

**Texas Instream Flow Program
Lower Sabine River Study Design Workgroup
Meeting Notes
January 6, 2009**

The Study Design Workgroup met in Orange on January 6, 2009 from 8:30 a.m. to approximately 4:30 p.m. The following notes capture key discussions and decisions of the group.

Confirmation of Objectives/ Development of Indicators

The workgroup members reviewed and confirmed or revised the objectives they initially developed at the November 18, 2008 meeting and then developed indicators for these objectives, as follows by discipline:

BIOLOGY

Biology Objectives (*confirmed by group*)

- Maintain and/or improve sustainable native biological communities/habitats
- Control invasive and non-native species that threaten the function of the aquatic and terrestrial ecosystems

Biology Indicators (*selected by workgroup*)

Editing shows additions (underlined) and deletions (strike-through) from list proposed by TIFP agencies.

Category	Indicator
<i>Instream biological communities</i>	Native richness
	Relative abundance
	Fish <ul style="list-style-type: none"> • Flow sensitive species • Sport fishes • Prey species • Imperiled species • Intolerant species
	Other aquatic organisms (Benthic invertebrates , mussels, river and riparian plants, and other vertebrates may be appropriate as indicators)
<i>Instream habitat</i>	Habitat quality and quantity for key species
	Mesohabitat area and diversity
<i>Riparian habitat</i>	Vegetation <ul style="list-style-type: none"> • Age class distribution of riparian plant species • Riparian species richness and diversity • Density • % Canopy cover
	Soils

	<ul style="list-style-type: none"> • Riparian soil types
	Hydrology <ul style="list-style-type: none"> • Gradient of inundation • Base flow levels

Prioritization of biology indicators: Agencies indicated they believe all indicators can be studied, and therefore prioritization not needed, depending on the number of key species identified. Agencies expect to study two to three key species, and the rest to be studied at the mesohabitat level.

Notes from discussion

- Instream biological communities
 - Diversity indices: derived from native richness and relative abundance
 - Should we consider productivity?
 - Habitat can serve as a less expensive measure of the same thing
 - Consider productivity for specific species if needed
 - Fishes
 - Categorize flow sensitive species by category (e.g. high/medium/low flows, facultative/obligate, grouping species by flow need/by community guild)
 - Blue sucker is both flow sensitive, imperiled
 - Intolerant species: List tolerance relative to suspended solids, salinity, temperature, etc.
 - Other aquatic organisms:
 - Benthic invertebrates: do not include generally; might consider if tributary work is done
 - River prawns: lack of data?
 - River and riparian plants: emergent swamp issue
 - Other vertebrates:
 - Birds will be taken care of via riparian plants
 - Note increased beaver population, but specific study element not needed
 - Turtles are taken care of with the health of other species
- Riparian habitat: noted as a connectivity indicator, also

HYDRROLOGY

Hydrology Objective (confirmed by group)

- Manage flow regimes which accommodate human needs while sustaining river and floodplain ecosystems

Hydrology Indicators (selected by workgroup)

Editing shows additions (underlined) and deletions (strike-through) from list proposed by TIFP agencies

Category	Indicator
<u>Flow</u>	Overbank flows (frequency, timing, duration, rate of change, and

<i>regime components</i>	magnitude)
	High pulse flows (frequency, timing, duration, rate of change, and magnitude)
	Base habitat flows (frequency, timing, duration, range of change, and magnitudes)
	Subsistence flows (frequency, timing, duration, rate of change, and magnitude)
<i>Natural variability</i>	Natural
	Current

Prioritization of hydrology indicators: Agencies indicated they believe all indicators can be studied, and therefore prioritization not needed.

Notes from discussion

- Concern: subsistence flow relationship to 7Q2 flows. Other factors could relate to what constitutes a “subsistence flow.”

WATER QUALITY

Water Quality Objective (*confirmed by group*)

- Maintain/improve the water quality for the benefit of biological communities and human needs

Water Quality Indicators (*selected by workgroup*)

Editing shows additions (underlined) and deletions (strike-through) from list proposed by TIFP agencies

Category	Indicator
<i>Nutrients</i>	Nitrogen <ul style="list-style-type: none"> • Organic • Nitrate plus nitrite • Ammonia • Total
	Phosphorus <ul style="list-style-type: none"> • Filterable reactive • Total
	<u>Chlorophyll-a</u>
<i>Oxygen</i>	Dissolved oxygen
<i>Temperature</i>	Temperature
<i>pH</i>	<u>pH</u>
<i>Water clarity</i>	Suspended solids
	Turbidity
	Secchi depth
<i>Salinity</i>	Conductivity (<u>as relevant to brackish fish</u>)
<i>Microalgal growth</i>	Chlorophyll-a

<i>Recreational health</i>	Bacteria
<i>Metals</i>	Concentration of metals in water
<i>Organics</i>	Concentration of organics in water
<i>Biological</i>	Benthic invertebrates
	Fish
<i>Fish consumption advisories and closures</i>	Fish tissue analysis

Prioritization of water quality indicators: Agencies indicated they believe all indicators can be studied, and therefore prioritization not needed.

GEOMORPHOLOGY

Geomorphology Objective (confirmed by group)

- Protect/enhance current fluvial geomorphologic processes that create natural habitat

Geomorphology Indicators (selected by workgroup)

Editing shows additions (underlined) and deletions (strike-through) from list proposed by TIFP agencies

Category	Indicator
<i>Bank stability</i>	Rate of lateral channel migration
	Rate of channel avulsion
	Rate of bank erosion
<i>Channel maintenance</i>	In-channel bars (area, configuration, sediment size)
	Meander pools (depth)
<i>Flood impacts</i>	Stage (at USGS gage locations)

Prioritization of geomorphology indicators: Agencies indicated they believe all indicators can be studied, and therefore prioritization not needed.

Notes from discussion

- Bank stability
 - Cutoff Bayou a particular concern
- Channel Maintenance
 - In-channel bars: rate of revegetation is captured in “riparian vegetation” indicators

CONNECTIVITY

Connectivity Objectives (revised by group)

- Maintain/improve hydrologic connectivity needed to sustain floodplain and wetlands area (i.e. bottomland hardwoods, swamps, emergent marsh, oxbows, yazoos)

- Ensure that Lower Sabine River Texas Instream Flow Program studies are not conducted in a vacuum that ignores other needs in Texas and Louisiana such as bays and estuaries

Connectivity Indicators (selected by workgroup)

Editing shows additions (underlined) and deletions (strike-through) from list proposed by TIFP agencies

Category	Indicator
<i>Riparian zone</i>	Total area inundated
	Habitat area inundated
<i>Lateral connectivity</i>	Connection to river (frequency, duration, and timing)
<i>Freshwater inflows to Sabine Lake</i>	Volume of flow (monthly and yearly totals) at USGS gage #08030500, Sabine River at Ruliff, TX)
<u><i>Longitudinal connectivity to river</i></u>	<u>Define longitudinal connectivity, investigate issue and consider if indicators needed</u>

Prioritization of connectivity indicators: Agencies indicated they believe all indicators can be studied, and therefore prioritization not needed.

Notes from discussion

- Concern expressed that freshwater inflows recommendation stated as an optimal (MaxC) number

OTHER OBJECTIVE

- Consider/ study impacts of floodplain development in riparian zone

Notes from discussion

TIFP agency staff indicated that while the recommendations of the TIFP might impact development in the riparian floodplain, they noted that the TIFP studies don't specifically quantify floodplain development impacts on instream flow. Workgroup members agreed to retain the objective, but not list any indicators for it.

Miscellaneous discussion

- Some workgroup members raised concerns about how the dam and its existence are considered, and concerns that there should not be attempts to manage for return to pre-dam conditions. They also noted issues of population growth, how to define the baseline condition, and how to show the impact of the dam in the studies.
- In discussing the issue of siltation in Toledo Bend reservoir, the workgroup agreed to acknowledge in the studies the impact of sediment and other longitudinal connectivity upstream of Toledo Bend dam, while still recognizing the dam as the study boundary.

Next steps

- Agencies will develop criteria for study sites and send to participants for their suggestions on possible sites
- Study partners are welcome: workgroup participants are encouraged to consider becoming study partners.
- Agencies and study design partners will develop study sites considering various indicators and draft study design.
- Agencies will send draft study design to workgroup participants.
- Final meeting of workgroup for participants to review study design will be held 2 to 3 months in future
- Agencies will continue to communicate with workgroup participants throughout this process.
- Miscellaneous action item: Mark Wentzel will provide participants with link to Lower Colorado model mentioned in his presentation

Parking Lot

- Continue to look at the availability of FEMA funding relating to floodplain issues and other issues with any nexus to impacts of flooding (e.g. die-off of species, damage to riparian areas). Be aware of the timing for seeking such funding.