



Preparing for a Water Treatment Plant

Town of Long Harbour Case Study

2017 Clean and Safe Drinking Water Workshop



Keith Bartlett, P.Eng. SNC-Lavalin Inc
709-368-0118 Keith.Bartlett@snclavalin.com



AGENDA

Introduction and Presentation Road Map

Agenda

- › Introduction and summary
- › Review of Long Harbour WTP Project
- › Lessons Learned
- › Preparing for a WTP Project
- › Questions



The background of the slide is a composite image. On the left, there is a blue-tinted, semi-transparent overlay with a fine grid pattern. Within this overlay, a Siemens handheld device is visible, showing a green LCD screen with some illegible text and several buttons below it. To the right of the overlay, the background shows a blurred industrial scene with a prominent red component, possibly part of a machine or engine, and a steering wheel or control knob. The overall composition is modern and technical.

Review of Long Harbour WTP Project



THE PROBLEM

The Problem

Water Quality

- › DOC
- › Turbidity
- › Colour
- › pH
- › Langelier Index
- › DBP



HAA & Langelier Index Summary


 Department of Environment & Conservation
 Water Resources Management Division

HAA's Summary for Public Water Supplies in Newfoundland and Labrador

	HAA Average (µg/L)	Average Type	Total Samples Collected	Last Season Sampled
Community Name:	Long Harbour-Mount Arlington Heights			
Service Area:	Long Harbour-Mount Arlington Heights			
Source Name:	Shingle Pond and/or Trout Pond (2 Intakes)			
	183.13	Running	27	Spring 2013
	222.60	Running	26	Winter 2013
	182.70	Running	25	Fall 2012
	155.73	Running	24	Summer 2012
	127.82	Running	23	Spring 2012
	104.13	Running	22	Winter 2012
	117.28	Running	21	Fall 2011
	113.90	Running	20	Summer 2011
	111.32	Running	19	Spring 2011
	92.68	Running	18	Winter 2011
	28.98	Running	17	Fall 2010
	28.98	Running	16	Summer 2010
	32.50	Running	15	Spring 2010
	38.00	Running	14	Winter 2010
	76.50	Running	13	Fall 2009
	76.50	Running	12	Summer 2009
	78.50	Running	11	Spring 2009
	98.00	Running	10	Winter 2009
	76.67	Simple	9	Fall 2008
	115.00	Simple	8	Summer 2008

	Sample Date	Langelier Index
COMMUNITY NAME:	Long Harbour-Mount Arlington Heights	
SERVICE AREA:	Long Harbour-Mount Arlington Heights	
SOURCE NAME:	Shingle Pond and/or Trout Pond (2 Intakes)	
	Jan 28, 2013	-7.09
	Sep 26, 2012	-5.48
	Dec 06, 2011	-4.99
	Jun 09, 2011	-6.14
	Nov 17, 2010	-4.14
	May 31, 2010	-6.24
	Dec 15, 2009	-4.70
	Jun 04, 2009	-5.38
	Nov 12, 2008	-4.56
	May 28, 2008	-6.72
	Jan 17, 2008	-4.14
	Aug 29, 2007	-5.93
	Jan 22, 2007	-5.60
	Aug 01, 2006	-6.76
	Jan 24, 2006	-6.86
	Sep 06, 2005	-5.88
	Nov 04, 2004	-6.76
	Jun 03, 2004	-6.01
	Oct 31, 2003	-6.44
	May 15, 2003	-4.04
	May 14, 2003	-5.72
	May 23, 2002	-5.32
	Oct 31, 2001	-4.70
	Jun 26, 2001	-6.26
	Feb 21, 2001	-4.98




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Existing Equipment

Water System

- › Two Surface Water Sources
 - › Trout Pond
 - › Shingle Pond

Treatment System

- › Screens
- › Pressure Filters
- › Cl₂ Gas Disinfection (Flow Proportional)



Town Goals

- › Identified improved drinking water quality as a top priority
- › System to produce water that meets Guidelines for Canadian Drinking Water Quality
- › In 2009 Town received funding to undertake an EDI & prepare Design-Build TOR for WTP



The background of the slide is a photograph of industrial machinery from a water treatment plant, overlaid with a semi-transparent blue grid pattern. The machinery includes large metal tanks, pipes, and structural frames. A diagonal cutout in the bottom right corner reveals the original, unfiltered photograph of the equipment.

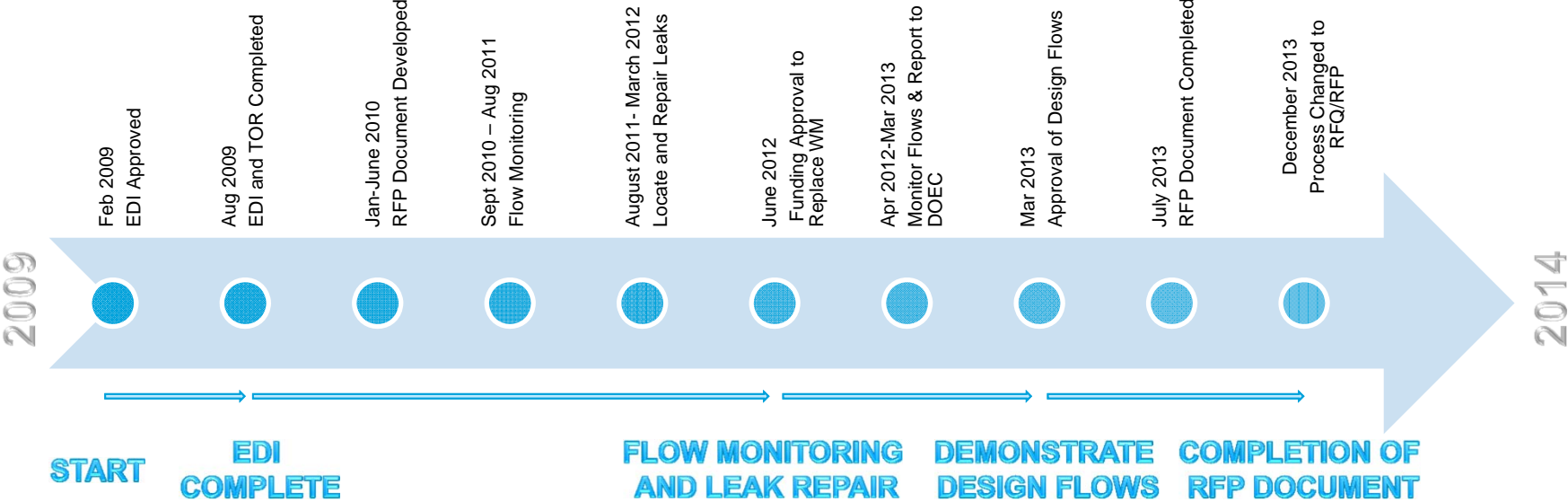
DESIGN-BUILD OF WATER TREATMENT PLANT

Standardized RFQ-RFP process for proponent selection

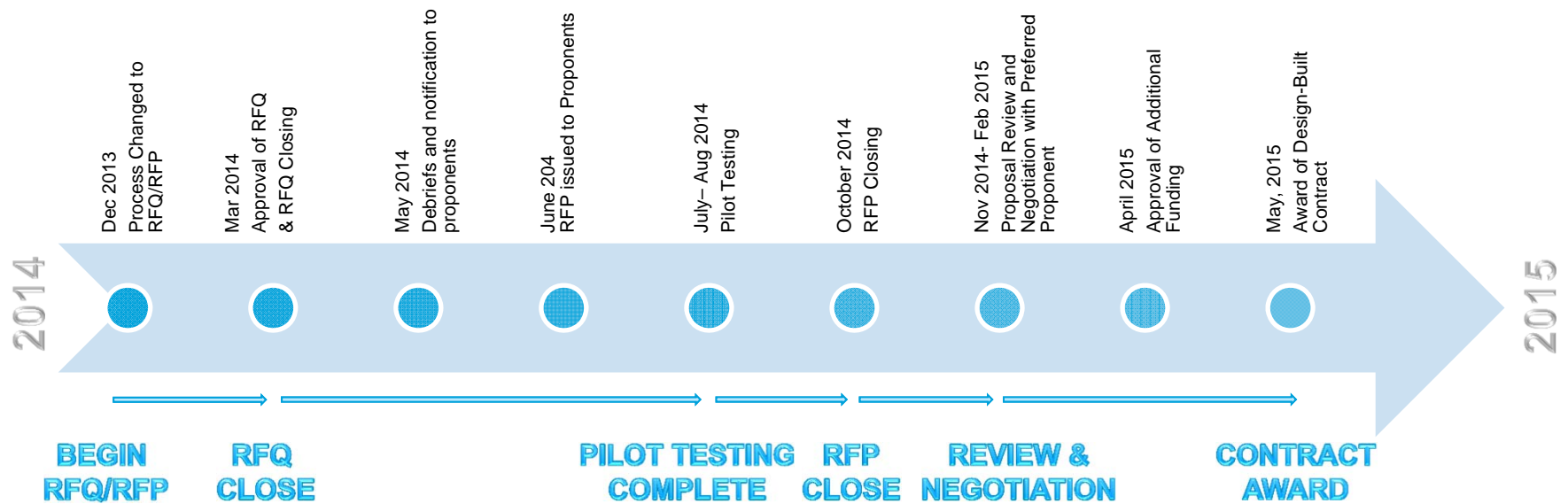
LONG HARBOUR PROCESS



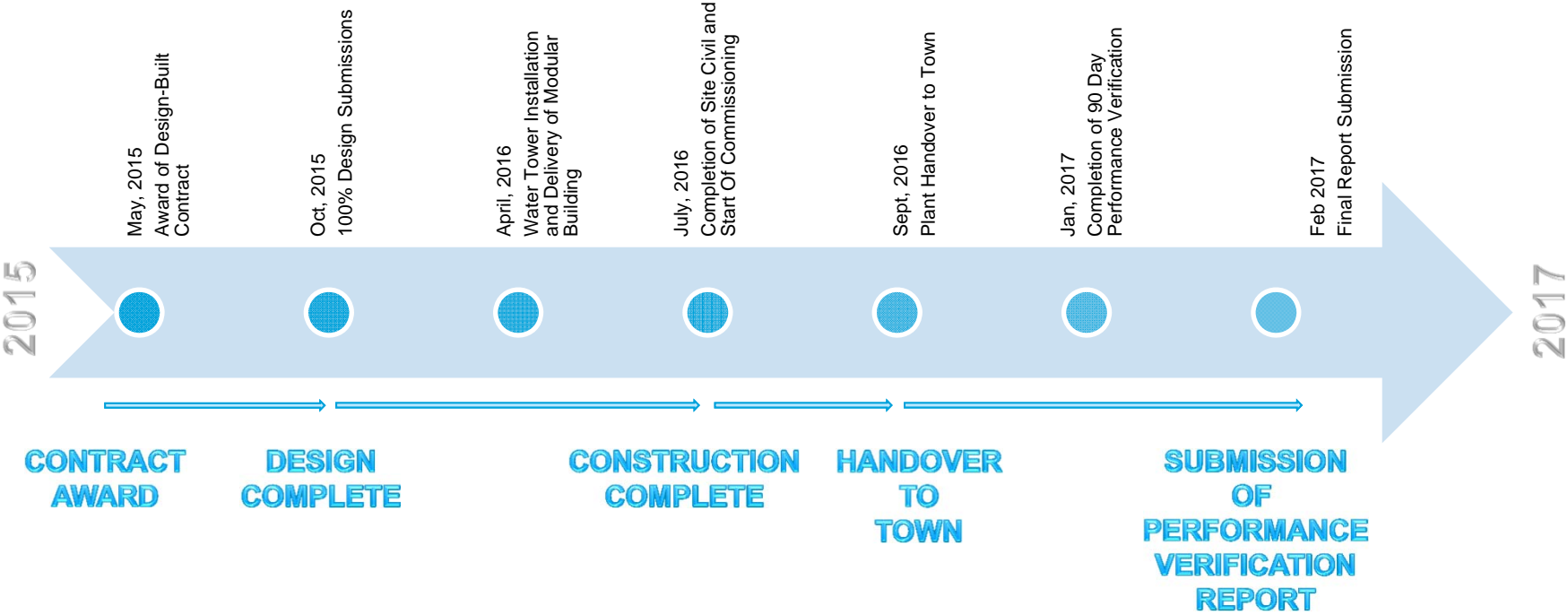
PREPARATION FOR THE RFP PROCESS



RFQ/RFP PROCESS

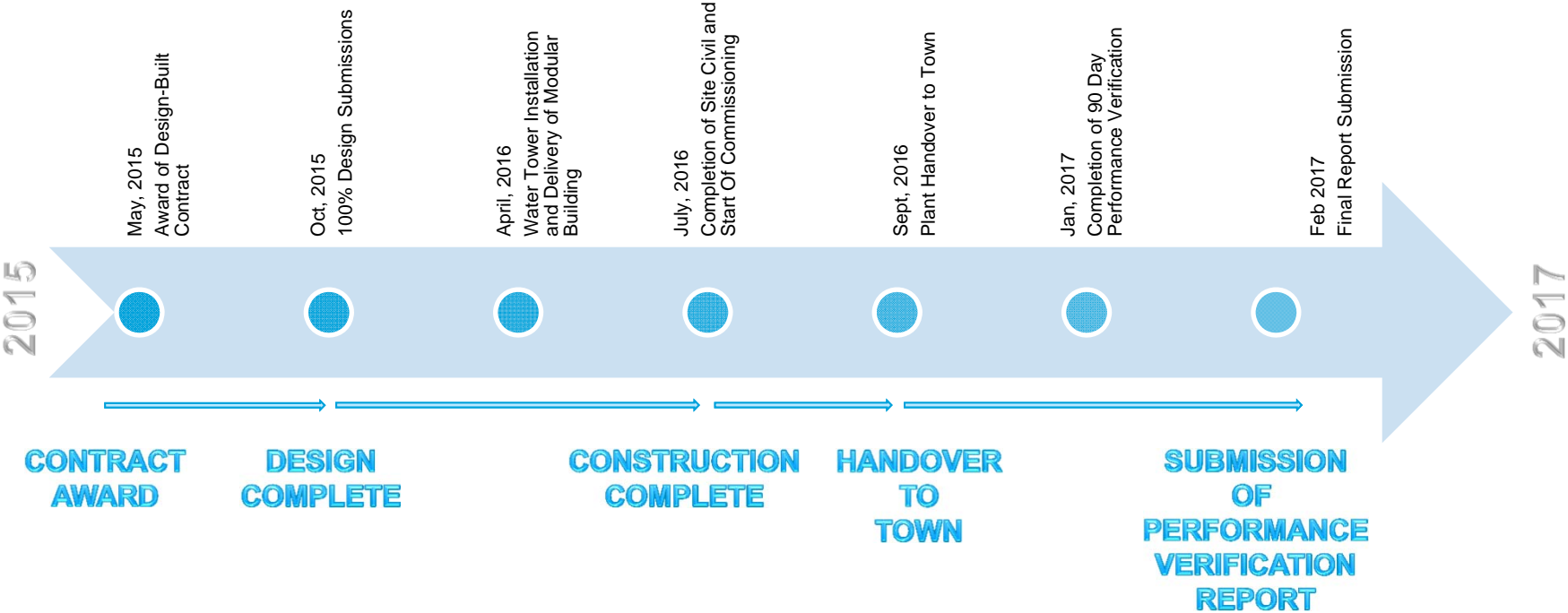


DESIGN-BUILD PROCESS



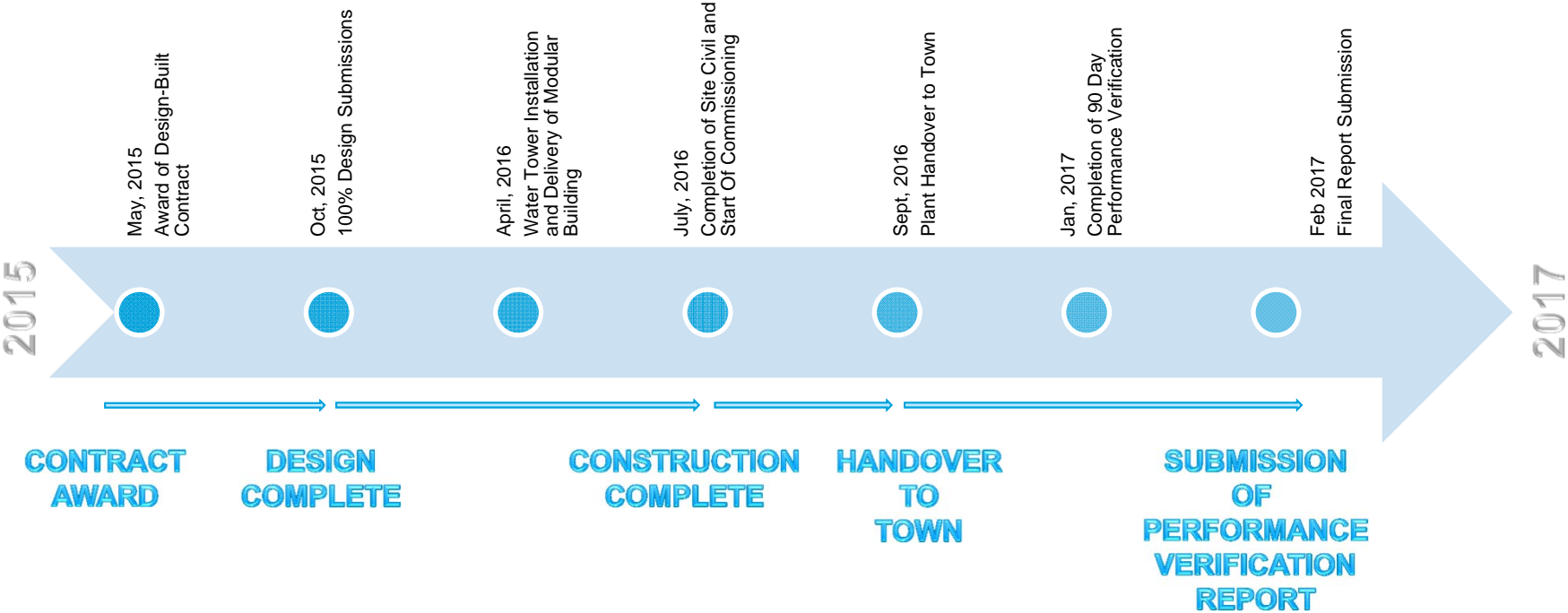


DESIGN-BUILD PROCESS





DESIGN-BUILD PROCESS





PROJECT OVERVIEW

Capital Costs: \$2.6M

Flow Rate (m³/day & 116 USGPM Capacity)

Town Population (design): 298

Operation cost (1st 90 days): \$ 12,094.36

Performance: All Parameters Within Guidelines



The image shows an industrial facility, possibly a refinery or chemical plant, with a large blue-tinted overlay. The overlay is split diagonally from the top-left to the bottom-right. The top-left portion of the overlay is a dark blue with a fine grid pattern, and the bottom-right portion is a lighter, solid blue. The text "LESSONS LEARNED" is written in white, bold, sans-serif capital letters on the dark blue grid background. The background image shows a large, light-colored industrial building with a corrugated metal roof and a door. To the left, there are tall, cylindrical storage tanks with ladders. In the distance, there are hills and a clear blue sky. The overall scene is an industrial landscape.

LESSONS LEARNED

Contributors to Project Success


- › Understanding of Town's complete water distribution system
- › Quality of Information available at RFP Stage
- › Communication Plan
- › Project Execution Plan Anticipating Unknowns
- › Document Management System
- › Access to the proper Technical resources as needed



Proposed Process Improvements

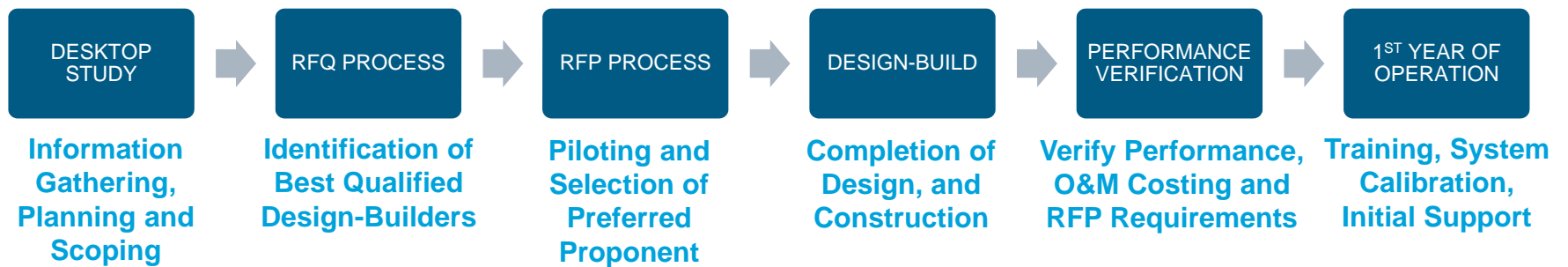
- › Increased focus/detail on sludge management
- › Detailed Plan/Procedures for Power Outages
- › Detailed Source Water Quality Testing for 1 Year in Advance of RFP
- › Engineering Study
- › Existing system As-Builts
- › Detailed Operator Training and support plan



The image shows the interior of a water treatment plant. On the right side, there is a mezzanine level with bright yellow safety railings. Below the railings, there are various pieces of industrial machinery, including large blue cabinets with control panels. One of the panels has the brand name 'ACRYEN' visible. The background is filled with a complex network of pipes, valves, and electrical conduits. The overall scene is industrial and technical. The text 'PREPARING FOR A WATER TREATMENT PLANT' is overlaid on the left side of the image in a white, sans-serif font.

PREPARING FOR A WATER TREATMENT PLANT

PROCESS FOR DESIGN-BUILD OF A WATER TREATMENT PLANT



DESKTOP STUDY

- › Water System Model
- › Review of water supply capacity/quality (As required)
- › Preliminary Tank Sizing (As Required)
- › Budgetary Estimate
- › Legal Surveys
- › Topographical Survey
- › Geotechnical Report
- › Water Quality Monitoring/Testing
- › Theoretical Flows Vs Actual
- › Leak Detection & Repair
- › Confirmation of Design Flows
- › Water Conservation



RFQ PROCESS

- › Confirm General Owner's Statement of Requirements
- › Preparation of RFQ Document detailing:
 - › Design Flows
 - › Water Quality
 - › Design Standard
 - › Selection Procedure
- › Identify Proponents Most Qualified for Design Build (limit to 3-4)



RFP PROCESS

- › Detailed Request for Proposals Document Including
 - › Detailed Owner's Statement of Requirements
 - › Water Quality Data
 - › Design Standard
 - › Evaluation Criteria/Ranking Formulas
- › Piloting
- › 30% Design Submission (By Proponents)
- › Proposal Review & Evaluation With Owner's Advisor
- › Negotiation with Preferred Proponent
- › Award of Design-Build Contract



DESIGN-BUILD PROCESS

- › Design Submissions – Review with Owner’s Advisor
 - › 60%
 - › 90%
 - › 100%
- › Shop Drawing Submission for Review by Owner’s Advisor
- › Construction
- › Start-up
- › Commissioning
- › Hand-over



PERFORMANCE VERIFICATION

- › Set period for tracking of quality objectives and costing
- › Ongoing Training for Town Staff
- › Ongoing support for Town staff during operation
- › Final Reporting
- › Performance Verification Holdback
- › Generation of final deficiency list



First Year of Operations

- › Continuation of tracking of quality objectives and costing
- › Pre-defined budget for support for Town staff during operation
- › Completion of Deficiencies
- › Project Closeout





QUESTIONS?

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Values that guide us

Our values keep us anchored and on track. They speak to how we run our business, how we express ourselves as a group, and how we engage with our stakeholders and inspire their trust.

Teamwork & excellence

We're innovative, collaborative, competent and visionary.

Customer focus

Our business exists to serve and add long-term value to our customers' organizations.

Strong investor return

We seek to reward our investors' trust by delivering competitive returns.

Health & safety, security and environment

We have a responsibility to protect everyone who comes into contact with our organization and the environment we work in.

Ethics & compliance

We're committed to ethical business.

Respect

Our actions consistently demonstrate respect toward our stakeholders.

