

A Surface Water Intake Replacement Story: Challenges and Triumphs

Presentation to: New Jersey Water Association Date: October 21st, 2021

1

CONTENTS

01. Project Background

03. Project Challenges

05. Construction

07. Summary **02.** What is Design-Build?

04. Project Deliverables

06. Start Up

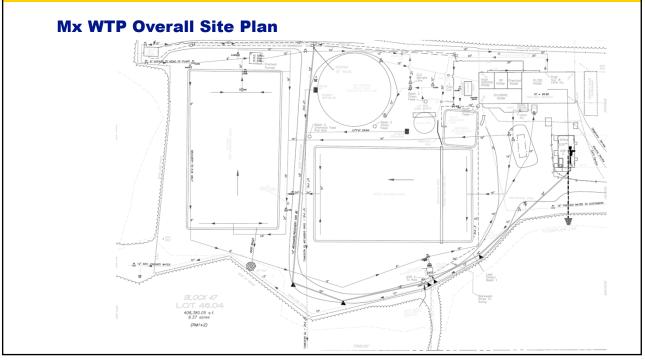
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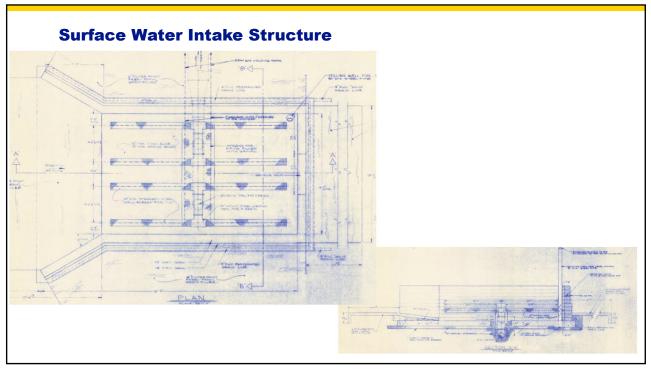


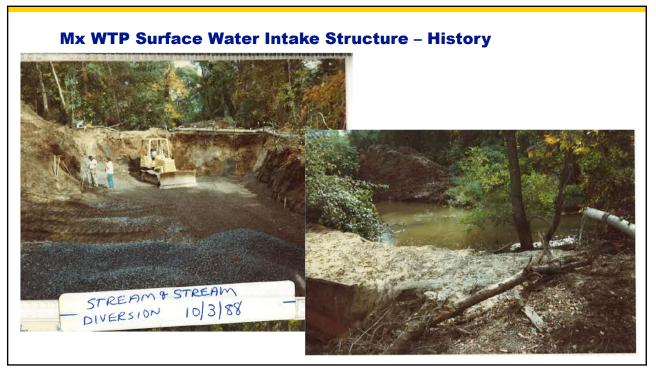
- 8.0 MGD combined surface water and groundwater treatment plant
- Surface water is supplied by the Matchaponix Brook and is treated via a conventional treatment scheme:
 - Pre-treatment (polyaluminum chloride, potassium permanganate, carbon, lime)
 - Flocculation
 - Sedimentation
 - -Gravity filter filtration
 - Post-treatment (lime, sodium hypochlorite)
- Groundwater is supplied by two on-site deep aquifer ASR^{*} wells that feed directly to the Mx WTP's 3.0 MG finished water storage tank
 - * ASR = aquifer storage and recovery

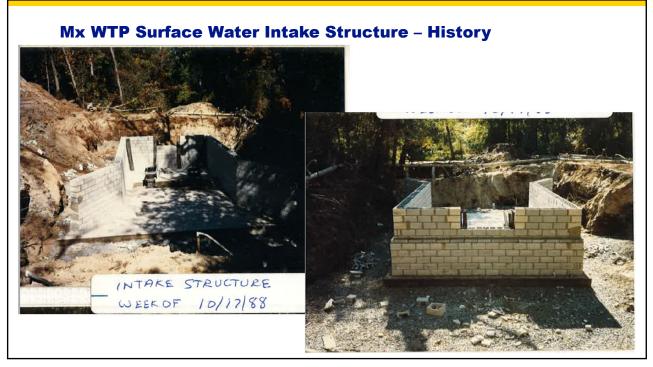
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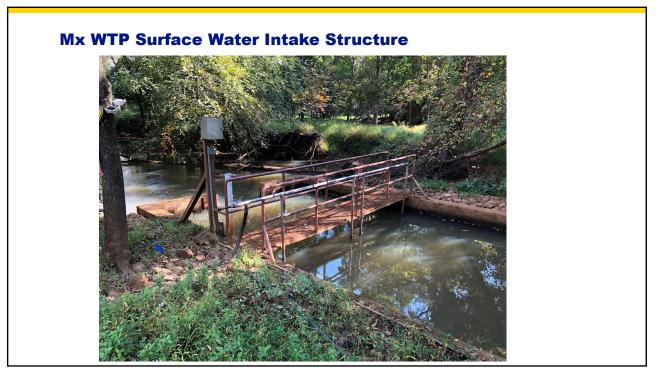


















Project Tasks

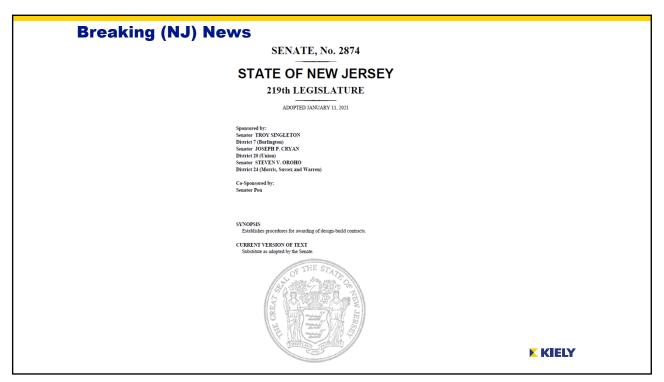
- Institute design-build (D-B) solution
- Improve safety aspects of screen cleaning and maintenance
- Ensure/reinforce 8.0 MGD supply capability
- Provide better method with which to remove sediment from intake structure
- Create remote operation for cleaning of screens

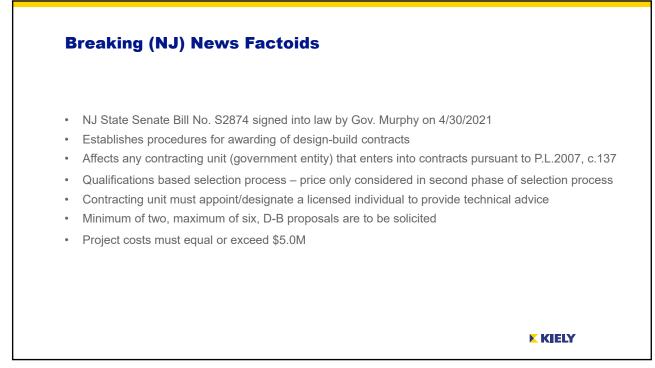
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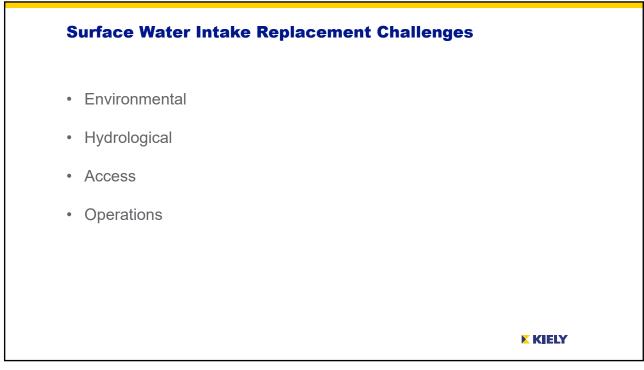


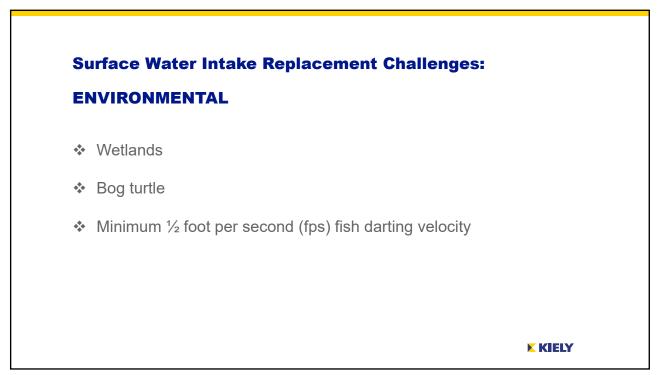


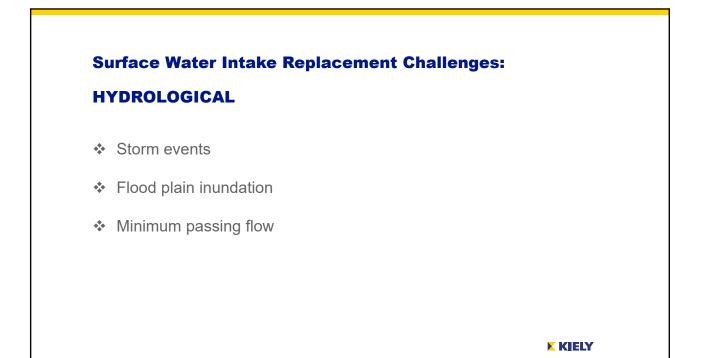


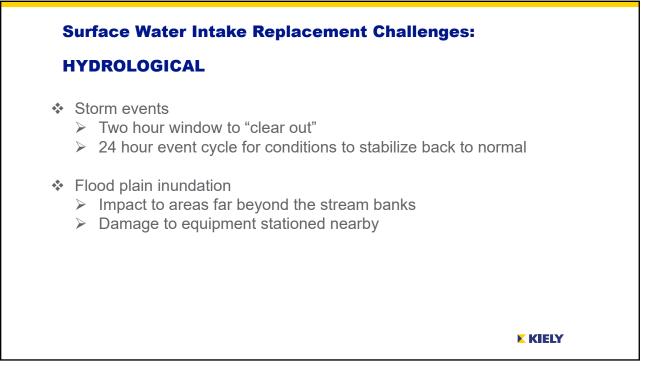




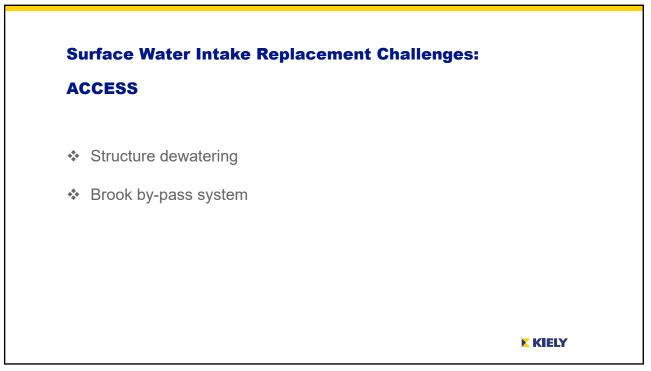






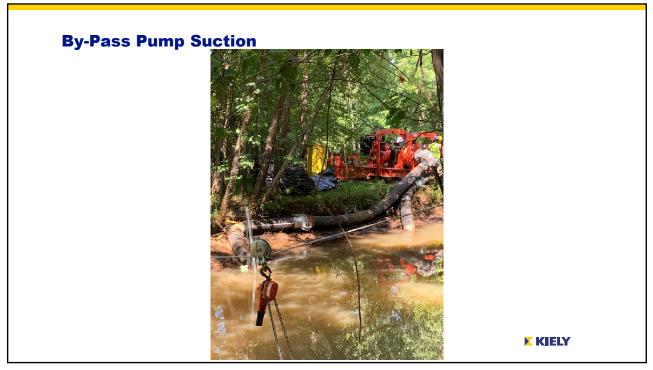


Timestamp	STREAM	STREAM FLOW(MGD)	Contractor and the second	STREAM	Maximum Recorded Flows 2017		
12-Jul-17 00:00:00		4.944335938					
12-Jul-17 00:00:00		4.944335938 5.974647522					
12-Jul-17 01:00:00		6.766601563			STREAM FLOW (GPM)	17435.	
12-Jul-17 01:30:00		7.631835938			STREAM FLOW (cfs)	38.832	
12-Jul-17 02:00:00		8.562148094				001002	
12-Jul-17 02:30:00	3.338249922	9.630859375	6688.096788	14.8955385			
12-Jul-17 06:30:00	4.983000278	18.84472656	13086.61567	29.14613735			
13-Jul-17 00:30:00	6.153437614	4.977539063	3456.624349	7.698495209			
NJDEP-BW	/A Permi	t Minim	um Pas		cfs = 3,276 gpm		

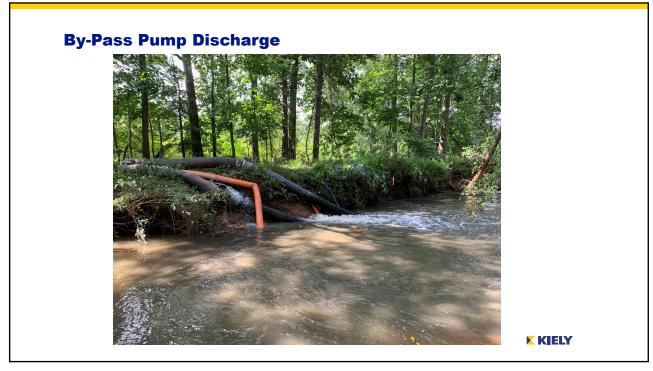




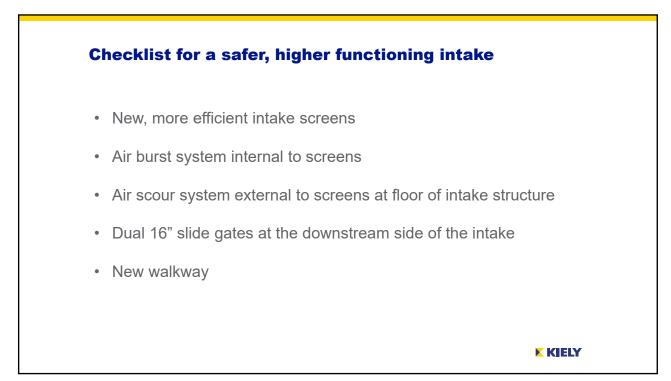


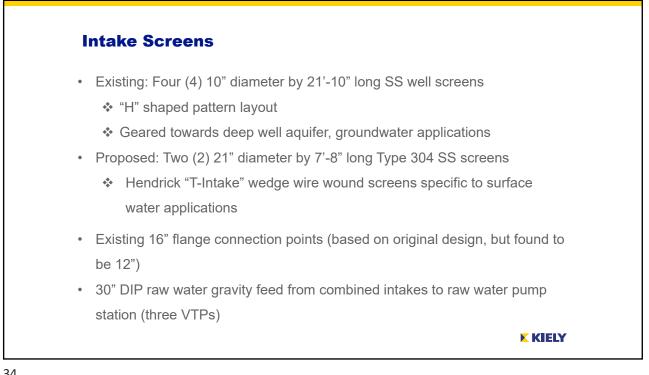


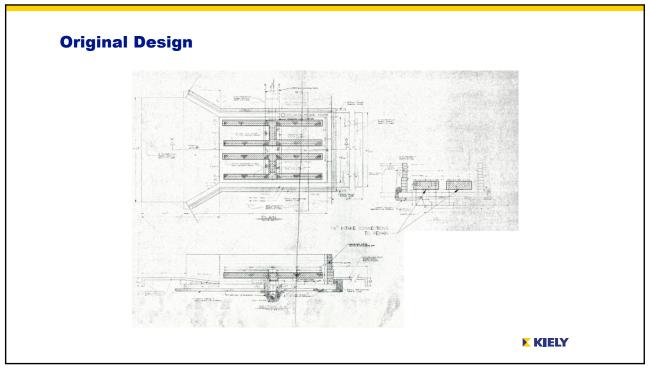




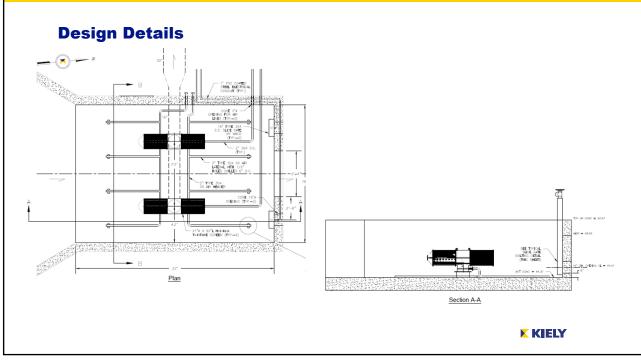


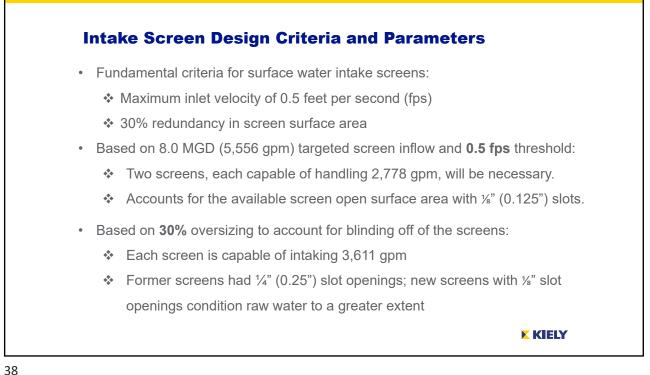


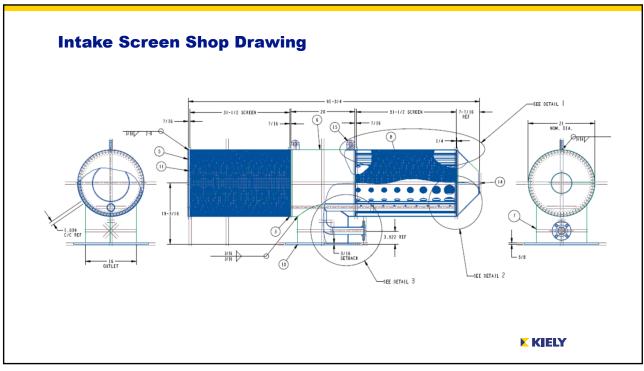


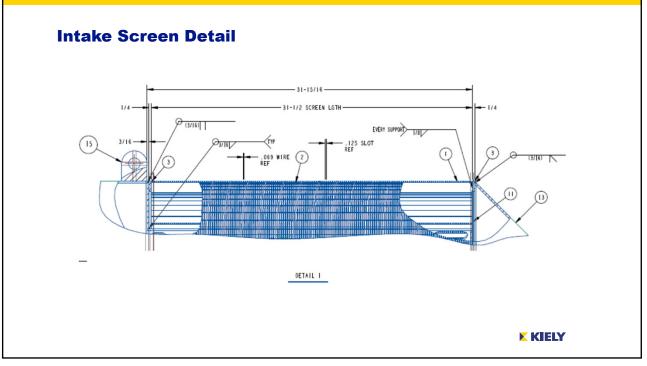




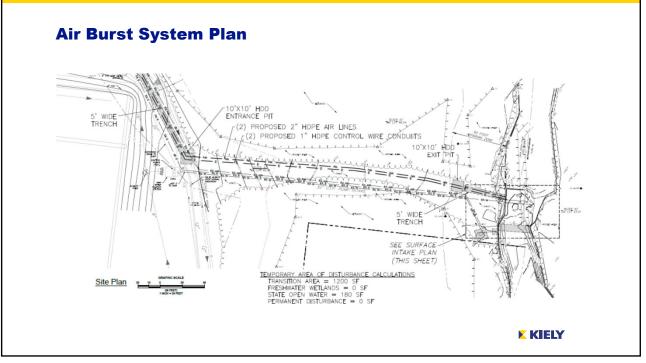










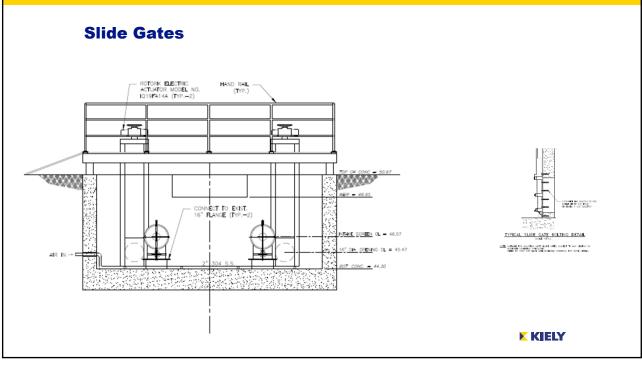


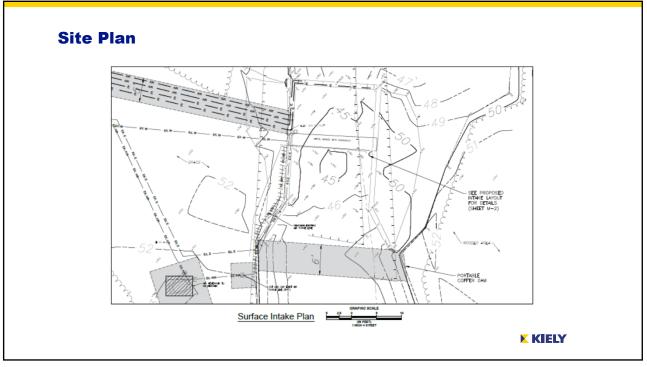
Air Burst System Delivery System

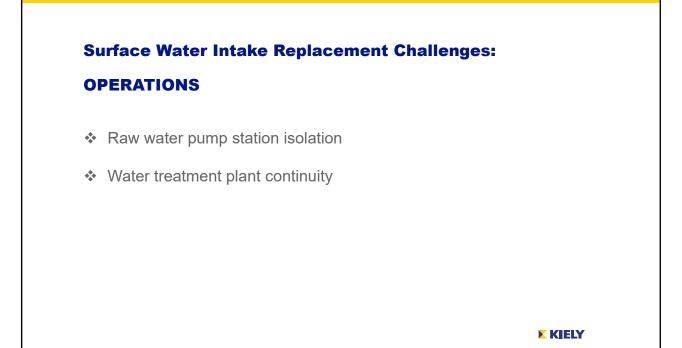


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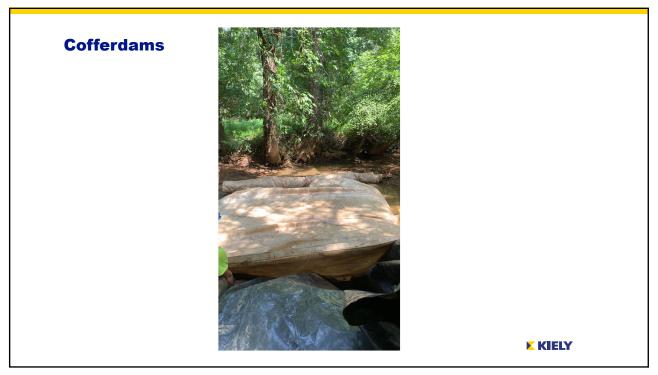




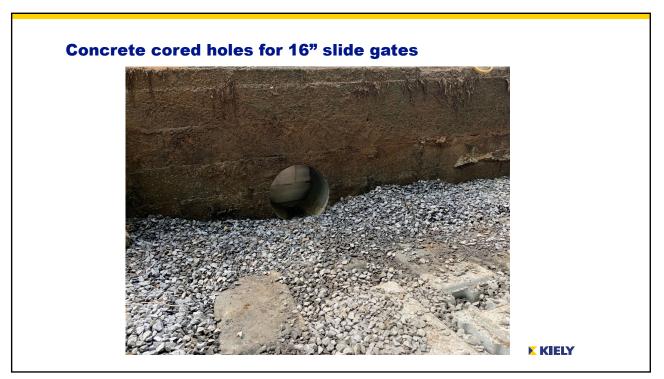
Central Construction Facets

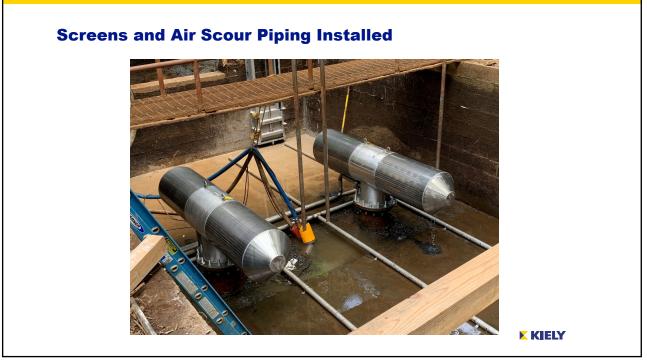
- Cofferdams upstream and downstream
 - Deployment
 - Maintenance
- Concrete coring of existing reinforced 16" concrete wall
- HDDing of dual 2" air supply and dual 1" electrical HDPE lines
- Install air burst supply and storage system
- Install two (2) new intake screens
- Install two (2) 16" slide gates
- Install 2" SS air scour header system
- Install articulated concrete mat downstream of intake structure

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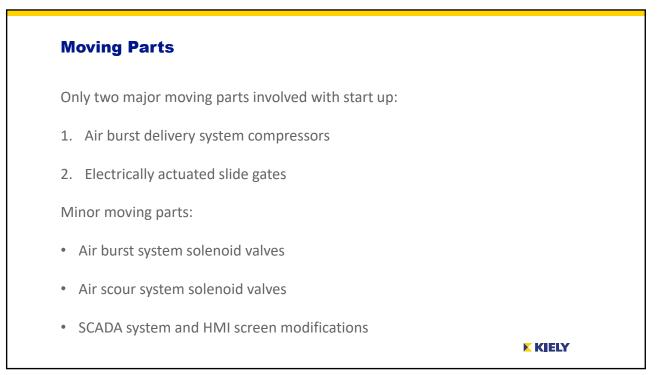




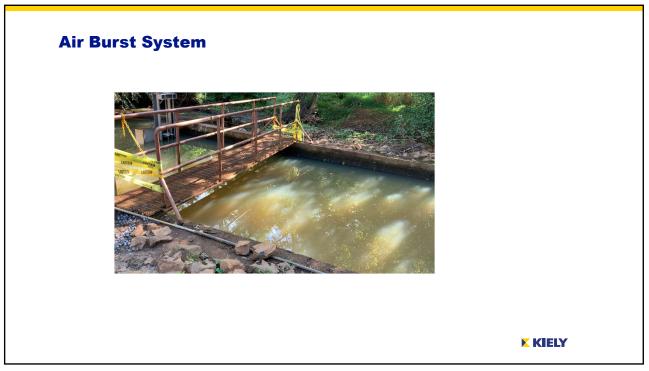


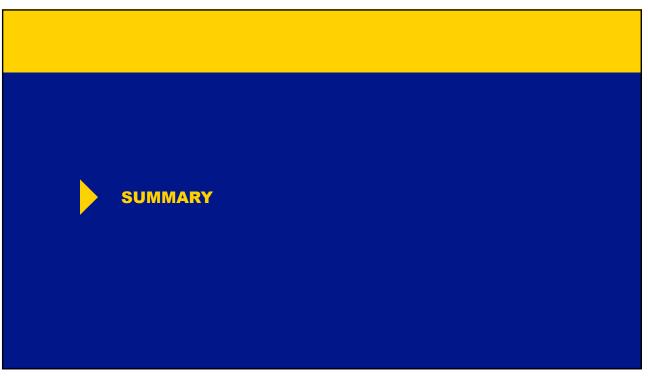












Take Aways

- Advanced project planning imperative i.e.: seasonal challenges
- Communications!
- Understand regulatory constraints
- Owner and designer/builder partnership critical
- Project delivered on time, on budget, and on expectation

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