Texas Parks & Wildlife Department Guidelines for Construction and Clearing Within Riparian Areas

A. Summary of Impacts Anticipated With Clearing of Rights-of-Way and Construction Within Riparian Habitats

The following discussion lists a portion of the adverse impacts often incurred to natural resources with clearing of vegetation along streams and rivers as a result of construction disturbance and right-of-way (ROW) preparation.

(1) Direct Vegetation Loss

Removal of vegetation along stream systems is usually very damaging to fish and wildlife habitat and to natural processes associated with these systems. Vegetation associated with forested stream systems usually reflects highest value wildlife habitats. The degree of adverse impact to habitat resulting from this vegetation loss relates directly to the quantity of the vegetation loss and quality of the vegetation assemblage in fulfilling life requisites of those organisms using it.

(2) Disruption of Habitat Continuity

Habitat fragmentation is a serious threat to biological diversity. Because of the high use of riparian systems in general by wildlife, TPWD recommends that forest systems associated with floodplains be managed so as to avoid habitat fragmentation. Wildlife use river corridors to travel across the landscape and to move between food, cover, and breeding locations. Fish use habitat features within stream systems where appropriate physical parameters of light, temperature and water quality exist. As human development activity continues to compete for the natural resources existing within these riverine systems, remaining forested floodplains become increasingly valuable and scarce. Clearing for construction and utility ROW's, widening of utility ROW's, realignment of roadways crossing riverine systems, and abandonment of roads which cross these systems contribute significantly to increasing fragmentation of high value riparian habitats.

(3) Impacts to Protected and Rare Species and Natural Resources

Riverine systems are more prone to function as protected species habitat than upland areas because they tend to be less disturbed and represent higher value systems. Consequently, endangered species and natural plant community investigations should always be conducted when disturbance of these systems is projected or planned.

(4) Impacts to Natural Functions Associated with Forested Stream Systems

Riparian area management, which was once considered to be essentially a fish and wildlife concern, is a broader issue that cuts across various agency functions, including not only fish and wildlife but also range management, watershed management, and soil management. Streamside forests are complex ecosystems vital to the protection of our streams and rivers. Functions served by these forested riparian systems include:

Improving the quality of water resources by removing or ameliorating the effects of pollutants in runoff; Increasing biological diversity and productivity of stream communities by improving habitat and adding organic matter to the food base; Removing sediment and sediment-attached phosphorus by filtration;

Transforming nitrate to nitrogen gas as a part of nutrient cycling;

Acting as a sink by storing nutrients for extended periods of time;

Dampening sedimentation and erosion and providing organic energy to downstream reaches.

B. Recommendations Concerning Construction in Riparian Areas

Construction and clearing of vegetation for development can drastically affect natural resources and natural processes associated with stream systems. These resources and processes are fundamental to the development of habitat for fish and wildlife. The following general recommendations concerning disturbances within riparian systems should be followed to minimize adverse impacts to fish, wildlife, and plant resources.

(1) Channel Modification (channelization, realignment, relocation, modification, "improvement")

Channel modification projects serve to destroy natural aquatic and riparian habitats through direct removal of woody vegetation along streamsides and alteration of the physical attributes affecting the stream's configuration and flow characteristics. Therefore, TPWD supports channel modification projects only if vegetation impacts are avoided or mitigated and the reconstructed channel provides for a stream floodplain, natural stream meandering, pools and riffles, streamside vegetation, overhead canopy vegetation and appropriate width/depth/velocities.

(2) Stream Crossing Structures ((culverts, bridges, transmission lines, pipelines, utility rights-of-way)

- cross at right angles to the stream;
- locate crossings where the channel is straight and exhibits unobstructed flows;

- avoid crossing at bends;
- structure design (span) must ensure that the natural stream-bed and bank remains intact;
- during construction, work from only one bank;
- vegetation and overstory canopy should be preserved (i.e. preserve the streamside vegetation corridor), especially the more southerly or westerly banks to maximize shading;
- construction of conduit for fluids or transmission lines across waterways should be installed by boring under streams versus trenching through the stream substrate;
- accommodate low-flow fish passage,
- Avoid vegetation buffer areas adjacent to wetlands and riparian corridors by a minimum of 100'.

(3) Stream Maintenance (stream cleaning and desnagging)

- Rocks and boulders are usually part of the natural stream-bed and should not be removed unless they cause significant ponding, sediment deposition, or accumulation problems with logs, small debris, or garbage.
- Trees should not be removed from stream banks unless they: are dying, dead, or have damaged root systems; are leaning over the channel at an angle greater than 30 degrees off vertical; have root systems undercut to the degree that they rely on adjacent vegetation for support (if so, leave the root system for stabilization).
- Logs should not be removed from streams if they: are isolated or single logs that are embedded, jammed, rooted, or water logged in the channel or floodplain; are not subject to displacement by the current; are not blocking flows; are embedded logs parallel to the channel or stabilizing a shoreline.

(4) General Mitigation Measures

- Restore, replant, or revegetate with native vegetation (85% survivability required) all areas incurring minor or temporary disturbance.
- If soil replacement is required, the replacement soils should be native to the area (similar physical and chemical characteristics) and non-toxic.
- If wetland disturbance is involved, in-kind, in-basin replacement is recommended.

Wetland creation should not destroy good to excellent quality upland habitat.

(5) General Stream Conservation Criteria

- Construction and development activities should occur in such a manner to prevent or minimize damage to any stream, river or lake from pollution by debris, sediment, foreign material or from the manipulation of equipment and/or materials in or near such waterways.

- Water used for wash purposes or any other operation which might cause the water to become polluted with sand, silt, cement, oil or other impurities should not be returned directly to a stream, river or lake or to a ditch immediately flowing into a stream, river or lake. Such waters should be detained and treated prior to release to the natural ecosystem.

- Any water used from a stream, river or lake should be taken in such a manner that maintains water rights and sustains fish life downstream or around a stream, river or lake's perimeter.

- If the proposed development indicates substantial disturbance or removal of the State-owned streambed material, a permit from TPWD under Chapter 86, Parks & Wildlife Code may be required. Application forms and instructions are available by contacting the Inland Fisheries Division at (512) 389-4639.