Olmsted Locks & Dam
Inland Waterway Users Board

MR. DAVID DALE, SES, PE, PMP
DIRECTOR, Programs
Great Lakes and Ohio River Division
12 August 2015
Agenda

- Status
  - Project Overview/BLUF
  - Dam 2015 Plan to Complete
  - Dam 2015 LWS Milestone Identification
  - 2015 LWS Images
  - Project Scorecard
  - Risk & Capability
  - Special Interes
  - L&D Nos. 52/53 Demo

- Discussion
BLUF

- Bottom Line Up Front
  - Project cost at completion is $65M under the fully funded $3.1B PACR Baseline
  - Project completion schedule is 2 years ahead of the PACR baseline schedule, 2022 in lieu of 2024
  - Capability funding allows the team to actively mitigate risk aka buy down cost and reducing schedule.
Risk Mitigation
one example
2015 USACE Innovation of the Year Award
Self-Consolidating Concrete

Direct Savings = $5.5M
Indirect Savings = $30M
Olmsted Project Overview

**Fixed Weir**
- Foundation prep through NP9 complete
- All 2015 LWS Paving Blocks (PB Nos. 5-8) pre-cast complete
- 2015 LWS PB Nos. 5 & 6 set
- 2015 LWS Shells NP Nos. 3 & 4 pre-cast complete
- 2015 LWS Shell NP No. 5 pre-cast in-progress
- 2016 LWS Shell NP No. 6 pre-cast in-progress

**Navigable Pass**
- Foundation prep through NP9 complete
- All 2015 LWS Paving Blocks (PB Nos. 5-8) pre-cast complete
- 2015 LWS PB Nos. 5 & 6 set
- 2015 LWS Shells NP Nos. 3 & 4 pre-cast complete
- 2015 LWS Shell NP No. 5 pre-cast in-progress
- 2016 LWS Shell NP No. 6 pre-cast in-progress

**Tainter Gates**
- All (18 of 18) TG Shells set
- TG-1 erected
- TG-2 delivered (14 Jul)
- TG-3,4,5 released for fabrication/expedited delivery
- Hydraulic machinery installation for TG-1/TG-2 underway

**Locks & Approach Walls**
- All (18 of 18) TG Shells set
- TG-1 erected
- TG-2 delivered (14 Jul)
- TG-3,4,5 released for fabrication/expedited delivery
- Hydraulic machinery installation for TG-1/TG-2 underway

**Operations Facilities**
- Maintenance Bldg (2017)
- Lock Masters Bldg (2018)

**Resident Engineers Office**

**Completed**

**Under Contract**

**Future**

**Wicket Lifter**
- Design underway (MDC)
- Estimated delivery (Dec/2017)

**Dam Access Road**

**Left Boat Abutment**
- Design complete
- Foundation pile ordered
* Nine shells set in LWS 2014 including two shells set outside historical LWS limits (15 Jun – 30 Nov)

Setting of LWS 2015 Baseline Milestones (NP4 and NP5) and Stretch Goals (PB Nos. 9 -12) will not complete this LWS at an FY15 capability funding level less than $216M.
2015 LWS Milestones

- **Scheduled Milestones**
  - Set NP #3-5 (of 12) - NP #3
  - Set PB #5-8 (of 12)
  - Erect TG #2 (of 5)

- **Preparatory Milestones**
  - Install Grout Mat (thru NP #12/LBA)
  - Drive Foundation Pile (thru NP #6) (thru NP #3)
  - Drive M/S Pile (thru NP #6 U/S, NP #12 D/S)

- **Stretch Goal Milestones**
  - Set NP #6 (of 12)
  - Set PB #9-12 (of 12)
  - Drive Left Boat Abutment (LBA) Foundation Piling

* Strike through indicates revision based upon FY15 funding impact

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<thead>
<tr>
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<th>BASELINE ($235M)</th>
<th>CURRENT ($207M)</th>
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<tbody>
<tr>
<td>PB-5</td>
<td>15 Jun</td>
<td>10 Jun</td>
</tr>
<tr>
<td>PB-6</td>
<td>29 Jun</td>
<td>29 Jul</td>
</tr>
<tr>
<td>PB-7</td>
<td>14 Jul</td>
<td>14 Aug</td>
</tr>
<tr>
<td>PB-8</td>
<td>28 Jul</td>
<td>31 Aug</td>
</tr>
<tr>
<td>NP-3</td>
<td>14 Sep</td>
<td>12 Nov</td>
</tr>
<tr>
<td>NP-4</td>
<td>08 Oct</td>
<td>LWS 16</td>
</tr>
<tr>
<td>NP-5</td>
<td>26 Nov</td>
<td>LWS 16</td>
</tr>
<tr>
<td>TG-2</td>
<td>11 Sep</td>
<td>15 Oct</td>
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* Milestone complete
* Milestone slippage due to High Water Event
* Milestone slippage due to Capability Shortfall

Legend
- LP — Lower Pier
- TG — Tainter Gate
- SB — Service Bridge
- GM — Grout Mat
- FP — Foundation Pile
- M/S — Master/Sheet
- RBA — Right Boat Abutment
- LBA — Left Boat Abutment
- PB — Paving Block
- NP — Nav Pass Shell (Monolith)
1. Early season dredging (Hurley)  
2. TG-1/PB-5 setting  
3. Admiral Zukunft visit  
4. Wicket installation NP-4  
5. PB-6 moving down skid way  
6. TG-2 arrives on site
**Expenditures**

<table>
<thead>
<tr>
<th></th>
<th>Planned (BCWS)</th>
<th>Earned (BCWP)</th>
<th>Actual (ACWP)</th>
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<tbody>
<tr>
<td></td>
<td>$1.946B</td>
<td>$1.945B</td>
<td>$1.953B</td>
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**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**

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<tr>
<th>Project Complete</th>
<th>Sep 2024/Mar 2022</th>
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<tbody>
<tr>
<td>Dam Operational</td>
<td>Sep 2020/Oct 2018</td>
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**Target:**
Green: Current = PACR-12 months  
Yellow: Current = PACR-11 months to PACR-7 months  
Red: Current = PACR-6 months to after PACR date
Olmsted L&D Project Earned Value Analysis
(Based on DOD Gold Card)
May 2015

- PACR (Fully Funded) = $3.099B
- Remaining Contingency = $226M
- Current COE Estimated TEP is $2.873B in March 2022
**Funding Analysis**

- **Capability Funding:**
  - Dam Operational - 2018
  - Project Complete – 2022
  - Tot Proj Cost: $3.04B

- **$180M/yr in FY16:**
  - Dam Operational - 2020
  - Project Complete – 2024
  - Tot Proj Cost: $3.17B

- **$225M/yr in FY16:**
  - Dam Operational - 2019
  - Project Complete – 2023
  - Tot Proj Cost: $3.12B

- **PACR:**
  - Dam Operational - 2020
  - Project Complete – 2024
  - Tot Proj Cost: $3.09B

- **$180M/yr in FY16:**
  - Dam Operational - 2020
  - Project Complete – 2024
  - Tot Proj Cost: $3.17B

- **$225M/yr in FY16:**
  - Dam Operational - 2019
  - Project Complete – 2023
  - Tot Proj Cost: $3.12B

- **PACR:**
  - Dam Operational - 2020
  - Project Complete – 2024
  - Tot Proj Cost: $3.09B

- **$216M**
- **$268M**
- **$125M**
- **$175M**
- **$100M**
- **$75M**
- **$25M**

**Years:**
- 2014
- 2015
- 2016
- 2017
- 2018
- 2019
- 2020
- 2021
- 2022
- 2023
- 2024
L&D Nos. 52/53 Demo

- Marine Demolition majority of demolition costs.
  - L&D No. 52 - $67.5M; L&D No. 53 - $47.7M

- USACE Jan ‘15 meeting with USCG and Industry
  - Received input regarding demolition preferences. Safety, navigation and legacy maintenance impacts highlighted.

- USACE next step - engineering analysis
  - Numerical modeling and expert elicitation input
  - Configure final elevations of weir sections and sediment impacts

- Refine Land disposition scope during Real Estate excess property process; includes SHPO coordination & MOA
A tow transporting replacement 300 Ton turbines for TVA struck and is currently resting/listing on top of L&D 53 river chamber guide wall.

Crews utilizing water pumps supplied by the Olmsted project, attempt to dewater ruptured barge chambers.

Chambers have been successfully temporarily patched.
In Summary

► Project cost at completion is $65M under the fully funded $3.1B PACR Baseline
► Project completion schedule is 2 years ahead of the PACR baseline schedule, 2022 in lieu of 2024
► Capability funding allows the team to actively mitigate risk aka buy down cost and reducing schedule.
Discussion

Olmsted Locks and Dam
Wicket Lifter Barge
Actualized Risk Events

1. 2015 LWS High Water
   - Start: 18 Jun 2015
   - End: 25 Jul 2015 (37 days)
   - Critical Elevation = 306 feet
   - Critical Velocity = 4 fps

   **Mitigation Strategy**
   - Work outside contractual LWS before and after
   - Use capability funding to increase premium time/scheduling
   - Increase production efficiency (means/methods)

   **Impacts**
   - Increased costs
   - Increased uncertainty (2018 operational milestone)
   - However, no schedule slippage currently to 2018 operational milestone

2. FY15 Capability Funding
   - Initial Capability Request = $205M
   - Pres Bud = $160M/Funding Pot = $45M
   - Increased FY15 Capability = $235M
   - Current Capability = $216M(min)/$227M(max)
   - Actual Funding to Date = $207M

   **Mitigation Strategy**
   - Constrain activities to fit prog. spend plan
   - Improve Communication (Oper. Env.)

   **Impacts**
   - Increased cost and schedule exposure
Capability Funding

- Funding Stream
  - Sep/2020 Dam Operational Milestone
    - Minimum of $150M/year (PACR)
  - Oct/2018 Dam Operational Milestone
    - Minimum of $215M/year (PACR) or Variable Capability Level (currently $89M behind $215M/year pace)
  - *Current Estimated Capability $227M (FY15) and $268M (FY16)
  - Current Expected FY15 Funding = $216M (min. req. to maintain critical path)
  - FY Capability Funding is variable and formally re-assessed by the PDT twice per fiscal year (2nd QTR and 4th QTR) based upon production tempo, hydraulic conditions, and schedule risk mitigation

* High water event (18 Jun – 29 Jul) decreased max. FY15 capability from $235M to $227M
• TEP is a required EVMS leading indicator and independently calculated/owned by the Contractor

• The Corps reviews and formally recognizes additional budget, when appropriate, via the PCN process and subsequently memorialized by contract modification

• The individual cost accounts are continuously reviewed by their respective Cost Account Managers (CAM) and adjustments (plus/minus) made real time

• At the current TEP value, the Olmsted project would use only $18M (or 7%) of the $244M in contingency allowance calculated in the PACR documentation and remains below authorization ($45M)
Special Interest

- **TEP Review (Dec/2014 – Mar/2015 Increase)**
  - FY19 ($350K) Review Complete - Approx. $100K in question
  - FY18 ($14M) Review Complete - Approx. $7.5M in question
  - FY17 ($23M) Review Underway
  - Production rate evaluation impacted by “abnormal” seasonal conditions

- **Equipment Salvage Project Credit**
  - Inventory: CAP = $138M/GFP = $17M
  - CAP estimated salvage credit ($25M) memorialized in schedule
  - Proof of concept 300 Ton Truck Crane (GFP) sold on GSAXCESS site

- **2015 LWS Navigation Impacts**
  - “Scheduled” timeframes for “open” chamber lockage
  - Notional schedule disseminated
  - Protocol published/stakeholder coordination ongoing