

Kentucky Lock Project Update Inland Waterways Users Board Meeting No. 93

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Kentucky Lock Addition

Bottom Line Up Front

- **Downstream Cofferdam Construction**
 - ▶ High water in December through March has impacted construction
- **Downstream Lock Excavation contract is on schedule**
- **Economic Update and Post Authorization Change Report are undergoing policy review by HQ and Division.**
- **Downstream Lock Monoliths award on track for September 2020**

Kentucky Lock Project Overview

Bridges Superstructures - \$104M
Completed Jul 2014

Bridges Substructures - \$44M
Completed Mar 2006

D/S Lock Excavation - \$54.8M
Award – Sept. 2018

D/S Cofferdam - \$67.1M
Award - Sept. 2016

U/S Miter Gate Fab. - \$5.6M
Completed Dec 2016

Upstream Cofferdam - \$17M
Completed Nov 2006

D/S Lock Monoliths
Award – Sept. 2020

Site, Demolition, &
Utilities - \$4.6M
Completed Mar 2019

Approach Walls
Award – Sept. 2021

Upstream Lock - \$110M
Completed Feb 2017

Contract Legend

Completed

Current

Future

Lock & Associated Facilities	\$1,006M
TVA Transmission Towers	13M
P & L Railroad	97M
Hwy 62 and other roadways	100M
Total	\$1,216M

\$534.1M Obl thru Sep 2019 = 40% complete



10th Shell

Downstream Cofferdam Construction



9 Nov – Setting 9th Shell



22 Jan 2020 – High Water

Final concrete shell placement is huge milestone on critical path (Feb. 2, 2020)

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Events:

- Nashville District ACCURATELY and SUCCESSFULLY placed final and 10th concrete shell Sunday, Feb. 2, 2020 at the Kentucky Lock Addition Project on the Tennessee River in Grand Rivers, Ky.

Communication Objectives:

- Downstream Cofferdam Project delayed over month due to high water; placement allows progress on its CRITICAL PATH. Now 73 percent complete.
- TEAMWORK between Corps of Engineers and contractor REDUCED risk, IMPROVED methods and processes.

Activities:

- Crews LOWERED 1.55 million pound shell, heaviest of all 10 shells, onto prepared bedrock streambed within tolerances.

Key Take-Aways:

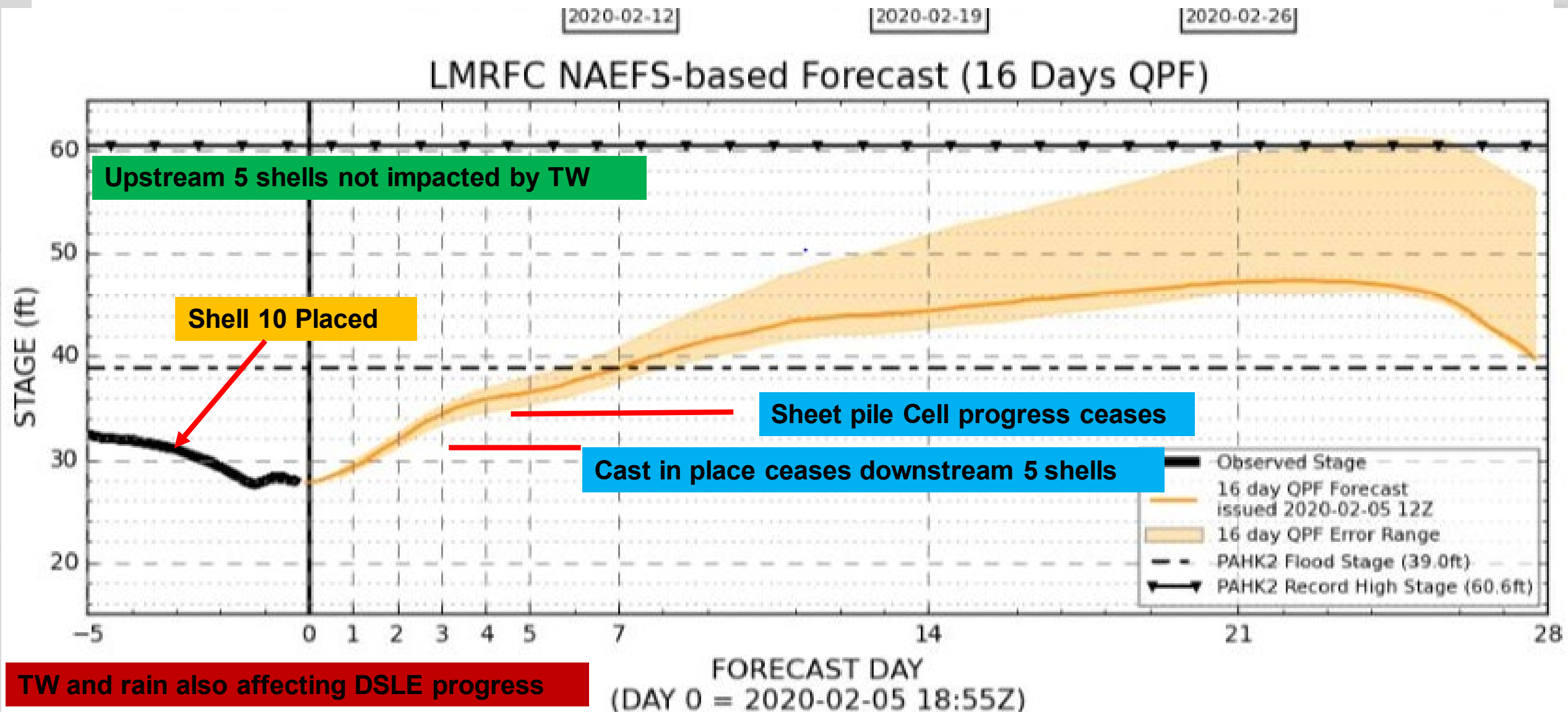
- River levels receded within the allowable range on Saturday night prior to this operation on Super Bowl Sunday, reflecting the DEDICATION of this team to complete this project as soon as possible.
- Placing the last shell DEMONSTRATES the worth of a unique design and construction methods that may be employed on other projects.

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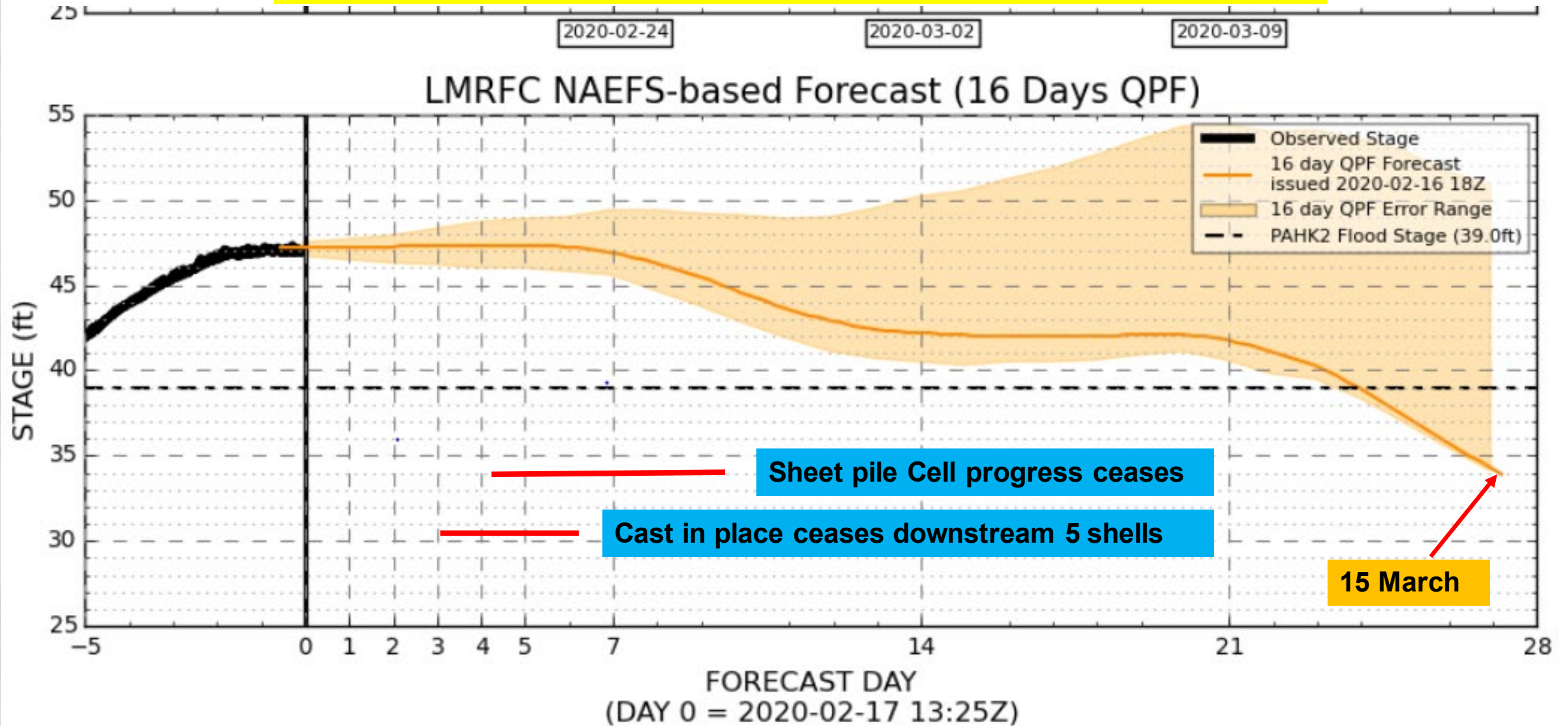
Downstream Cofferdam Critical TW Elevations vs Forecast

5 February 2020 Forecast



Downstream Cofferdam Critical TW Elevations vs Forecast

17 February 2020 Forecast



The shaded areas show probable future river stage based on the present forecast and past forecast skill. The shaded areas capture 2/3 of past forecast errors, centered on the median error.

2 Feb 2020 – Setting last shell (water barely low enough)



6 Feb 2020



7 Feb 2020

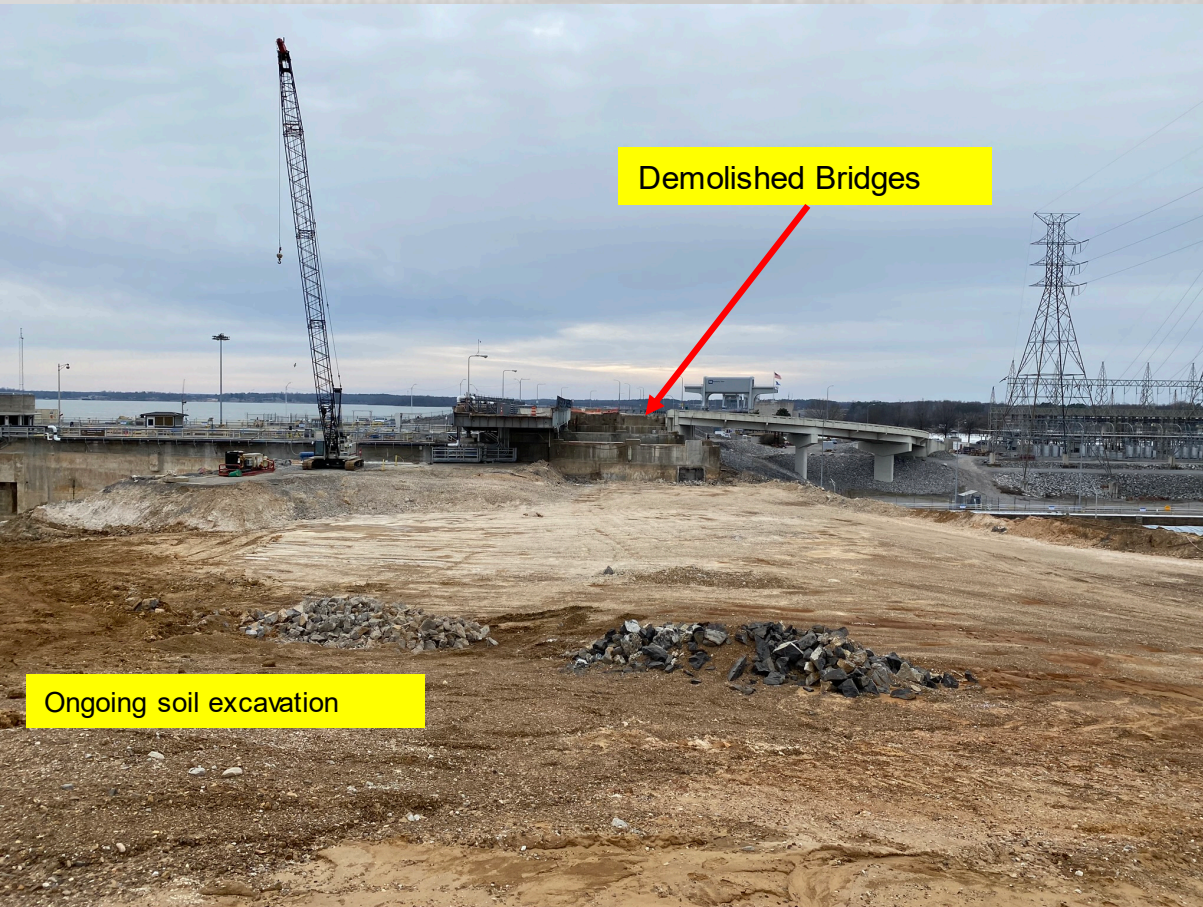


Lower 5 shells under water

18 Feb 2020



Lower 5 shells 18 feet under water



Demolished Bridges

Ongoing soil excavation

22 January 2020

23 November 2019
Aerial

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Downstream Lock Excavation Construction



Ongoing Excavation

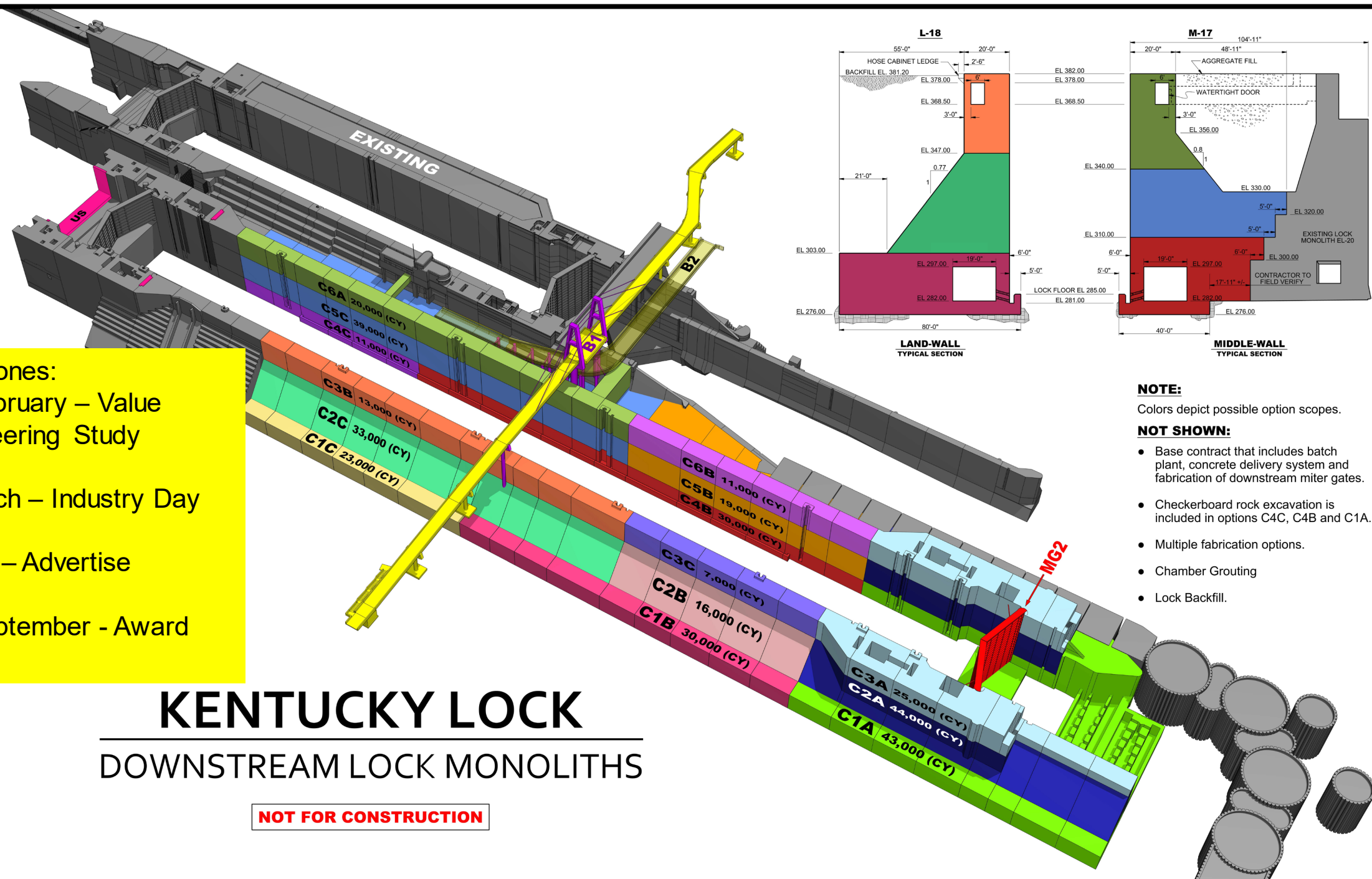
aerial
innovations
SOUTHEAST

Milestones:
24 February – Value Engineering Study
3 March – Industry Day
2 July – Advertise
28 September - Award

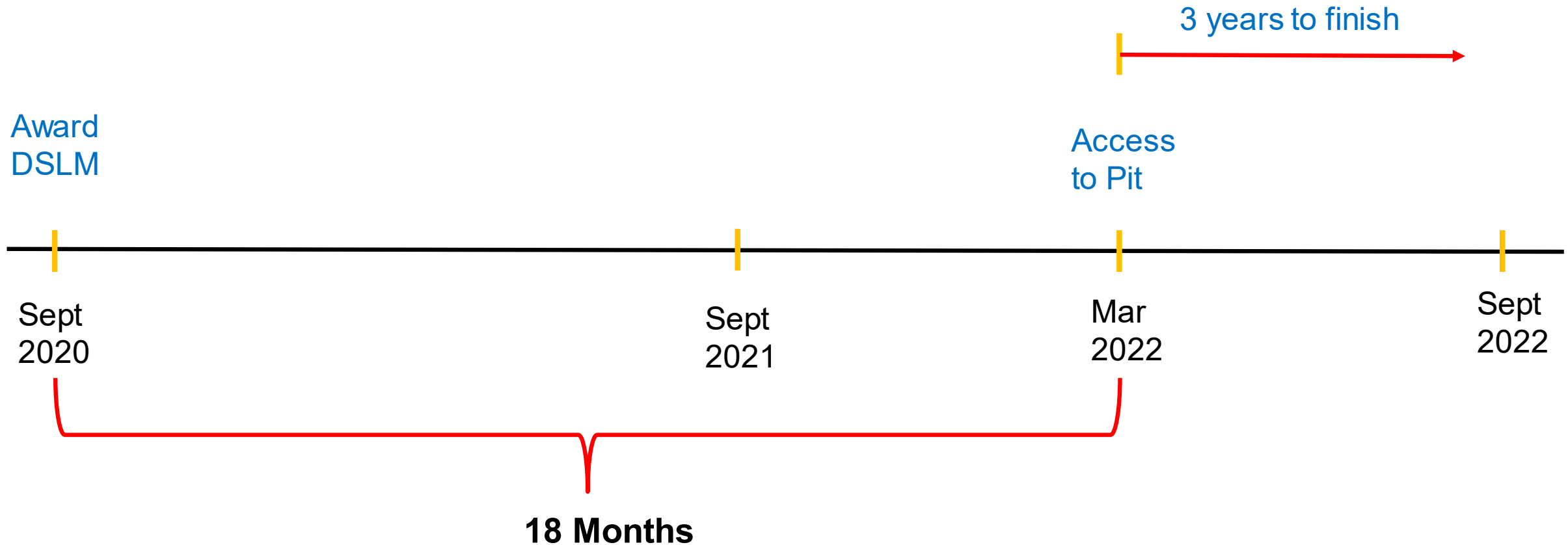
KENTUCKY LOCK

DOWNSTREAM LOCK MONOLITHS

NOT FOR CONSTRUCTION

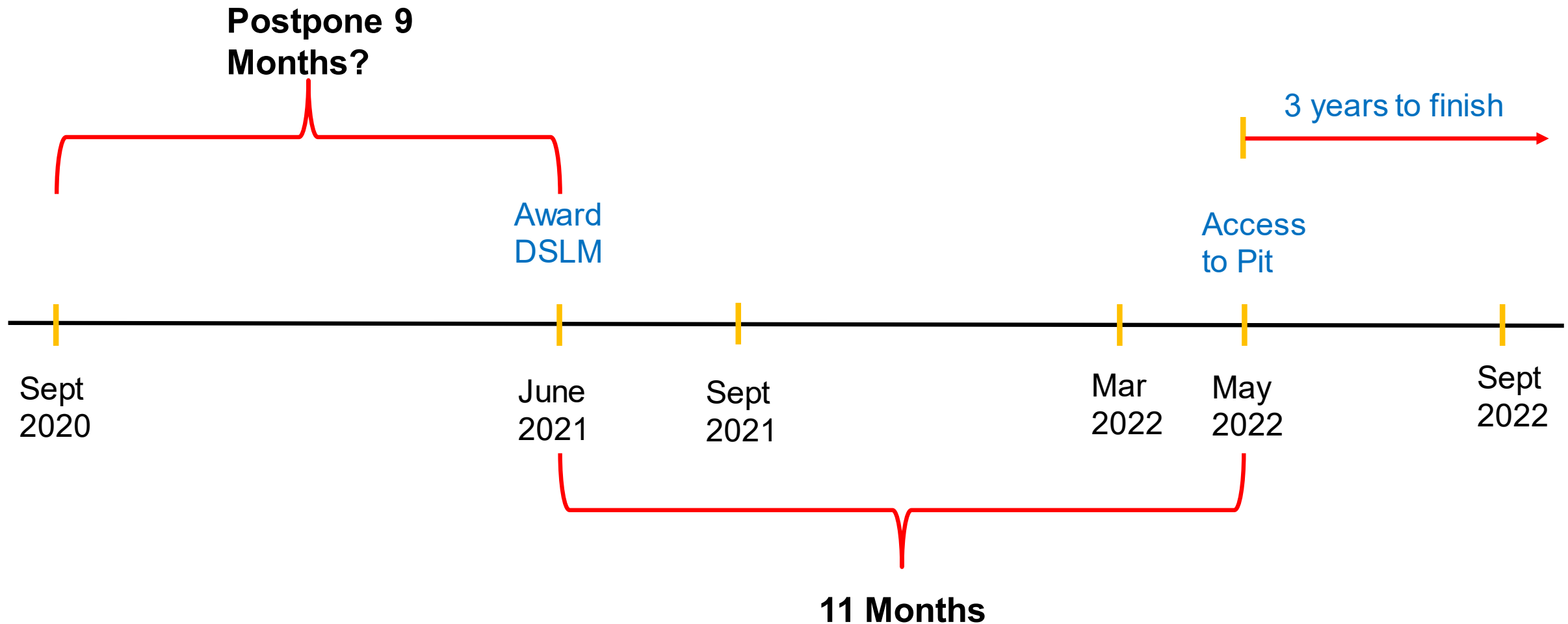


Timeline for Downstream Lock Monoliths



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Timeline for Downstream Lock Monoliths With 2020 High Water Impacts



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Kentucky Locks & Dam, Tennessee River, KY

	ARRA	CG	IWTF	Total
Total Project Cost (TPC):				\$1,215,858,000 ¹
Allocations through FY 2014:	\$88,833,626	\$175,955,288	\$141,460,987	\$406,249,901
FY15 Allocation:	\$0	\$7,350,000	\$7,350,000	\$14,700,000
FY16 Allocation:	NA	\$22,850,000	\$22,850,000	\$45,700,000
FY17 Allocation:	NA	\$18,000,000	\$18,000,000	\$36,000,000
FY18 Allocation:	NA	\$20,600,000	\$20,600,000	\$41,200,000*
FY19 Allocation:	NA	\$21,800,000	\$21,800,000	\$43,600,000
Total Allocations to Date:	\$88,833,626	\$243,905,288	\$209,410,987	\$585,749,901
Remaining TPC Balance:				\$630,108,099
Remaining Balance Change From Last Meeting				\$0

Note: ¹Project cost data is reflective of 27 Feb 19 certified cost at a price level adjustment (OCT 18 \$'s), Fully Funded, 2024 completion

Changes

None

Funding Overview

- Authorized Cost: \$752,790,000 (Oct18 \$)
- 902 Limit: \$885,623,000 (Oct18 \$)
- ARRA (FY09-13): \$ 88,833,628
- Engineering & Design Cost: \$112,162,000 (Thru FY18)
- Supervision & Admin Cost: \$ 21,391,000 (Thru FY18)
- Mitigation Cost: TBD;
alternative analysis on hold pending funding

Current Status of the Project

- Downstream Cofferdam construction is 73% complete;
- Downstream Lock Excavation construction contract 33% completed.

Next Steps

- Economic Update & PACR by spring 2020.
- Award Downstream Monoliths by September 2020.

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Kentucky Locks & Dam, Tennessee River, KY

Schedule of Remaining Work	Design Initiated	Contract Award	Construction Complete*	Project Benefits	Capitalized Cost Closeout
Task 1 – HWY / RR Superstructures	01-Oct-99	19-Sep-05	24-May-12		
Task 2 – Upstream Lock Monoliths (all Options)	01-Oct-00	29-Jan-10	30-Dec-16		
Task 3 – Upstream Miter Gate Fabrication	01-Oct-02	30-Sep-13	1-Mar-16		
Task 4 – Downstream Cofferdam	01-Oct-00	30-Sep-16	2-Sep-20		
Task 5 – Site, Demolition, & Utilities	01-Oct-00	31-Jan-18	30-Mar-19		
Task 6 – Downstream Lock Excavation	01-Oct-00	26-Sep-18	10-Nov-21		
Task 7 – Downstream Lock	01-Oct-00	30-Sep-20	12-Mar-24	12-Mar-24**	
Task 8 – Approach Walls	01-Oct-02	30-Sep-21	21-Nov-23		

*Dates are achievable based on the most efficient funding profile.

**Based on 27 Feb 2019 Certified cost estimate Cost and Schedule Risk Assessment, the project has an 80% confidence level of being completed by 2028.

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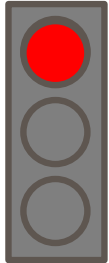


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Kentucky Lock Project

Time and Cost Scorecard



Expenditures

31 Dec

Planned (BCWS)	\$581.2M
Earned (BCWP)	\$524.3M
Actual (ACWP)	\$510.6M

BCWP: Reports the value (based on % complete) of the work performed to date.

Target:

Actual as compared to Planned: (<1% = Green) (>1% and <3% = Yellow) and (>3% = Red)

Schedule

30 June

(Baseline)/(Current)

Project Complete	May 2028 / Oct 2024
Lock Operational	May 2028 / Oct 2024

Measures: Planned project completion and Lock operational dates

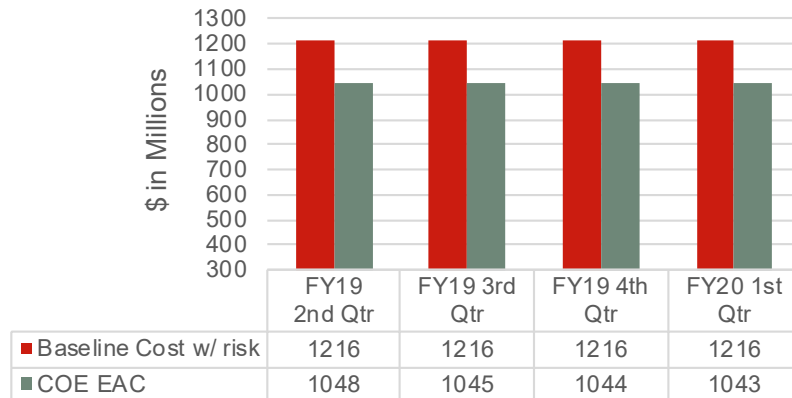
Target:

PACR Anticipated approved spring 2020.



Budget

KY Lock Project EAC Trend



Major Activity Schedule

Activity	Baseline	Current
Set 10 th Cofferdam Shell	Dec 2019	Feb 2020
Award Downstream Lock Monoliths Contract	Sep 2020	Sep 2020
Economic Update/PACR to HQ	Feb 2018	Dec 2019(A)

Kentucky Lock Project Schedule

Major Project Activity	Start/Award	Complete ²
Upstream Lock Monoliths Construction Contract	Jan 2010	Feb 2017
Downstream Cofferdam Construction Contract	Sep 2016	Red Sep 2020
Site, Demolition & Utilities Construction Contract	Jan 2018(A)	Mar 2019(A)
Downstream Lock Excavation Construction Contract	Sep 2018(A)	Nov 2021
Downstream Lock Monoliths Construction Contract	Sep 2020	Sep 2024
Approach Walls Construction Contract	Sep 2021	Nov 2023
Total Project Cost Estimate (2 year cycle)	Sep 2018	Feb 2019(A)
Economic Update/Post Authorization Change Report for 902 Exceedance ¹	Jul 2017	Red Mar 2020

Note: Red indicates revised date from previously reported

¹902 Exceedance expected as early as FY2022

² Assumes no risk. 80% confidence schedule adds 46 months to project completion date.

Nashville Petroleum Trend by Barge

Gasoline and Ethanol

	CY 2014	CY 2015	CY 2016	CY 2017	CY 2018	CY 2019
Middle TN Market Share by Barge	<2%	2-10%	10-20%	>25%	>40%	>45%

Diesel

	CY 2014	CY 2015	CY 2016	CY 2017	CY 2018	CY 2019
Middle TN Tons by Barge	<150K tons	<150K tons	>200K tons	>400K tons	>700K tons	>500K tons

Data from Corps of Engineers Lock Performance Monitoring System

Kentucky Lock

Summary and Challenges

- Project schedule impacts are being experienced due to high river levels this winter.
- Downstream Cofferdam construction is a high risk contract due to constricted marine area and geology.
- Award of >\$250M Downstream Lock Monoliths in September 2020?
 - ▶ Postpone until FY21 – Solicit input on Industry Day 3 March
- Recent years average delays at KY Lock >10 hours and traffic levels remain robust. This should bode well for benefits in ongoing Economic Update.
- Efficient Funding Profile:

FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total
\$61.1M	\$169.5M	\$159.4M	\$170.5M	\$66.4M	\$626.9M

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