



**COMMISSION
AGENDA MEMORANDUM**

Item No. 81

ACTION ITEM

Date of Meeting December 14, 2021

DATE: December 3, 2021

TO: Stephen P. Metruck, Executive Director

FROM: Eileen Francisco, Interim Director, Aviation Facilities and Capital Programs
Wayne Grotheer, Director, Aviation Project Management

SUBJECT: Industrial Wastewater Treatment Plant Program (CIP# C801234) – Preliminary Design Funding

Amount of this request: \$2,000,000

Total estimated project cost: \$100,000,000 to \$200,000,000

ACTION REQUESTED

Request Commission authorization for the Executive Director to (1) execute a contract for Architecture and Engineering (A&E) services to complete planning and preliminary design for the Industrial Wastewater Treatment Plant (IWTP) Program (CIP C801234). The amount of this request is \$2,000,000.

EXECUTIVE SUMMARY

This project will install a pre-treatment system and upgrade the existing systems at the IWTP to ensure compliance with future King County Department of Natural Resources Industrial Waste Discharge permit limits.

The airport's IWTP manages and treats stormwater associated with industrial activities from aircraft fueling and maintenance operations as well as wastewater from other airport-related operations such as aircraft deicing. Stormwater runoff with low Biochemical Oxygen Demand (BOD) discharges to the Puget Sound under conditions of National Pollutant Discharge Elimination Systems (NPDES) permit. Stormwater runoff with high BOD discharges to King County South Treatment Plant for secondary treatment under King County Department of Natural Resources Permit No. 7810-05. The primary source of high BOD is aircraft deicer runoff. Effective in 2026, the King County BOD permit limits will be restricted to a level that will require an on-site pre-treatment system at the Seattle-Tacoma International Airport (STIA).

The amount of this request is \$2,000,000 for planning efforts and preliminary design. The total estimated project cost is currently \$100,000,000 - \$200,000,000. Staff will return to the Commission following the completion of the preliminary design work; at this time staff will

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provide an updated project cost estimate and request authorization for design funding to move forward with the full design phase.

JUSTIFICATION

Since 2007, the IWTP has discharged industrial wastewater runoff containing aircraft deicers to the King County Wastewater Treatment System. Through each permit cycle, King County has restricted discharges because under sustained heavy deicer loads, the performance of the County's treatment plant has been disrupted by the Port's discharges.

Over the past five years, the Port has evaluated technologies and methods to reduce impacts to the King County treatment plant. This evaluation included a comprehensive assessment of deicing source control, storage, and treatment technologies. This assessment resulted in measures to reduce the amount of aircraft deicer applied and implementing operation efficiencies. For example, most of the aircraft deicer applicators switched to an application technology reducing the amount of deicer applied. This source reduction reduces the amount of future storage needed.

Under the terms of the July 2021 Industrial Waste Discharge (IWD) permit, the Port is required to implement infrastructure and operational modifications by 2026 to comply with future discharge limits. The IWTP modifications needed to comply with reduced limits include significant additions to the system for storage and pretreatment of IWS stormwater containing spent aircraft deicing fluid. The 2021 IWD permit also includes a compliance schedule over the next five years to reflect progress toward implementation of measures to meet reduced 2026 effluent limitations.

The requested authorization will establish preferred pretreatment configuration, necessary infrastructure improvements, and location that includes necessary IWTP upgrades, storage and pretreatment.

Diversity in Contracting

As part of the planning phase of this project, a service directive will be issued against an existing indefinite delivery / indefinite quantity (IDIQ) contract. An aspirational goal of 16% WMBE participation is associated with this IDIQ contract.

DETAILS

Planning funds will be used to develop:

- Detailed Basis of Design (treatment configuration, storage options, infrastructure needs)
- Project Notebook
- Updated cost estimate
- Evaluation of siting and permitting requirements

The preliminary design will develop scope for a pre-treatment system, water storage, and all associated mechanical support systems. The pre-treatment system will need to be integrated

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into the existing IWTP. The current plan is to issue a service directive against an existing indefinite delivery / indefinite quantity (IDIQ) contract to complete the preliminary design. If an existing contract cannot be utilized, a project-specific contract will be executed for A&E services.

Scope of Work

Preliminary design of the following systems will be included in the scope of the Project Notebook:

- (1) Existing IWTP upgrades (lagoon mixing, upgrades to dissolved air flotation systems, etc.)
- (2) Pre-treatment flow diversion and influent system
- (3) Storage systems to facilitate pre-treatment
- (4) BOD treatment system (aerated gravel beds, oil-water separator, drainage, etc.)
- (5) Effluent discharge systems
- (6) Pumps and systems to support rainwater reuse
- (7) Support systems (new building, power supply, controls, security systems, HVAC)

Schedule

The current project schedule shows an in-use date between Q4 2026 - Q2 2027. The dates shown below are based on conservative assumptions in procurement, permitting, and construction. Options to further compress the schedule will be evaluated during the planning phase to ensure that discharge to the King County STP complies with anticipated 2026 BOD permit levels.

Activity

Preliminary design start	2022 Quarter 1
Commission design authorization	2022 Quarter 4
Design start	2023 Quarter 3
Commission construction authorization	2024 Quarter 4
Construction start	2025 Quarter 1
In-use date*	2026 Quarter 4 - 2027 Quarter 2

* The planning phase will evaluate opportunities to compress the schedule.

Cost Breakdown

	This Request	Total Project
Design	\$2,000,000	TBD
Construction	\$0	TBD
Total	\$2,000,000	TBD

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ALTERNATIVES AND IMPLICATIONS CONSIDERED

Alternative 1 – Do not proceed with this project.

Cost Implications: Approximately \$10,000 would need to be expensed. BOD levels would exceed permit allowances and likely result in significant fines indefinitely.

Pros:

- (1) No capital investment required at this time.

Cons:

- (1) Failure to meet King County permit levels for the new permit cycle will leave limited options for managing de-icing runoff at STIA. High BOD wastewater at the IWTP will not be able to discharge to the King County South Treatment Plant.
- (2) In order to comply with reduced limits the IWTP current storage is not sufficient and could result in overflow of untreated water into adjacent receiving waters.
- (3) High risk of violating King County and NPDES permit requirements.

This is not the recommended alternative.

Alternative 2 – Conduct preliminary design to determine approach for implementation of a pre-treatment system at the Industrial Wastewater Treatment Plant (IWTP).

Cost Implications: \$2,000,000

Pros:

- (1) Implementation of a pre-treatment facility on-site at STIA will allow continued discharge to the King County South Treatment Plant.
- (2) A preliminary design for the pre-treatment facility and associated systems will be developed, allowing opportunities for review by stakeholders before full design authorization.
- (3) King County Department of Natural Resources requires a draft Engineering Report describing the preferred on-site storage and treatment alternative by August 31, 2022. This report must be sufficient to develop design documents and meet the requirements of WAC 173-240-130. The preliminary design developed as part of this request will satisfy the requirements of this report.
- (4) The preliminary design will provide alternatives to reduce operational impacts and project risks. Comprehensive existing conditions and permit requirements will be evaluated, and an updated project cost estimate will be developed.

Cons:

- (1) Capital investment of \$2,000,000 is required to develop preliminary design (current total project estimate is \$100M - \$200M).

This is the recommended alternative.

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FINANCIAL IMPLICATIONS

Following a third-party cost estimate, as part of the preliminary design, the project will update the revised estimate for total project cost.

<i>Cost Estimate/Authorization Summary</i>	Capital	Expense	Total
COST ESTIMATE			
Original estimate	\$127,000,000	\$0	\$127,000,000
AUTHORIZATION			
Previous authorizations	\$135,000	\$0	\$135,000
Current request for authorization	\$2,000,000	\$0	\$2,000,000
Total authorizations, including this request	\$2,135,000	\$0	\$2,135,000
Remaining amount to be authorized	TBD	\$0	TBD

Annual Budget Status and Source of Funds

This project, CIP C801234, combined with C801123, is included in the 2022-2026 capital budget and plan of finance with a budget of \$127,000,000. While this appears to be a precise number, there is significant uncertainty over the ultimate cost. The cost is estimated to be within a range of \$100 - \$200 million. The funding sources would include the Airport Development Fund and revenue bonds. The majority of the project costs would be recovered through airlines rates. The Majority-In-Interest ballot would be submitted to the airlines for approval in late 2022.

Financial Analysis and Summary

Project cost for analysis	\$127,000,000
Business Unit (BU)	Industrial Waste System
Effect on business performance (NOI after depreciation)	NOI after depreciation will increase due to inclusion of capital (and operating) costs in airline rate base.
IRR/NPV (if relevant)	N/A
CPE Impact	\$0.32 in 2028 (ultimate CPE impact will vary with project cost)

Future Revenues and Expenses (Total cost of ownership)

The addition of pre-treatment to the IWTP will require additional long-term resources for operations, maintenance, and training.

ATTACHMENTS TO THIS REQUEST

- (1) Presentation

PREVIOUS COMMISSION ACTIONS OR BRIEFINGS

None