



Exposure Areas and Exposure Point Concentrations

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Agenda

Exposure Areas (EAs)

1. What is an EA?
2. Purpose of selecting EAs
3. Process for selecting EAs

Exposure Point Concentrations (EPCs)

1. What is an EPC?
2. Purpose of EPCs
3. Development of EPCs





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- TASC does not speak for or represent EPA



Exposure Areas



What Is an EA?

- An area within which an exposed person may reasonably be assumed to move at random
 - Contact with soil or sediment is equally likely at all points within the EA





Purpose of Selecting EAs

- To support risk calculations
 - EAs are selected based on property use and behavior of people
- Theoretical Examples:
 - For residential property, a child is expected to ingest 200 milligrams of soil per day; 350 days per year
 - For recreation on nearshore sediment, a child is expected to ingest 200 milligrams of soil per day; 90 days per year





Basis for EAs

- Screening level assumption
 - Resident (adult and/or child) moves at random across their own property
- Refined assumption
 - Resident frequents certain locations more often than others
 - Front yard = EA 1
 - Back yard = EA 2
 - Shoreline = EA 3



Process for Selecting EAs for Hudson River PCBs Superfund Site

- Screening level assessment (SLA)
 - Each tax parcel is one EA
 - Each tax parcel is residential





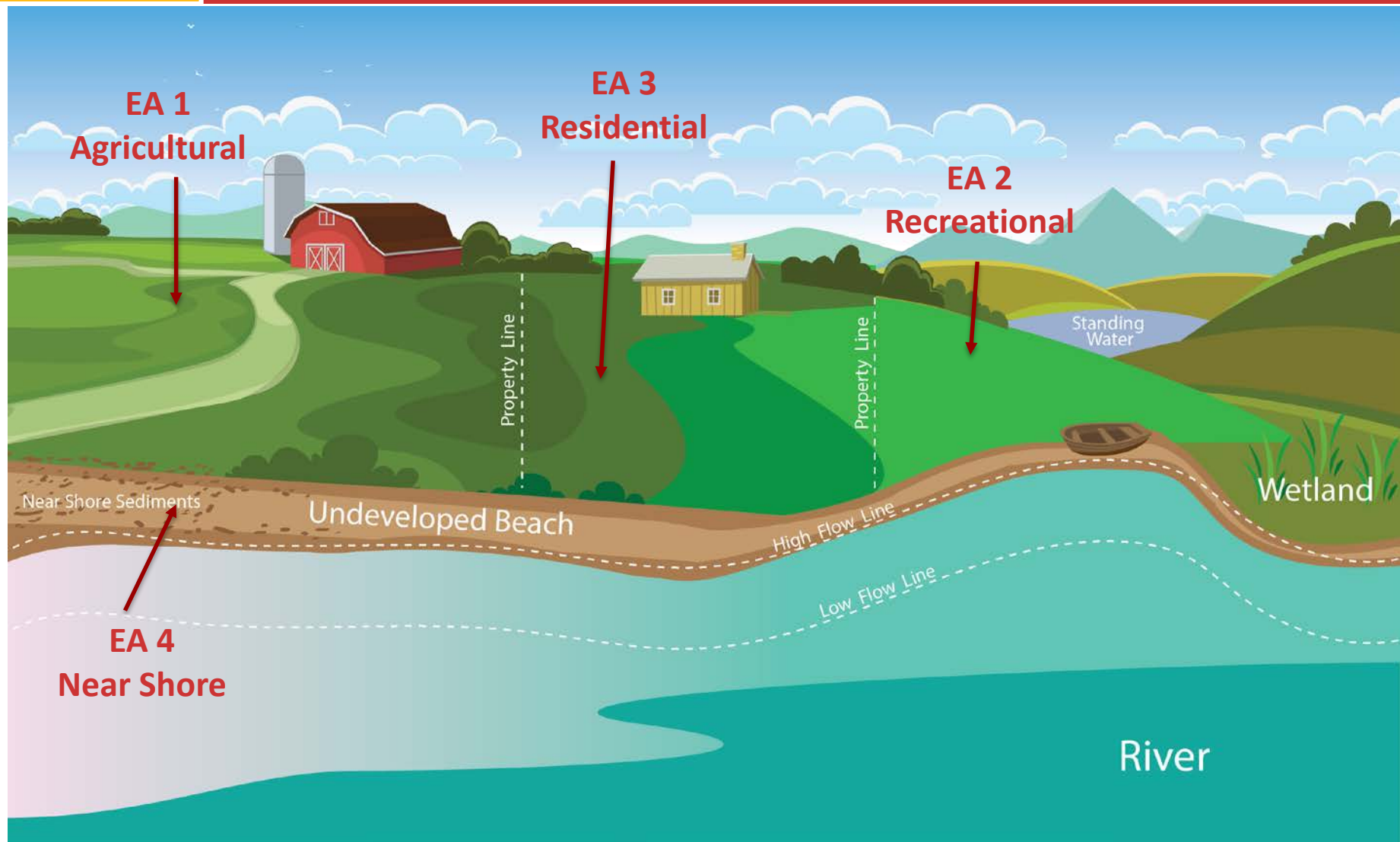
Process for Selecting EAs for Hudson River PCBs Superfund Site



- Phase 1 and 2 risk assessment
 - A tax parcel may have more than one EA
 - Tax parcels will be assigned 1 EA, if possible
 - An EA may encompass more than one tax parcel
 - Use scenarios for each EA may be:
 - Residential
 - Recreational
 - Agricultural
 - Commercial/industrial
 - School

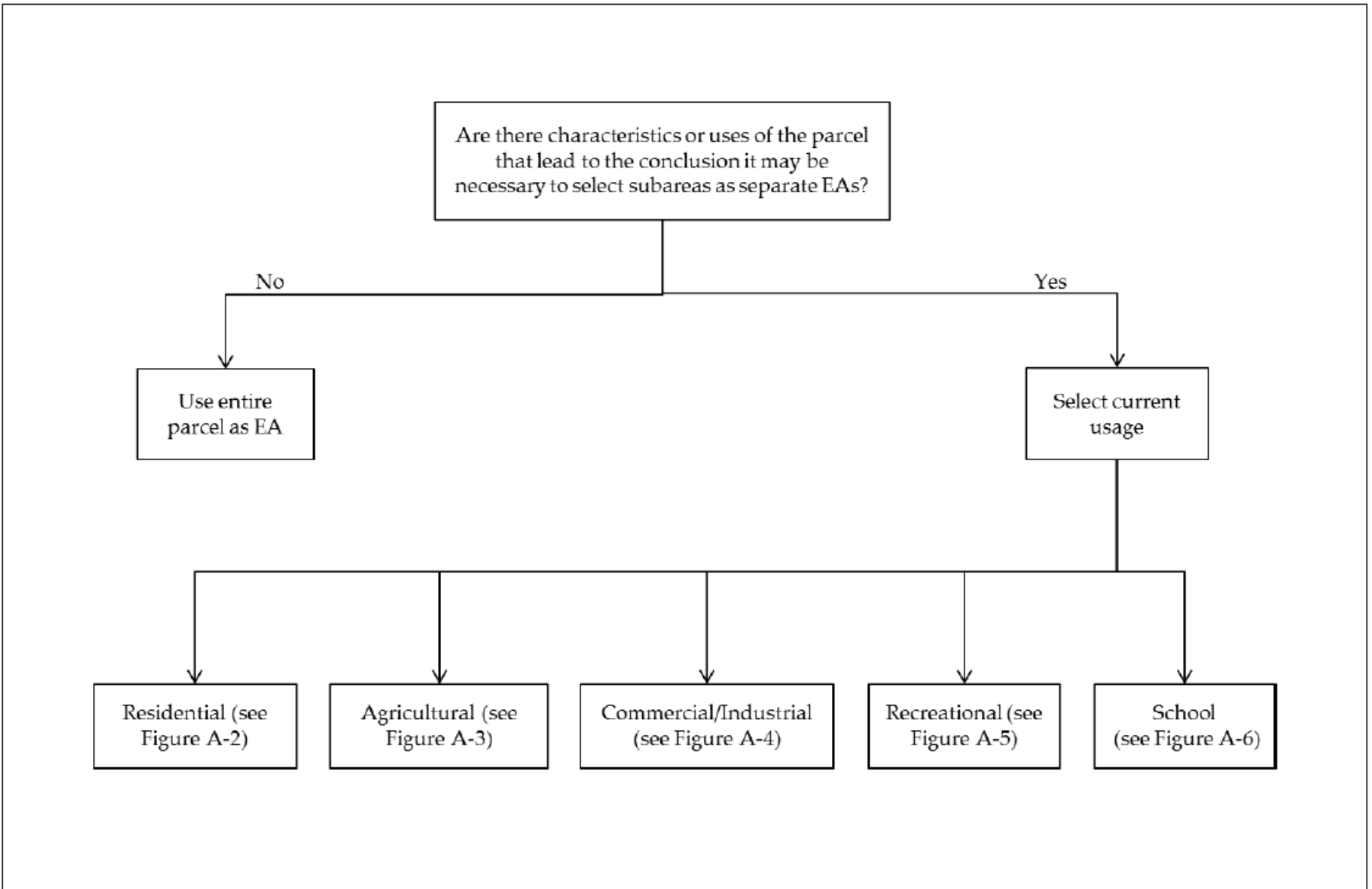


Phase 1 and 2 Concept Illustration



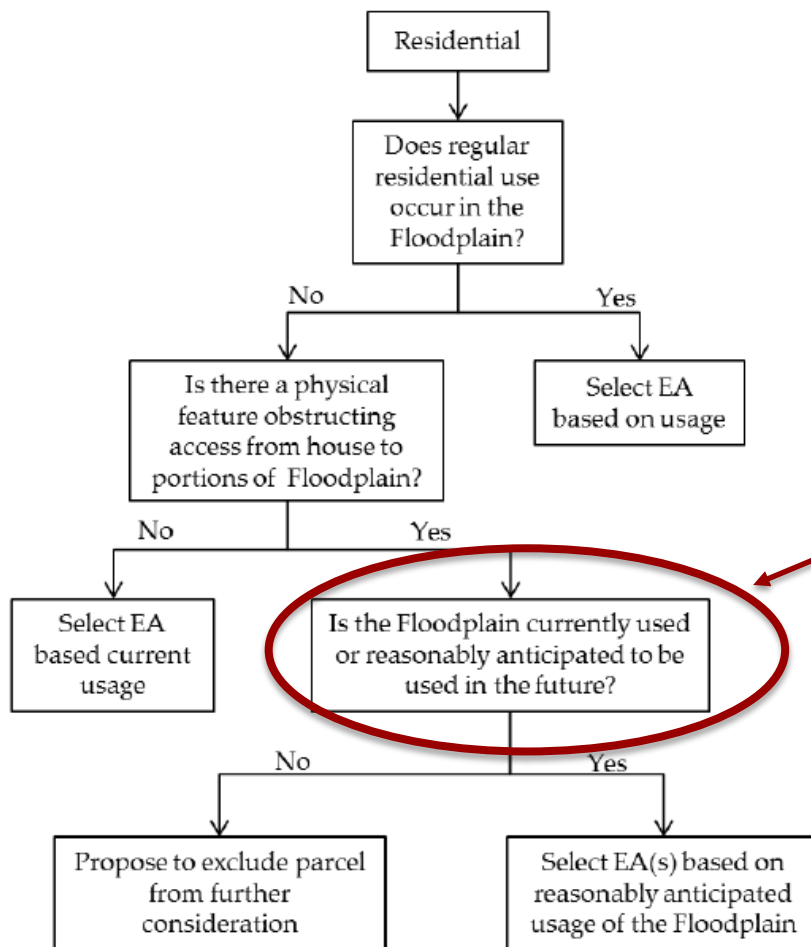


Figures A-1 through A-6





Figures A-1 through A-6



Who decides future use?

Note: In some cases, portions of the Floodplain may be used for different purposes. When this occurs, multiple EAs and usage types may be identified and evaluated for a single parcel.



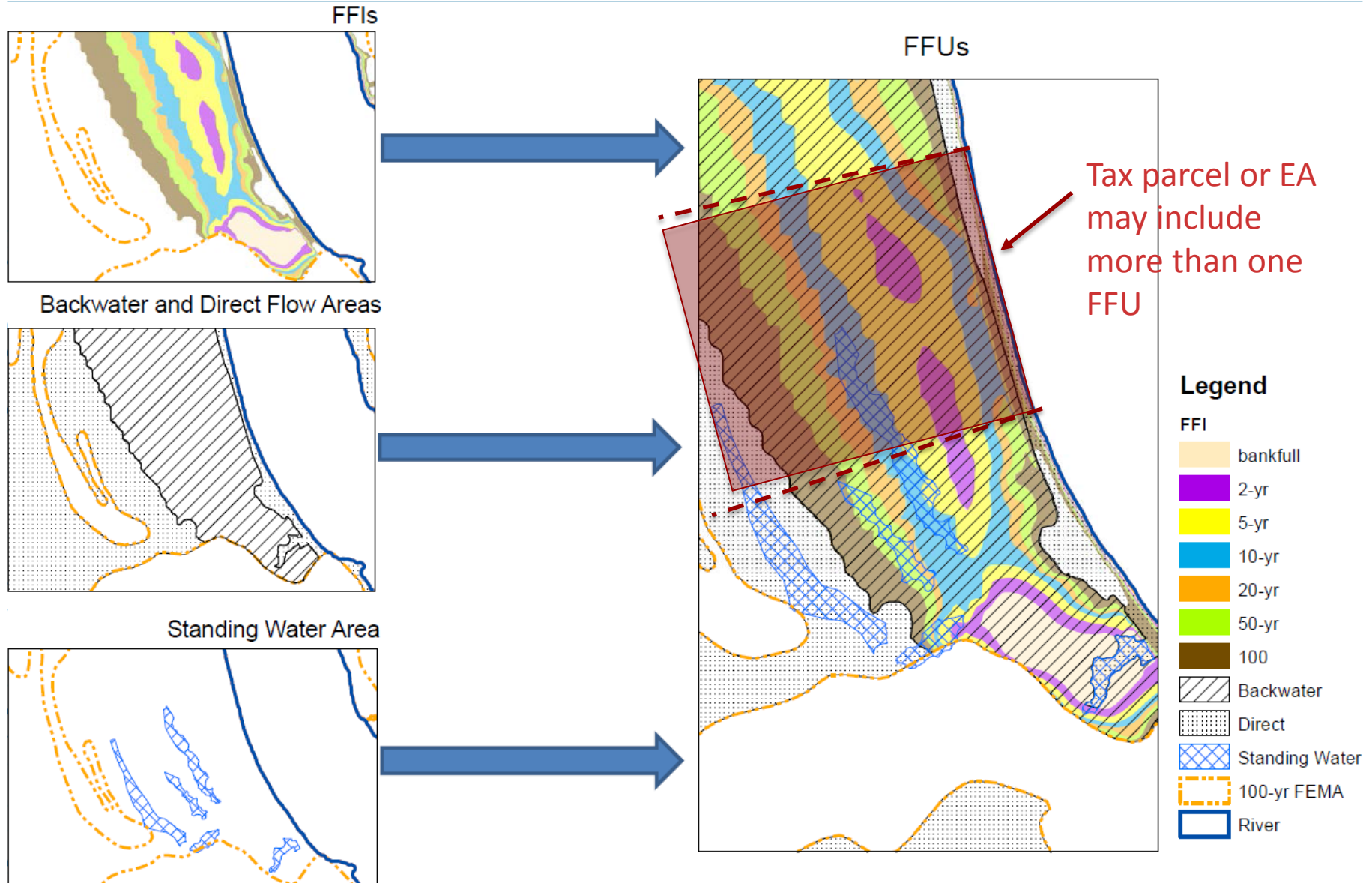
Floodplain Partitioning

- Floodplain will be partitioned
 - Flood Frequency Intervals (FFIs)
 - Direct flow areas
 - Areas closer to the shore; flooded more frequently
 - Backwater areas
 - Low-lying areas further from the shore; flooded less frequently
 - Flood frequency units (FFUs)
 - Finest resolution of PCB concentrations in the floodplain
 - Defined using flood frequency, local region, type of flooding, other factors





FFIs and FFUs (Figure 2-2)



Exposure Point Concentrations



What Is an EPC?

- Representation of average PCBs concentration in soil or sediment in exposure area (EA) used in risk assessment
 - Determined for each EA
 - Exposed person assumed to be equally exposed to soil or sediment within all portions of EA over specified time period



Purpose of EPCs

- To support risk calculations
 - EPCs are calculated from soil samples within each EA
 - Different for each phase of the risk assessment
 - SLA – maximum concentration detected
 - Phase 1 – reasonable maximum exposure (RME)
 - Phase 2
 - RME
 - Central tendency exposure (CTE)



Development of EPCs

- Evaluate data sufficiency/collect more samples
- Develop EPCs for each FFU
- Develop area-weighted average EPC for each EA

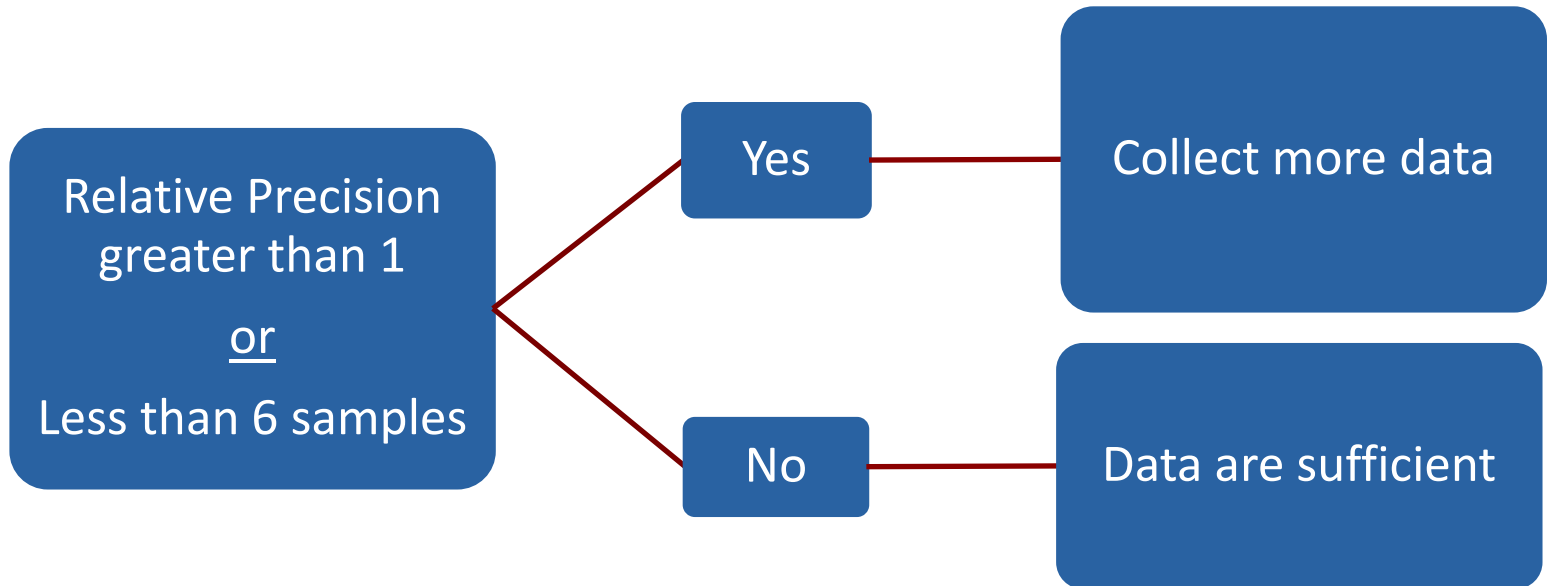




Phase 1 Data Sufficiency

- Is there enough data?

First data gap review for each FFU

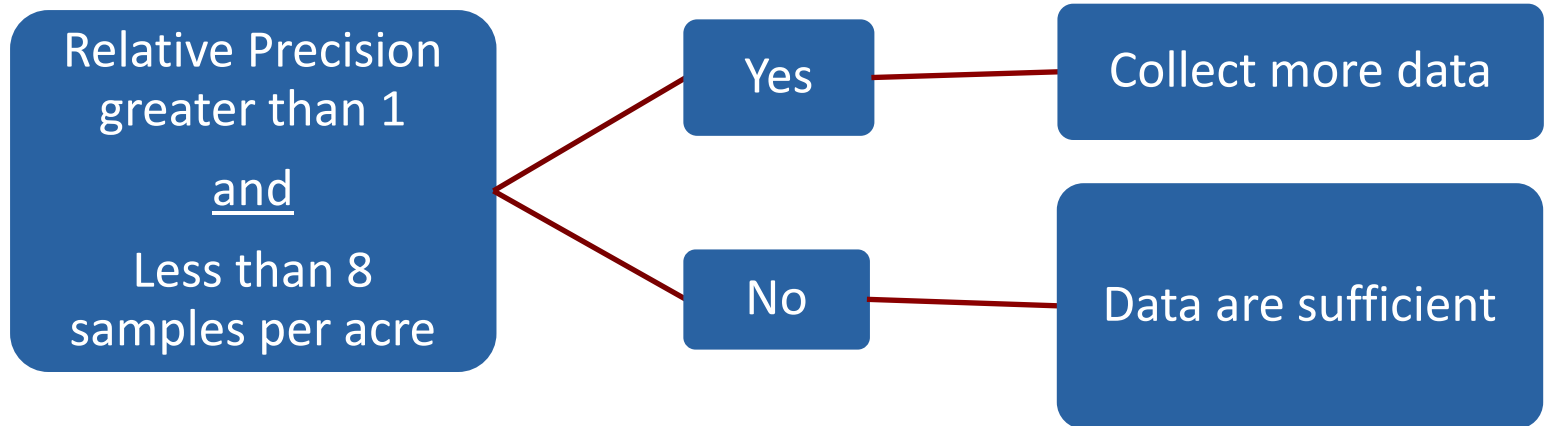




Phase 2 Data Sufficiency

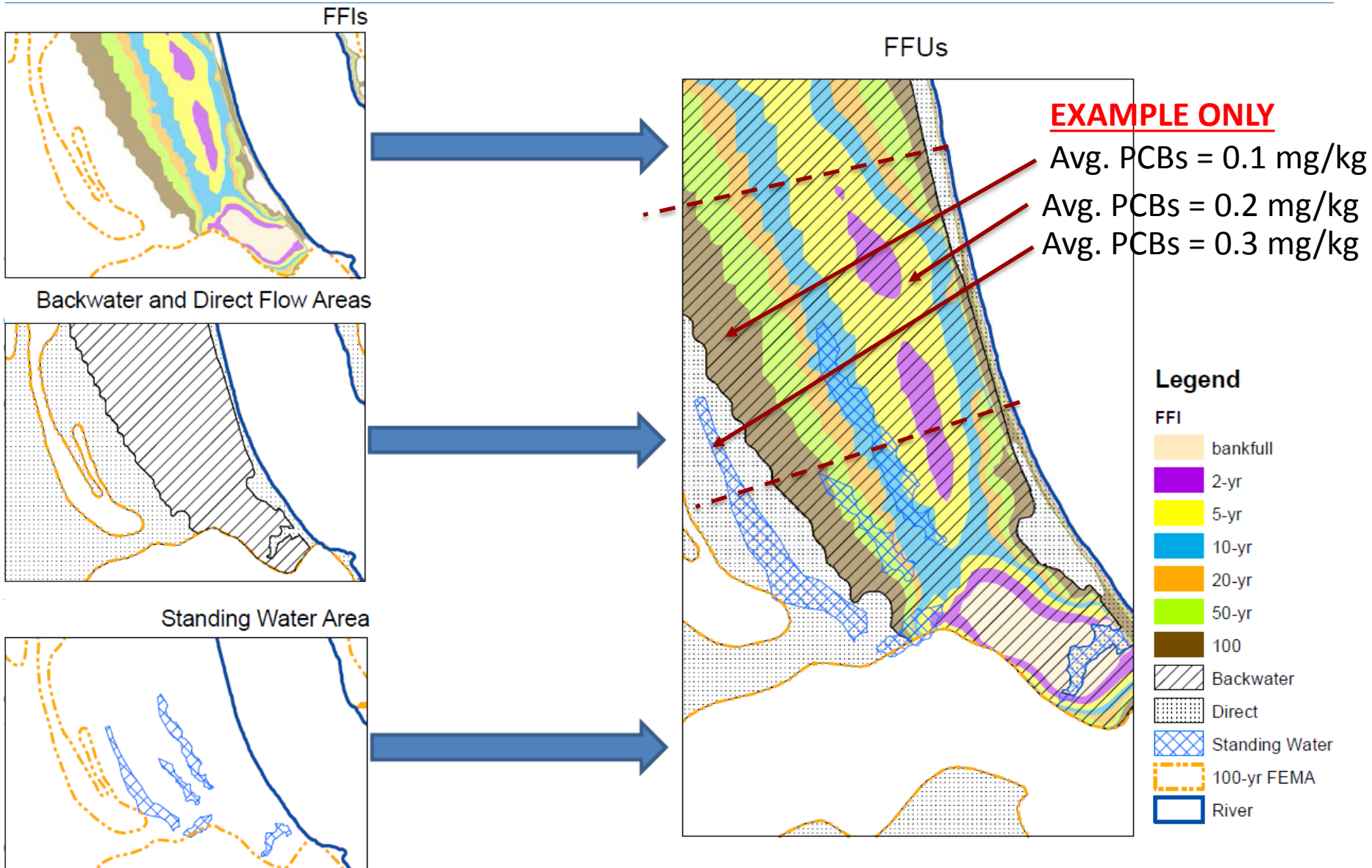
- Is there enough data?

Second data gap review for each FFU



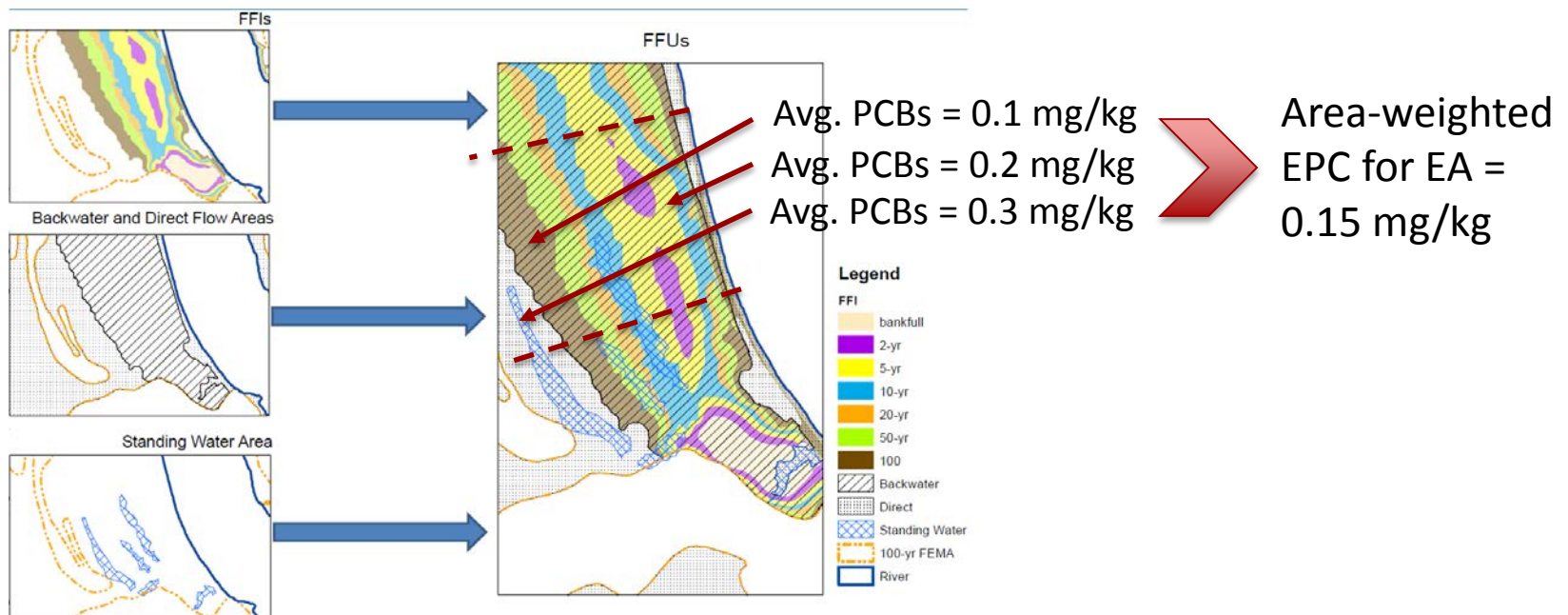


EPCs for FFUs



EPCs for EAs

- EPCs will be derived on an area-weighted basis for each EA





To Be Determined

- Define each FFU
 - Where is it?
 - What PCB concentration defines the EPC?
 - For Phase 1
 - For Phase 2
- Define each EA
 - Where is it?
 - What is the use scenario?
 - How many FFUs are included?
 - What is the area-weighted EPC?

Summary



Summary

- EAs may include more than one FFU
- PCB concentrations will be developed for each FFU
- EPCs will be derived on an area-weighted basis for each EA





Summary

- EAs selected based on current and future use
 - Community and property owner input is needed
 - To properly identify current and future use scenarios
 - To subdivide EAs according to use and planned use
- EPCs calculated for each risk assessment phase
 - SLA (maximum detected concentration)
 - Phase 1 (reasonable maximum exposure)
 - Phase 2 (central tendency exposure)
- Stay involved; understand decisions as work progresses



Summary

- Some risk assessment elements not yet determined
 - Precise floodplain boundaries
 - Exposure factors for agricultural workers
 - Modified exposure factors GE intends to develop based on climate





Questions and Comments





CONTACT INFORMATION

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