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Aquatic Vegetation Control at the B.A. Steinhagen /Town Bluff Lake

(Location of RD Willis Power Plant)

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Background

- B.A. Steinhagen, Town Bluff, Dam B are the names used for the Lake constructed in the 1950's. In 1989 the dam was modified for the installation of Robert D. Willis Power Plant. The plant has two S-Tube type turbines which operate generators nominally rated at 4Mwh each. Actual power production has rarely exceeded 3.6Mwh
- Invasive species of Vegetation has increased to the point that an aquatic vegetation control program is being managed by Town Bluff in coordination with TPWD and LNVA , primarily by chemical spraying



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RD Willis Power Plant located on Town Bluff Lake



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RD Willis Intake Channel



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- Previous annual efforts lowering the lake levels to allow “freeze kill” of vegetation were largely ineffective due to warm winters.
- In 2005 the Corps notified the TPWD and other interested parties of a strategy to lower the lake for 4 months in 2006 to “dry and kill” invasive species.



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Town Bluff Lake De-watering 2006-2007

- Phased drawdown of lake between May 2006 to June 2007 during which the embankment received grouting repairs and the Texas Dept. Transportation took advantage of low lake levels to perform repairs to the Hwy 190 bridge received repairs by TXDOT.
- After several months of continued delays in refilling of the lake, the performance of the Shaft Servo Seal Repair contract was allowed to begin without the contractually required pre-disassembly testing of the first generator. The contract was completed in January of 2008.



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Robert D. Willis Power Plant



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Town Bluff Lake



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Town Bluff Lake

An October 2007 survey conducted by TPWD staff estimated the following acreages for the most problematic exotic vegetation species on B.A. Steinhagen (approx. 10,687 surface acres)

Alligatorweed	3,174 acres
Water hyacinth	385 acres
Common salvinia	3,354 acres
Giant salvinia	< 5 acres
Hydrilla	< 20 acres

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Town Bluff Lake

- **In FY2008 the Corps of Engineers worked with the Lower Neches Valley Association (LNVA) and the Texas Parks and Wildlife Department (TPWD) to join hands and resources in efforts to control the vegetation infestations. Since 2008 the Town Bluff Project has procured in excess of \$100,000 in chemicals each year and LNVA and TPWD have worked in partnership to provide airboat spraying contracts for spraying of the large mats of aquatic vegetation infesting the Town Bluff Lake**



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Town Bluff Lake

- The direct impact on the dying vegetation is that the dead vegetation does not immediately sink to the lake bottom, but migrates in large mats down toward the Power Intake of the Robert D. Willis Power Plant.
- Dead vegetation continues to clog the Trash Racks of the Robert D. Willis Power Plant requiring quarterly trash removal .
- Head losses of up to 5 feet have been observed immediately behind partially blocked Trash Racks



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Impacts on Robert D Willis Power Output

- 1999 Plant total 39,053 Mwh
- 2000 Plant total 31,751 Mwh
- 2001 Plant total 25,601 Mwh
- 2002 Plant total 35,156 Mwh
- 2003 Plant total 40,640 Mwh
- 2004 Plant total 22,067 Mwh
- 2005 Plant total 19,271 Mwh
- 2006 Plant total 10,212 Mwh
- 2007 Plant total 4,331 Mwh

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Summary

- The Corps is achieving success in reducing the invasive species vegetation through a partnering with TPWD and LNVA. Spraying is ongoing with multiple Airboats and the impact is showing marked improvements upon targeted areas.
- The success of the vegetation controls has increased the trash accumulations on the trash racks of the Robert D. Willis Power Plant, requiring more frequent contractual costs to clean the Trash Racks. Annual cost of trash removal is currently requiring \$52,000 per year.