SAN FRANCISCO BAYKEEPER®

June 10, 2019

Alameda City Council
City Hall
2263 Santa Clara Avenue
Alameda, CA 94501

Via email: clerk@alamedaca.gov
Councilmember Jim Oddie, email: joddie@alamedaca.gov
Councilmember Tony Daysog, email: tdaysog@alamedaca.gov
Mayor Marilyn Ezzy Ashcraft, email: mezzyashcraft@alamedaca.gov
Councilmember Malia Vella, email: mvella@alamedaca.gov
Vice Mayor John Knox White, email: jknoxwhite@alamedaca.gov

Dear Mayor Ashcraft, Vice Mayor White, and Councilmembers Oddie, Daysog, and Vella,

San Francisco Baykeeper is deeply concerned about the potential construction of a large data center in Alameda that proposes to use water from San Francisco Bay in a once-through cooling system. It has come to Baykeeper's attention that the Alameda City Council will be discussing this project at its June 18, 2019 meeting as the

> Introduction of Ordinance Authorizing the City Manager to Execute a Fifteen-Year Lease with One Five-Year Option to Extend, Substantially in the Form of the Attached Lease, with Nautilus Data Technologies, Inc. for Building 530, an 82,251-Square Foot Building Located at 120 West Oriskany Avenue, Building 529, a 3,200-Square Foot Building, and Building 600, a 343-Square Foot Building, at Alameda Point. [Requires Four Affirmative Votes] (Base Reuse 819099).

Once-through cooling is an antiquated technological approach and the system proposed here could harm San Francisco Bay in a variety of ways. By its nature, this approach to system cooling dissipates heat energy into adjacent waters. This transfer of heat energy, along the route of the cooling system and in the system's outflow, can cause direct mortality to sensitive phases (e.g., eggs, or larvae) of desirable aquatic species, such as fish or their invertebrate prey. The dispersal of waste heat into waters surrounding the system may also facilitate the growth and distribution of undesirable organisms. System intake may entrain and kill sensitive species and currents formed by system outflow may disturb fragile habitats (e.g., egg incubation sites or cover for rearing fish).

These negative environmental impacts, in fact, have led California to phase out the use of this ecologically detrimental cooling process by 2024. According to a report from the California Energy Commission, water diversion from oceans, estuaries, lakes, or rivers to cool steam after it has passed through a turbine to create power was officially phased out in 2010 by the State Water Resources Control Board to address 19 power plants that diverted 16 billion gallons a day of California's waters.[1] The water

[1] *See* "Once-Through Cooling Phaseout," available at https://www.energy.ca.gov/renewables/tracking_progress/documents/once_through_cooling.pdf (includes

diversion from these once-through cooling systems entrapped billions of aquatic organisms annually, including fish larvae and shellfish, and removed water from vital habitats.[2] If California is phasing out this potentially outdated technology in other sectors, Alameda should take a closer look at whether now is the appropriate time to permit expansion of such strategies.

Furthermore, construction of the proposed system will require the modification of existing Bay infrastructure. Such modification is likely to disturb and permanently alter the Bay floor as well as shoreline and shallow nearshore habitats.

Please take Baykeeper's detailed comments and concerns, below, into account when considering this project.

Project Description for Nautilus Data Technologies' water-cooled data storage facility in Building 530, Building 529, and Building 600 at Alameda Point

The data storage facility is planned to go up to 25 megawatts of electricity usage, according to the estimate of electricity sales provided by Alameda Municipal Power. Therefore, at full build-out, the facility could take in approximately 25,000 gallons of water a minute. This water will flow through a five-foot-diameter pipe into the facility. The water will then be routed under several streets, under the Bay Trail, across the sea bed of the harbor, under the harbor seal float, through an opening in the breakwater, and then be discharged into the Bay.

Technical Concerns Related to Once-Through Cooling, a Technology Proven to be Environmentally Detrimental to San Francisco Bay

A decade ago, three power plants along the margins of San Francisco Bay used once-through cooling. The State Water Resources Control Board banned the process and these operations shut down in part due to the finding that the process pulls large amounts of Bay water in to cool power plant turbines and then releases the heated water back into the environment, upsetting the sensitive temperature balance in the Bay ecosystem. Once-through cooling kills large numbers of fish and wildlife that get sucked into power plant turbines and trapped by the force of rushing water against intake screens. This type of cooling process is an outdated technology that was implemented 30 to 40 years ago when coastal power plants were built. The volume of water being considered in Alameda would draw a comparable volume of water to some of the plants considered under the once-through cooling policy and should receive the same level of scrutiny.

We are also concerned by the potential that construction of this cooling facility or its ongoing presence will negatively affect shoreline access (e.g., along the Bay Trail), as well habitat values associated with the shoreline, harbor seal float, the sea bed of the harbor, and the breakwater. Species that may be affected are harbor seals, fish such as Starry Flounder, California Halibut, Longfin Smelt, and many other fish species, as well as key invertebrates such as Dungeness Crab and/or Bay shrimp, among others. The City should assess the potential of construction or the continued existence of the cooling system infrastructure to harm protected species and/or those that are key components of regional fisheries or the food webs such fisheries rely upon.

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recommendations by the California Independent System Operator, the California Public Utilities Commission, and the Energy Commission).

[2] *Id*.

Potentially Broad Ramifications for the State and Region from Reliance on Outdated Technology

Nautilus has proposed a similar facility in the Port of Stockton, which would site a cooling plant in a waterbody that is severely challenged by high temperatures and low dissolved oxygen. Impacts from that facility might also be detrimental, and permitting of these systems may be on the rise. It is thus doubly important to require strong environmental protections for any once-through cooling proposal on the Bay, both to protect the Bay itself and to set a standard that such facilities should be held to in other parts of California.

In addition, the City should evaluate the availability of other cooling systems that are more protective of Alameda and the bay's environment and that are more energy efficient than once-through cooling systems. For example, waste heat recovery and conversion of waste heat to power are emerging trends for improving energy efficiency and reducing the greenhouse gas emissions footprint of data centers[3]. Requiring new data centers on the island to maximize their energy efficiency would be consistent with Alameda's commitment to reducing its greenhouse gas emissions.

Conclusion

Baykeeper is concerned that Nautilus has not sufficiently considered impacts from its data center once-through cooling proposal to San Francisco Bay associated with temperature, inflow, entrainment, outflow, acute and persistent effects of infrastructure siting on important fish and wildlife habitat, and greenhouse gas emissions associated with the inefficient use of waste heat produced by data centers. Generally speaking, once-through cooling is old technology now being replaced by more updated systems with fewer environmental impacts. The energy savings from once-through cooling as compared with other outdated technologies referenced by the project applicant are not sufficient reason to sacrifice public trust resources. More information concerning Nautilus' proposal is needed to properly evaluate the impacts to the Bay, including an evaluation of more modern alternatives such as a closed cycle wet cooling system,[4] or waste energy capture and reuse, or waste-heat-to-energy systems that would reduce potential impacts. The Bay Area's technology companies are world-renowned for their innovative solutions, Alameda should require Nautilus to develop a more creative solution to these problems instead of relying on decades-old technology to dispose of their waste heat in the Bay.

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[3] *See, e.g.*, Nicola Jones, *Waste Heat: Innovators Turn to an Overlooked Renewable Resource*, Yale Environment 360 (May 29, 2018), available at https://e360.yale.edu/features/waste-heat-innovators-turn-to-an-overlooked-renewable-resource; Fred Pearce, *Energy Hogs: Can World's Huge Data Centers Be Made More Efficient?* Yale Environment 360 (April 3, 2018), available at https://e360.yale.edu/features/energy-hogs-can-huge-data-centers-be-made-more-efficient.

[4] *See, e.g.*, Union of Concerned Scientists, *How it Works: Water for Power Plant Cooling*, available at https://www.ucsusa.org/clean-energy/energy-and-water-use/water-energy-electricity-cooling-power-plant ("Wet-recirculating or closed-loop systems reuse cooling water in a second cycle rather than immediately discharging it back to the original water source. Most commonly, wet-recirculating systems use cooling towers to expose water to ambient air. Some of the water evaporates; the rest is then sent back to the condenser in the power plant. Because wet-recirculating systems only withdraw water to replace any water that is lost through evaporation in the cooling tower, these systems have much lower water withdrawals than once-through systems, but tend to have appreciably higher water consumption. In the western US, wet-recirculating systems are predominant").

Thank you for considering these comments. If you have any questions please don't hesitate to contact Ben Eichenberg, ben@baykeeper.org, (510) 735-9700.

Sincerely,

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San Francisco Baykeeper

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