October 4, 2007

**Topic:** BLM Hydrologic Issues and Concerns  
**Project:** Dept. of Homeland Security Pedestrian Fence  
**Location:** San Pedro River Basin (HUC 15050202) - U.S./Mexico International Border

**Introduction:** This outline is a supplemental document to BLM EA #AZ-420-2007-051 which was prepared at the request of the Dept. of Homeland Security. EA #AZ-420-2007-051 analyzed environmental impacts associated with construction and maintenance of pedestrian fences, temporary vehicle barriers, permanent vehicle barriers, and no action. A Finding of No Significant Impact (FONSI) was signed by the BLM on 8/31/07 based on the substantive reason that a combination of temporary and permanent vehicle barriers would be constructed through the river corridor, floodplain, and all dry wash areas as apposed to permanent pedestrian fence.

The BLM met with USACE, Border Patrol, and Granite Construction Company on site 9/26/2007 to discuss BLM resource issues. It was apparent at this time that USACE, Border Patrol, and Granite Construction had failed to read the BLM Environmental Assessment. Issues clearly outlined in the EA were discussed onsite and it was agreed that best available hydrologic reports and modeling results would be provided to the BLM for further review. The following list of issues and concerns comes after review of these documents. Cause and effect consequences to the hydrologic system of the San Pedro River Basin resulting from construction of pedestrian fence are outlined in BLM EA #AZ-420-2007-051.

**Issues/Concerns:**

1. The hydrologic report provided to the BLM does NOT account for debris build-up in proposed pedestrian fence. Instead, NO build-up of debris was assumed in the modeling process (assumed free flowing) so fence design requirements (no gaps greater than 6") and water surface elevation requirements (no rise greater than 6" on up-stream side of structure) could be met.

2. Upstream sedimentation and downstream erosion occur over the same period of flow. Because maintenance generally does not occur during these periods of flow, potential impacts associated with creating a sediment starved system (as outlined in the EA) would continue.

3. The contracting hydrologist (Reza Khakpour) who performed the modeling admits that by modeling the fence as a solid structure (to any extent) “…we will have NO shot at meeting the 6” allowable rise in water surface elevations upstream no matter how wide we make the fences.”

4. The timing and intensity of seasonal flood flows in the San Pedro River are essential for maintaining riparian function as well as recharging the alluvial aquifer. Regardless of the maintenance commitments by Border Patrol, the proposed/existing fence could inadvertently act as a flood control structure altering natural flood characteristics. Changes in flood timing and intensity
altering recharge and riparian function may impact pending BLM in-stream flow water rights claims in the San Pedro River.

5. Reza also states that debris build-up is a maintenance issue and that Border Patrol will have to do regular maintenance and debris removal on these structures. (Figures 1 and 2 taken by BLM in late August confirm this statement). This brings up several additional problems:
   a. Limited seasonal access due to inclement weather, poor road conditions...may prevent regular maintenance.
   b. Construction of this type of fence would require a long-term commitment to monitoring and maintenance (including a long term financial commitment) by the Border Patrol. The BLM EA identifies approximately 65 washes within the watershed that will require constant maintenance.
   c. Existing maintenance at drainage crossings is not evident.
   d. Current fence design includes “set-backs” which will help directly access debris build-up in drainages. However, debris build-up could extend into Mexico preventing adequate removal. The end result would be a wall of sediment in the drainage, above the fence, in Mexico that would require more routine maintenance and money.

6. Existing structures (remarkably similar to proposed design) have considerable problems with debris build-up (USACE admitted this during the 9/26/07 on-site). In relation to passage of debris/sediment, why is the new design “far superior” to the existing design (aside from Pier scour)?

7. Why is Pier Shape square as opposed to round? Would alternate shapes pass debris better?

8. Is it possible to design/construct removable pedestrian barriers that would meet fence design requirements of the Dept. of Homeland Security as well as fulfill BLM environmental (hydrology) obligations? Seasonal installation/removal of pedestrian fence could/should coincide with installation/removal of vehicle barriers in the San Pedro River and floodplain. This approach would limit access issues during periods of necessary maintenance, meet security and environmental needs, as well as reduce time and money commitments that would be required for maintenance.

9. Could pedestrian fences constructed in dry washes be fitted with a gate (or equivalent) which could remain open during the typical wet season?

10. The current design given to the BLM indicates bollard (pier) spacing to be less than 4”. Reza informed me (via e-mail) that bollard spacing can be 6” and still meet fence design requirements. Increasing spacing may also result in using fewer bollards in drainages which would reduce the area of blockage helping better pass debris.
Figure 1: Low-water crossing - Existing Pedestrian Fence
(8-21-2007)

Figure 2: Low-water crossing - Newly Designed Pedestrian Fence
(9-26-2007)
Figures 3 & 4: Down cutting below existing Pedestrian Fence
Figure 5: Debris build-up behind Permanent Vehicle Barriers