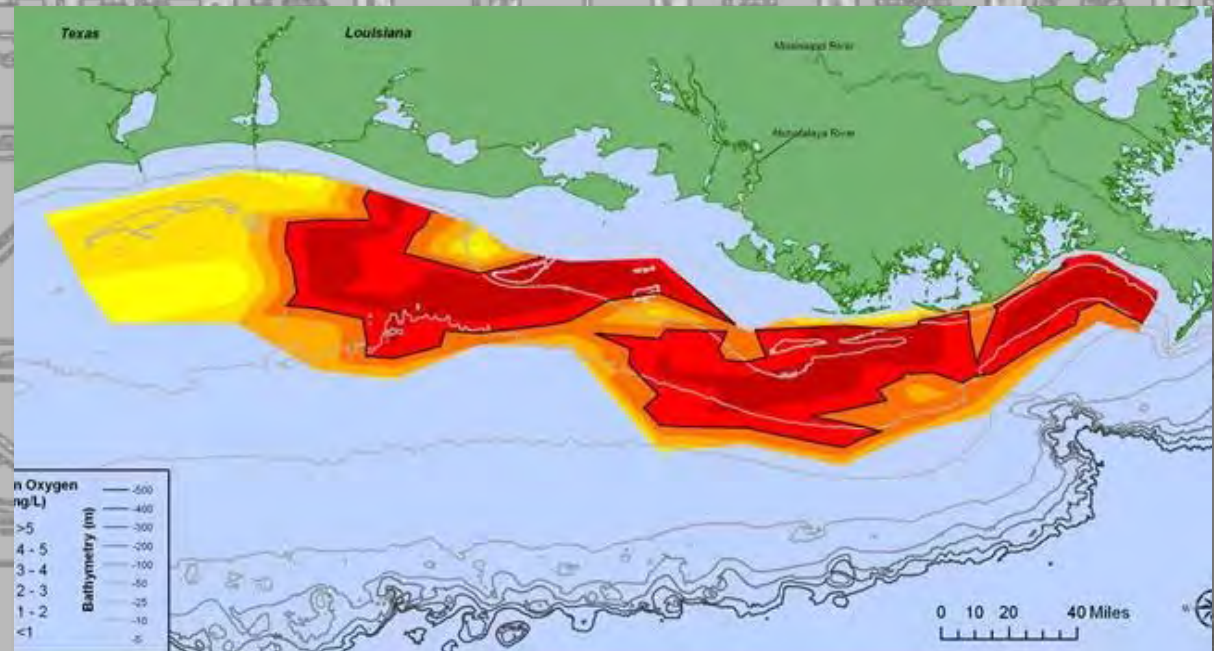


# THE ROLE OF ECOSYSTEM SERVICES VALUATION IN USACE DECISION-MAKING

Vegetation on Levees Workshop: Information, Data, and Approaches to Perform Best Practices

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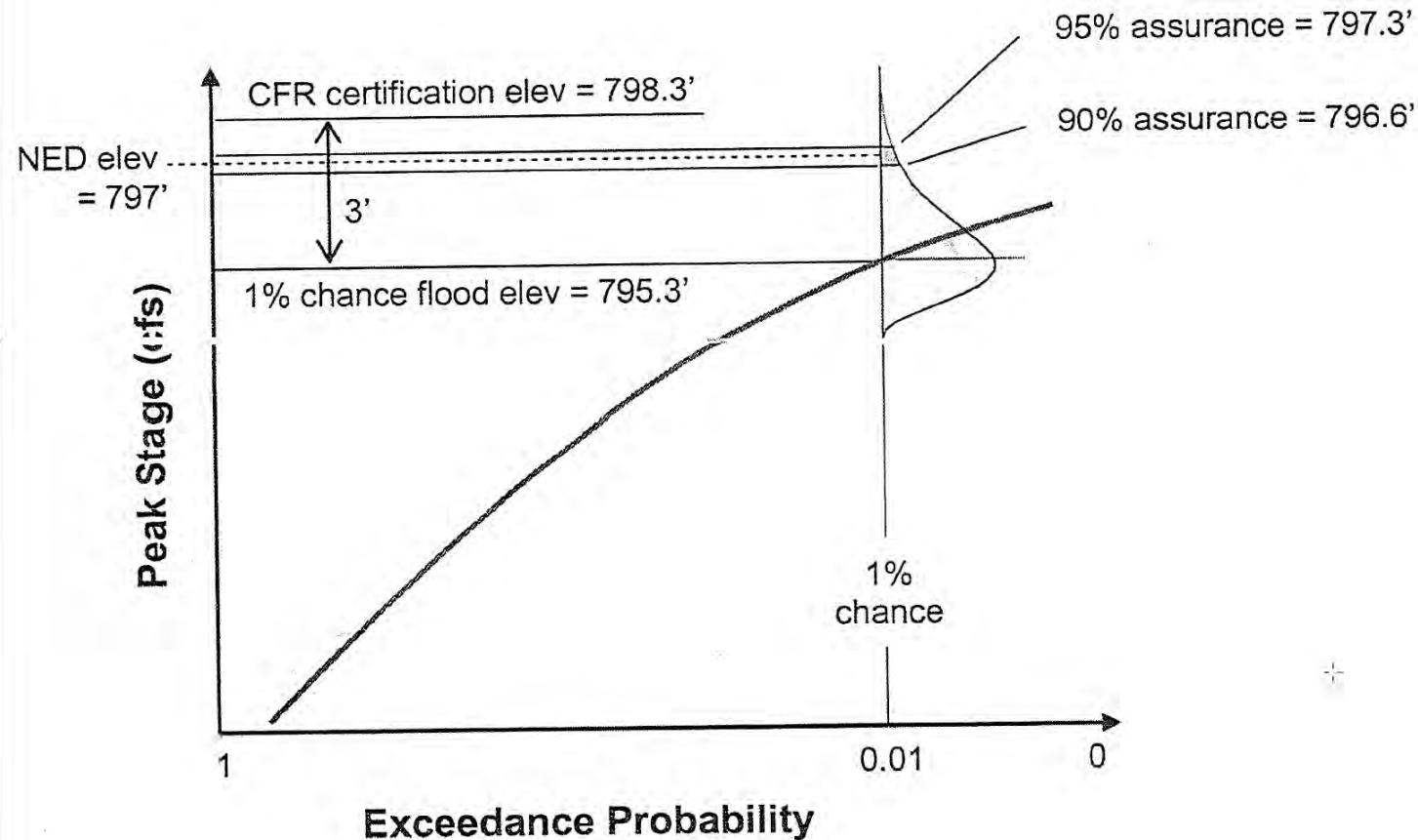
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# ROLE OF ECONOMICS

## DEVELOPMENT OF ENGINEERING GUIDANCE

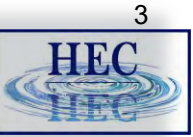
- Economics provides the government an efficient framework for decision-making
- Decisions on development of guidance should improve social welfare ( $B > C$ )





# ROLE OF ECONOMICS

## *DEVELOPMENT OF ENGINEERING GUIDANCE*



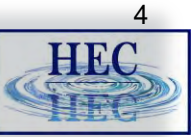
- Economics provides the government an efficient framework for decision-making
- Decisions on development of guidance should improve social welfare ( $B > C$ )

1. There is inefficiency – a misallocation of resources – in the way that levees are designed
2. Levees constructed on or near riverbanks and that are paved with non-native highly-maintained grass results in the loss of ecosystem services
3. The loss of ecosystem services is a cost to the nation that has not been included in decisions about how and where to build levees
4. Ignoring this cost results in a misallocation of resources in the same way that ignoring the cost of labor in the construction of a levee would result in a misallocation of resources
5. Current and upcoming guidance will require that the loss of ecosystem services be explicitly considered in alternative plan comparison and alternative plan selection
6. PDTs need guidance on how to include vegetation on levees to offset that cost



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# ECOSYSTEM SERVICES MATTER FOR DECISIONS

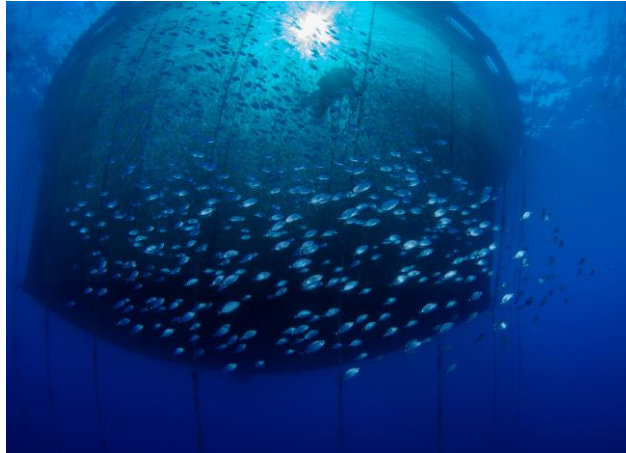
## *BOTH SIDES OF THE BALANCE SHEET MATTER*

- Ecosystem services have explicit contribution to national economic productivity
- A change in those services results in a change in economic productivity

**Pollinator Species ~ Agriculture**



**Water Quality ~ Aquaculture**



**Carbon Sequestration and Storage**





# WHAT DOES POLICY SAY?

## *ECOSYSTEM SERVICES MATTER*

- Most recent policy requires explicit evaluation of ecosystem services
- Evaluation should include monetary quantification where possible

### **CG USACE – Policy Directive – Comprehensive Documentation of Benefits in Decision Document (January 2021)**

Section 6(c): “Environmental. For each alternative plan, positive and negative benefits must be analyzed consistent with current ecosystem restoration or environmental compliance guidance. The benefit assessment can be quantitative or qualitative, and if appropriate, monetized.”

### **Executive Order 10472 (April 2022)**

Section 4(b): “The Director of the Office of Management and Budget shall issue guidance related to the valuation of ecosystem and environmental services and natural assets in Federal regulatory decision-making...”



# WHAT DOES GUIDANCE SAY?

## *ECOSYSTEM SERVICES MATTER*

- Current guidance requires explicit evaluation of ecosystem services
- Evaluation should include monetary quantification where possible

### **ER 1105-2-100**

Para. 2-4(k)(1): “NED costs...From an economic perspective, the real measure of cost is opportunity cost...NED costs include three types of costs: implementation costs, other direct costs and associated costs”

Para. 2-4(k)(4): “Associated costs are those costs necessary for production of project outputs for which no project expenditure is made.”

### **Policy for Conducting Civil Works Planning Studies EC (Pre-publication)**

Para. 2-3(k): “[Ecosystem services] can be classified as being of an economic, environmental, and/or social nature and can be characterized as being of local, regional, and/or national in scope...structured disclosure of effects and trade-offs in qualitative or quantitative terms is integral to any formulation effort...”



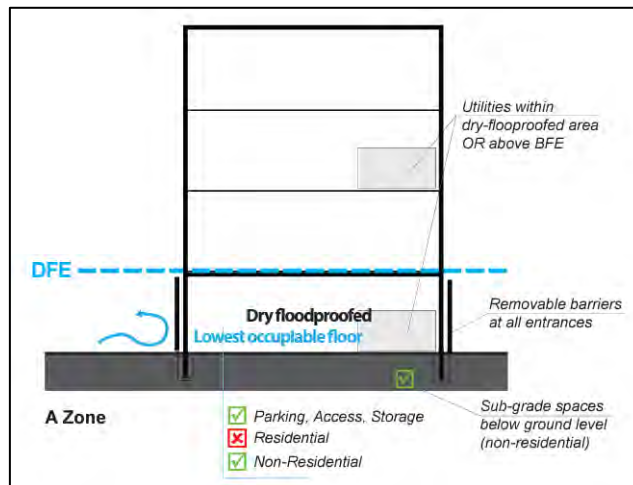
# TAKEAWAYS

## LESS ECOSYSTEM DESTRUCTION

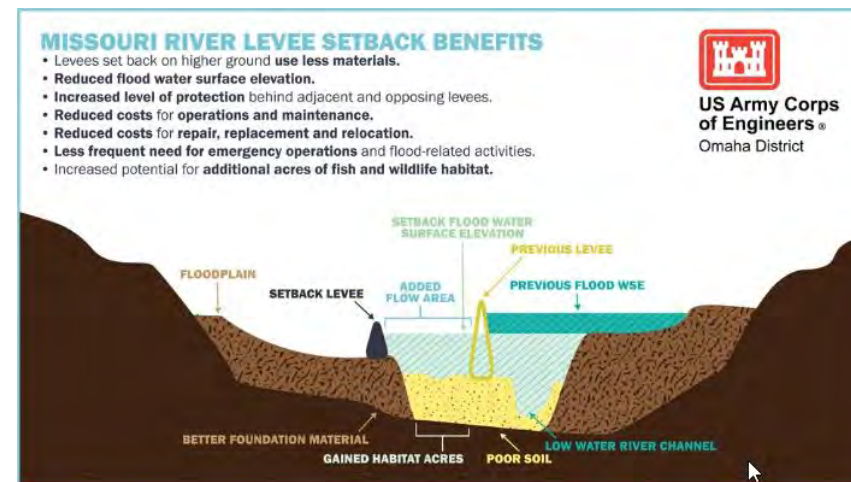


- The real cost of constructing a levee is revealed
- Some approaches to reducing flood risk become relatively more appealing

### Nonstructural Actions



### Setback Levees



### Woody Vegetation

