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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 Plan

- Prior to May 10, 2006, lake will remain at full pool (82.5')
- May 10 – 20, elevation will be lowered to minimum generation pool (76.0') to allow for scheduled periodic inspection of embankment and related structures.
- May 20 – July 31, lake will remain at minimum generation pool (76.0').
- July 31 – September 15, floodgates will be raised and lake will be drawn down to the river channel (<60.0').
- September 15, begin closing gates and bringing lake back to full pool (82.5') unless powerhouse is not online, then drawdown may last to the end of September or longer.



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Town Bluff Lake

13 Month De-watering Event

- 20 May thru 1 Jun 2006 -**Partial drawdown** for periodic inspection
- Inspection revealed Embankment and Floodgate structure Retaining wall damage which would require full drawdown to repair.
- 1 Aug thru 29 Oct 2006 **full drawdown** for vegetation
- 30 Apr 2006 Unit #1 Shaft Servo Repair begins
- 14 Jun 2007 extended **drawdown ends** after embankment and retaining wall repairs and allows generation Unit #2
- 24 Oct 2007 thru 4 Jan 2008 Trash blockage NO GEN

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Panorama of Town Bluff Lake during 2007 de-watering



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Panorama of Town Bluff Lake during 2007 de-watering



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Panorama of Town Bluff Lake during 2007 de-watering



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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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- Currently, in FY2008, the Corps has procured \$140,000 in chemicals for use by LNVA aircraft and airboat spraying efforts.
- LNVA is scheduled to provide 1100 hours of airboat spraying services for spray application of chemicals (\$150,000 cost)
- Dead vegetation will continue to challenge the ability of the RD Willis Power Plant due to clogging of the trash racks and reduction in generation capability.

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Impact on RD Willis 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 challenged to control vegetation so that it reduces the impact on boating, recreation and hydropower
- The management of the invasive species of Aquatic Vegetation will likely become a model for addressing future invasive species of vegetation in many Corps lakes.
- Self-cleaning Trash Racks may become a serious consideration to reduce impacts on Hydropower