Screening of “Sites of Concern”

- Criteria from Previous Presentations
- Bank Soils (Vegetation)
- Velocities and Critical Velocities
- Past Performance
- Existing Bank Protection
- Other Features (Distance from Levee, etc)
Background

- Five sites where further consideration and analysis of levee stability seems warranted
- Sites identified from past experience, professional judgment and recent river inspections
- Includes sites discussed in MBK presentation
Site 1: RM 10.5 Left
Site 1: RM 10.5 Left

- MBK Site
- Erodible sands on floodplain; some toe erosion
- USACE repairs
- Recreational use damages vegetation
RM 10.5 Left Bank Retreat
RM 10.5 Left Bank Section

American River RM 10.5
Left levee

Elevation (ft NAVD88)

Station (ft)

Max WSE (unsteady HEC-RAS)
HEC-RAS cross-section
LiDAR
Min levee template (Max WSE+3 ft)

2H:1V
3H:1V
American River RM 10.5

- Max WSE (unsteady HEC-RAS)
- WSE (RMA2 160K)
- Bed (HEC-RAS)
- Bed (RMA2)
- Vel (HEC-RAS)
- Vel (RMA2 160K)

Station (ft)

Elevation (ft NAVD88)

Velocity (ft/s)
Site 2: RM 8.8 Right
Site 2: RM 8.8 Right

- Site 5 Extension
- Long considered for repairs
- Vertical, exposed bank
Site 2: RM 8.8 Right
American River RM 8.75
Right levee

Elevation (ft NAVD88)

Station (ft)

Max WSE (unsteady HEC-RAS)
HEC-RAS cross-section
LiDAR
LiDAR
Min levee template (Max WSE+3 ft)

3H:1V
2H:1V
RM 8.75 Section and Velocities
Site 3: RM 7.5 Right
Site 3: RM 7.5 Right

- MBK Site
- Downstream of Howe Street Bridge
- Flow Expansion downstream of Bridge?
American River RM 7.5
Right levee

Elevation (ft NAVD88)

Station (ft)

2H:1V
3H:1V

Max WSE (unsteady HEC-RAS)
HEC-RAS cross-section
LiDAR
Min levee template (Max WSE+3 ft)
American River RM 7.5

Station (ft) vs Elevation (ft NAVD88) and Velocity (ft/s)

Max WSE (unsteady HEC-RAS)
WSE (RMA2 160K)
Bed (HEC-RAS)
Bed (RMA2)
Vel (HEC-RAS)
Vel (RMA2 160K)
Site 4: RM 7 Right (CSUS)
Site 4: RM 7 Left

- Repaired with toe rock and vegetated bench
- High consequence site; most severe hydraulic conditions
- Confirm design for 160,000 cfs
Site 4: RM 7.0 Left
RM 7.0L Section

American River RM 6.75
Left levee

Elevation (ft NAVD88)

Station (ft)

Max WSE (unsteady HEC-RAS)
HEC-RAS cross-section
LiDAR
Min levee template (Max WSE+3 ft)

2H:1V

3H:1V
Site 5: RM 6.4 Left
Site 5: RM 6.4 Left

- Downstream of H Street; outside of bend
- Exposed cobbles
- Likely Modesto Formation
- USACE repair of about 700 feet in 2004
RM 6.4L View Downstream
RM 6.4L from Right Bank
RM 6.4L Bank Repair Section

SITE 6.4 L @ 3+00
RM 6.4L “Spurs”
RM 6.25 Section and Velocities

American River RM 6.25

Elevation (ft NAVD88)

Velocity (ft/s)

Station (ft)

Max WSE (unsteady HEC-RAS)
WSE (RMA2 160K)
Bed (HEC-RAS)
Bed (RMA2)
Vel (HEC-RAS)
Vel (RMA2 160K)
Next Steps

• Evaluate these sites with the procedures discussed earlier
• More detail on hydraulics and sediments may be needed for evaluation
# Summary of Sites of Concern

<table>
<thead>
<tr>
<th>RM</th>
<th>Bank</th>
<th>MBK Site</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.5</td>
<td>Left</td>
<td>Yes</td>
<td>Erodible sands over cohesive lower bank; USACE toe repair along part of bank</td>
</tr>
<tr>
<td>8.8</td>
<td>Right</td>
<td>Yes</td>
<td>Also called “Site 5 Extension”; steep, eroding bank upstream of repair. Stable recently but retreating over time</td>
</tr>
<tr>
<td>7.5</td>
<td>Right</td>
<td>Yes</td>
<td>Downstream of Howe Avenue; steep bank; erosion reported in 1986. Further investigations needed</td>
</tr>
<tr>
<td>7.0</td>
<td>Left</td>
<td>No</td>
<td>Site 3 repair on outside of bend at Sacramento State. Confirm that the design meets current standards for 160,000 cfs</td>
</tr>
<tr>
<td>6.1</td>
<td>Left</td>
<td>No</td>
<td>Outside of bend; cobble exposed near water line; likely Modesto sediments. Investigate stability of repair on bank slope</td>
</tr>
</tbody>
</table>