



Biosolids Diversification Project Thermal Drying Facility

PRE-PROPOSAL MEETING AND SITE TOUR | AUGUST 4, 2026

Presentation Outline

- 01 AlexRenew Overview**
General & PhaseForward
- 02 Biosolids Diversification Project and Thermal Drying Facility Scope**
Discussion of major scope items
- 03 Procurement Process**
- 04 Site Tour**

Upper Occoquan Service Authority biosolids thermal drying facility (photo credit: Stantec)



Today's Presenters



Felicia Glapion

Felicia joined AlexRenew in 2019 and serves as Chief Engineering Officer, responsible for AlexRenew's Engineering and Maintenance Department.



Kyle Chan

Kyle joined AlexRenew in 2020 and serves as an Engineer III, acting as Project Manager on AlexRenew's Biosolids Diversification Program and other projects.



Igor Scherbakov

Igor joined AlexRenew in 2023 and serves as the Procurement Manager, responsible for AlexRenew's Procurement Team.

AlexRenew OVERVIEW

Purifies 13 billion gallons of wastewater each year

Serves a population of about 320,000 people in Alexandria and portions of Fairfax County

Established in 1952 as an independent authority

Governed by a 5-member citizen Board





AlexRenew's Major Capital Projects

Now – 2032

Nutrient
Reduction
Project

Process Optimization
Project

RiverRenew Tunnel
Project

Headworks Renewal Project

Job Order
Contracts

Nutrient
Reduction
Project

Biosolids Diversification
Program
(includes this project)

phaseforward

Building a Resilient Wastewater Future



Biosolids Diversification (CMAR)

Upgrades to meet emerging regulations, increase bioenergy production, and realize alternative beneficial end uses for biosolids



Headworks Renewal (CMAR)

Improvements to aging equipment that provide initial screening of debris larger than a pea and settling solids as small as a grain of sand



ULLIMAN
SCHUTTE



Process Optimization (Design-Bid-Build)

Installation of new equipment to enhance our nutrient removal processes and continue to improve water quality in the Chesapeake Bay and its tributaries



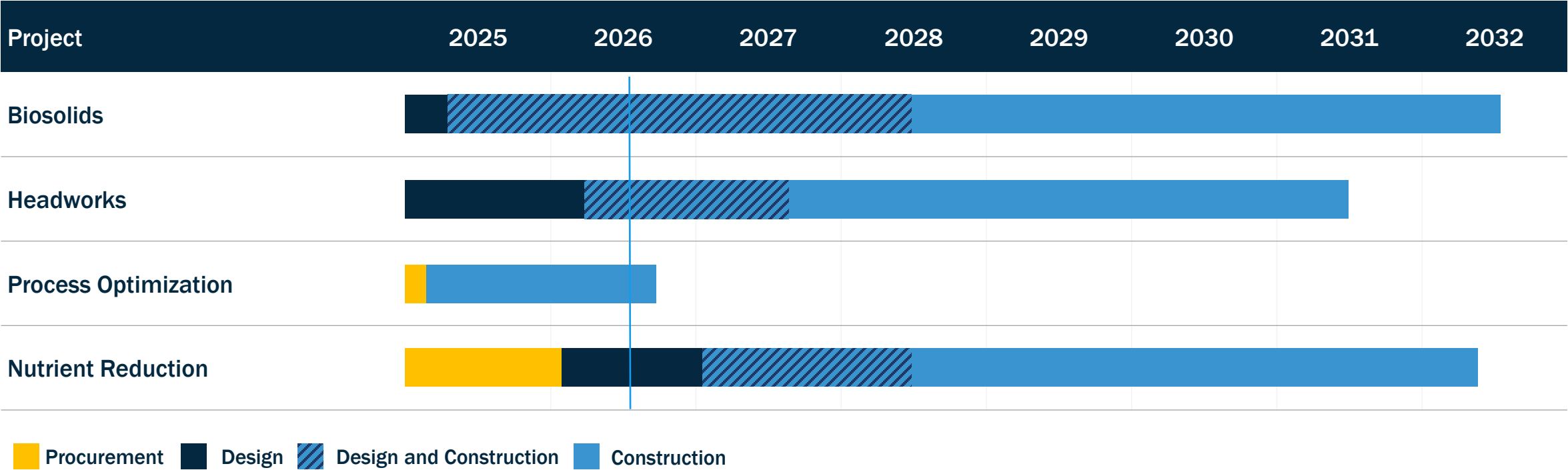
Nutrient Reduction (Progressive Design-Build)

Rehabilitation of processes providing the final settling and filtration of wastewater to further reduce nutrient loads and allow for continued growth in our community



PhaseForward Schedule

The PhaseForward projects are all at various stages of construction and design and anticipated to go through 2032.



AlexRenew's Biosolids Approach

AlexRenew is undertaking a four-pronged approach that mitigates near-term regulatory risk from PFAS in biosolids and provides a long-term sustainable solution to biosolids management.



Sampling and Source Minimization

Monitor influent, effluent, and biosolids PFAS levels and test local industrial users to support source identification and minimization



Deprioritize Land Application

Partner with a local waste-to-energy facility for biosolids disposal and secure landfill capacity as a backup during incinerator down-times



Upgrade Current Facilities

Strengthen biosolids processing and disposal operations through upgrades to ensure reliable service in the near-term



Diversify End Uses

Invest in new infrastructure to reduce biosolids volume and support resilient, long-term biosolids management options beyond land application

Regional Biosolids Feasibility Study Overview

In 2024, AlexRenew began a partnership with Arlington County, Fairfax County, Fauquier County Water and Sewer Authority, Loudoun Water, Prince William Water, and Upper Occoquan Service Authority to explore viable alternatives to land application through a joint regional study.



Technology Alternatives

Identification and evaluation of viable biosolids treatment and disposal technologies

Governance Structure

Evaluation of governance and decision-making models suitable for a regional program

Siting

Identification and screening of potential regional facility locations within Northern Virginia

AlexRenew's Biosolids Roadmap

AlexRenew's current roadmap is to improve its current solids infrastructure in the near-term while identifying necessary adaptations to meet current and future regulatory requirements, including how to minimize its reliance on land application.

**Medium-term Goals
2032**
Reduce biosolids volume and
prioritize bioenergy

**Short-term Goals
Now**

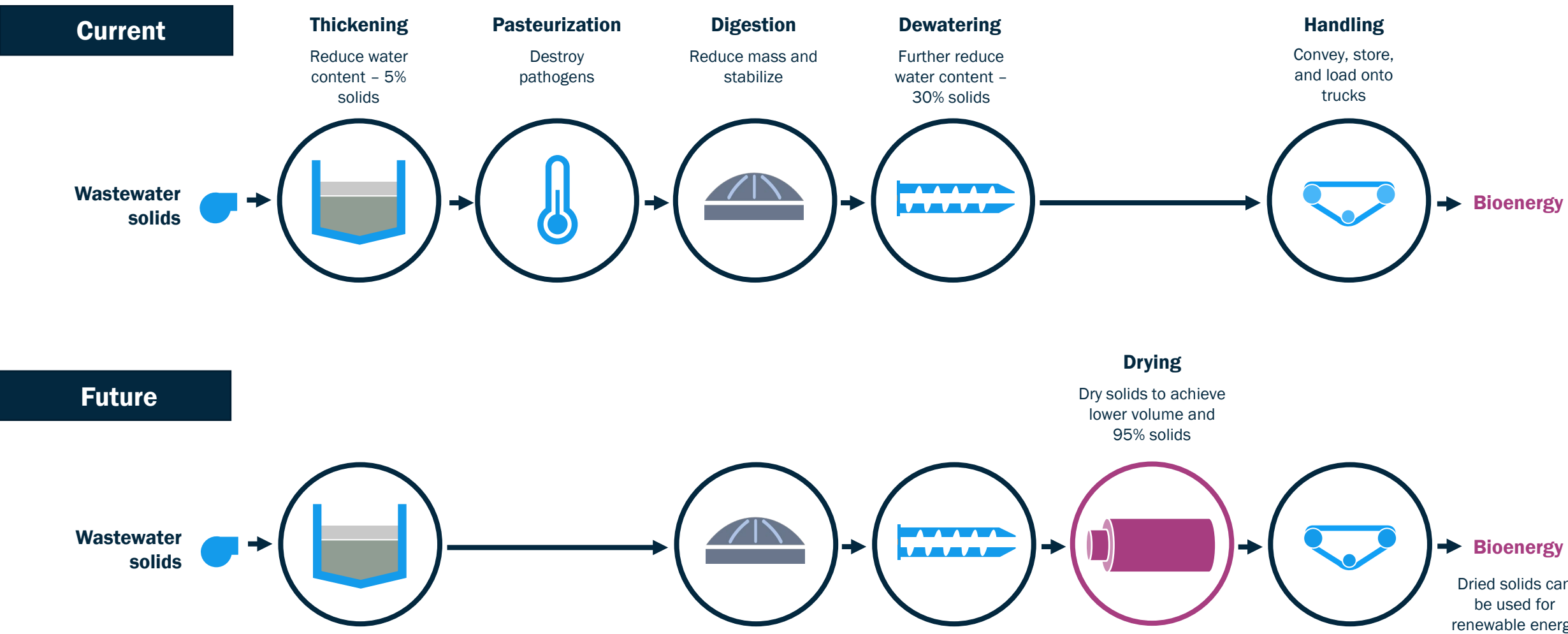
Upgrade our current facilities to
improve reliability and functionality

**Long-term Goals
2040**

Leverage the regional
biosolids study for a long-
term solution

Goal of the Biosolids Diversification Program

AlexRenew’s goal is to adapt the current treatment process and add a reliable, efficient, and maintainable thermal drying facility that supports reducing the volume of biosolids produced and a permanent shift away from land application.



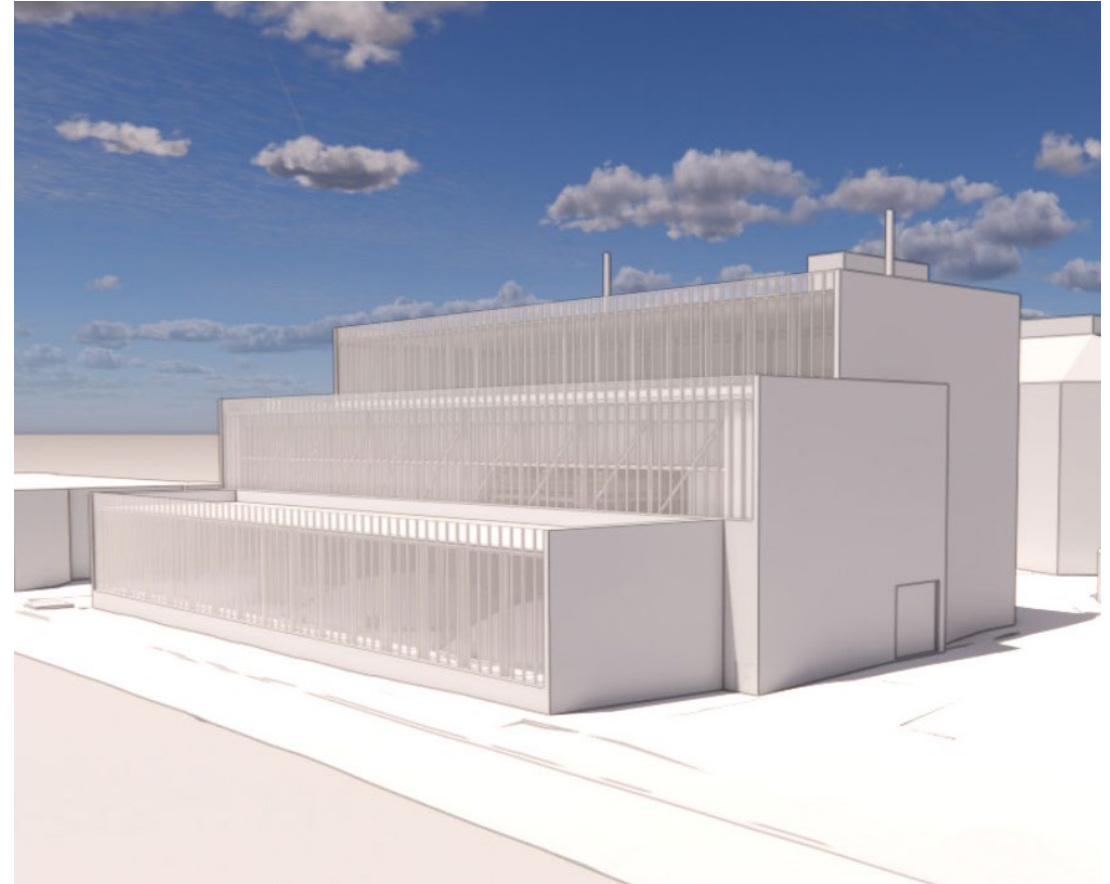
Projects within the Biosolids Diversification Program

The Biosolids Diversification Program consists of two projects that support achieving the objectives of AlexRenew's biosolids roadmap.



Existing Facility Upgrades

Stantec

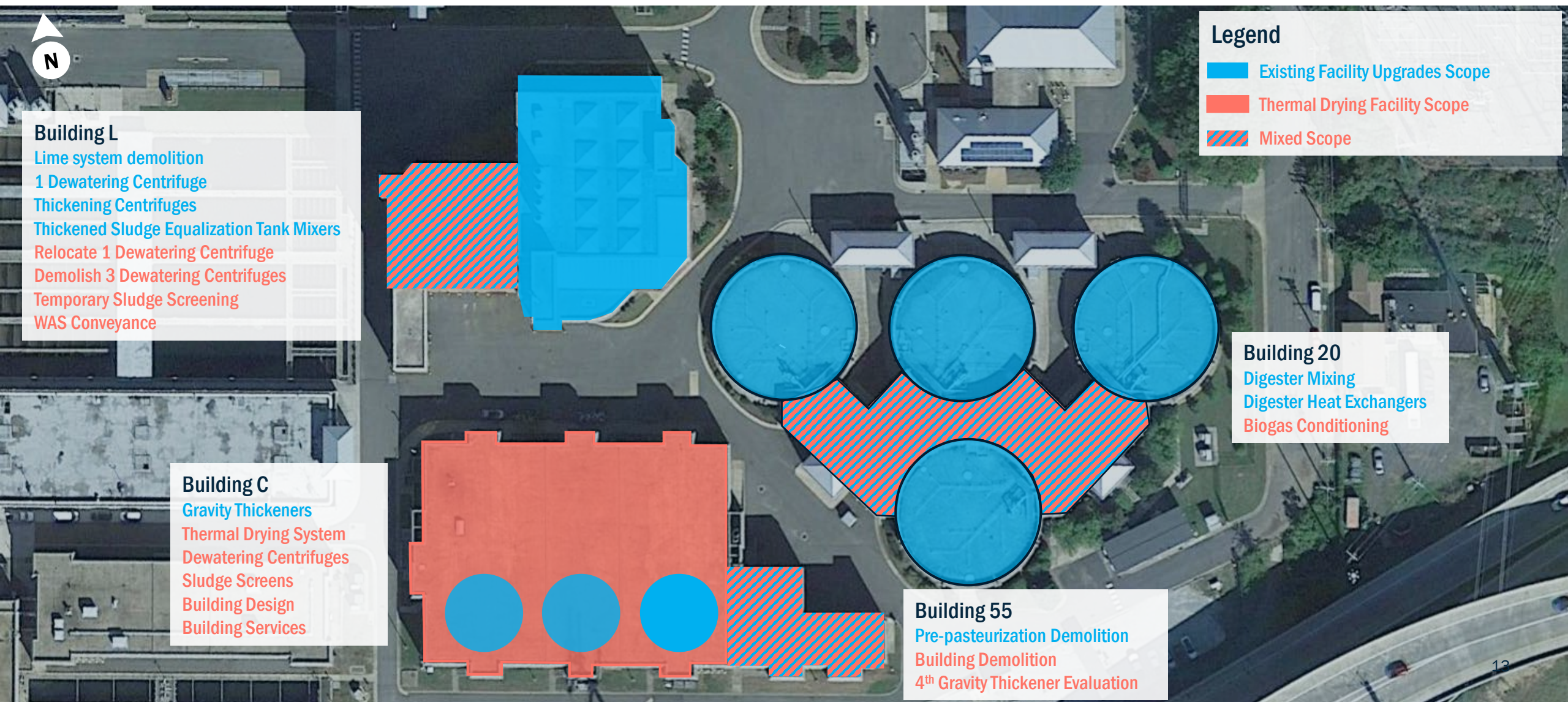


Thermal Drying Facility

This Procurement

Biosolids Diversification Program Scope

Work for the Biosolids Diversification Program is required throughout AlexRenew's solids process buildings.



Existing Facility Upgrades Scope

This project replaces aging equipment throughout the solids treatment process to improve reliability.



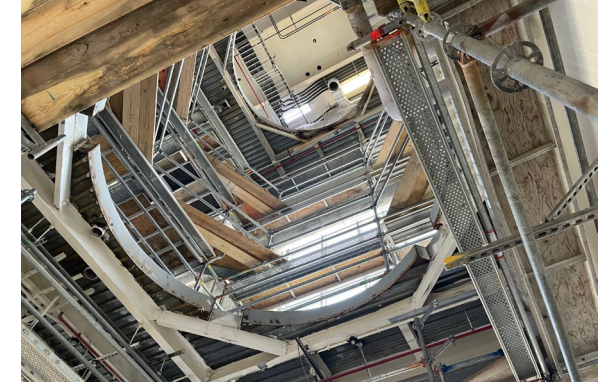
Replace dewatering centrifuges (3) & add a fourth unit



Replace thickening centrifuges and drive motors (4) and add a fifth unit



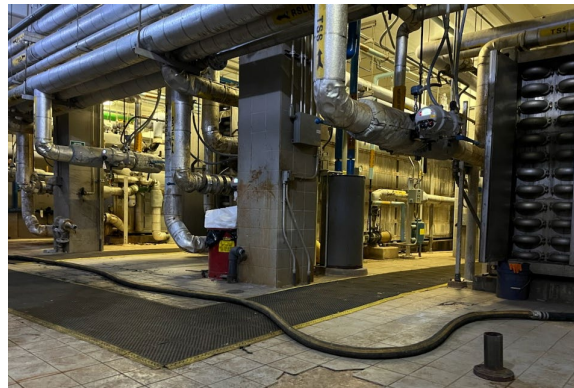
Fully refurbish gravity thickeners (3) (i.e., new rake drives, piping, scum collection systems, covers, & controls)



Demolish two (2) decommissioned lime storage silos and associated process equipment



Replace digester heat exchangers (4) with larger units to provide all digester heating



Decommission and demolish the pre-pasteurization system (i.e., heat exchangers (3), solids pumps (6), and storage tanks (4)).



Decommission and demolish the existing gas mixing system and replace with hydraulic jet mixing



Install new electrical equipment to support new process equipment

Thermal Drying Facility – Key Design Considerations

The new Thermal Drying Facility must include considerations for the unique aspects of the project, including that AlexRenew is an active site with limited space and any building will be visible to the surrounding community.

AlexRenew's Design Standards	Maintenance of Plant Operations	WRRF Space Constraints	Structural Requirements	Architectural Context in Alexandria
– Sustainability – Climate and Resilience – Electrical – HVAC – Fire Protection – I&C/SCADA	– Three Gravity Thickeners operating inside Building C – Odor control – Maintain staff and vehicle access to adjacent buildings	– Small and constrained site – Minimal laydown area – No space to expand	– Building C basement will be protected in place – Foundations must consider subsurface utilities and access tunnels	– Prominent, public-facing location – Design must consider location of exterior equipment and minimize visual impact

Existing Conditions

The Thermal Drying Facility will be constructed within Buildings C and 55, which currently house the gravity thickening, sludge screening, and pre-pasteurization processes.

— Building C (Sludge Thickening Building)

- Constructed ~1975
- Gravity thickeners + ancillary process equipment
- Electrical room
- Control room (abandoned)
- Misc. storage space
- HVAC equipment (basement)

— Building 55 (Pre-pasteurization Building)

- Constructed ~2005
- Sludge screens (screens, pumps, wet wells)
- Pre-pasteurization system (tanks, heat exchangers, pumps)
- Ancillary process equipment



Existing Gravity Thickeners

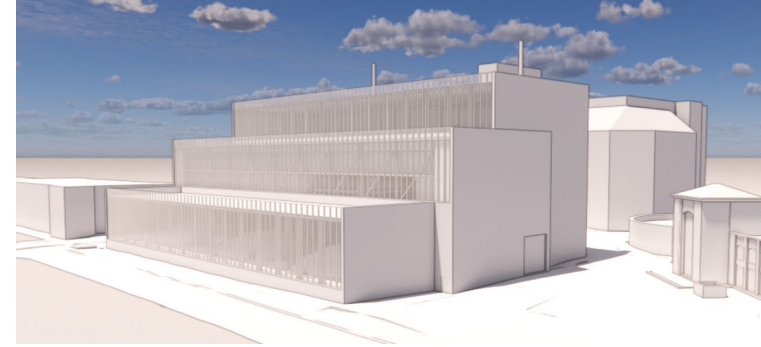


Existing Buildings C and 55, facing northwest

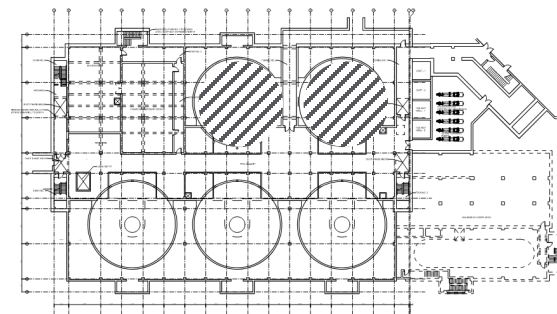
New Building C Design

The successful Respondent will design a new Thermal Drying Facility on the existing Building C site.

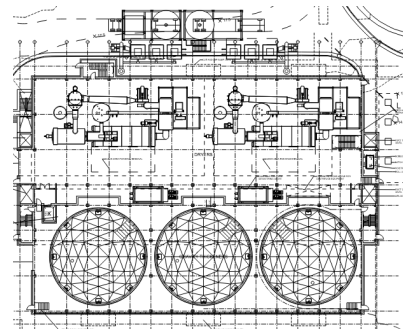
- Demolish Building 55
- Replace Building C superstructure with a new superstructure that includes:
 - Two (2) dryers
 - Three (3) gravity thickeners
 - Four (4) dewatering centrifuges
 - Three (3) thickened sludge screens
 - Electrical and HVAC
 - Control room



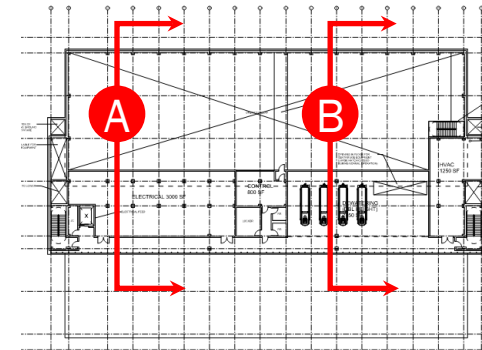
Thermal Drying Facility Conceptual Rendering, facing northwest



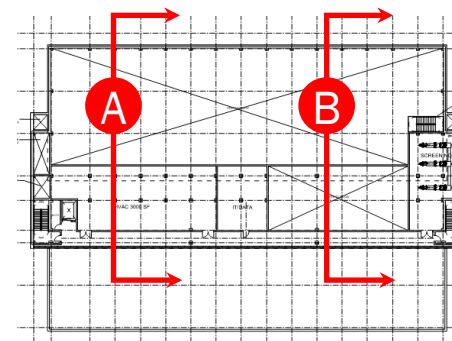
Concept Plan - Basement



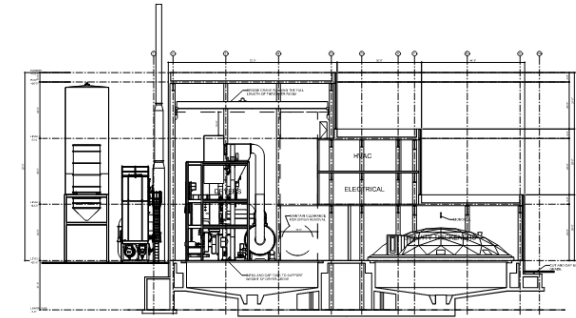
Concept Plan - 2nd Floor



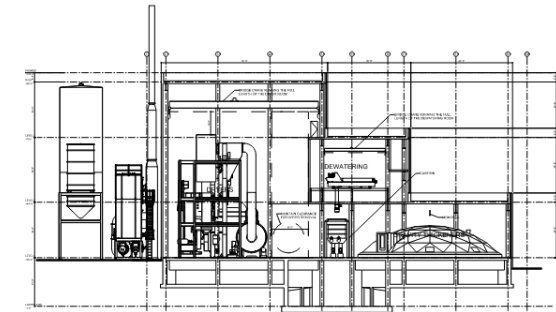
Concept Plan - 1st Floor



Concept Plan - 3rd Floor



Concept Plan - Section A



Concept Plan - Section B

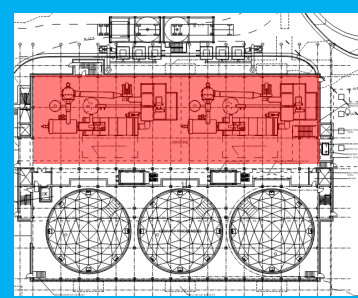
Thermal Dryer System

The new Thermal Drying Facility will include drum dryer systems from Andritz Separation, Inc.

- Design will include the installation of two (2) Andritz DDS-60 rotary drum dryers
 - Redundant dryers for reliable 7-day operation
 - Building sized for (2) DDS-70s to allow for future expansion
- Preferences
 - Standardized equipment layout
 - Ease of access to equipment (maintenance/service)
 - Use of digesters for emergency digested sludge storage
 - Maximized pellet storage – how many days can we get?

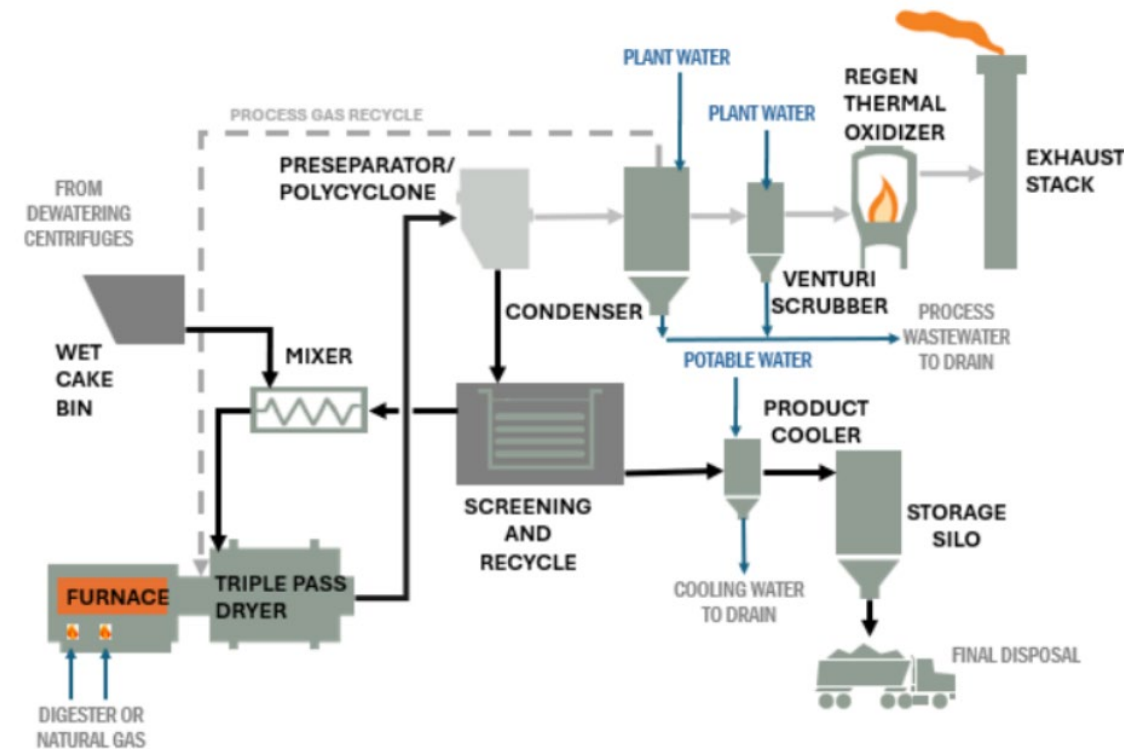


Andritz DDS-110 in Changi, Singapore
(picture credit: Andritz)



Location

Building C 1st Floor

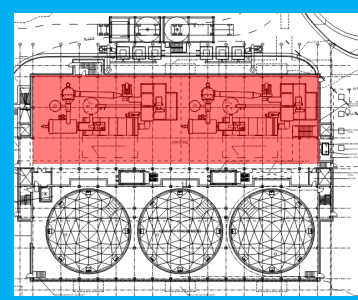


Thermal drum dryer process diagram

Thermal Dryer Ancillary Systems

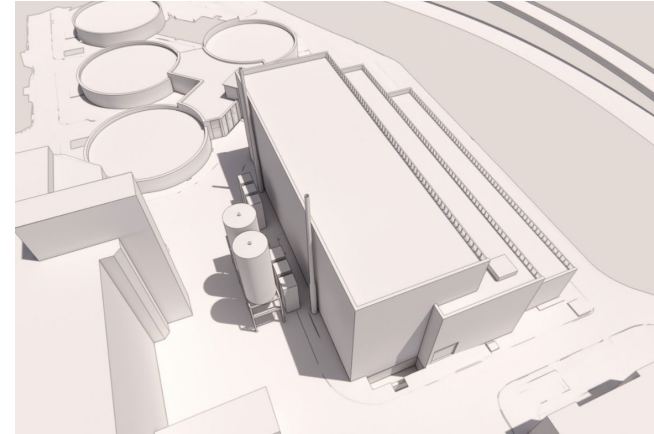
The new Thermal Drying Facility will require additional systems to support the dryers.

- In collaboration with Andritz, design and space-proof ancillary equipment
 - Regenerative thermal oxidizers (RTOs)
 - Pellet storage/loading
 - Dewatered cake storage
 - Biogas cleaning
 - MCCs
 - Controls
 - SCADA integration
 - Electrical supply (transformers, switchgears, etc.)
- Assess/modify utility requirements (e.g., electrical, plant water (W3), ventilation, biogas, etc.)
- Design modifications to waste activated sludge (WAS) conveyance to accommodate increased solids loading
- Consider plant traffic flow pre- and post-construction



Location

Building C 1st Floor



Thermal drying facility conceptual rendering, showing pellet storage and RTOs

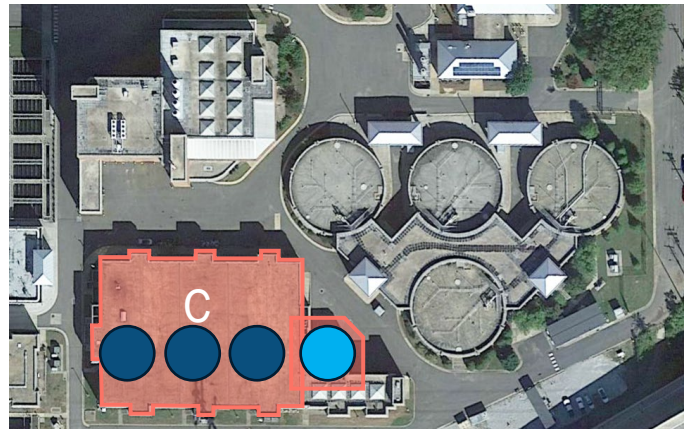


Conceptual location of new transformers, located south of Building 44

Gravity Thickeners (GTs)

The new building will be constructed around a continuously active solids treatment process.

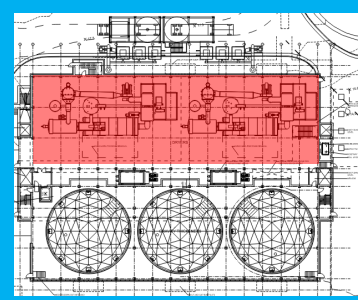
- Design demolition of two (2) of five (5) GTs
- Three (3) GTs must be protected and remain fully operational during construction
 - Existing Facility Upgrades is rehabilitating and adding domed covers to these three (3) units
 - Collaborate with CMAR to develop comprehensive maintenance of plant operations (MOP0) plans
- Evaluate the need for a 4th future GT
- Evaluate odor control needs
- Evaluate maintenance access



Concept layout with four gravity thickeners

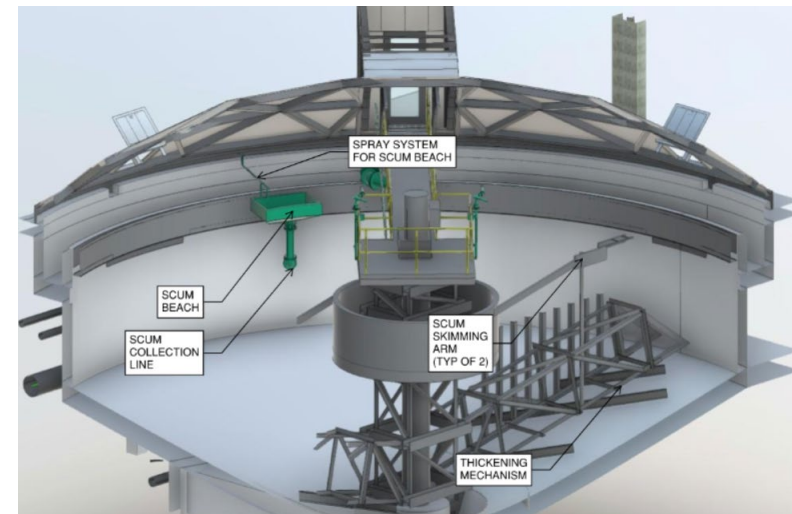


Existing gravity thickeners



Location

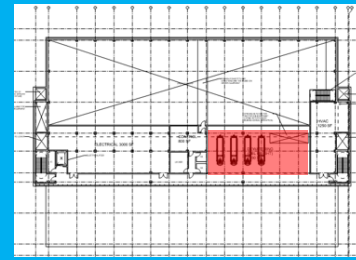
Building C 1st Floor



Section cut of rehabilitated gravity thickener

Dewatering Centrifuges (DCEN)

Dewatering centrifuges reduce the volume of digested sludge prior to thermal drying.



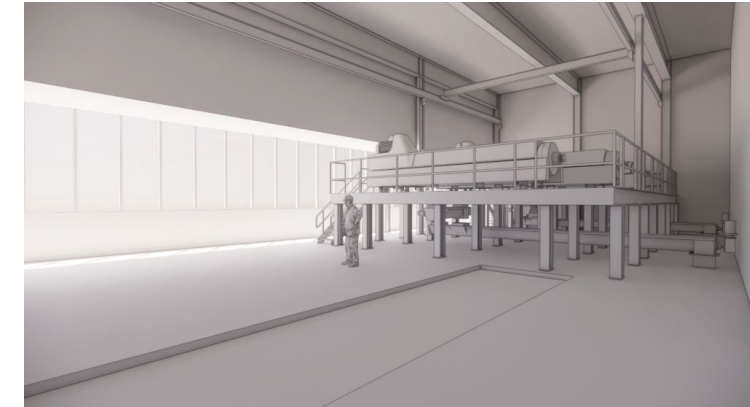
Location

Existing Facility Upgrades Project

- Increase DCEN count from three (3) to four (4) units in Building L

Thermal Drying Facility Project

- Building L
 - Design demolition of old DCENs (3)/relocation of new DCEN (1)
 - Design MOPO to run 3 existing DCENS until Bldg. C DCENs are ready to operate
 - Design demolition/relocation of associated sludge EQ tanks & dewatered centrate conveyance system
- Buildings C and 55
 - Relocate to Building C to centralize process
 - Design three (3) new DCENs
 - Design new sludge equalization tanks and dewatered centrate conveyance system



Dewatering centrifuge room, Building C (conceptual)

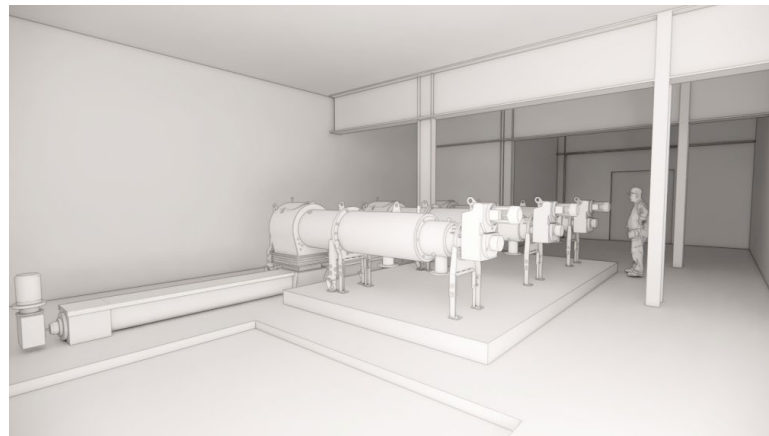


Existing dewatering centrifuges in Building L

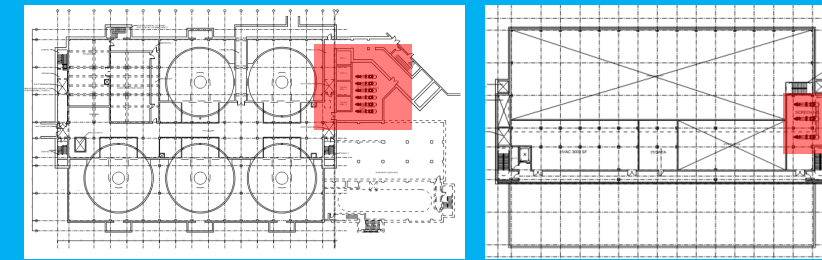
Sludge Screening

Thickened sludge screens are necessary to keep rags out of the digesters.

- Design temporary sludge screening system
 - For use during construction
 - Via early work package (pre-Building 55 demo)
- Design permanent sludge screening system
 - Current concept: Screens (Building C), Wet wells & pumps below grade/design flood elevation
 - Evaluate wet well/pump location alternatives (re: **Climate Risk**)



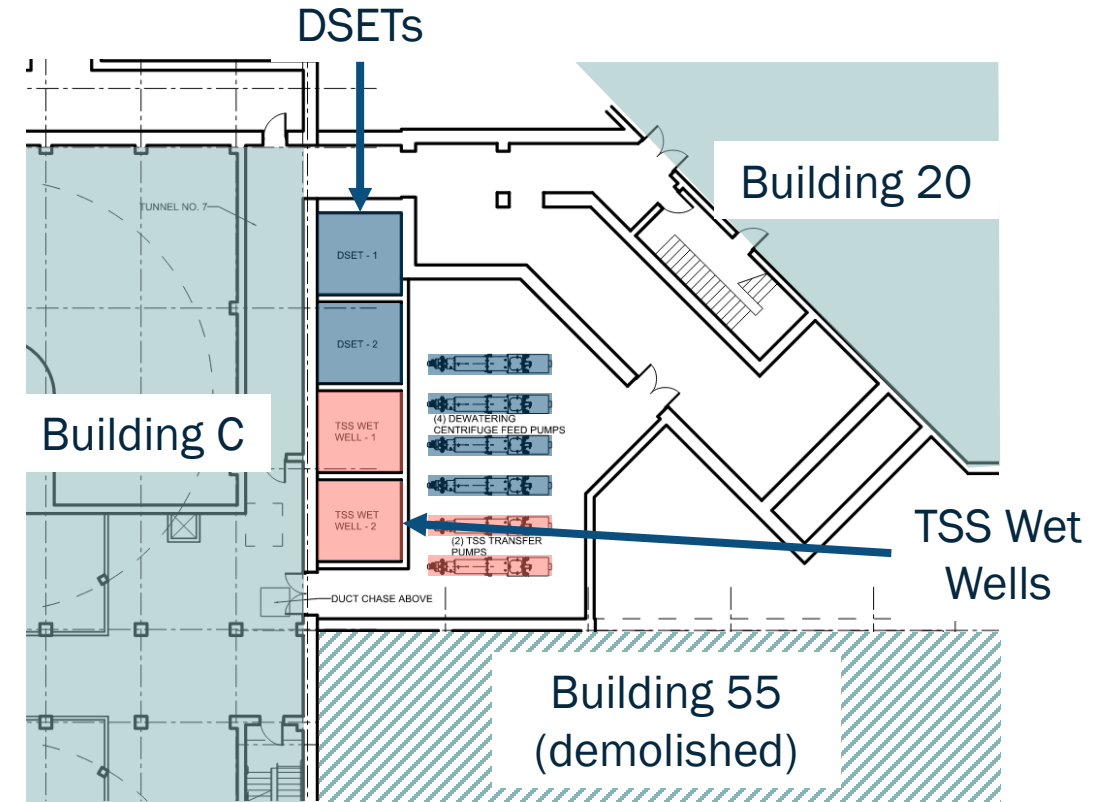
Conceptual rendering of sludge screens in Building C



Location

Building C Basement

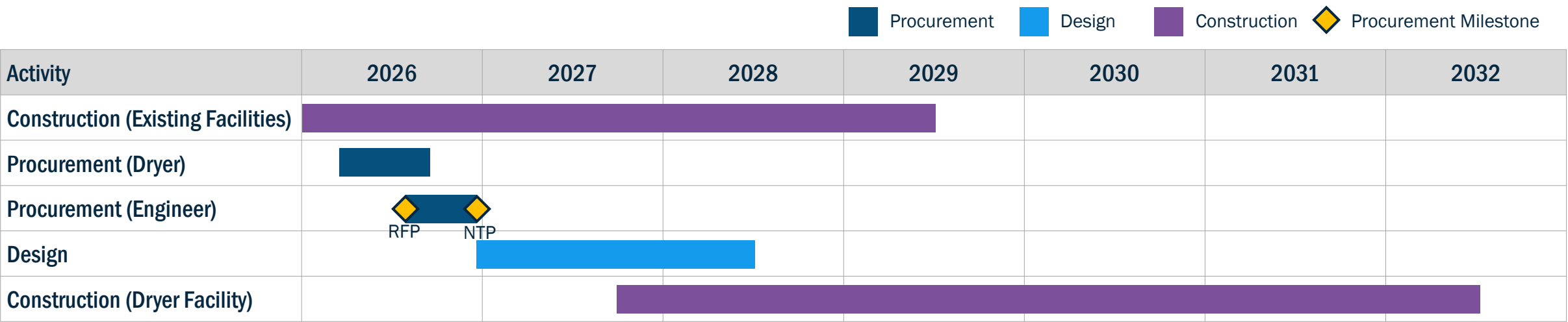
Building C 3rd Floor



Conceptual layout of TSS wet wells in expanded basement gallery

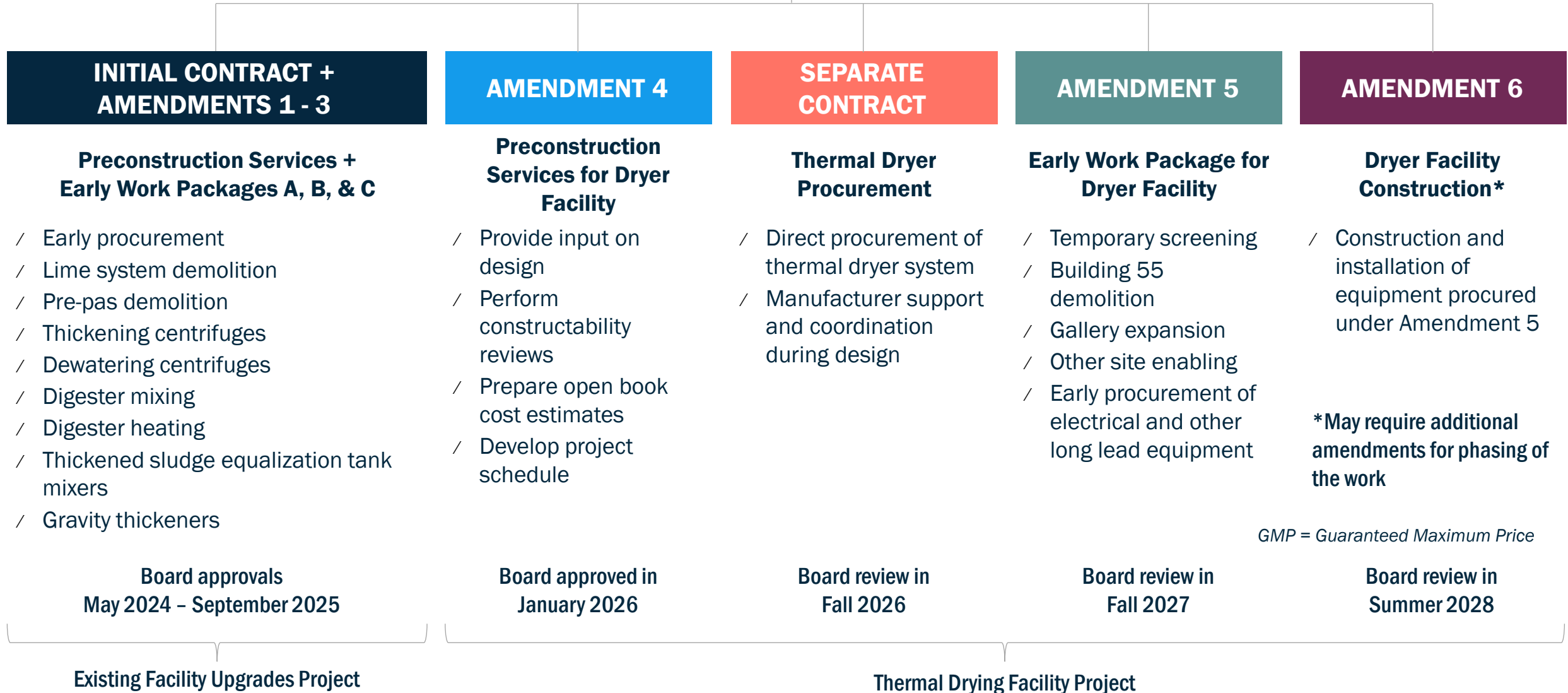
Anticipated Biosolids Diversification Project Schedule

The Existing Facility Upgrades are currently underway, with construction of the Thermal Dryer Facility anticipated for 2027 through 2032.



The schedule dates are approximate and are non-binding. They are provided for Respondents' information only.

Biosolids Diversification Program GMP



GMP = Guaranteed Maximum Price

*May require additional amendments for phasing of the work

All amendments require Board review and approval

Anticipated Scope of Services

The scope of services is divided into two phases that align with the CMAR's scope.

Phase I Preconstruction Services

- Project familiarization and validation
- Site specific investigations
- Existing condition assessment
- Design development
- Milestone design reviews and workshops
- Value engineering, constructability, and packaging reviews
- Equipment pre-purchase identification
- Maintenance of plant operations planning
- Permitting and regulatory coordination services
- CMAR and dryer manufacturer coordination
- Risk identification
- Project meetings and workshops
- Schedule and cost management

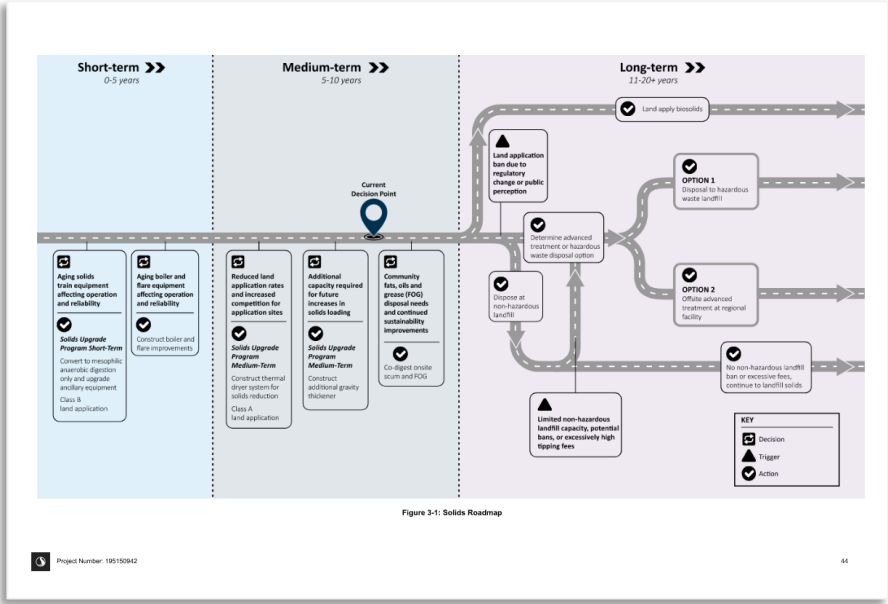
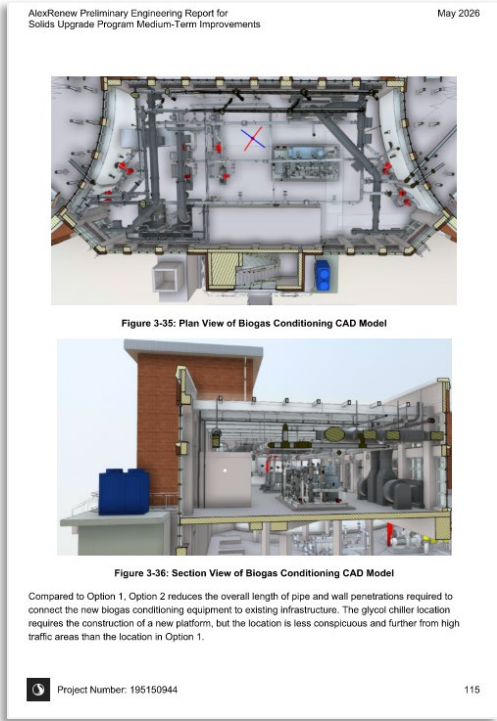
Phase II Construction Services

- Engineering services during construction
- Review submittals, RFIs, MOPO plans, and startup and commissioning plans
- Update contract drawings
- Support change management process
- Update documents for Owner's operation of the equipment and facility
- Owner training
- Progress meetings and site visits
- Schedule and cost management
- RE&I services may be added in a future amendment

See Attachment D to the RFP for a draft scope of services

Reference Documents

AlexRenew provided three documents for additional context on the existing systems and preliminary design. Request access following the instructions provided in the RFP.



Draft Preliminary
Engineering Report
May 2026

AlexRenew Solids Roadmap
May 2025

Conceptual Renderings
June 2026

Proposal Requirements

The evaluation criteria for the RFP is focused around identifying a Respondent who can support AlexRenew in its organizational and program goals with a team that aligns with AlexRenew's Project Delivery Team goals.

Project Delivery Team Organization

- **Organization chart**
- **Resumes** – up to ten (10) resumes for the individuals the Respondent considers the most critical
- **Narrative** – explain the project team structure and people, what you need from AlexRenew, and why this project

60 points

Related Project Experience

- Three (3) reference projects

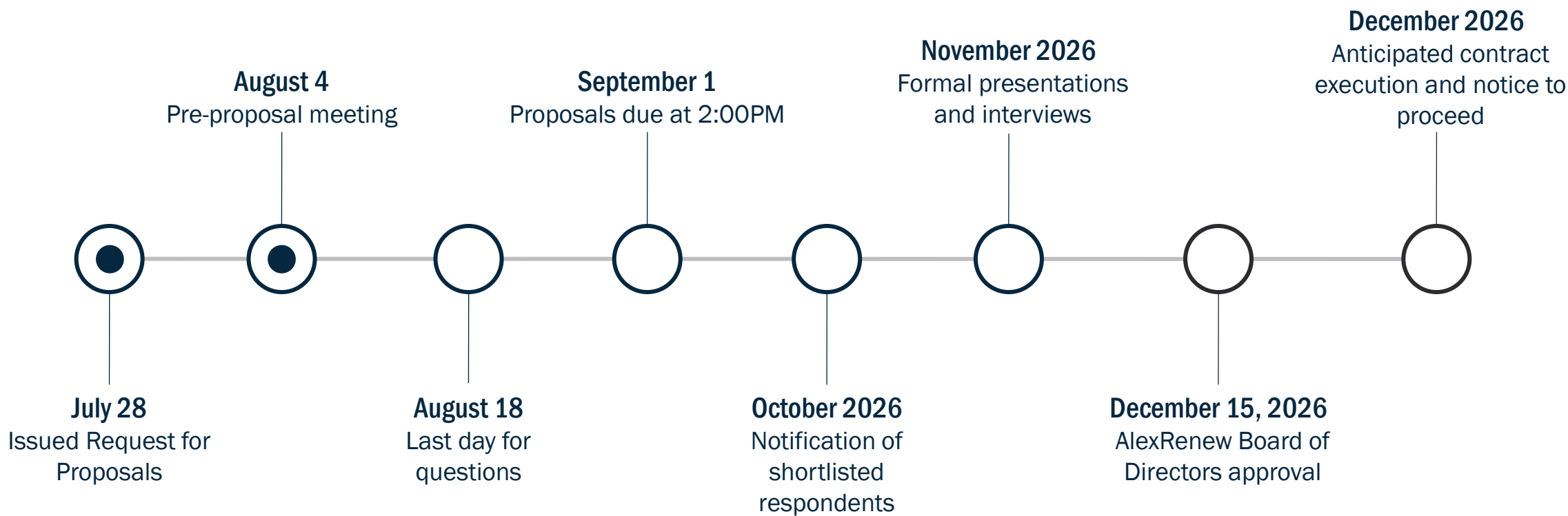
40 points

Resident Engineering and Inspection Services Experience

- Description of internal capabilities to provide RE&I services

Not evaluated

Procurement Timeline





Project Delivery Team Goals

Leadership | Partnership | Experience



Today's Site Tour

All tour participants must sign the liability and media release form available on the table across from the elevators.



Environmental Center

1

Building L

2

Building C

3

Building 55

1

2

3

