

PLANNING FUNDAMENTALS REFRESH – PROBLEMS, OPPORTUNITIES, OBJECTIVES, AND CONSTRAINTS

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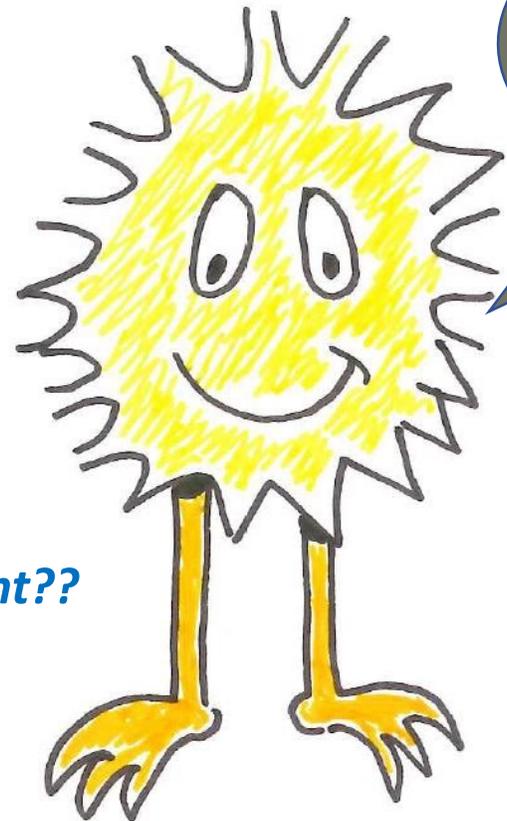


PRESENTATION OUTLINE

- Intro to the “POOCs”
- Planning process
- Scoping
- Defining Problems & Opportunities + Examples
- Risk Identification
- Conceptual Model Example
- Defining Objectives & Constraints + Examples
- How do the POOCs fit together?
- Who develops the POOCs and how?
- Q&A



PROBLEMS, OPPORTUNITIES, OBJECTIVES, CONSTRAINTS: AKA, THE “POOC’S!”



I am the foundation of
the planning process!

Question: Why are these so important??

Artist: Jerry Fuentes – Former SPK senior planner and Capstone instructor



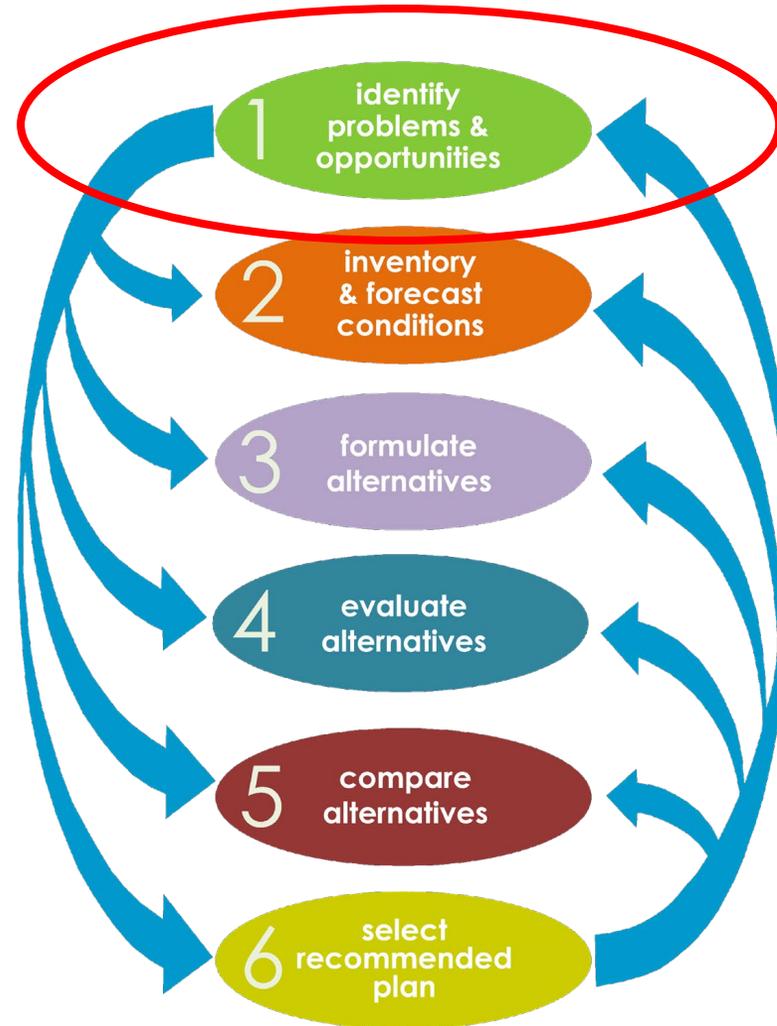
BLUF



- The POOCs give our study **direction and focus** – both initially and throughout the planning process (i.e., are we going in the right direction?)
- We may identify a lot of **Problems** (i.e., things to fix) & **Opportunities** (i.e., things could be better) in our study area, but we don't have to address them all
- The subset of problems & opportunities we plan to address through our study become our **planning Objectives** – i.e., what we hope to achieve
- We **formulate** management measures and alternatives to meet our planning objectives
- **Constraints** will limit (or influence) what measures we formulate
- POOCs are developed **collaboratively** – not just the PDT – but all interested groups & full spectrum of technical disciplines
- Why develop the POOCs? **To use them!**

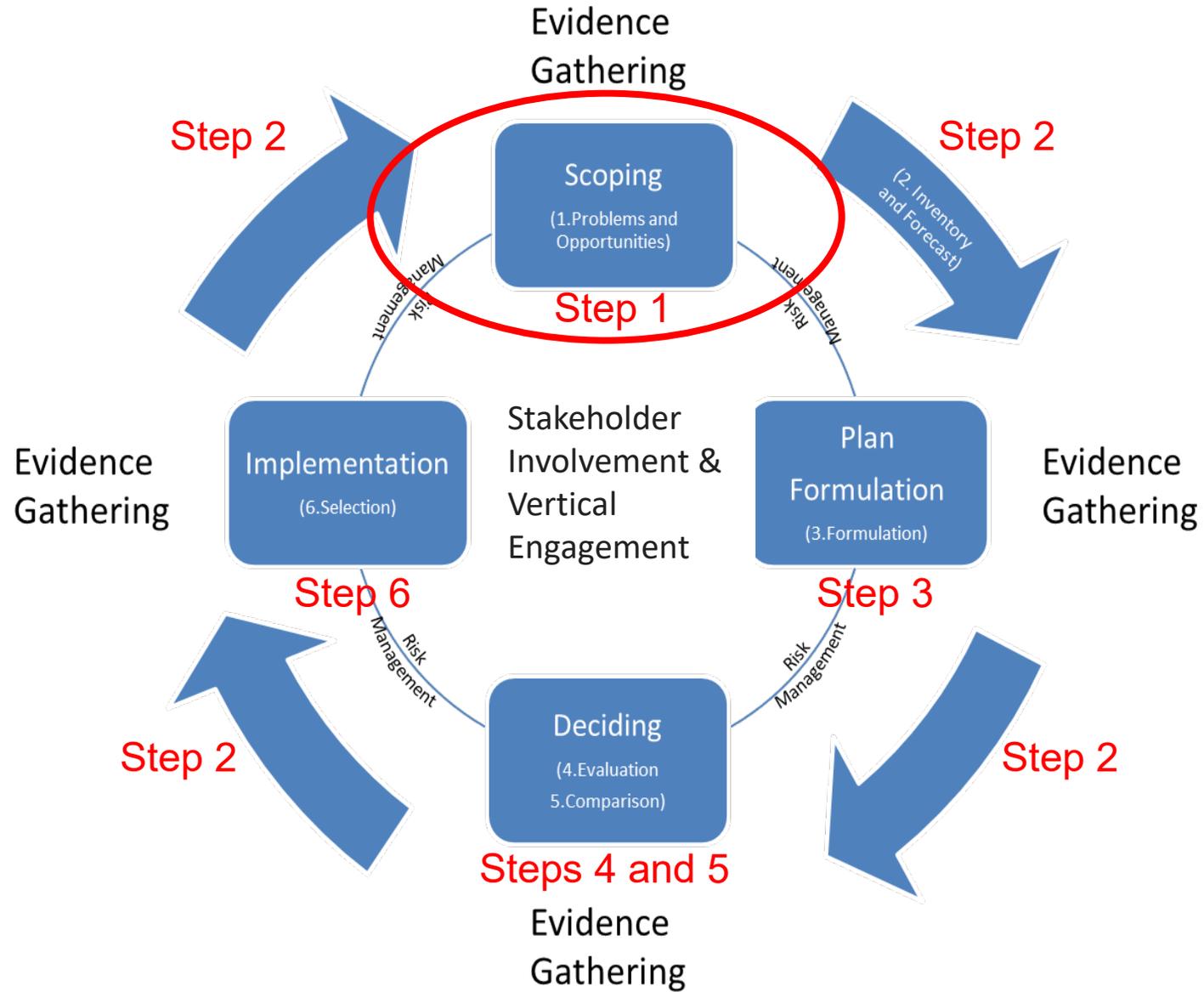


Traditional Six Step Planning Process





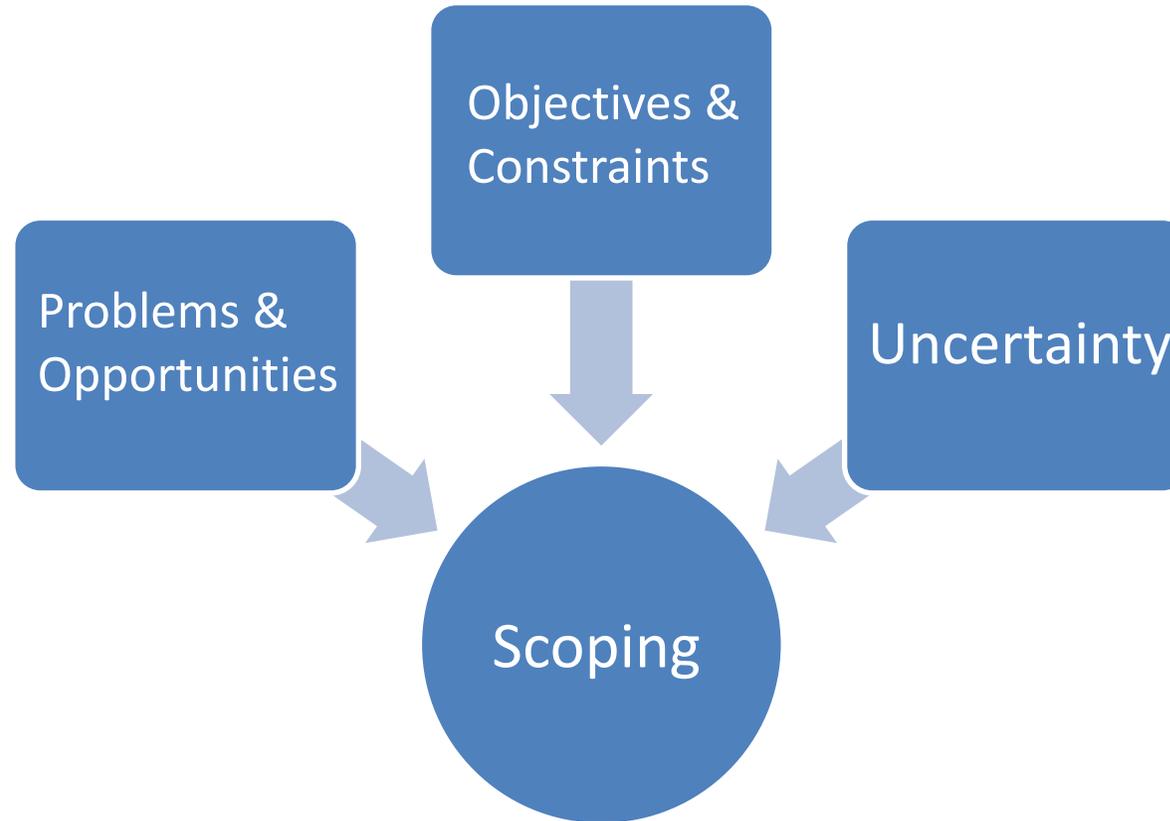
Risk Informed Planning





What is Scoping?

Task 1 of Risk-Informed Planning Process





What is Scoping?

The new draft EC, “Policy for Conducting Civil Works Planning Studies,” tells us scoping will define:

(a) Study area

(b) Identified water resources needs within the study area, framed in a systems/watershed context

(c) Identified stakeholders and communities that may be affected by the potential federal investment, including collaboration

(d) Clear statements of purpose and need, **problems, opportunities, objectives, and constraints** that will be used to guide the remainder of the planning work



What are the POOCs?

- ***Guess what? The new draft EC “Policy for Conducting Civil Works Planning Studies,” doesn’t define the POOCs.***
- ***Previous ER 1105-2-100 (aka, the Planning Guidance Notebook) doesn’t define **problems and opportunities** either. It does define **objectives and constraints**, however.***
- ***Fortunately, the Planning Manual (IWR Report 96-R-21) defines them all!***
 - ***We’ll use the Planning Manual definitions/ descriptions in subsequent slides.***



What are problems?

- OK, before we turn to what the Planning Manual has to say about “problems,” let’s see if we have a common understanding
- Use the [chat](#) to type in your definition of what problems are



PROBLEMS

In simplest terms, most Corps of Engineers Civil Works water resource studies are related to four basic problems:

- Flood Risk
- Coastal Storm Risk
- Navigation Inefficiencies
- Aquatic Ecosystem Degradation

Question: What do these align with??



PROBLEMS...

- ... are the undesirable conditions we are trying to address
- ... are generally negative and reflect current conditions. But, since we're concerned about future conditions, consider how problems may change over time
- ... generally, describe something that is broken or missing
- ... can be expanded to identify the *nature, cause, location, dimensions, origin, time frame, and importance* of the problem, as well as an indication of who considers this a problem
- ... can be “tiered”
 - Start with a **single sentence**
 - Followed by a **narrative** that covers *what, where, and when*, followed by what's *causing* the problem, and *why* we care about the problem



LET'S TAKE A TYPICAL EXAMPLE...

- *From an Upper Mississippi River Restoration (UMRR) project:*

- **Problem Statement:** Historic islands have been lost in Pool 14, resulting in loss of island habitat, loss of side channels, and degradation of open river habitat.



- **Problem Narrative:** Between UMR river miles 502-506 in Pool 14 (*location*), historic islands have been lost (*nature*) over the last ~70 years (*timeframe*) through erosion and higher water elevations caused by physical modifications and altered hydraulics (impoundment) of the Miss River (*origin and cause*). The loss of islands has resulted in loss of island habitat (terrestrial and nearshore shallow water), loss of side and secondary channels, and degradation of open river habitat (*nature and dimensions*) through greater wind fetch and wave activity, sediment re-suspension, and loss of aquatic vegetation (*cause*). Loss of these habitats has in turn impacted habitat for migratory birds, endangered mussels, and spawning and rearing habitat for native fish (*importance of the problem*).
- *[Note: Who considers this a problem can be explained through citing institutional, public, and technical sources of significance.]*



More Problem Statement Examples

- Hurricane storm surge is a risk to life and property in Miami.
- Loss of wetlands is impacting fish and wildlife populations in coastal Mississippi.
- Channel width is limiting efficient navigation traffic into and out of the port of Oakland.
- Flooding from inundation and inadequate infrastructure results in economic damages and life safety risk in the Watsonville area.

Pitfalls to Avoid in Problem Definition



- No focus--definition too vague or broad.
Example: Lack of biodiversity in the watershed.
- Focus is misdirected - definition is too narrow.
Example: How can we improve conditions for the mottled duck?
- Statement is assumption-driven.
Example: How can we stop harmful human disturbances?
- Statement is solution driven.
Example: Mallow Marsh needs a water control structure.
- Statement focuses on the cause/driver, not the effect we care about.
Example: The shoreline is eroding.



Something else to keep in mind when identifying problems...

- Congress directs and oversees the specific projects that USACE plans and constructs through authorization legislation, annual and supplemental appropriations legislation, and oversight efforts
- It is important it is to start with a review of authorizing language and any associated implementation guidance
 - For example, we may ID problems we can't address through USACE action (although we can highlight – even recommend – opportunities for other entities to participate)
 - Similarly, our objectives should focus on USACE water resources missions



What are opportunities?

- OK, before we turn to what the Planning Manual has to say about “opportunities,” let’s see if we have a common understanding
- **Raise your hand** to volunteer a definition



OPPORTUNITIES

- A favorable juncture of circumstances; a good chance for advancement or progress
 - ▶ Focus on positive and future conditions – something can be made better
 - ▶ Can be positives of the problems (but not all that helpful in terms of telling us something “new”) -- *therefore the preference is not to duplicate problems in opportunities statements*
 - ▶ Usually additional ideas, not necessarily related to *solving* the problem, but *in addition* to addressing the problem
 - ▶ Sometimes opportunities can be thought of as *“nice to haves”*, i.e., although the focus of the study will be about solving problems (first identified by a non-Federal sponsor, for example) there may also be opportunities to do other “good things”
 - ▶ Avoid the tendency to **ID study tasks** as “opportunities” (e.g., “there is an opportunity to improve communication with the local community through study outreach activities”)



OPPORTUNITIES

- Examples to accompany Pool 14 problem statement:
 - ▶ There is an opportunity to increase passive recreational activities (such as canoeing, kayaking, hiking, and birdwatching) in the Steamboat Island study area **in conjunction with** restored island and backwater aquatic habitats.
 - ▶ There is an opportunity to contribute to the **goals** of the North American Waterfowl Management Plan through the **restoration of backwater aquatic habitats**.

While the Upper Mississippi River Restoration study focused on the problems related to aquatic ecosystem degradation, these opportunities were added to the study scope.



***Q&A check on what we've covered
so far...***

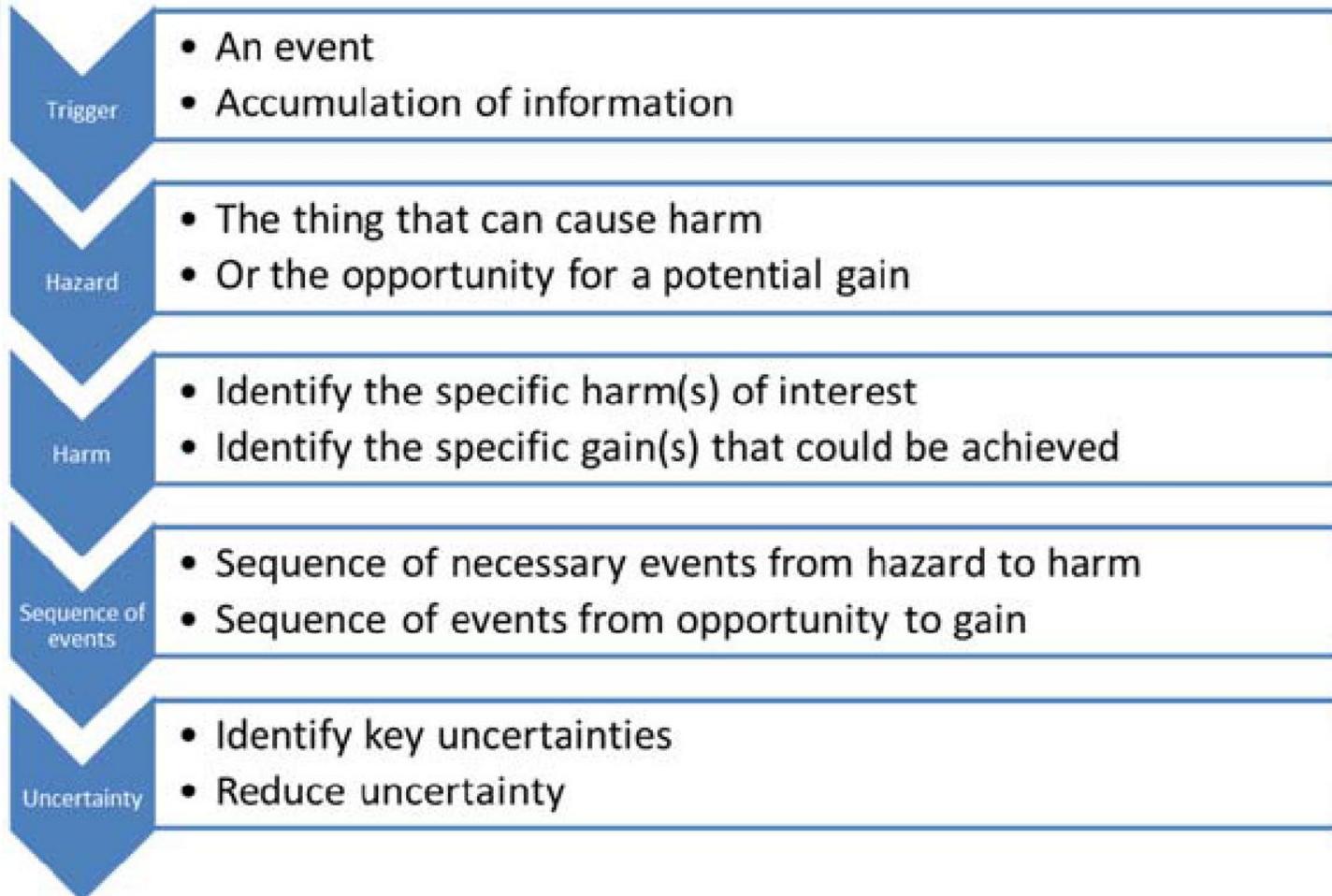


Problems and Opportunities = Risk Identification

- One big difference in Risk-informed planning: think of (and characterize) problems and opportunities as **risks** – *example on next slide*
- Risks: either losses to be reduced or uncertain gains to be realized (i.e., problems to solve or opportunities to attain)
- Remember, risk = probability x consequence
- Establishing the risk context = identify problems and opportunities



Risk Identification



Altered hydraulics caused by impoundment...

Leads to deposition of silt in the backwaters and secondary channels...

Silt smothers SAV, reduces aquatic diversity, and reduces depths necessary for overwintering habitat...

When backwater channel depths reach < 4', aquatic diversity declines and winter habitat for resident fish is lost.

Will rate of silt deposition continue? Will Pool operations remain the same? Will climate change affect backwater habitat?



LET'S PUT INTO PRACTICE AN EXAMPLE PROBLEM STATEMENT

“The streambank is eroding. We need to stop the erosion.”

- Is that a good problem statement?

No

Yes

- Why or why not?
- How could it be improved?
- **Raise your hand** to volunteer an answer.

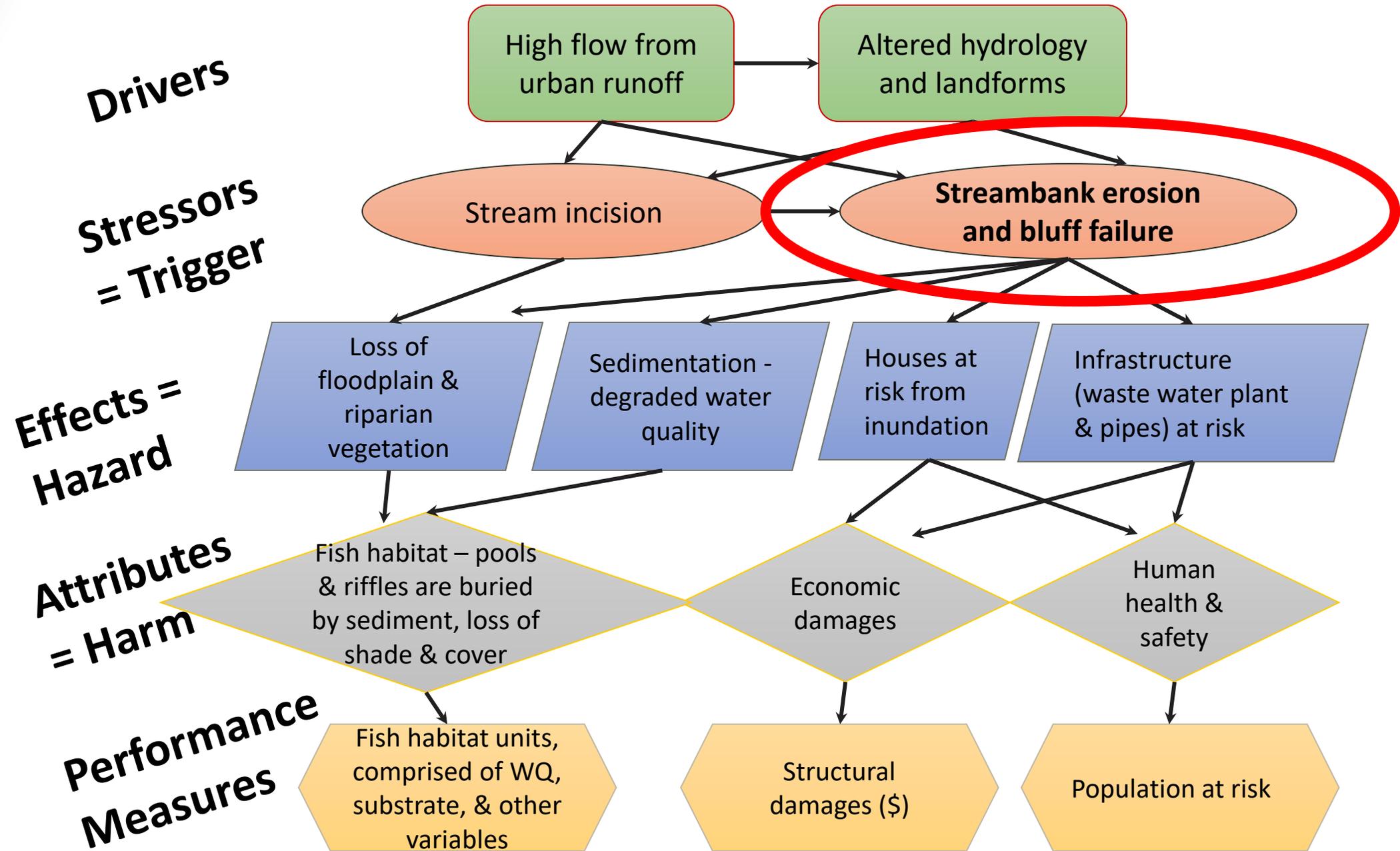


LET'S USE A HYPOTHETICAL CONCEPTUAL MODEL TO ILLUSTRATE HOW RISK IDENTIFICATION CAN IMPROVE OUR PROBLEM STATEMENTS AND NARRATIVE...

- Erosion is a natural hydrogeomorphic process...
 - What is causing the bank erosion?
 - What are the consequences or effects of bank erosion?
 - What is the likelihood of the consequences?
 - Can we solve the problem through our measures or actions?
- Conceptual models can help...



HYPOTHETICAL CONCEPTUAL MODEL





HYPOTHETICAL CONCEPTUAL MODEL

Drivers

Let's build this together...

Stressors
= Trigger

We started by saying the
streambank is eroding.

Effects =
Hazard

This is a *“stressor”* to the natural
system.

Attributes
= Harm

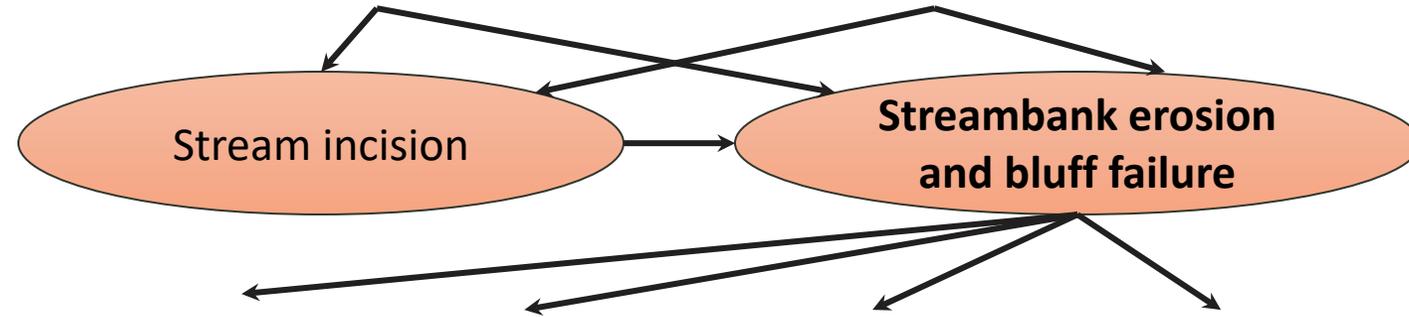
Associated phenomena include
bluff failure and stream incision...

Performance
Measures



HYPOTHETICAL CONCEPTUAL MODEL

What might be causing the erosion?



Drivers

**Stressors
= Trigger**

**Effects =
Hazard**

**Attributes =
Harm**

**Performance
Measures**



HYPOTHETICAL CONCEPTUAL MODEL

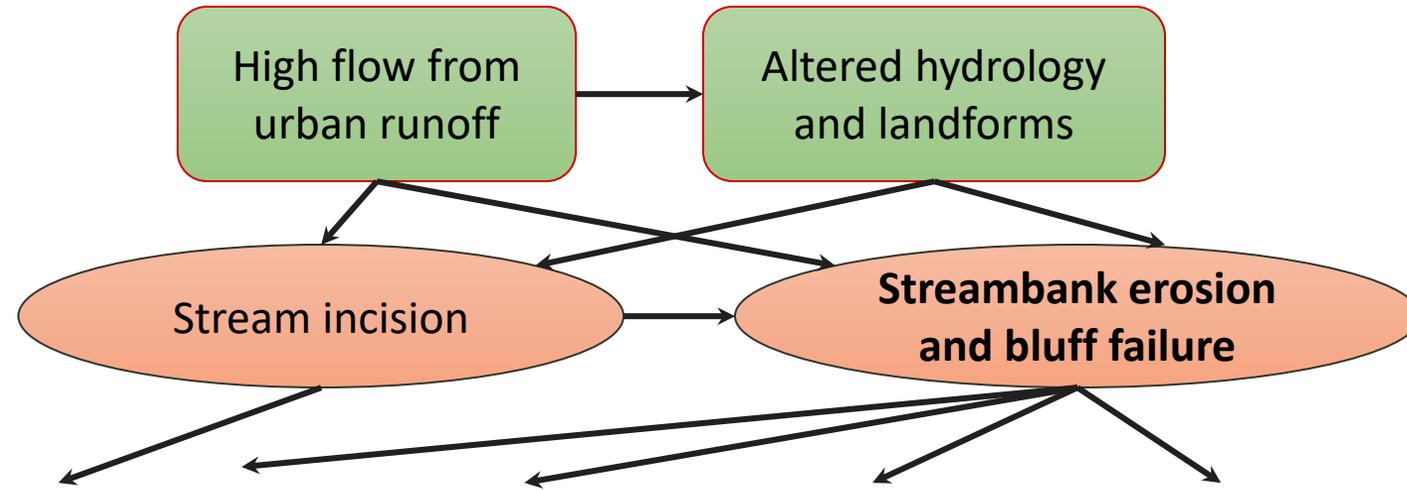
Drivers

Stressors
= Trigger

Effects =
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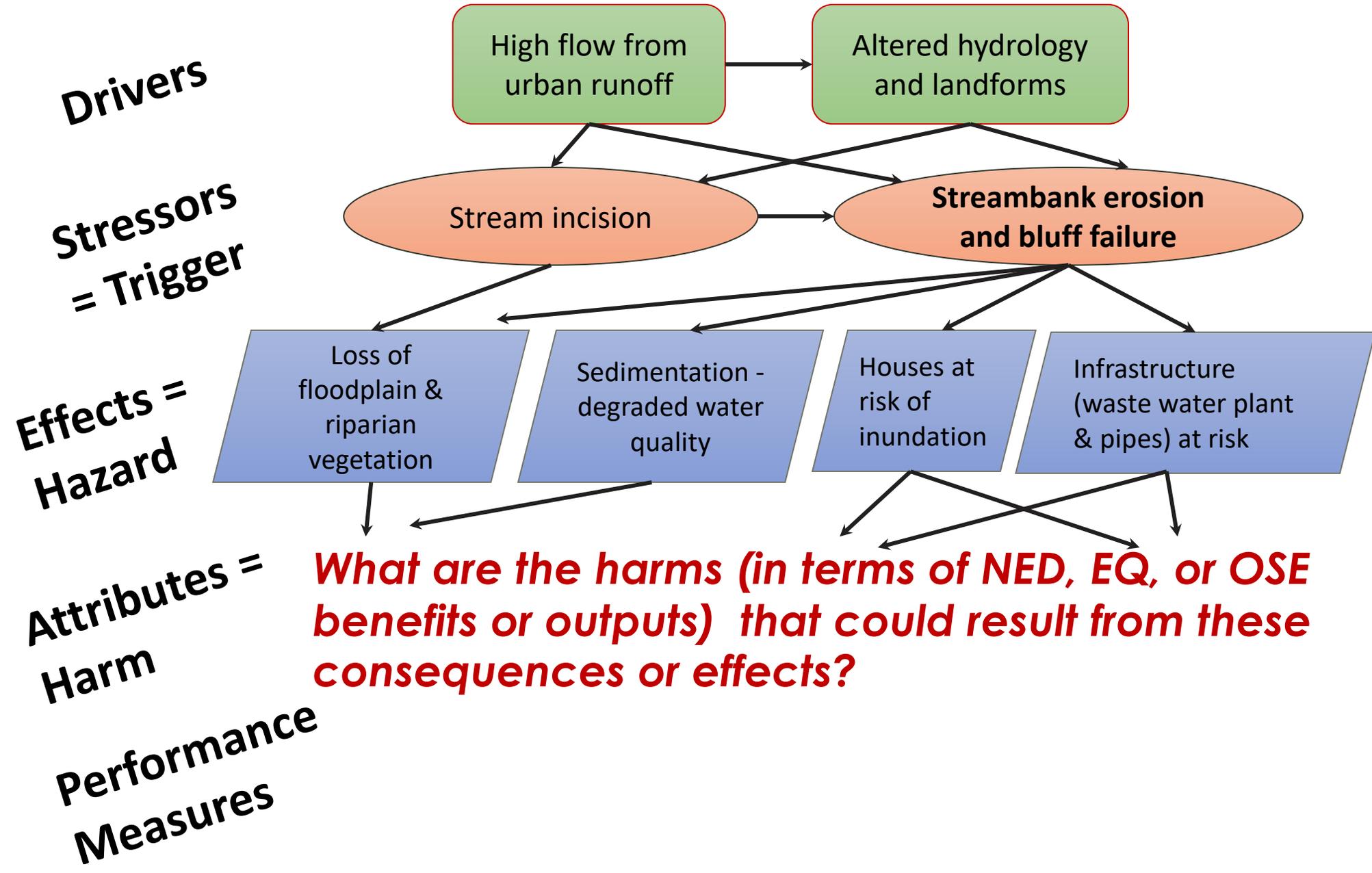
Performance
Measures



What are the consequences of the erosion that we care about?

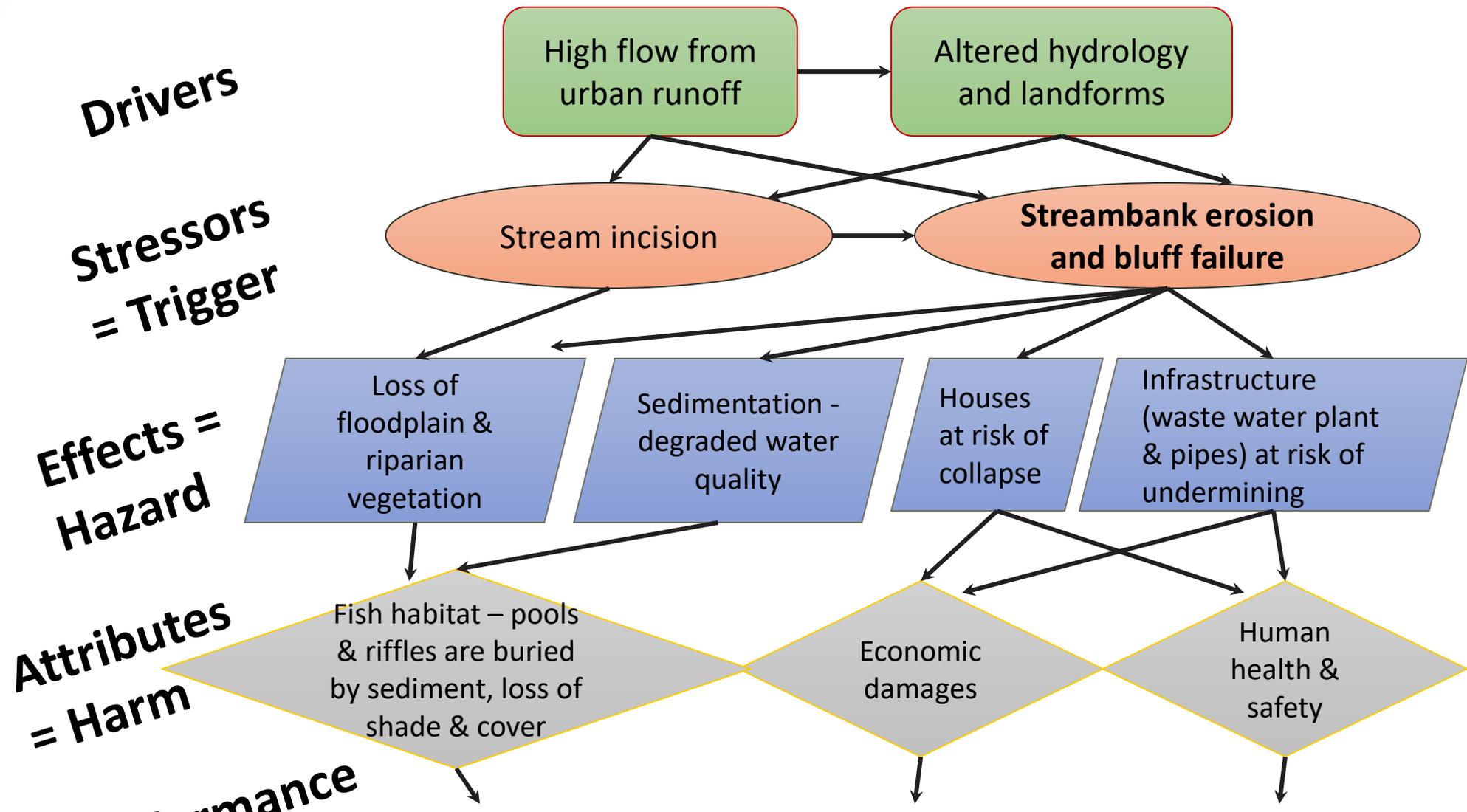


HYPOTHETICAL CONCEPTUAL MODEL





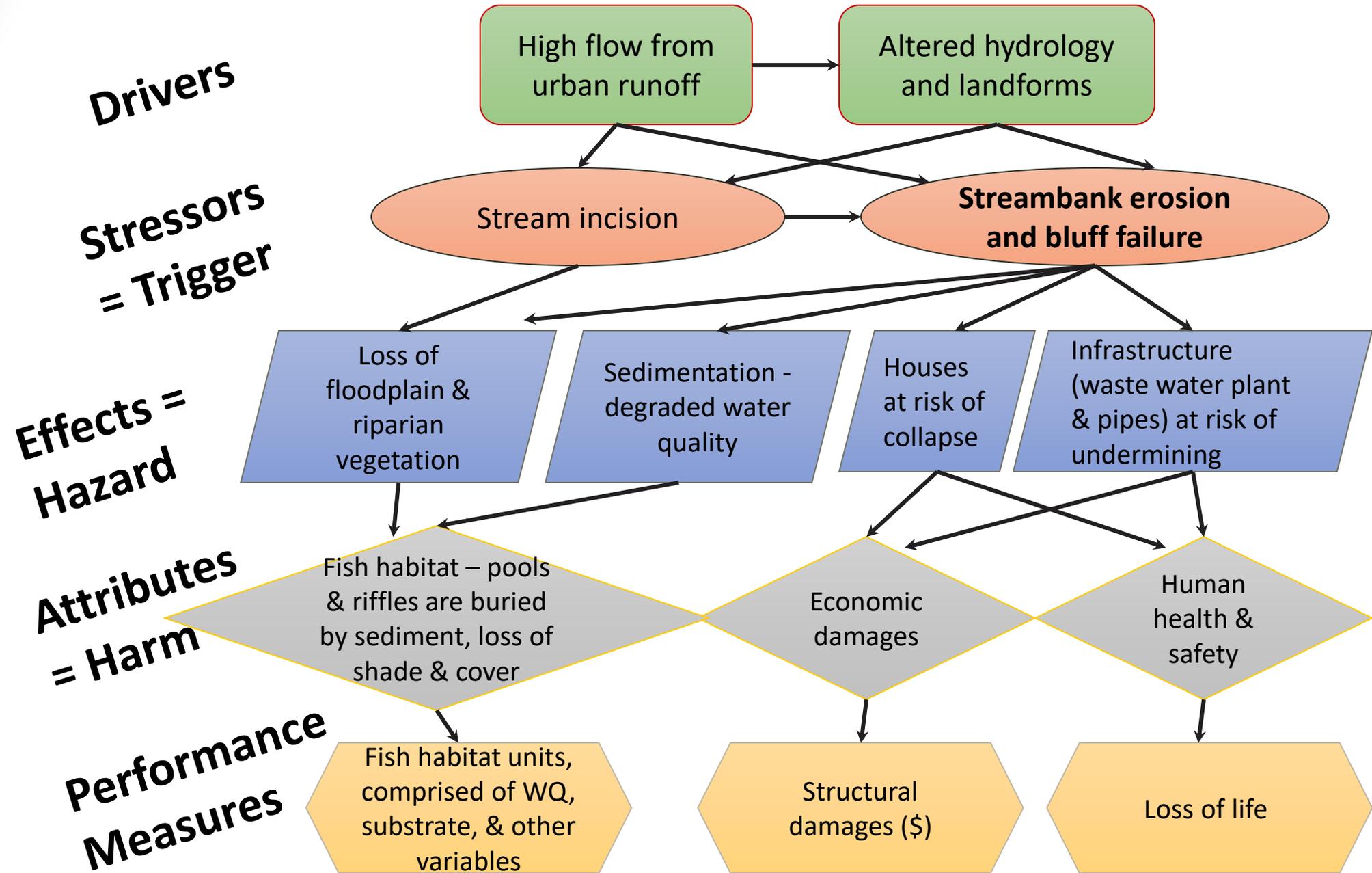
HYPOTHETICAL CONCEPTUAL MODEL



How would we measure these benefits or outputs?



HYPOTHETICAL CONCEPTUAL MODEL





HYPOTHETICAL CONCEPTUAL MODEL

- Based on our conceptual model, what is a better problem statement and narrative?
- *Statement: “Erosion and flooding are causing loss of riparian and aquatic habitat, damages to structures and infrastructure, and negative impacts to public health and safety.”*
- *Narrative: “Altered hydrology, caused by increased urban runoff and other urbanization alterations, is causing downstream channel incision, streambank erosion, and bluff failure, which in turn are causing:*
 - **Loss of natural riparian and floodplain vegetation**
 - Increased sedimentation, leading to **poor quality aquatic habitat** for resident and migratory fish
 - Increased risk of **damages to nearby residential structures** and critical infrastructure
 - Increased **risk to public health & safety** from inundation and loss of functionality of water treatment plant.”



***Q&A check on what we've covered
so far...***



What are planning objectives?

- OK, before we turn to what the Planning Manual has to say about “objectives,” let’s see if we have a common understanding
- Please volunteer a definition in the [chat](#).



PLANNING OBJECTIVES...

- ...Reflect what we *want to accomplish* with an alternative plan and the changes between without- and with-project conditions
- ...Should include the ***effect, subject, location, timing, and duration***
- ...Should be ***specific and measurable*** -- standards by which we will judge the effectiveness of an alternative
 - However, “specific” and “measurable” **do not** mean objectives need to include a specific **goal or target**, such as amount of acreage or percent of restoration



PLANNING OBJECTIVES...

- ...Should ***not contain the “solution”*** to the problem (e.g., reduce erosion through bank stabilization) – they should allow for various ways to solve the problem through implementation of different management measures
- We formulate to meet our objectives -- don't include an objective if we aren't going to develop measures to try to achieve it
- Objectives are statements that describe the results you want to get **both** by solving the **problems** and taking advantage of the **opportunities** you identified



Pop Quiz

1) *Do all identified problems need to have corresponding objectives?*

No

Yes

2) *Can our study be single purpose but at the same time be multi-objective?*

No

Yes



Sample Objective Statements

(for different mission areas)

- Over the 50-year period of analysis (**duration**) from 2030 to 2080 (**timing**), increase (**effect**) the quantity or quality of vegetated habitats (**subject**) and maintain (**effect**) a diverse vegetative mosaic (**subject**) in the floodplain to benefit native fish and wildlife resources (e.g., migratory birds, waterfowl, and species of conservation concern) in the study area's 39-mile reach of the Mississippi River (**location**).
- Over the 50-year period of analysis (**duration**) from 2030 to 2080 (**timing**), reduce (**effect**) flood damages (**subject**) to commercial, residential, and public properties in the Proctor Creek watershed (**location**).
- Over the 50-year period of analysis (**duration**) from 2030 to 2080 (**timing**), reduce (**effect**) risks to life and community safety (**subject**) associated with riverine flooding in the Mossdale Tract area (**location**).



Sample Objective Statements (for different mission areas)

- Over the 50-year period of analysis (**duration**) from 2030 to 2080 (**timing**), reduce (**effect**) damages (**subject**) from coastal storms and shoreline erosion to critical infrastructure along the 10-mile study reach in San Diego County (**location**).
- Over the 50-year period of analysis (**duration**) from 2030 to 2080 (**timing**), decrease (**effect**) costs (**subject**) that result from tidal delays associated with container vessels entering and leaving Charleston Harbor (**location**).
- Over the 50-year period of analysis (**duration**) from 2030 to 2080 (**timing**), minimize (effect) navigation restrictions (subject) for the existing and future fleet at the Port of Oakland.
- Over the 50-year period of analysis (**duration**) from 2030 to 2080 (**timing**), improve (**effect**) recreational opportunities and public access (**subject**) along the Wolf River (**location**) for such activities as boating, fishing, kayaking, hiking, bird-watching, picnicking, and educational activities.



Common Mistake to Avoid in Objective Statements

- Defining Duration
- “**Planning horizon**” and “**project life**” are not the same as the 50-year period of analysis and should **never be used** in objective statements for duration
- Neither term is needed anywhere in decision documents
- Once authorized projects are constructed, they last in perpetuity unless deauthorized, so “project life” is essentially forever
- Planning horizon begins at the start of the study and continues for the project life, so it is also essentially forever



Constraints

- A constraint is basically a **restriction** that limits the extent of the planning process or plan formulation
- Constraints are undesirable changes or things we want to **avoid** doing
- **Universal** planning constraints apply to every study. For example, we must plan and design projects in compliance with all Federal laws and policies.
- **Study-specific** planning constraints are those actions or impacts the project under consideration needs to avoid due to circumstances or conditions within the study area.



Constraints

- Some constraints are “hard and fast” – we must avoid – but others are better characterized as “**considerations.**” They may have some negative influence or impact, but we can minimize or mitigate for those impacts if there are other positive/ beneficial reasons for including the management measure.
- Don’t inadvertently **confuse screening criteria with constraints** (e.g., “high land costs”)



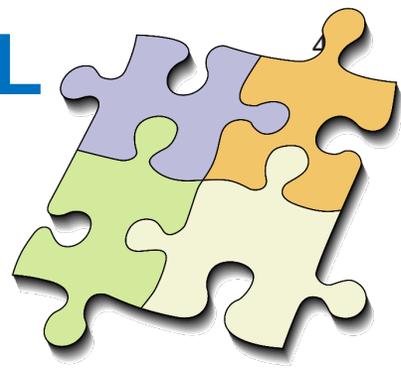
Sample Constraint Statements

[Note: In all cases whether these are constraints or considerations depends on the study context and whether the effects can potentially be mitigated.]

- Avoid/ minimize impacts to commercial and recreational **navigation operations** in East San Pedro Bay from proposed ecosystem restoration management measures.
- Avoid/ minimize placement of dredged material on beaches **during sea turtle nesting season**.
- Avoid/ minimize impacts to existing **shaded riverine aquatic habitat** along the lower San Joaquin River from FRM features.
- Avoid/ minimize impacts to **aesthetic resources**, including views of and from the historic district, from proposed CSRM management measures.
- Avoid/ minimize disproportionate **impacts to economically disadvantaged** and socially vulnerable populations in the study area from proposed FRM features.



HOW DO WE USE THE POOCs? HOW DOES ALL THIS FIT TOGETHER?



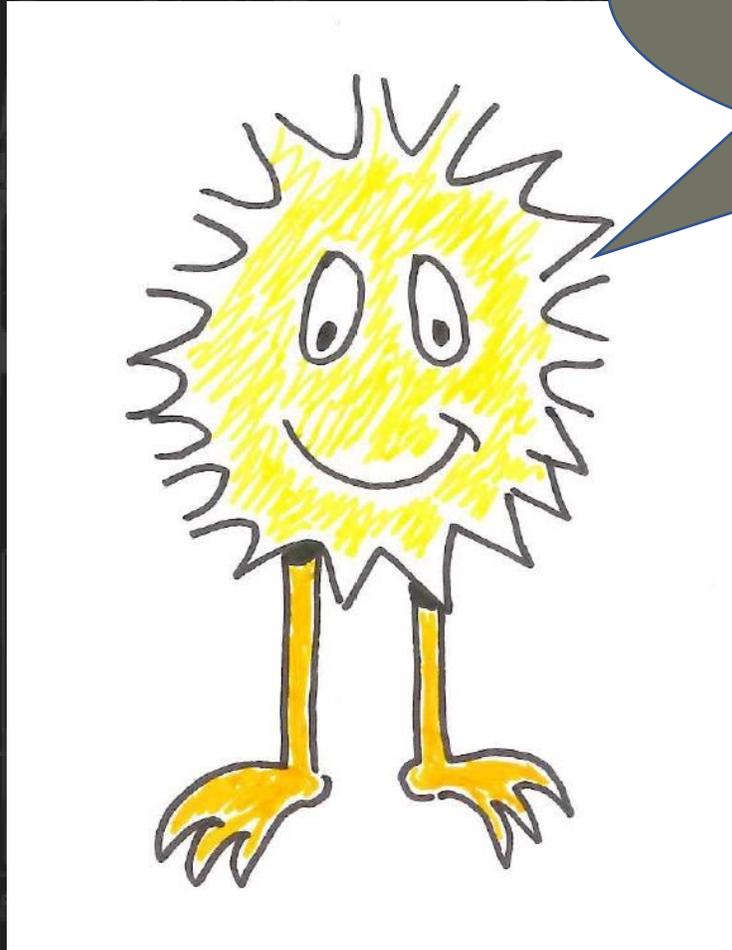
- The POOCs give our study **direction** and focus – both initially and throughout the planning process (i.e., are we going in the right direction?)
- We may identify a lot of problems (potential losses or unrealized gains) in our study area
 - We don't have to address all the problems we identify
- We may or may not be able to address the **opportunities** we identify
- The subset of problems/ opportunities we plan to address through our study become our **planning objectives** – i.e., what we hope to achieve
- We **formulate** management measures and alternatives to meet our planning objectives
 - If we have an objective, we must formulate to meet it
- Not every measure/ alternative has to meet every planning objective
- **Constraints** (and considerations) will limit (or influence) what measures we formulate
- Why develop the POOCs? ***To use them!***



WHO DEVELOPS THE POOCs AND HOW?

- Who? POOCs are developed **collaboratively** – not the PDT in a vacuum – but all interested groups & full spectrum of technical disciplines
 - Includes non-federal sponsors, Federal, State, and local agencies, Tribes, minority and low-income communities with environmental concerns, non-governmental organizations, and other public interests
- How? USACE encourages **active outreach** to and **participation** of these groups -- through **scoping charettes**, **interagency meetings**, **invitations** to be cooperating agencies, **public outreach** and communication plans, **public meetings** (virtual and in-person), **NEPA scoping**, etc.
 - From a practical standpoint, PDTs may take a “first crack” at the POOCs (for example, with the “6 pieces of paper”), but they are informed by early engagement with these groups
- POOCs are reinforced and affirmed with the vertical team, decision makers, and PDT along the way
- *If not, PDTs may find themselves well into a study and realize that they don't have buy-in on the foundations of their plan formulation*
- Still, the PDT “owns” the POOCs. We may get input from stakeholders, but the POOCs need to be compatible with USACE authorities, missions, and policies.

**ANY
QUESTIONS??**



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