



Attachment 1

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Date: December 08, 2021

To: Brian Macy, Assistant General Manager

From: Bassam Alzamar, Field Operations Manager

Through: Danny Friend, Director of Operations

**SUBJECT: OPERATIONS ASSESSMENT –
PERMANENT AND PORTABLE GENERATORS**

The District operates several critical facilities that currently do not have permanent standby power installed that would provide power in the event of an outage. Maintaining power to each of these facilities is critical to both providing water for our customers and maintaining our SCADA communications throughout the District's network. The District wishes to maintain the operation and integrity of its water system during times of natural disaster and inclement weather.

Since late 2018, Operations staff has been conducting an internal review of the department's operational standards, procedures, maintenance practices and more importantly system/equipment inadequacies. In early 2019, staff completed the District's Emergency Response Plan (ERP) and most recently in 2021, completed the District's Vulnerability Assessment (VA) which evaluated the District's water operations and came up with recommendations for MSWD based on the findings. In the findings, the VA made comments to backup generation and having adequate backup power. This item is something staff has been working on and brought to the Board of Directors for approval in the 2020 and 2021 budget adoptions.

In 2020, staff began analyzing the water system and evaluated key wells and booster that would be needed in the event of a system wide power outage. Wells 27/31, 32, and 37 were deemed to be key facilities for permanent generators which would allow water to be pumped into the District's largest zones 913, 1070, and 1240. Staff also evaluated the Annadale 1400 zone which is served by well 24 and the future well 42 which is currently under construction. The determination to bring in a permanent generator to either well 24 or 42 was put on hold until the completion of well 42 which is slated for mid-2022. Keynote, staff has the operations flexibility to move water into the 1400 zone by way of boosters five and six at Terrace Reservoir in the case of an emergency or on a as needed basis.

Well 27 currently feeds Valley View reservoir within the 1070 which then boosts water via two 75 HP pumps (lead/lag) to Overhill Reservoir which is in the Overhill 1400 zone. With a permanent generator located at Well 27, Operations can move water with the assistance of a portable generator at Valley View and Overhill and feed the 1400 and 1530 zones as needed.

- Permanent Generator for Wells 27/31, 1 – 600Kw gensets
- Portable Generator for 1070 and 1400, 1 – 150Kw gensets

Located at the same site as Well 27, Well 31 feeds Two Bunch Reservoirs which feeds the 1070 zone as well. Two Bunch Reservoirs then boosts water via two 75 HP pumps (Lead/Lag) to Terrace Reservoir 1240 zone which in turn boosts water to 1400 High Desert View zone by use of booster five and six (60 HP pumps). Both boosters five and six can be configured and ran to simultaneously to feed both 1400 Annandale and High Desert View zones as needed. Boosters 1 – 4 at Terrace Reservoir boost water to the 1530 High Northridge zone via use of two 50 HP and two 75 HP pumps of which typical operations is running two boosters at one time. Keynote, boosters 1-4 and 5 and 6 are operated by two separate electrical panels which are serviced by two separate Edison service drops. As noted above, with a permanent generator located at Wells 27/31, Operations has the flexibility to move water with the assistance of portable generators at the smaller booster sites and keep the 1400 and 1530 under pressure during an outage.

- Permanent Generator for Wells 27/31, 1 – 600Kw gensets
- Portable Generator for 1400 and 1530 zones, 1 – 275Kw genset and 1- 150Kw genset

Well 37 is also a well that provides water to the 1240 zone and Terrace Reservoirs. As noted above, Terrace Reservoirs boost water to the 1400 and 1530 zone while keeping the 1240 zone pressurized with the use of 6 booster pumps.

- Permanent Generator for Well 37, 1 – 450Kw genset

Well 32 currently feeds Little Morongo Reservoir which floats the 913 zone and boosts water to the 1070 zone via boosters 1 and 3, both 75 HP pumps. This site is proposed to get a 450KW permanent generator that will power the well and boosters.

- Permanent Generator for Well 32, 1 – 450Kw genset

Furthermore, Operations is looking to purchase an additional 200Kw genset to be utilize at locations like Low Northridge Reservoir which provides water to the 1630 zone (Vista Reservoir), Low Desert View boosters which supplies water to Redbud Reservoir, Redbud boosters also boosts water to Highland Reservoir, and to MSWD's two separate public water systems in the ID-E area as needed. Also, Operations has an approved capital budget item for a portable transfer pump which will allow staff to pump water between zones as needed during emergencies. Example of this would be the ability to set up a pump between the 1400 Annandale zone and the 1530 Mission Lakes Zone which has been done in the past by use of a portable transfer pump set up in front of Well 28.

Attached hereon is a digitized map that shows the breakdowns as described above. You will see that based on the scenario above and the map provided, Operations has set up the department to be able to move water across the systems with ease based on the design of the permanent and portable generators setups.

PROPOSED PORTABLE GENERATOR SIZES, QUANTITIES AND ESTIMATED COSTS.

Size of Generator (kW)	Quantity	Estimated Cost
275	1	\$ 134,000.00
200	1	\$ 103,000.00
150	2	\$ 174,000.00
Total Quantity Prop.	4	
Total Estimated Cost		\$ 411,000.00
Budgeted Amount		\$ 573,375.00

PROPOSED PERMANENT GENERATOR LOCATIONS, SIZES, ZONES FEED AND ESTIMATED COSTS.

Proposed Facility	Size of Generator (kW)	Proposed Zones Feed	Estimated Cost (Budgeted)
Well 27/31	600	1070, 1240, 1400, 1530	\$ 411,002.00
Well 32	450	913, 1070	\$ 300,331.00
Well 37	450	1240, 1400, 1530	\$ 300,331.00
Estimated Total Cost			\$ 1,011,664.00