Meeting Date: 12/17/20
Number: G 05-03
Staff: M. Moser

Staff Report 58

GRANTEE:

City of Long Beach

PROPOSED ACTION:

Review a proposed tideland oil revenue expenditure in an amount not to exceed $2,588,989 by the City of Long Beach for four capital improvement projects located both on and adjacent to legislatively granted sovereign land in the city of Long Beach, Los Angeles County.

AREA, LAND TYPE, AND LOCATION:

Granted sovereign tide and submerged lands located in the city of Long Beach, Los Angeles County.

BACKGROUND:

The City of Long Beach (City) is a trustee of sovereign tide and submerged lands granted by the Legislature under Chapter 676, Statutes of 1911 and as amended; Chapter 102, Statutes of 1925 and as amended; and Chapter 158, Statutes of 1935. There have been many revisions to the statutes granting the City these lands. In 1964, the City's statutory trust grant was amended to authorize the City to spend tideland oil revenue for specific uses and to require the City to notify the Commission of proposed tideland oil expenditures (Chapter 138, Statutes of 1964, First Extraordinary Session).

Tideland oil revenue must be expended for uses and purposes consistent with the City's granting statutes and be for statewide purposes as opposed to purely local interests and benefits. The City is required to file a detailed description of any proposed capital improvement expenditure exceeding $100,000 with the Commission 60 days before disbursement.

The proposed $2,588,989 expenditure of tideland oil revenue is to fund four projects located both on and adjacent to the Long Beach tidelands as shown on Exhibit A. The projects, as proposed and described by the City, are as follows:

1. JUNIOR LIFEGUARD FACILITY

This project involves replacing an existing two-story, 665 square foot lifeguard structure built in the 1930s with a new 960-square-foot facility. The new facility will accommodate the growth of the Junior Lifeguard program and provide treatment facilities for administering first aid. This site includes restrooms and is adjacent to a bike path and parking lot. The new location can leverage existing utilities, reducing project costs.

On December 2, 2013, the Commission reviewed an expenditure to fund a feasibility study and the design phases of the Junior Lifeguard Facility rebuild project. On April 19, 2018, the Commission reviewed an expenditure for funds to continue the design and permitting process. Now, after some changes to the design and permitting process, the project is going out to bid.

The City is requesting Commission review of an additional $300,000 expenditure to construct the facility.

PREVIOUS COMMISSION REVIEW:

- Item 115, December 2, 2013 - $500,000
- Item 91, April 19, 2018 - $500,000

PROPOSED EXPENDITURE: $300,000

TOTAL ESTIMATED PROJECT COST: $1,300,000

PRELIMINARY SCHEDULE:

- Design: Fall 2020
- Bid and Award: Fall 2020
- Construction: Winter 2020
- Completion: Spring 2021

2. ALAMITOS BAY WATER QUALITY ENHANCEMENT

According to the City, the State Water Resources Control Board requires coastal power plants to significantly reduce the use of ocean water for cooling by 2020. There are several ocean water pumps operated by the AES Alamitos Facility and the Haynes Generating Station that provide forced circulation within the bay. The AES Facility will be retiring their cooling pumps,

which will affect water circulation in the South Bay, the San Gabriel River, and the ocean. The retirement of the pumps without additional means to circulate water will impact all water bodies surrounding the Bay, including Marine Stadium and Colorado Lagoon. The feasibility study and conceptual design will look at alternatives for water circulation in the absence of the ocean water pumps.

On October 24, 2019, the Commission reviewed a $200,000 expenditure for the initial feasibility study and conceptual design for the Alamitos Bay Water Quality Enhancement Project. This project is currently in the planning phase. A detailed project update, provided by the City Manager, can be found as Exhibit B to this staff report. The City is requesting review of an additional $300,000 to design this project.

PREVIOUS COMMISSION REVIEW:

- Item 74, October 24, 2019 - $200,000

PROPOSED EXPENDITURE: $300,000

TOTAL ESTIMATED PROJECT COST: unknown

PRELIMINARY SCHEDULE:

- Design and Permitting: 2020 - 2022
- Bid and Award: 2022 - 2023
- Construction: 2022 - 2024
- Completion: 2025 - 2028

3. PIERPOINT LANDING RESTROOM AMERICANS WITH DISABILITIES ACT (ADA) IMPROVEMENTS

This project is to make ADA improvements to public restrooms inside city-owned building located at 200 Aquarium Way. The stalls, grab bars, sinks, and similar fixtures require reconfiguration to allow for ADA access. Existing tiles will be demolished and replaced. Fixtures will either be replaced or adjusted to conform with accessibility height requirements. Paper dispensers will be reinstalled or replaced at correct heights. Cross-slope of restroom flooring will be leveled with new concrete to create a compliant accessible path of travel, and flooring will be replaced with new resinous flooring. The City requests review of a $200,000 expenditure for this project

PROPOSED EXPENDITURE: $200,000

TOTAL PROJECT COST: $200,000

PRELIMINARY SCHEDULE:

- Planning: Winter 2020
- Permitting and Design: to be determined
- Bid and Award: to be determined
- Completion: to be determined

4. HAUL-OUT AND REPAIR OF FIRE RESCUE BOATS

This project is for the engine and pump replacement, haul-out, and refurbishment of four fire department lifeguard rescue boats. Engines are supposed to be replaced on a maintenance schedule to ensure proper performance and reduce the risk of failure during fire operations. According to the City, scheduled haul-out and repair is critical in preserving the condition and life expectancy of the boats, which are affected by the saltwater environment. Each boat will require two engines, two transmissions, wiring harnesses, pump, and a pump engine replacement. The project will eliminate the need for pump transmissions, allowing the pump system to run directly from the pump engine. The boats will also be cleaned and painted; and hull fittings, fuel supply, return lines, and battery cables will be replaced. This will provide a safer, more efficient, and environmentally friendly use. Two other boats will eventually need refurbishment but are not part of the current expenditure. The City is requesting review of a $1,788,989 expenditure for this project.

PROPOSED EXPENDITURE: $1,788,989

TOTAL ESTIMATED PROJECT COST: $1,788,989

PRELIMINARY SCHEDULE:

- **Unit 126:** 03-11-2019 to 02-06-2020
- **Unit 127:** 03-11-2019 to 09-22-2020
- **Unit 128:** 02-06-2019 to 09-22-2020
- **Unit 129:** 09-22-2020 to 04-01-2021

The City inadvertently failed to submit this proposal to the Commission before undertaking the project. If the Commission objects to the expenditures the City must reimburse the tidelands fund for the amount already spent.

STAFF ANALYSIS AND RECOMMENDATION:

The City's statutory trust grant allows various uses of the oil revenue derived from the existing oil fields on the City's granted Public Trust lands.

Section 6(c) of Chapter 138, as amended, authorizes the expenditure of tideland revenues for the construction, repair, operation, and maintenance of bulkheads, piers, earthfills, streets, roadways, bridges, bridge approaches, buildings, structures, recreational facilities, landscaping, parking lots, and other improvements on or adjacent to the Long Beach tidelands or on or adjacent to the Alamitos Beach Park Lands.

Section 6(d) of Chapter 138, as amended, allows tideland revenue to be expended on construction, repair, operation, and maintenance of small boat harbors, marine stadiums, a maritime museum, marine parks, beaches, waterways, and related facilities on or adjacent to the Long Beach tidelands or on, or adjacent to, the Alamitos Beach Park Lands.

Based on the information provided by the City, the proposed capital improvement projects do not appear to be inconsistent with the uses set forth in Section 6(c) and (d) of Chapter 138, as amended by Chapter 941, Statutes of 1991. As required by the statutory trust grant, the proposed expenditures are for the benefit and use of the statewide public and for uses and purposes not inconsistent with the City's statutory trust grant.

OTHER PERTINENT INFORMATION:

1. Pursuant to Chapter 138, Statutes of 1964, as amended by Chapter 941, Statutes of 1991(Chapter 138), the Commission has 60 days to notify the City that a proposed capital improvement is not consistent with Chapter 138. Commission staff received notice from the City of the proposed expenditures on November 6, 2020.

2. The City's grant requires that it maintain separate tidelands accounts identified as the Harbor Fund, Tidelands Fund, and Tidelands Oil Revenue Fund. The proposed capital improvement projects will be funded with tideland oil revenue from the Tidelands Fund.

3. The proposed action is consistent with Strategy 1.2 of the Commission's Strategic Plan to provide that the current and future management of ungranted sovereign lands and resources and granted lands, including through strategic partnerships with trustee ports and harbor districts, is consistent with evolving Public Trust principles and values, particularly amid challenges relating to climate change, sea-level rise, public access, and complex land use planning and marine freight transportation systems. More specifically, this proposed action is consistent with a Targeted Outcome under Strategy 1.2, to track each grantee's revenues and expenditures to ensure that trust revenues are reinvested into the tide and submerged lands, rather than diverted to other purely municipal purposes or other uses inconsistent with the Public Trust.

4. Reviewing this proposed expenditure of tideland oil revenue for consistency with Chapter 138 is not a project in accordance with the California Environmental Quality Act because it is an administrative action that will not result in direct or indirect physical changes to the environment.

   Authority: Public Resources Code section 21065 and California Code of Regulations, title 14, section 15060, subdivision (c)(3).

EXHIBITS:

A. Location and Site Map
B. Alamitos Bay Water Quality Enhancement Project Update

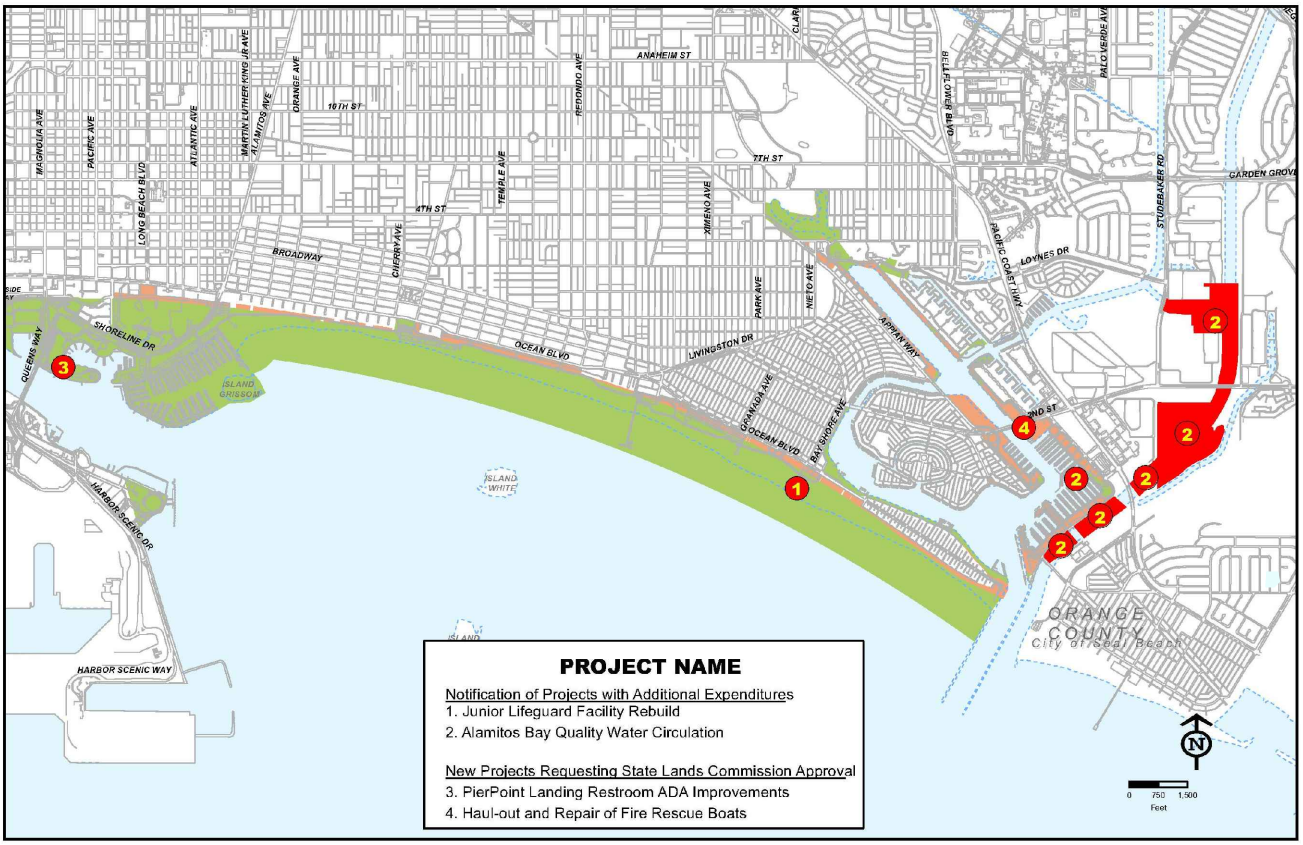
RECOMMENDED ACTION:

It is recommended that the Commission:

Find that, based on the information provided by the City, the proposed expenditure of tideland oil revenue in the amount of $2,588,989 for four capital improvement projects located both on and adjacent to legislatively granted sovereign land in the City of Long Beach does not appear to be inconsistent with the uses set forth in section 6(c) and (d) of Chapter 138, as amended.

NO SCALE

SITE



ATTACHMENT A

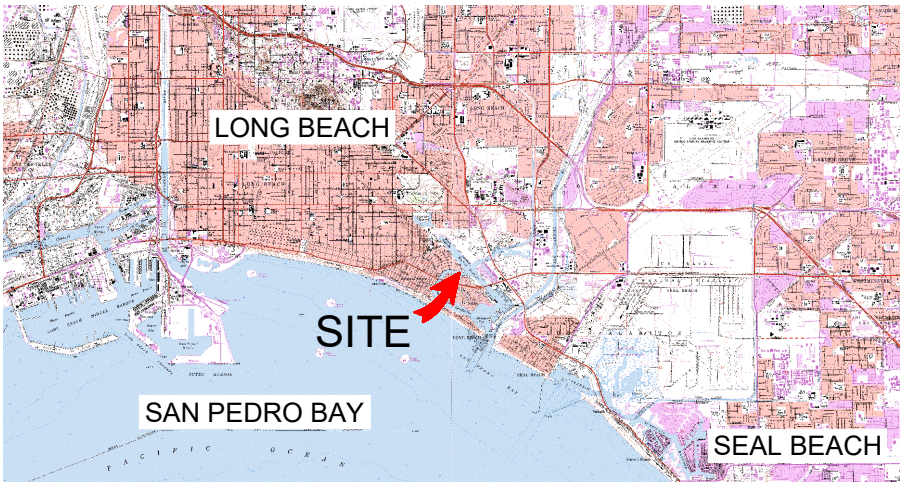
CITY OF LONG BEACH
PROPOSED TIDELANDS CAPITAL PROJECTS

MAP FEATURES
- PROJECT LOCATION
- TIDELANDS
- CONTIGUOUS AREAS
- WATERWAY

LONG BEACH TIDELANDS

NO SCALE

LOCATION



MAP SOURCE: USGS QUAD

This Exhibit is solely for purposes of generally defining the lease premises, is based on unverified information provided by the Lessee or other parties and is not intended to be, nor shall it be construed as, a waiver or limitation of any State interest in the subject or any other property.

Exhibit A

CITY OF LONG BEACH
G 05-03
EXPENDITURE OF
OIL REVENUE
LOS ANGELES COUNTY

TS 11/18/2020

Exhibit B

CITY OF LONG BEACH

Memorandum

Date: October 26, 2020

To: Mayor and Members of the City Council

From: Thomas B. Modica, City Manager

Subject: **ALAMITOS BAY WATER QUALITY ENHANCEMENT PROJECT UPDATE**

This memorandum provides information on recent actions undertaken as part of an engineering feasibility study to identify alternative solutions for anticipated water quality impacts in Alamitos Bay due to State regulatory requirements to phase out Once-Through Cooling (OTC) systems at energy plants. Information is also provided on anticipated next steps in formulating an implementation plan based on the findings of the study.

BACKGROUND

The State Water Resources Control Board (SWRCB) enacted a OTC Policy in 2010, requiring power plants to phase out the practice of using marine water to cool turbines used for the generation of electricity. The policy on the Use of Coastal and Estuarine Water for Power Plant Cooling (Policy), aims to reduce the harmful effects associated with OTC, such as entrainment (fish and larvae drawn through the cooling system and subjected to hot water) and impingement (fish trapped at the screens). Both the Alamitos Energy Center (AES) and the Haynes Generating Station (HGS) currently draw ocean water from Alamitos Bay (Bay) and discharge the water to the San Gabriel River (SGR) as part of their OTC pumping systems. AES is a natural gas power plant that provides electricity to Long Beach and the region. This power generator has used ocean water to cool power plant turbines. Such pumping activities create currents, pulling ocean water into the Bay, mixing ocean and bay water, which, in turn, improves circulation and water quality. Through 2019, the average pump rate from the Bay into the SGR through AES was 326 million gallons of seawater per day. The average pump rate for HGS was 581 million gallons of seawater per day. AES has recently decreased pump rates and plans to phase out OTC entirely by 2023. HGS will cease OTC operations by 2029.

Through OTC pumping operations, AES and HGS have assisted circulation throughout the Bay for the last 55 years. This consistent water movement has established habitat and water quality conditions that are now dependent on a regular supply of new seawater pulled from the open ocean into the Bay and re-circulated back to the ocean from the SGR. It is anticipated that cessation of power plant pumps in 2023 will have an immediate effect on circulation and is expected to precipitate secondary adverse effects on water quality and aquatic life. The Bay is a major recreational and commercial waterway that supports a variety of year-round activities. It is also home to protected marine life and habitats. Over the years, the City has made significant investments to maintain and improve water quality in the Bay, including various watershed source control measures, such as storm water diversion, capture and treatment of runoff, and implementation of clean marina programs to reduce bacteria, toxic pollutants, and trash. Additionally, investments have been made to protect endangered species and their habitats through the restoration of wetlands and eel grass habitats.

For the last year, the City Project Team (Project Team), including staff from the City Manager, City Attorney, Development Services, Health and Human Services, Parks, Recreation and Marine, and Public Works Departments, has been engaged in an engineering feasibility study to evaluate the effectiveness of new, environmentally friendly pumps at different locations within the Bay. The Project Team has determined that installation of fish-friendly pumps at the AES site is a viable option for maintaining current water circulation patterns and meeting biological, environmental, and regulatory requirements. Work has begun to formalize a partnership with AES to implement a pumping solution prior to the full cessation of OTC operations in 2023.

STUDY OF POTENTIAL WATER QUALITY IMPACTS

Since the adoption of the OTC Policy in 2010, City staff have worked to understand and prevent water quality impacts, and plan long-term, sustainable measures to maintain and improve water quality in the Bay and surrounding water bodies. Moffatt & Nichol (M & N) was commissioned to investigate potential water quality improvement measures within the Bay and adjacent water bodies and/or tributaries, including Los Cerritos Channel and SGR. M & N studied water circulation throughout the Bay and identified potential causes of stagnation and other conditions that could lead to poor flushing and water quality. The initial study indicated pumping provides a circulation benefit, which, in turn, contributes positively to water quality. An expanded study included water quality modeling to predict the impact of decreased circulation and tidal flushing that would result when AES and HGS cease OTC pumping operations. Findings indicate the current, positive water quality condition of the Bay is a result of forced circulation from tidal exchange and pumping associated with OTC. Modeling studies show with the shutdown of OTC at the AES site, tidal flushing will decrease and seawater residence time will increase in some areas. Concentrations of bacteria will increase as a result, producing degraded water quality in portions of the Bay. For example, currently Mother's Beach water exchange occurs every 3.4 days, but after pumping stops, water exchange is anticipated to occur to every 9.5 days.

AES OTC pumping appears to impact residence times more significantly than HGS due to its upstream location. Residence time is commonly used as an indirect indicator of water quality. Increased residence time corresponds with degraded water quality and vice-versa. Currently, the greatest quantity of trash collected is from the Los Cerritos Channel before it enters the Bay at the AES inlet channel where currents from pumping pull floatable trash into capture devices adjacent to the AES power plant. Without the pumps, trash will flow into the Bay and be moved around with the tidal currents. Study findings indicate the following anticipated impacts from cessation of pumping and forced circulation in the Bay:

- A need for new trash management approaches to capture and retrieve trash from environmentally sensitive areas and public access areas;
- Prolonged periods of elevated bacteria concentrations near source areas; and,
- Increased temperatures in areas that are shallow and stagnant within the Bay that will lead to further water quality impacts like blooms and anoxic conditions in localized areas.

FEASIBILITY STUDY OF FISH-FRIENDLY PUMPING OPTIONS

The City employed M & N to identify alternative pumping systems that would minimize potential water quality impacts within the Bay due to pump cessation. M & N was charged with conducting an engineering study to identify pumping options that could be feasibly constructed on the AES site and to develop design concepts illustrating those options.

Additionally, M & N was asked to identify related permit and regulatory requirements, design and construction schedules, and construction cost estimates for each of the feasible options developed. This effort began with engagement of the Regional Water Quality Control Board (RWQCB) to determine whether pumping and transfer of water from the Bay into the SGR could continue without OTC operations under prescribed conditions, through either modification of the existing AES permit or a new permit held by the City. After several months of discussion and study, the RWQCB identified an approach that would require a new City permit to install fish-friendly pumps on the AES property and continue the transfer of water from the Bay to the SGR. Concurrent with these efforts, the Project Team and M & N began collaborating with AES to identify the most suitable location for the new pumps among the six existing pump intake wells associated with the six AES power plant units.

After achieving consensus with AES on a feasible location on their site, M & N and the Project Team finalized a project description and began evaluating the infrastructure to support installation of the fish-friendly pumps. The project proposes to replace two existing non-fish friendly vertical-axial-flow pumps at the AES Unit 6 intake well used for cooling during power generation with two fish-friendly vertical-axial-flow pumps that will be used to circulate water without the effects of cooling. The new pumps will have similar pumping capacity as the AES Unit 6 intake well. Installation of fish-friendly pumps will maintain the current water circulation pattern. Studies on the mechanics and implementation of these pumps indicate their use can promote safe fish transport from the Bay to the SGR. Fish-friendly pumps have impeller blades with rounded edges and wider spacing between the blades, substantially reducing the impact risk to fish. According to the research, their effectiveness in preventing harm to fish is between 93 and 99 percent.

Existing infrastructure was preliminarily assessed, and it was determined that the AES Unit 6 intake well could support the fish-friendly pumps. However, contrary to assumptions of several years ago, it was found that some new infrastructure would be required to convey water from the existing pump well to the SGR. Currently, water flows from the pump well through a steam condenser attached to the power plant unit into the SGR. Demolition of the power plant unit will commence upon cessation of OTC operations in 2023, as part of the AES OTC mitigation plan. This condition necessitates the installation of new piping infrastructure to an extent guided by the chosen construction scenario. A more in-depth assessment of the existing infrastructure to confirm its condition will be required and occur as part of the 30 percent engineering design.

In the spring of 2020, the Project Team and AES identified four conceptual design alternatives for the installation of new, fish-friendly pumps. Each alternative varies in level of interaction with AES operations, risks, costs, and schedule. Schedules for the four alternatives range from completion by 2023 to 2026. Construction cost estimates also vary based on the extent of new infrastructure required for each alternative. In general, construction schedules extending

beyond 2023 have lower costs and the least impact on AES operations. But the lower costs of these options come at the expense of protracted interruption of pumping to accommodate demolition of the existing AES Units 5 and 6 intake wells upon cessation of OTC operations in December 2023. Operations and maintenance activities and expenses will include maintenance and repair of pumps, cleaning of intake and outfall structures, trash capture and removal, and powering of the pumps with new, metered electrical service from Southern California Edison (SCE). The City exclusively, or as part of a partnership, would be responsible for operations and maintenance of the new pumping system. The Project Team has been informed that AES could not legally operate a pumping system unrelated with its primary purpose of generating energy.

The Project Team and AES have preliminarily selected a preferred design alternative, which is identified in the attachment. This design alternative proposes to start and complete construction by 2023 while the plant is operational and prior to demolition of the AES Units 5 and 6 intake wells. It requires the least amount of new piping infrastructure. The preliminary cost estimate for construction of the preferred design alternative is $35 million and operating and maintenance costs are estimated to be $2 million, annually. These costs are rough estimates until the condition of the site infrastructure can be fully assessed through 30 percent engineering design.

Developing a Memorandum of Understanding (MOU) agreement with AES is necessary to advance the preferred design alternative. Design, permitting, operating, and financial planning expectations need to be included in a MOU to guide the City and AES through this project. Preliminary engineering design and the permitting process will begin in the winter of 2020 to keep the project on schedule. To advance planning discussions and proceed with formalizing a business relationship with the City, AES is requesting a Non-Disclosure Agreement (NDA) to safeguard confidential proprietary information that may be disclosed during related discussions. AES is also requesting an Access License Agreement with the City to cover the investigative work performed on the site by the City's contractor.

MOU AGREEMENTS WITH AES

In October 2015, the City and AES entered a five-year MOU, effectively memorializing a voluntary commitment from AES to demolish all six existing power generating units after they ceased operating and construction of the new power plant was complete. Since the new AES power plant began operating in 2020, three of the six original power generating units remain operational and are expected to continue through December 2023. The other three units have ceased operations in accordance with the State Water Board's OTC policy, but will remain in place until the other three are shut down in 2023. As a result of this delay in the expected demolition of the original power plant units, there is a need to amend the current MOU to reflect the new schedule for demolition contemplated by AES. Additionally, the City and AES will agree to a second MOU to address continued operation of the AES pump stations once they ceased being needed for OTC operations. Completion of the Engineering Feasibility Study and identification of a preferred design solution has provided the basis for this second MOU. The Project Team anticipates working with AES to update the demolition MOU and finalize the second MOU to define shared commitments on the design, construction, and operation of the new pumping system over the next several months.

NEXT STEPS

The next phase of work includes developing and entering a MOU with AES and initiating 30 percent engineering design. However, to proceed with these efforts, the City must first execute the AES-requested NDA and Access License Agreement. Staff will seek City Council approval of these agreements in November 2020.

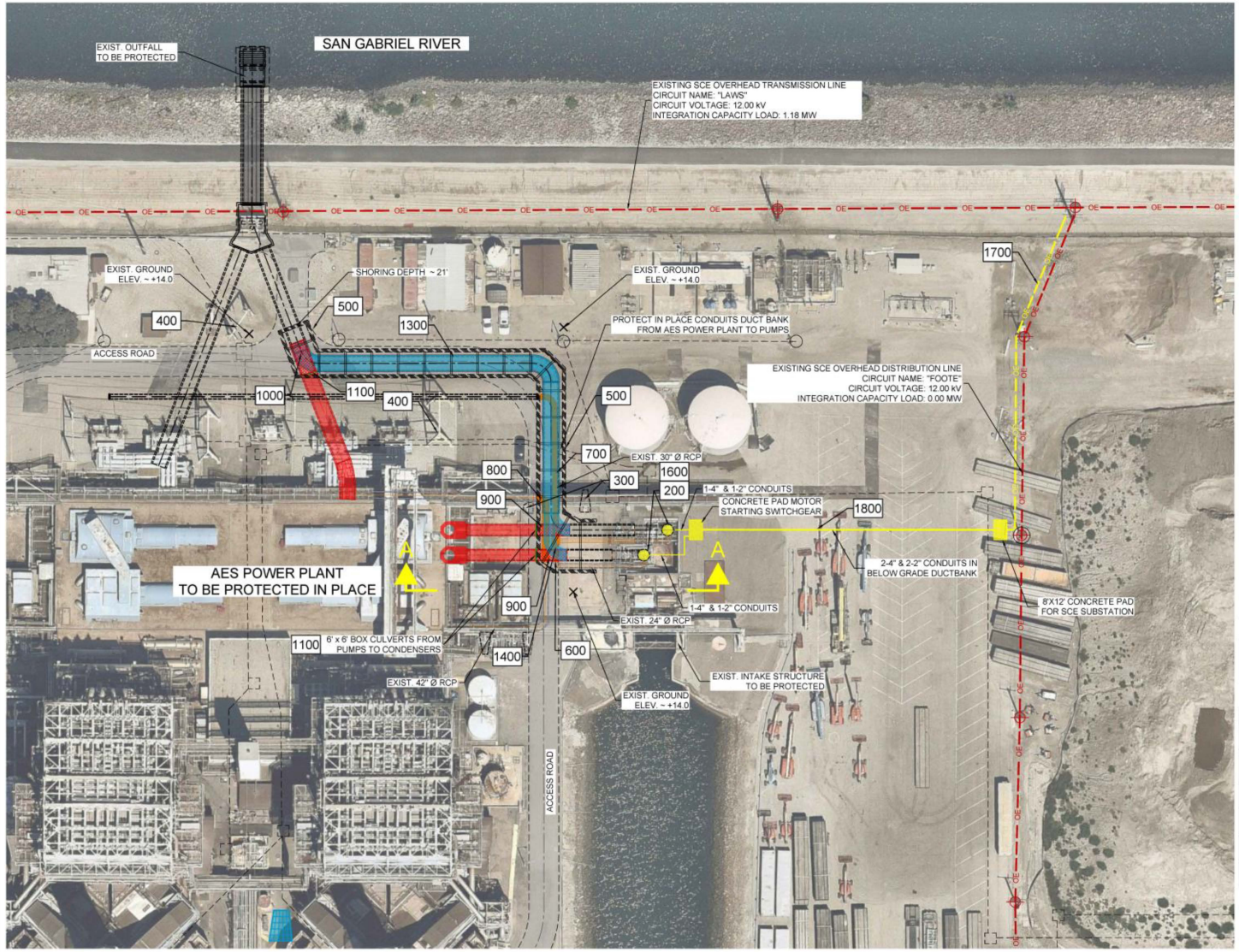
FISCAL IMPACT

As noted above, only a conceptual understanding of the capital and operating costs are known for the preferred design alternative. Overall, capital costs are estimated at $35 million and annual operating costs are estimated at $2 million. A more precise cost estimate can be achieved upon completion of an in-depth assessment of the current infrastructure conditions. There is $500,000 currently budgeted in the Tidelands Capital Improvement Program to support completion of 30 percent engineering plans.

If you have any questions, please contact Kevin Jackson, Deputy City Manager, at (562) 570-5028, or via email at Kevin.Jackson@longbeach.gov.

ATTACHMENT

c: CHARLES PARKIN, CITY ATTORNEY
LAURA DOUD, CITY AUDITOR
LINDA F. TATUM, ASSISTANT CITY MANAGER
KEVIN J. JACKSON, DEPUTY CITY MANAGER
THERESA CHANDLER, DEPUTY CITY MANAGER
REBECCA GARNER, ADMINISTRATIVE DEPUTY CITY MANAGER
BRENT DENNIS, DIRECTOR OF PARKS, RECREATION AND MARINE
ERIC LOPEZ, PUBLIC WORKS DIRECTOR
OSCAR ORCI, DIRECTOR OF DEVELOPMENT SERVICES
DEPARTMENT HEADS



CONSTRUCTION COST ESTIMATE SUMMARY

BID ITEM	LEGEND	DESCRIPTION	UNIT	QTY
100		MOBILIZATION/DEMOBILIZATION	LS	1.000
200		REMOVAL OF EXISTING PUMPS	EA	2.000
300		PROTECT OVERHEAD GANTRY CRANE STRUCTURE	LS	1.000
400		PROTECT EXISTING POWER TOWERS	EA	2.000
500		TEMPORARY SHORING	LF	640.000
600		REMOVAL OF EXISTING 24" RCP	LF	96.000
700		REMOVAL OF EXISTING 30" RCP	LF	45.000
800		REMOVAL OF EXISTING 42" RCP	LF	77.000
900		PARTIAL REMOVAL OF 6X6 RCB	LF	66.000
1000		PARTIAL REMOVAL OF 8X8 RCB	LF	38.000
1100		PLUG AND ABANDON EXISTING RCB AND RCP	EA	6.000
1300		INSTALL 8X8 RCB	LF	247.000
1400		INSTALL TRANSITION STRUCTURE 6X6 RCB TO 8X8	LF	48.000
1600		INSTALL NEW PUMPS	EA	2.000
1700	OE	SCE SERVICE LINE	LS	1.000
1800		POWER DISTRIBUTION	LS	1.000
		CONSTRUCTION SUB TOTAL		27,094,000
		CONTINGENCY @ 30%		8,128,000
		CONSTRUCTION TOTAL COST		35,222,000

CONSTRUCTION SCHEDULE

FROM MID 2021 TO MID 2022

ASSUMPTIONS

1	EXISTING 24", 30" AND 42" RCP CAN BE PARTIALLY REMOVED
2	EXISTING 6' X 6' AND 8" X 8"RCB CAN BE PARTIALLY REMOVED
3	EXISTING ROAD FROM INTAKE STRUCTURE TO OUTFALL CAN BE TEMPORARY CLOSED
4	PROPOSED PUMPS CAN BE POWERED FROM ADJACENT SCE CIRCUITS
5	SHORING AND INSTALLING 8' X 8' RCB WILL NOT CONFLICT WITH UNKNOWN UNDERGROUND STRUCTURES OR UTILITIES OTHER THAN THE CONDUITS DUCT BANK CROSSING FROM THE AES POWER PLANT TO THE PUMPS
6	NO CONSTRAINS FOR ACCESSING THE SITE AND AVAILABILITY OF LAYDOWN AREAS FOR CONSTRUCTION

ADVANTAGES AND DISADVANTAGES

BENEFITS	CONS
REDUCED COST BY USING EXISTING "WELL" INTAKE STRUCTURE	EXISTING STRUCTURE MAY LIMIT THE SIZE OF PUMPS
REDUCED COST BY USING EXISTING OUTFALL STRUCTURE	CONSTRUCTION ACTIVITIES HAVE THE MOST INTERACTION WITH AES OPERATIONS
REDUCED PERMITTING CONSTRAINTS BY USING EXISTING INTAKE AND OUTFALL STRUCTURES	

ALTERNATIVE No. 1-A "PRIOR DEMO - SHORT" - LAYOUT

SCALE: 1" = 30'

30 0 30 60

SCALE: 1"=30'

PLAN PREPARED FOR:

CITY OF LONG BEACH

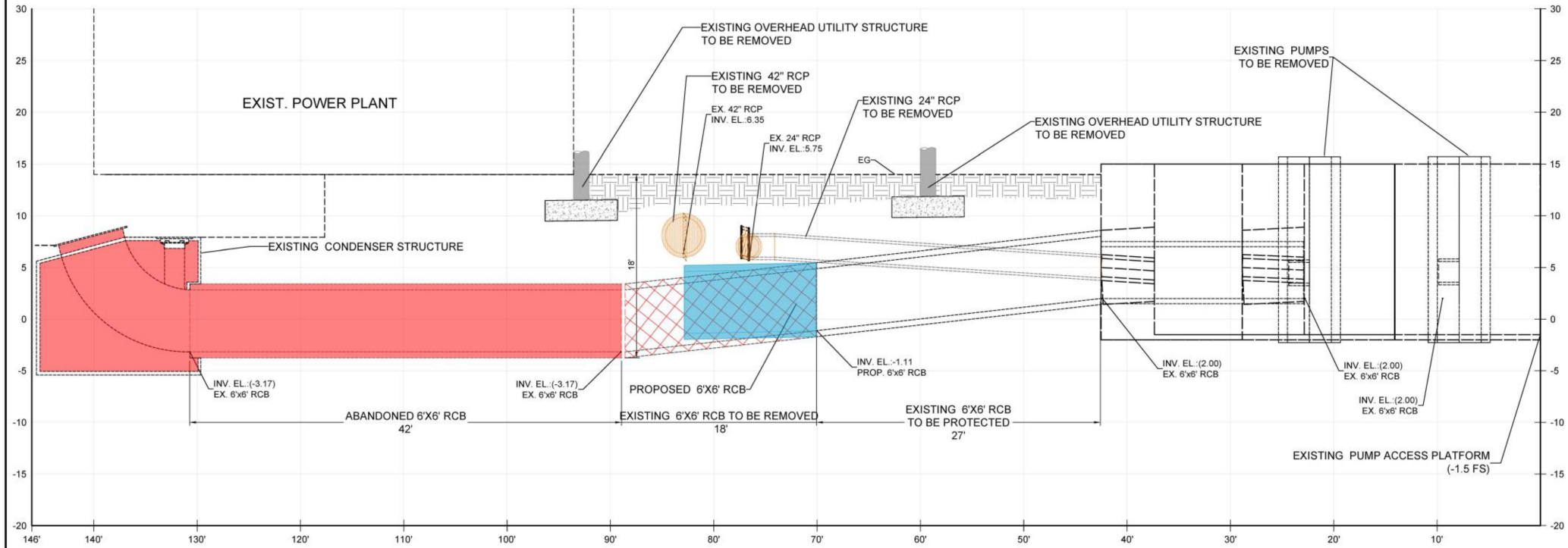
PLAN PREPARED BY:

moffatt & nichol

555 Anton Blvd, Suite 400
Costa Mesa, CA 92626
657-261-2699

ALAMITOS BAY PUMPING SYSTEM AT AES PLANT

Conceptual Engineering Design
Preferred Alternative



ALAMITOS BAY PUMPING SYSTEM
AT AES PLANT

PLAN PREPARED FOR:
CITY OF LONG BEACH

PLAN PREPARED BY:
moffatt & nichol
555 Anton Blvd, Suite 400
Costa Mesa, CA 92626
657-261-2699

Conceptual Engineering Design
Preferred Alternative
SECTION A-A
(2020-03-17)