Tempe Town Lake
Downstream Dam Replacement

NEW DAM ALTERNATIVES SELECTION

January 5, 2012

Gannett Fleming

Timeline *

- Alternatives Evaluation – June thru November
- Project Update with Council – September 22
- **Phase 1 Validate Concept & Select Dam Technology – November 2011**
- Phase 2 Design New Dam / Acquire Permits – complete by July 2013
- Bid and Procure Construction Contract by October 2013
- Start Construction by November 2013
- Construction Complete – December 28, 2015

* *Per current agreement with Bridgestone.*

Dam Design Criteria

1. Maintain or Improve Current Level of Flood Protection
2. Maintain Full Lake Quickly After Flood Event
3. Raise, Lower and Operate Reliably at Normal Lake Levels
4. Be Cost Efficient – Capital, Lifespan, O&M
5. Have Parts Easily Available
6. Be Compatible with Pedestrian Bridge, Existing Structures
7. Perform Well in this Climate
8. Meet Regulatory Requirements




Regulatory Conditions

US Army Corps of Engineers

Regulatory Agency	Concerns
U. S. Army Corps of Engineers	Water quality, channel conditions, 404 permitting
Flood Control District of Maricopa County	Flood control, levee maintenance
Federal Emergency Management Agency (FEMA)	Flood control, levees
Arizona Department of Water Resources	Dam Safety

FEMA

ARIZONA DEPARTMENT OF WATER RESOURCES

Alternatives Evaluation

About 20 Dam Options Studied:

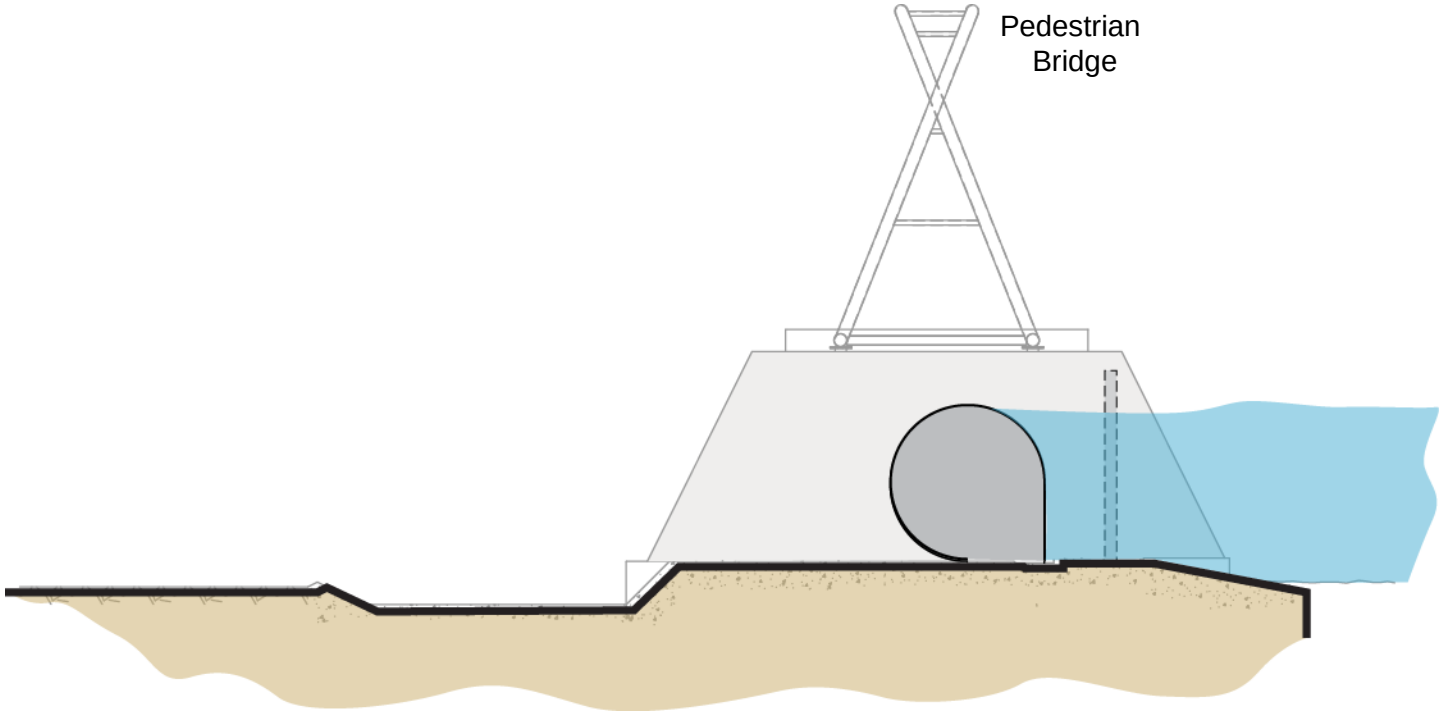
- Radial (Tainter) Gates
- Bascule or Bottom-Hinged Leaf Gates
- Inflatable Rubber Dams(water and air-filled)
- Ogee Crest Weirs
- Labyrinth Weirs
- Many Styles of Fuse Plugs
- Several Styles of Pneumatically-Operated Hinged Crest Gates (Obermeyer)
- Hydraulic Hinged Crest Gates
- Dyrhoff Rubber Dams (Sumitomo)
- Vertical Lift Gates
- Swing Gates
- Fusegates (Hydroplus)
- Earth Embankment/Fuseplug
- Several Styles of Mixed-type Spans
- Cable-Operated Hinged Crest Gate
- Others

Three Viable Alternatives

- Sumitomo Rubber Dam
- Obermeyer Gate
- Hydraulic Hinged Crest Gate

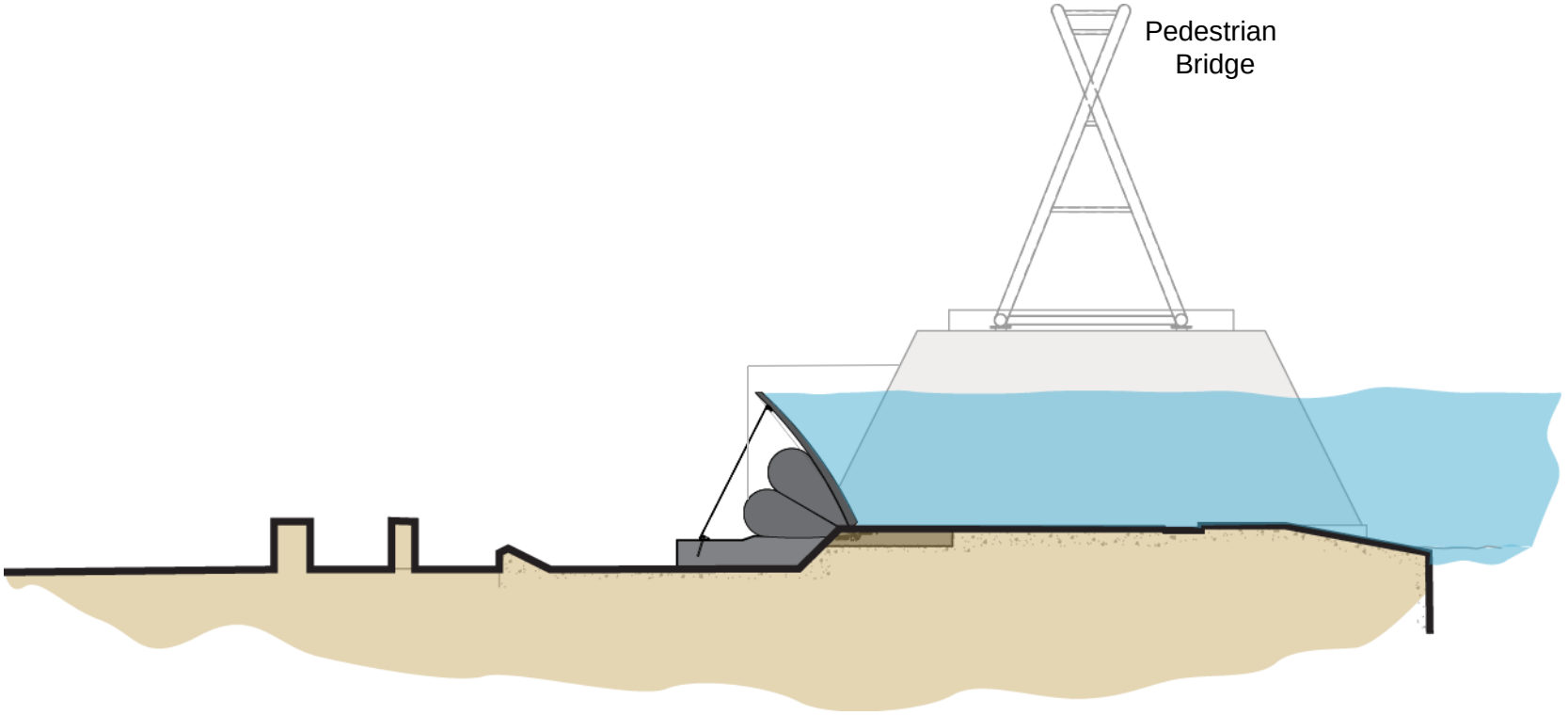
Proposed Alternative Locations

- Sumitomo – Replacing bladders, same location



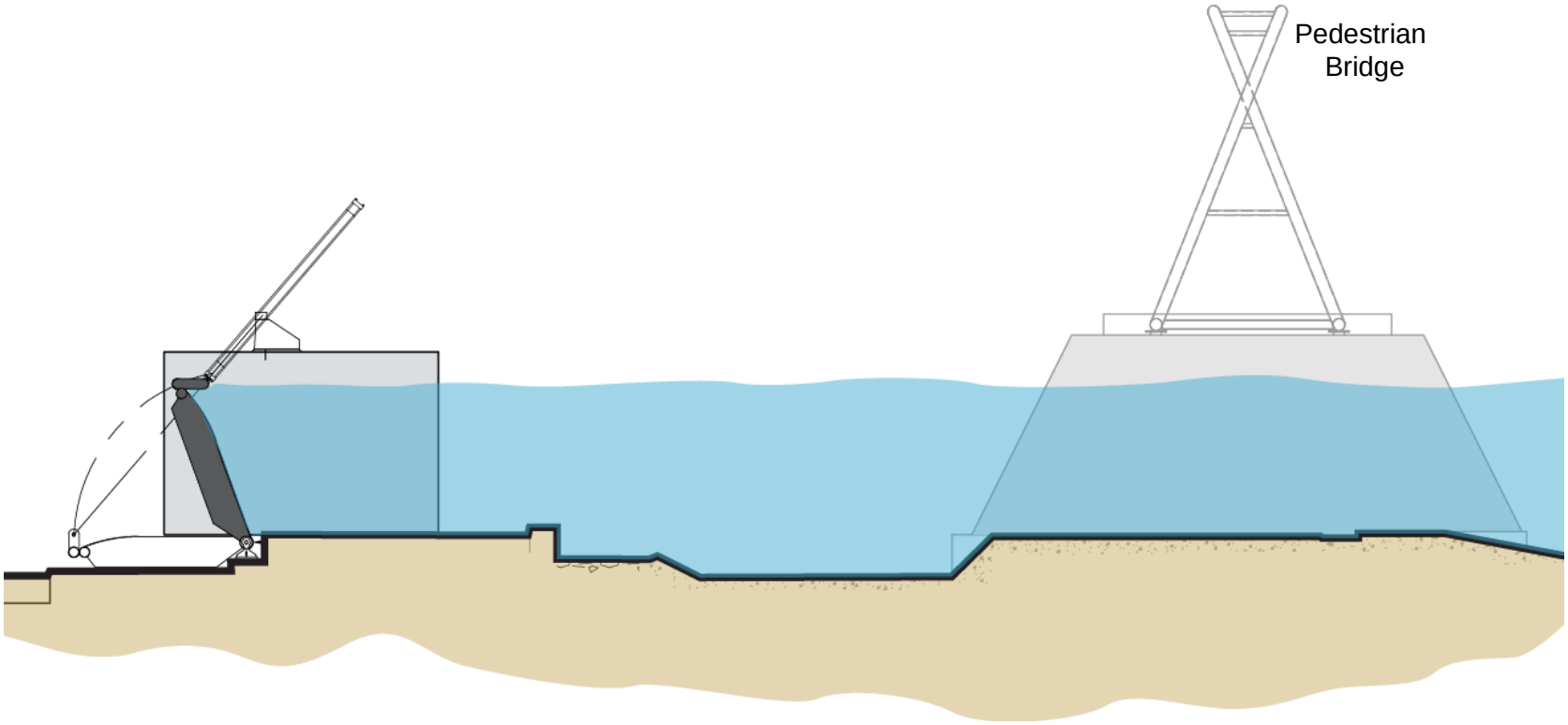
Proposed Alternative Locations

- Obermeyer – Adjacent to existing dam



Proposed Alternative Locations

- Hinged Crest Gate–100ft west of existing dam



Life Cycle Costs

Alternatives	Total Project Construction Cost	Total 50-Year Life Cycle Costs (Present Value)	Total Construction and Life Cycle Cost (Present Value)
Sumitomo Rubber Bladders - **10 Yr.** Rubber Life (Replace Rubber Bladder every 10 years)	$40,900,000	$138,300,000	**$179,200,000**
Obermeyer Gates - **10 Yr.** Rubber Life (Replace Rubber Bladder every 10 years)	$32,800,000	$41,600,000	**$74,400,000**
Hinged Crest Gates	$35,400,000	$32,700,000	**$68,100,000**

Dam Recommendation

- Hydraulically Operated Hinged Crest Gate
  - Safety & Reliability
  - Durability
  - Value (cost competitive)
  - Engineering Requirements
  - Regulatory Requirements

Dam Financing

- Preliminary Capital Cost Estimates: $36 Million
- Includes Design, Materials, Construction
- Does Not Include East Dam or Pump System (New East Dam repl. $8M-$10M)
- Finance Options Include:
  - Use Remaining $3,633,000
  - Seek Voter Approval for Bond Authorization for Dam Replacement Capital Costs
  - Sale of City Properties
  - Lease / Purchase Agreement
  - Combinations

Next Steps

- Public Meeting, Jan. 11, 5:30 p.m.
  Tempe Center for the Arts
- Return to Council Jan. 19
- Review Financing Options
- Design, Permit, Build

Want more information?
Visit www.tempe.gov/lake
Click on Town Lake Dam Replacement in the Blue Box