San Joaquin River Restoration Program

Fisheries Management Work Group
Technical Feedback Meeting

CSU-Stanislaus
September 8, 2008

Agenda

- Introductions and meeting purpose
- Review of progress to date and reach-by-reach limiting factors
- Alternative floodway concepts
- Restoration strategy
  - Decision Tree
  - Definitions
  - Example routing
- Next steps and future meetings

Meeting Purpose

- Reach-by-reach limiting factors and objectives
  - Follow-up from last meeting
  - Review of changes, next steps
- Alternative Floodway Concepts
  - Your input and insights on floodplain concepts
- Introduce Restoration Strategy
  - Decision Tree
  - Your input and insights

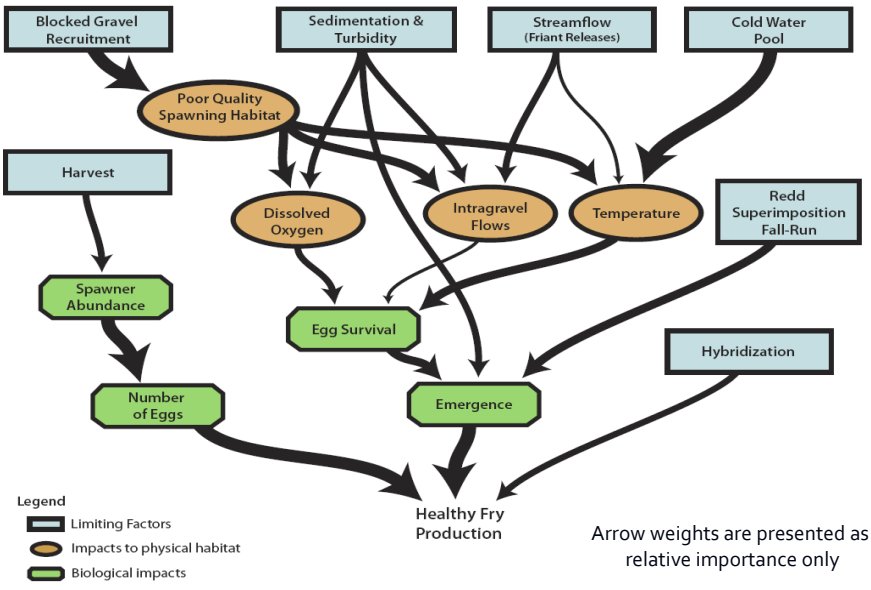
Review of Progress to Date and Reach-By-Reach Limiting Factors

Available Documents

- Chinook Salmon Temporal Occurrence and Environmental Requirements
- Conceptual Model of Stressors and Limiting Factors for Chinook Salmon
- Temperature Model Selection
- Temperature Model Sensitivity Runs
  - Sets 1 & 2
  - Set 3
- Quantitative Fisheries Model Selection
- Initial Program Alternatives Report

All documents all available on the project website at: www.restoresjr.com

Life Stage Conceptual Model Spawning and Incubation



San Joaquin River Reaches

Taking the Next Step – Reach by Reach Limiting Factors

- Conceptual Models are general representations of system-wide factors and impacts
- Reach-by-reach assessment needed because:
  - Not every reach has the same limiting factors
  - Need process to identify and prioritize future actions/projects by reach
- Reach-by-reach assessment conducted to:
  - Prioritize limiting factors by reach
  - Prioritize objectives by reach

Reach-by-Reach Limiting Factors

- Reach-by-reach limiting factors are ranked based on the expected affect on abundance
  - Primary – Abundance could be adversely affected to the extent that Restoration Goal may not be met
  - Secondary – Anticipated low or negligible impact on abundance
- **All the limiting factors and their priorities are based on existing conditions**

Draft Adult Migration Limiting Factors

	Reach 1	Reach 2	Reach 3	Reach 4	Reach 5	Bypasses
Inadequate Streamflow	PP	PP	PP	PP	PP	PP
Unsuitable Water Quality	SP	SP	SP	SP	SP	SP
Exports/ Diversions	SP	**PP**	**PP**	SP	**PP**	SP
False Migration Cues	SP	SP	SP	SP	SP	SP
Harvest	**PP**	**PP**	**PP**	**PP**	**PP**	**PP**

PP = Primary Priority
SP = Secondary Priority

Draft Adult Holding Limiting Factors

	Reach 1	Reach 2	Reach 3	Reach 4	Reach 5	Bypasses
Insufficient Cold Water	PP	NA	NA	NA	NA	NA
Inadequate Streamflow	PP	NA	NA	NA	NA	NA
Predation	SP	NA	NA	NA	NA	NA
Harvest	**PP**	NA	NA	NA	NA	NA

PP = Primary Priority
SP = Secondary Priority

Draft Spawning and Incubation Limiting Factors

	Reach 1	Reach 2	Reach 3	Reach 4	Reach 5	Bypasses
Blocked Gravel Recruitment	PP	NA	NA	NA	NA	NA
Insufficient Cold Water	PP	NA	NA	NA	NA	NA
Sedimentation and Turbidity	SP	NA	NA	NA	NA	NA
Inadequate Streamflow	SP	NA	NA	NA	NA	NA
Redd Super-imposition	SP	NA	NA	NA	NA	NA
Hybridization	SP	NA	NA	NA	NA	NA
Harvest	SP	NA	NA	NA	NA	NA

PP = Primary Priority
SP = Secondary Priority
NA = Not applicable

Draft Fry/Juvenile Rearing Limiting Factors

	Reach 1	Reach 2	Reach 3	Reach 4	Reach 5	Bypasses
Inadequate Streamflow	PP	PP	PP	PP	PP	PP
Excessive Water Temperature	PP	PP	PP	PP	PP	PP
Degraded Habitats	PP	PP	PP	PP	PP	PP
Excessive Predation	PP	PP	SP	SP	PP	SP
Excessive Entrainment	SP	PP	PP	SP	SP	SP
Adult Carcasses	SP	SP	SP	SP	SP	SP
Degraded Water Quality	SP	SP	SP	PP	PP	PP

PP = Primary Priority SP = Secondary Priority

Draft Smolt Migration Limiting Factors

	Reach 1	Reach 2	Reach 3	Reach 4	Reach 5	Bypasses
Inadequate Streamflow	PP	PP	PP	PP	PP	PP
Excessive Water Temperature	PP	PP	PP	PP	PP	PP
Degraded Habitats	PP	PP	PP	PP	PP	PP
Excessive Predation	PP	PP	SP	SP	PP	SP
Excessive Entrainment	SP	PP	PP	SP	SP	SP
Adult Carcasses	SP	SP	SP	SP	SP	SP
Degraded Water Quality	SP	SP	SP	PP	PP	PP
Harvest	SP	SP	SP	SP	SP	SP

PP = Primary Priority SP = Secondary Priority

Draft Yearling Limiting Factors

	Reach 1	Reach 2	Reach 3	Reach 4	Reach 5	Bypasses
Inadequate Streamflow	PP	PP	PP	PP	PP	PP
Excessive Water Temperature	PP	PP	PP	PP	PP	PP
Degraded Habitats	PP	PP	PP	PP	PP	PP
Excessive Predation	PP ?	PP ?	SP	SP	PP ?	SP
Excessive Entrainment	SP	PP	PP	SP	SP	SP
Adult Carcasses	SP	SP	SP	SP	SP	SP
Degraded Water Quality	SP	SP	SP	PP	PP	PP
Harvest	SP	SP	SP	SP	SP	SP

PP = Primary Priority SP = Secondary Priority

Alternative Floodway Concepts

Where Do We Build Rearing Habitat?

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Floodplain Design Concepts

- Key questions to address:
  - How do you design your floodway for hydraulic capacity and fisheries benefits?
  - How do you evaluate floodplain types?
  - How much floodplain do you need?

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Planning the Floodway

Less

50% wetted cross-section width
< 18 inches mean depth
< 1.5 f/s at 4,500 cfs
riparian ribbon

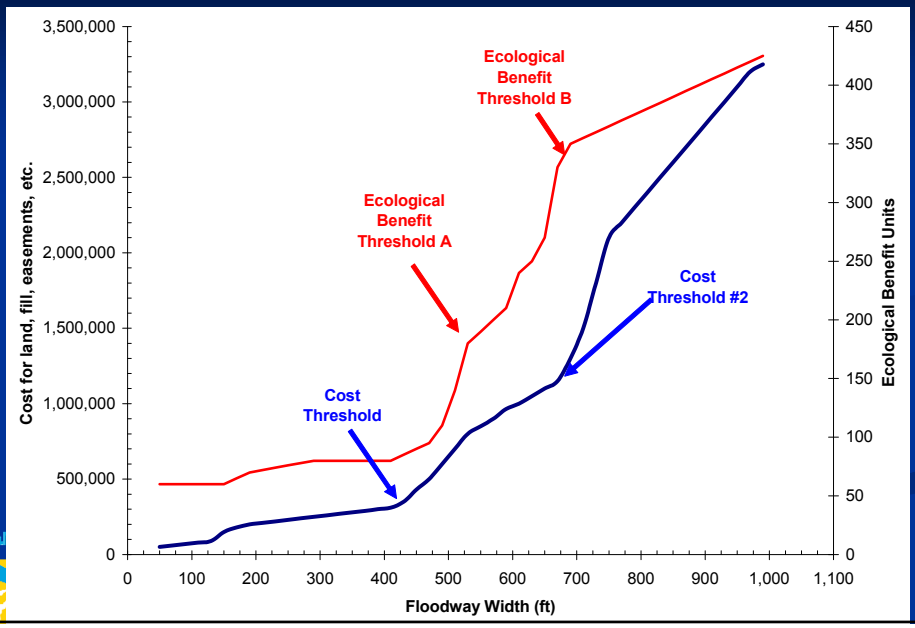
More

?

?

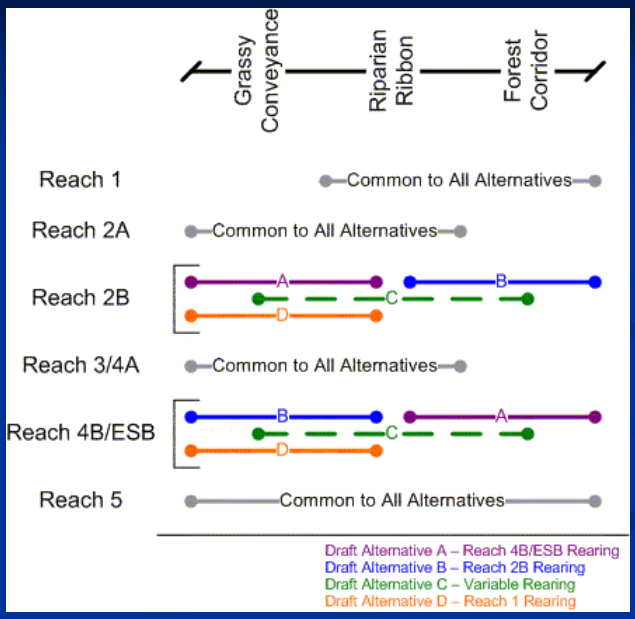
What type of ecological benefit does this provide?

Planning the Floodway



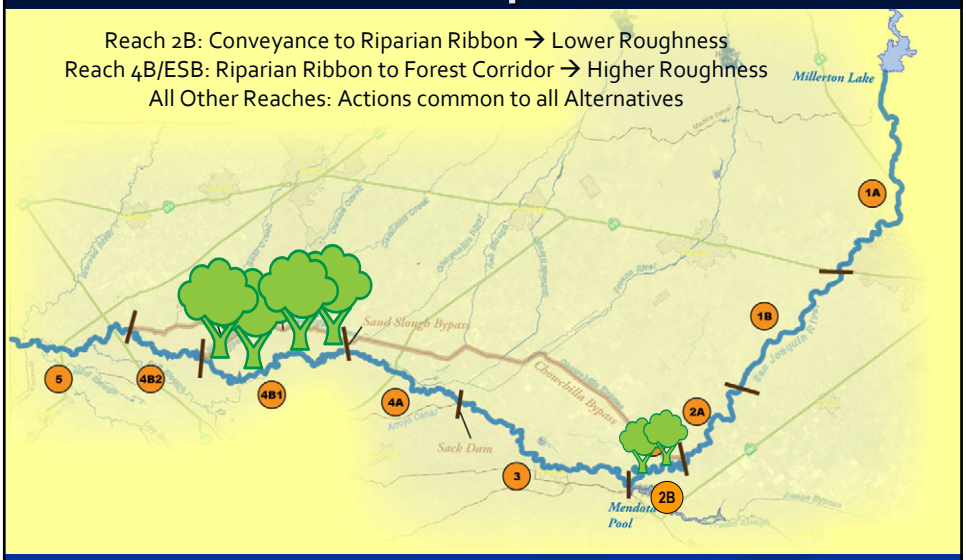
Alternative Floodway Concepts

Concepts denote an overall roughness factor for engineering analysis. Each floodway / floodplain type will be a mosaic of habitats.



Concept A

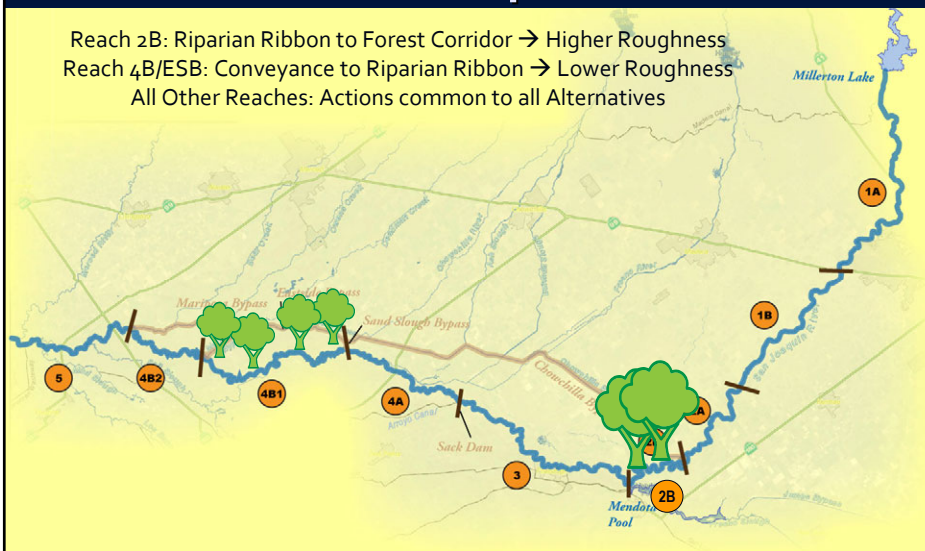
Reach 2B: Conveyance to Riparian Ribbon → Lower Roughness
Reach 4B/ESB: Riparian Ribbon to Forest Corridor → Higher Roughness
All Other Reaches: Actions common to all Alternatives



Reach 1A, 1B, and 4B1 rearing. Mirrors life history pattern of spring-run Chinook salmon in Butte Creek.

Concept B

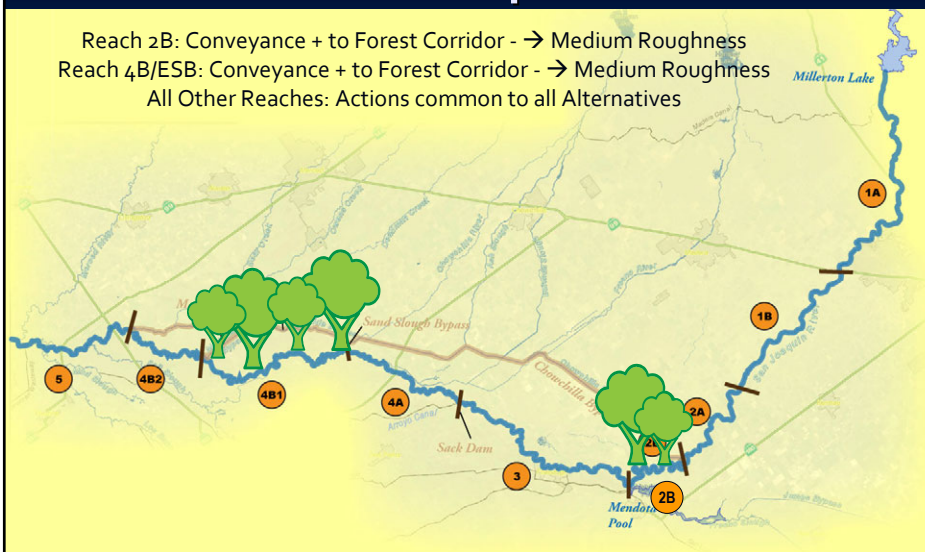
Reach 2B: Riparian Ribbon to Forest Corridor → Higher Roughness
Reach 4B/ESB: Conveyance to Riparian Ribbon → Lower Roughness
All Other Reaches: Actions common to all Alternatives



Reach 1A, 1B, and 2B rearing. Mirrors life history pattern of spring-run Chinook salmon in Mill and Deer creeks.

Concept C

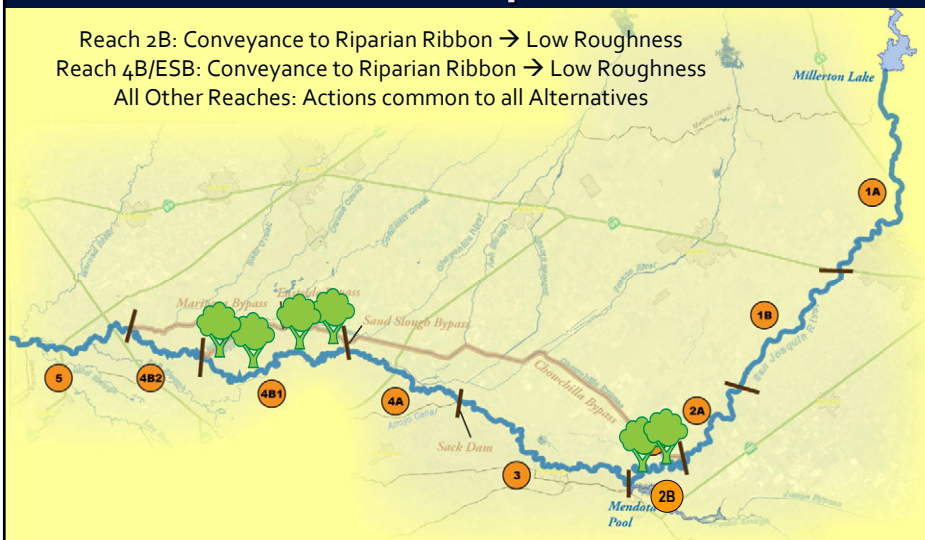
Reach 2B: Conveyance + to Forest Corridor - → Medium Roughness
Reach 4B/ESB: Conveyance + to Forest Corridor - → Medium Roughness
All Other Reaches: Actions common to all Alternatives



Reach 1A and 1B rearing, with variable habitat and possible rearing in Reach 2B and 4B/ESB. Variable life history.

Concept D

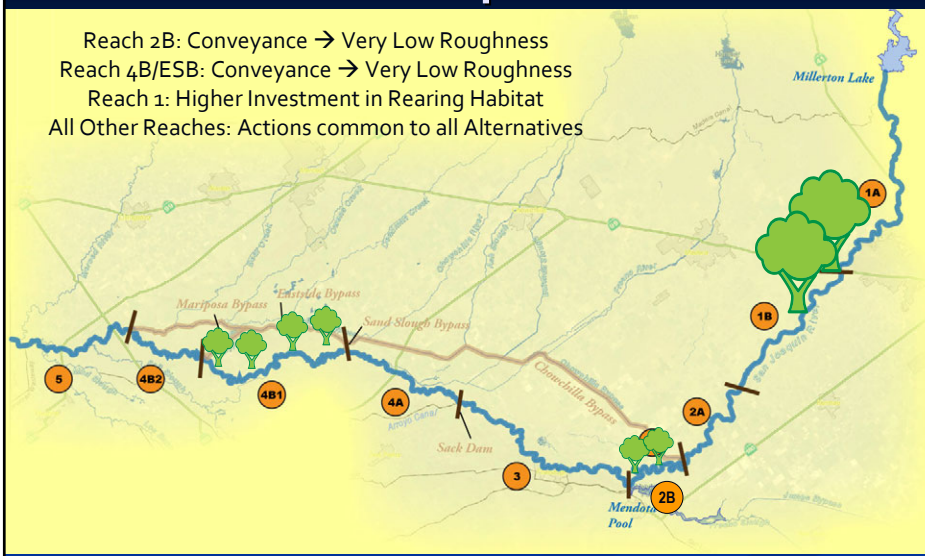
Reach 2B: Conveyance to Riparian Ribbon → Low Roughness
Reach 4B/ESB: Conveyance to Riparian Ribbon → Low Roughness
All Other Reaches: Actions common to all Alternatives



Reach 1A and 1B rearing. Lower reaches function as migration corridor with modest investment in 2B and 4B.

Concept D2?

Reach 2B: Conveyance → Very Low Roughness
Reach 4B/ESB: Conveyance → Very Low Roughness
Reach 1: Higher Investment in Rearing Habitat
All Other Reaches: Actions common to all Alternatives



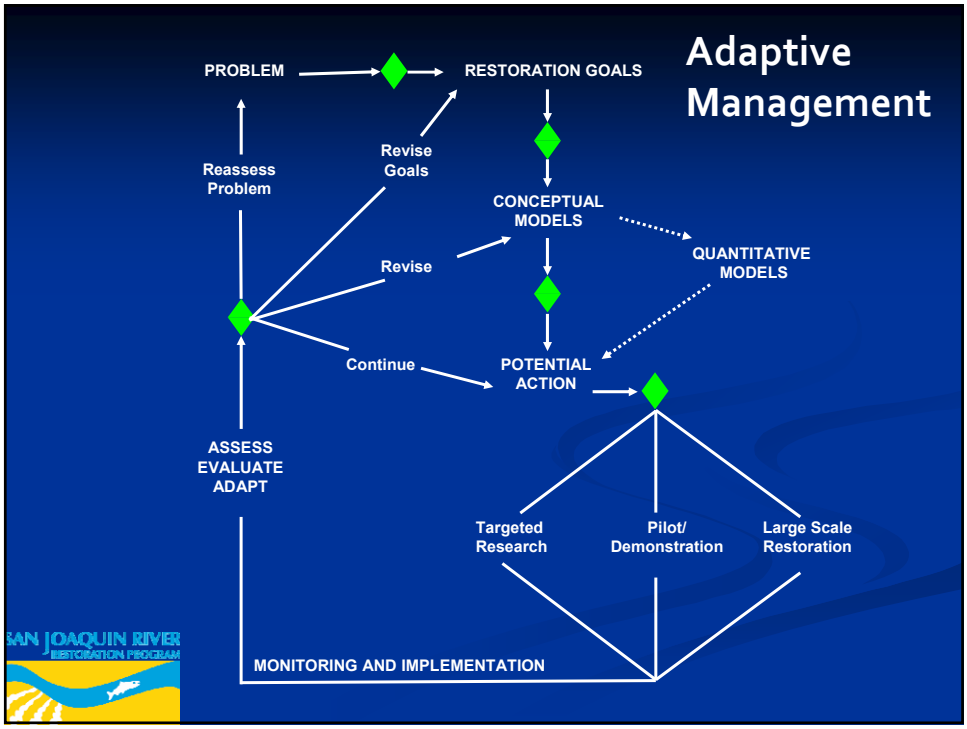
Reach 1A and 1B rearing. Lower reaches function as migration corridor with limited investment in 2B and 4B.

Restoration Strategy

Restoration Strategy

- Why have a restoration strategy?
  - Guide future actions
  - Sets up the adaptive management process
- Will be a foundational concept in the Fish Management Plan

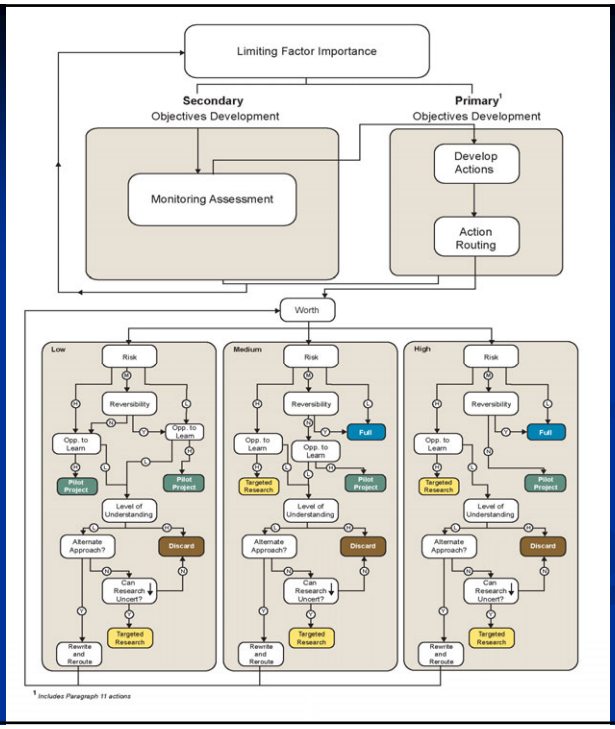
Adaptive Management



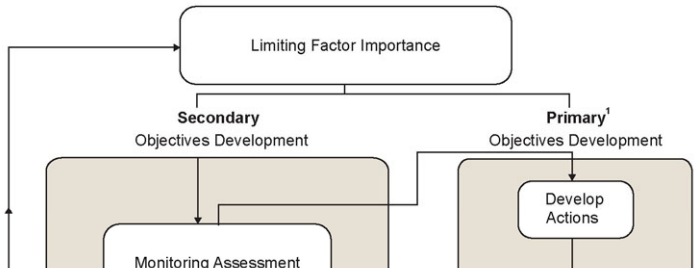
Purpose and Intended Use of Action Routing Process

- Tool to screen potential future actions:
  - Full implementation
  - Pilot project
  - Targeted research
  - Discarded
- Transparent process to address limiting factors
- Based on DRERIP Decision Tree for Routing Actions

Action Routing Process

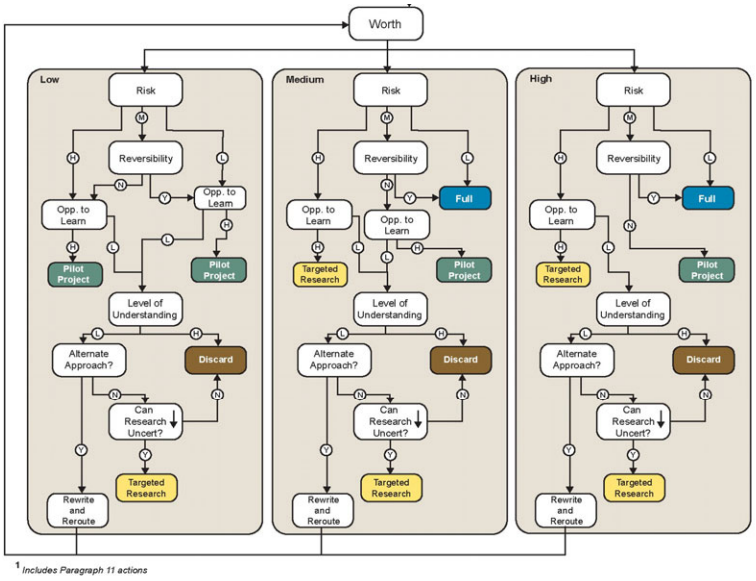


Action Routing Process – Part 1



All Paragraph 11 actions routed as "Primary" to full implementation

Action Routing Process – Part 2



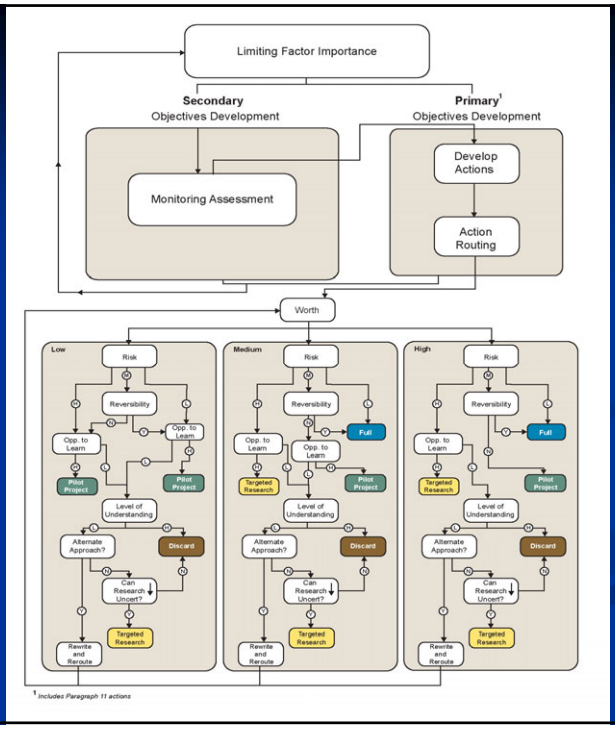
[1] *Includes Paragraph 11 actions*

Definitions

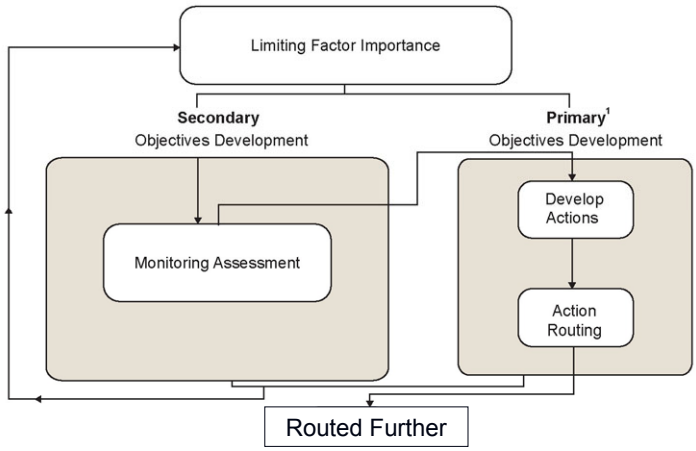
- Magnitude
  - Assesses the size or level of the outcome, either positive or negative, as opposed to the scale of the Action.
- Certainty
  - Describes the likelihood that a given Restoration Action will achieve a certain Outcome.
- Worth
  - Combines the magnitude and certainty of positive outcomes to convey the cumulative "value" of a Restoration Action toward achieving an outcome.
- Risk
  - Combines the magnitude and certainty of negative outcomes to convey the cumulative "potential" for a Restoration Action to result in an adverse, or negative outcome.

Action Routing Process

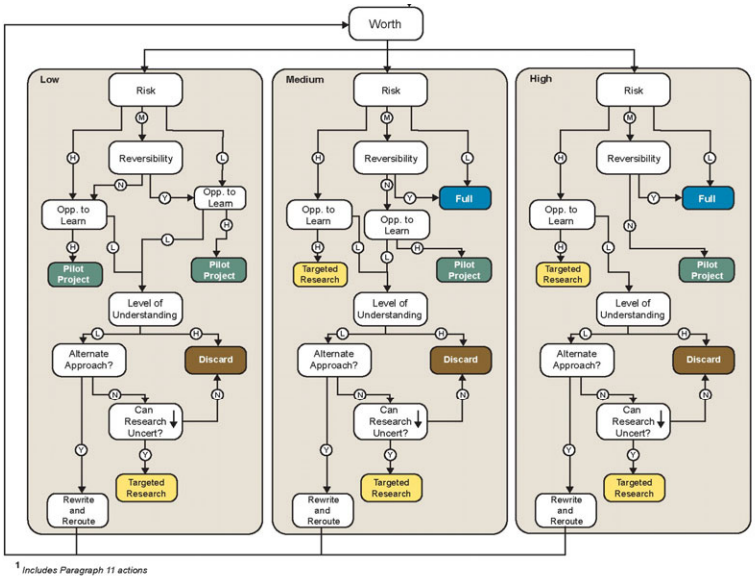
Example



Action Routing Example – Part 1



Action Routing Example – Part 2



[1] *Includes Paragraph 11 actions*

Discussion

Next Meetings

- October 7
- November 4
- Meetings at CSU Stanislaus
- 1:00 p.m. to 3:00 p.m.

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