Binkley Associates, Inc.

CONSULTING ENGINEERS

HYDRAULICS · WATER RESOURCES · WATER AND SEWAGE FACILITIES

August 2, 2017

VIA EMAIL ONLY

Pete Kampa
General Manager
Lake Don Pedro Community Services District
9751 Merced Falls Road
La Grange, CA 95329

RE: Intake Report

Dear Pete:

This is a follow up to our letters dated January 16, 2017 and May 10, 2017 regarding the intake facilities. On July 25, I visited the Barrett Cove Intake to observe the start-up of booster pump #2. While at the site, I also observed the condition of the existing facilities at the intake, and the emergency pump float which is stored at the adjacent boat yard. I have the following observations and recommendations.

Intake Facilities, Existing Conditions:

Fixed intake pump #1 has been in use, and is being operated manually with many of the controls and protections being bypassed. I am told this is because some of the related controls and equipment are failing.

I understand that nothing has changed with fixed intake pump #2 since our letter last summer when we attempted to run it and it did not function.

During the booster pump startup, the new pump tripped. It was apparently due to the voltage at the site being too high so the new motor protections were shutting it off. An electrician has visited the site since then, and made some adjustments in the new pump control panel, and according to the contractor, the pump now runs without tripping. I have not received confirmation of this from operational staff, and the contractor has not provided details on what was adjusted.

In addition, there are still several incomplete items from the emergency intake repair project approximately a decade ago. The eaves of the roof of the control building have rotted through in many places.

There may be additional items not listed in this letter.

As a reminder, the fixed intake barrels #1 and #2 are badly deteriorated and in need of replacement.

Emergency Floating Pumps, Existing Condition:

Reportedly, the float structure partially sunk last winter and was removed from the lake. The intent of operating staff at that point was to move the pumps from the float structure to the existing barge, and eliminate the old floating structure. We recommended a structural engineer design the modifications to the barge which are necessary to support the pumps. According to your email on July 19, and my observation on July 25, no engineer has been located, and no work has been done on this project.

My recollection is that the barge also needed some motor maintenance work. I do not know if this work has been done.

Mark Knudson from G3 Engineers, the Floway Pump manufacturer's representative, was at the site on July 25 conducting the startup of the new booster. I asked him to come and look at the floating pumps and discuss their condition. He had the following observations: Because the pumps have been stored in the "leaning over" position without draining the oil, the motors will need to be serviced because it is likely that the oil has leaked out into the windings, and they also may need new bearings. He said there are a number reputable motor shops in the valley that can clean and repair these motors. In addition, he agreed with my observation that the older of the two pumps should be taken to a pump shop for cleaning, inspection, and repair. Again, there are a number of pump shops that should be able to handle this pump work. Care must be taken in the future to properly store these pumps when not in use.

Conclusions:

The surface water supply is in an extremely precarious position. The fixed intake pump #1 could fail at any moment especially given that protections may not be functioning. The emergency float, which would be used as a backup, is out of service both due to the structure not being seaworthy and the pump motors possibly being damaged.

Recommendations, in order of priority:

1. Contact pump and motor shops in Modesto and surrounding areas and obtain estimates for the maintenance work required on the float pump and motors.
2. Coordinate with a contractor for removal of the pump and motors from the float platform and delivery to the shops.
3. Coordinate with the marina or other fabricator or boat repair shop for construction of new pontoons on the existing float, and installation of a modified hitching system that will attach float such that the pontoons will align in direction of travel rather than perpendicular as it was before (we will review, prior to construction). Bear in mind that we recommend this rather than moving the pumps to the barge because it appears to be the fastest engineered solution at this point, which is unfortunate since operational staff prefer to move the pumps to the barge.

4. Authorize any needed repairs on barge.
5. Reinstall pumps on the float structure, but consider rotating them such that discharge flanges face front and rear instead of to the side, so hose/pipe comes straight out of pump on to barge and float can be rotated 180 degrees if use of backup pump is needed (we need to confirm the space for this).
6. Identify operational technique, and obtain piping if needed, to connect and use float at high lake level, such that the float is ready to be used at a moment's notice if pump #1 fails.
7. Contract with Aqua Sierra to update SCADA at intake both for booster pump #2 operation (for use in future drought) and for use of float as a bypass of fixed intake pumps at higher lake levels (float pumping directly to water treatment plant raw water tank).
8. Obtain bids from electrical engineer(s) to come to the intake site and determine a recommended approach for replacement of the existing deteriorated (circa 1969) pump #1 and #2 panels with modern controls including soft starters, to eliminate the need for the existing, failing, control valves. Keep in mind the possibility that these new panels may possibly be transferred to use with new pump(s) and barrel(s) in the future, depending on the new pump design. Reserve space in building for an additional future 3rd pump panel. Contract for a design from electrical engineer.
9. Obtain construction bids. In addition to new fixed intake pump panels, project may include removal of control valves and replacement with check valves, and pulling, repairing, and reinstalling pump #2. In addition, the roof should be replaced. We can prepare the specifications for the non-electrical portion of the work.
10. Contract for engineering services for a study including conceptual plans, followed by design, for replacement of the existing intake (barrels and vault at a minimum), and extension to a deeper lake level. Study should identify several concepts and related costs for an entirely new intake structure at the existing site and/or other site(s). Such a study should take into consideration, at a minimum, historic and projected future lake level fluctuation, optimizing power consumption across the range of conditions, redundancy, reliability, operation and maintenance, planning and design, and include rough timelines for design and construction, and consideration of life cycle costs. Refurbishment of the existing structure, if deemed feasible, can be considered. Modifications to the floating pump system for use as a permanent system can also be considered.
11. I am unsure of the priority of this item at this time, but the voltage was very high when we were at the site. LDPCSD will need to work with PG&E to correct the power issues at the site, such that the motors can operate within 10% of their rating to avoid damage and having them trip.

The intention is that items 1-9 above, in addition to routine maintenance and occasional repairs, should provide surface supply for a number of years, either through the fixed intake or the float as a backup, while item 10 is completed and built. As a reminder, the existing fixed intake barrels are currently at the end of their service life, so it is imperative that item 10 be initiated soon.

Please call if you have any questions.

Very truly yours,
Binkley Associates, Inc.
Engineer for Lake Don Pedro Community Services District

By:_____
Elizabeth A. Binkley, P.E.
Principal

cc: Board of Directors, Syndie Marchesiello, Randy Gilgo, all via Email Only