			Hydrant Maintenance	Upon SFFD Request and Proactive Follow up Work from Inspections	2,966	508
			Rebuild High Pressure Hydrants and Scrap	Corrective - to support CM and Service Hydrant Program	2,015	N/A
		New Hydrants Installed	Install New High Pressure Hydrants	Redevelopment Projects	N/A	3
	Combined Low/High Pressure	Paint Hydrants	Paint Hydrant - Vandalism and Reported by SFFD	Ongoing	4,836	Labor based on Standing Work Orders
System Pipes		Replace and Renew Main Pipes	Main Pipe Leaks	As-needed	332	2
		Replace and Renew Hydrant Leads	Hydrant Leads	As-needed	860	5
Valves		Maintenance	Exercise Critical Valves	Once every 2 years	0*	Exercised 63 Critical Valves FY 18/19; To Exercise all valves FY 20/21
			Valve Vault Maintenance, Pump Flooded Vaults, Electrical and Mechanical Inspections	Corrective Maintenance based on FY 17/18 Survey	273	Location Details Available Upon Request
			System Valve Renewal	As-needed	783	6
			Altitude Valve Inspections	As-needed	15	-



			Inspect, Test, and Repair Valves/Actuators	As-needed	0	-
		Ames Valve Testing	Test Ames Valves	Ongoing	476	Quantity inspected available upon request
Pump Stations	PS1	Maintenance	Pump Testing and Backup Generator	Monthly	934	-
	PS2	Maintenance	Pump Testing and Emergency Backup Generator	BiMonthly	16	-
Tanks	Jones Tank	Maintenance	Tank Inspections	Monthly	16	-
			Pump Testing and Backup Generator	Monthly	16	-
	Ashbury Tank	Maintenance	Tank Inspections	Monthly	16	-
			Pump Testing	BiMonthly	4	-
Reservoir	Twin Peaks Reservoir	Maintenance	Inspect & Fill Twin Peaks Reservoir	As-needed	90	-
Cisterns		Maintenance & Inspections	Repair/Replace Cistern Handles, Fill Cisterns	As-needed	357	173
Suction Connections & Manifolds		Maintenance	Connection/Manifold Inspections and SFFD Dive Team Assistance	As-needed	0**	PM program scheduled for FY20/21
Manifold		Maintenance	Fire Boat Testing/Training	As-needed	185	-
Other Support		Maintenance/Operations Support	Instrumentation and Controls Calibration at all AWSS Facilities	Monthly	305	-
			Planning Support and Administration	Field Staff Planning and Supervisorial (Non-Management Labor)	2,057	-
			Landscaping & Pest Management	Quarterly	692.5	-

		Materials Management	As-needed (Includes only Non-Warehouse Staff Labor Charges)	767	-
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Notes

\* AWSS critical valves were exercised in FY18/19 and are scheduled to be exercised in FY20/21 (two-year cycle)

\*\* Bay suction manifolds preventative maintenance program is scheduled for FY20/21