

DRAFT **Timberland and Agricultural Land** **Impact Assessment**

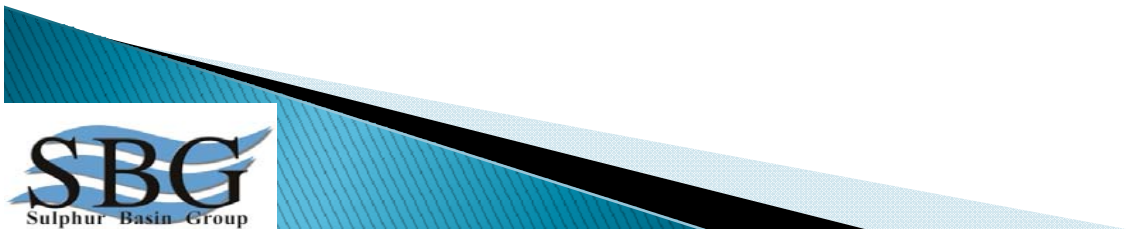
prepared for the



Authorization & Scope

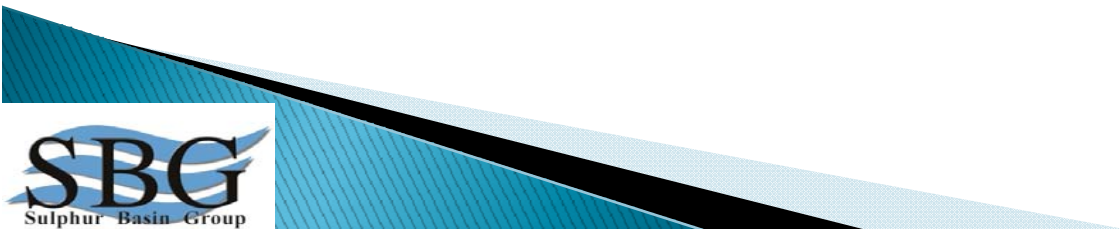
- ▶ Work Order 1 to Sulphur Basin Group (SBG).
- ▶ Scope included Appraisal District approach for assessing timberland & agricultural land impacted by proposed projects.
- ▶ Assessment within defined limits of Wright Patman Lake Reallocation (WPLR) of flood-to-water storage and Marvin Nichols Reservoir (MNR) project study areas.
- ▶ Assessment of Timberland Use Distribution in the region.

Study Area Limits



Study Limits

- ▶ Estimation of the area, volume/value of timberlands, and value of agricultural lands impacted was within the following study boundaries:
 - WPLR: Between elevation 242.5' NGVD and 227.5' NGVD; and
 - MNR: Within elevation 313.5' NGVD.
- ▶ Upper limits selection was based on previous studies.



Study Limits

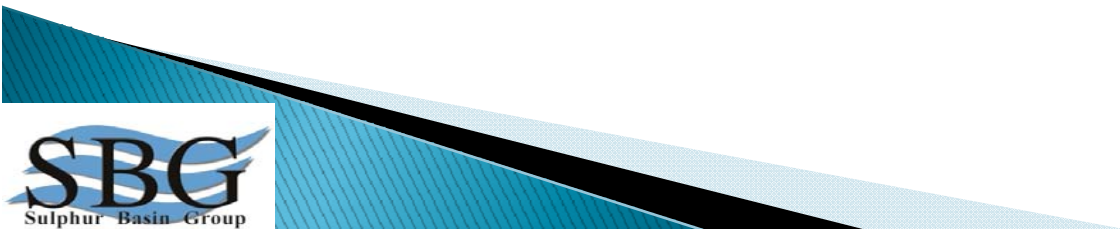
▶ WPLR

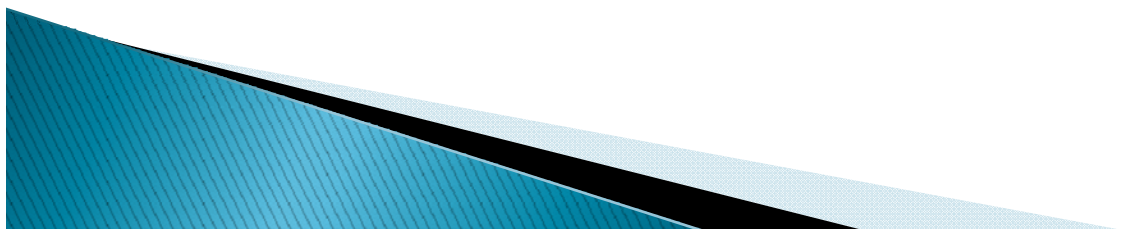
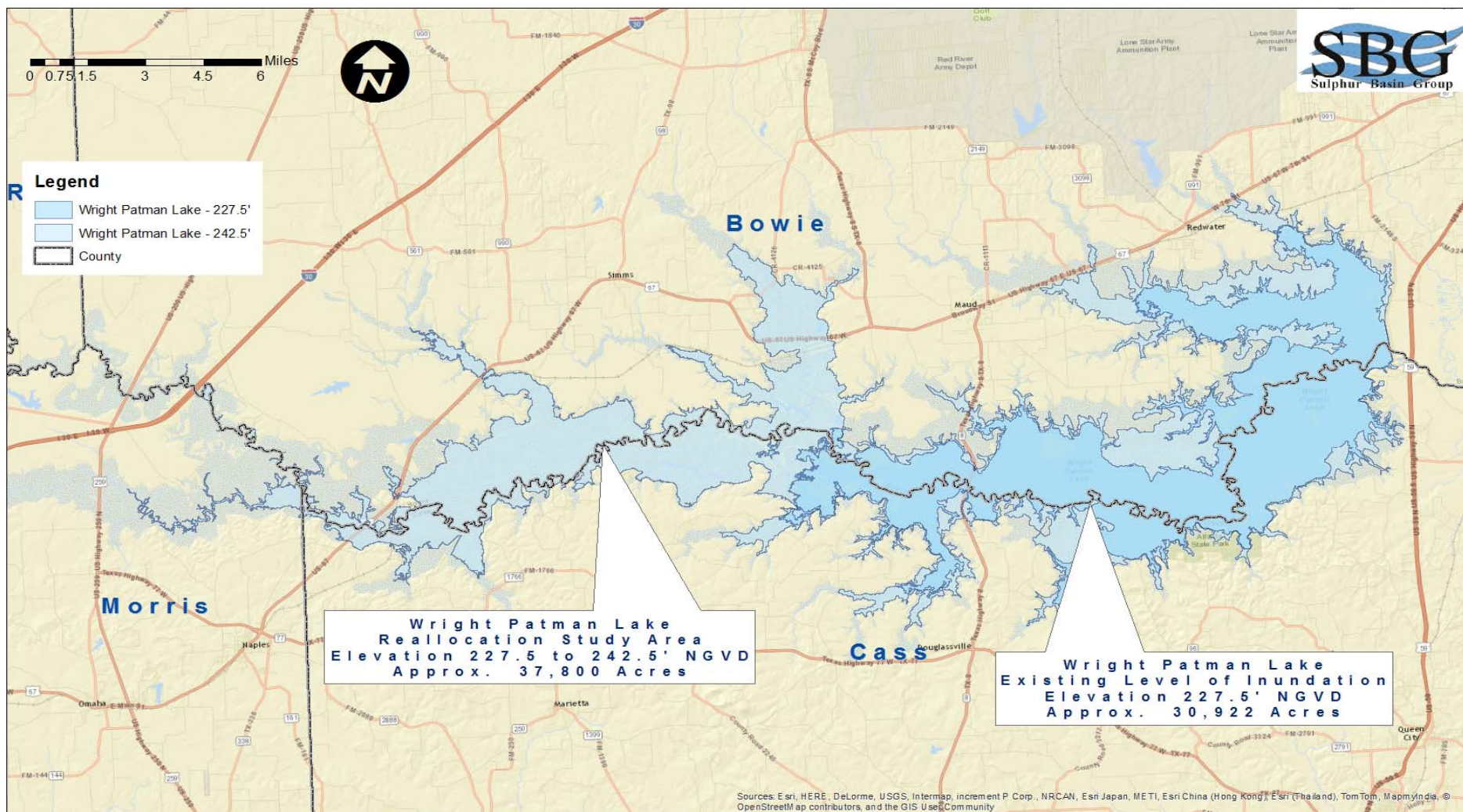
- 227.5' elevation proxy for the existing level;
- Area newly impacted by reallocation is between elevations 227.5' and 242.5'.
- Government & privately owned parcels are both wholly or partially within these two elevations.
- Private parcels are in Bowie & Cass Counties.
- In Morris County only government-owned parcels are impacted.

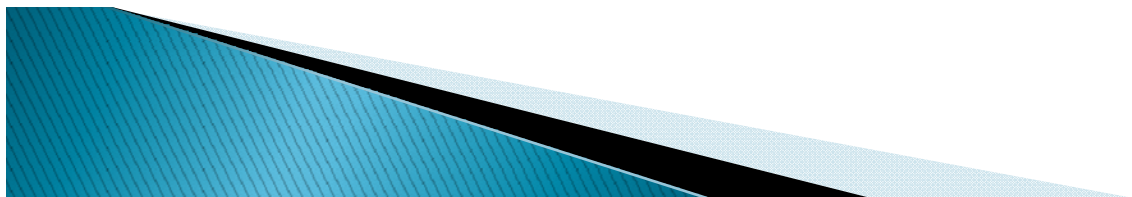
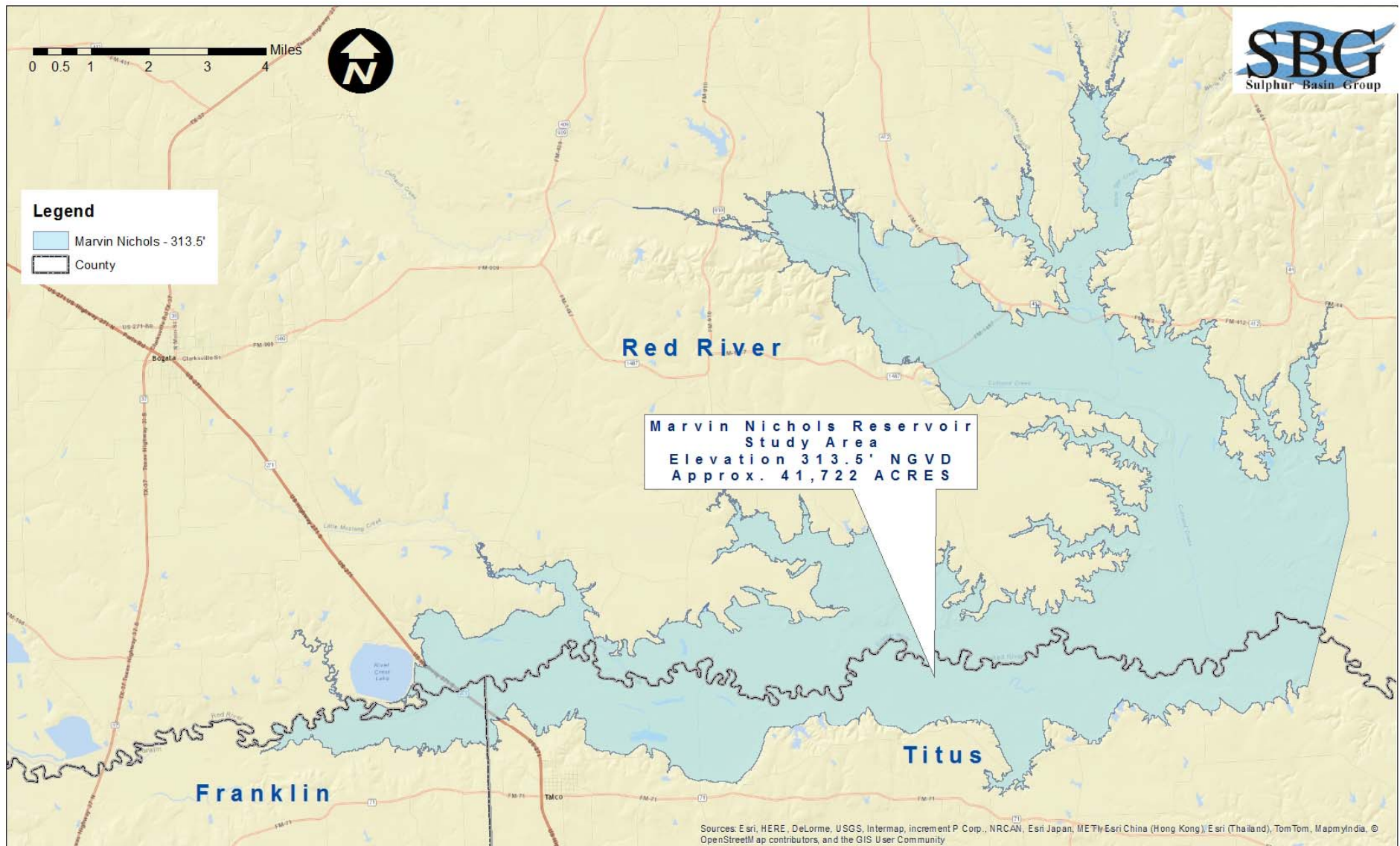
Study Limits

▶ MNR

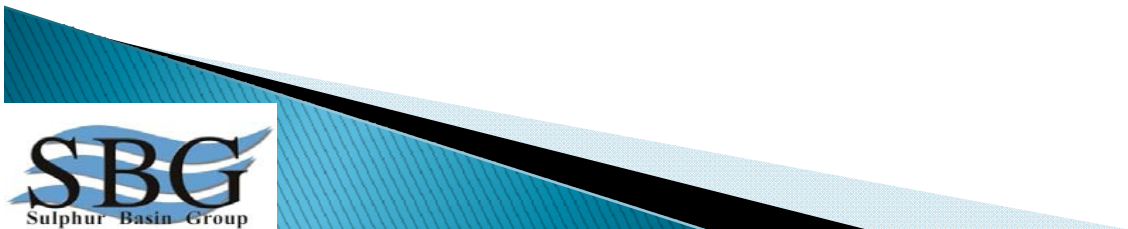
- Private parcels are both wholly or partially within elevation 313.5'.
- No government parcels.
- Private parcels are in Red River, Titus and Franklin Counties.





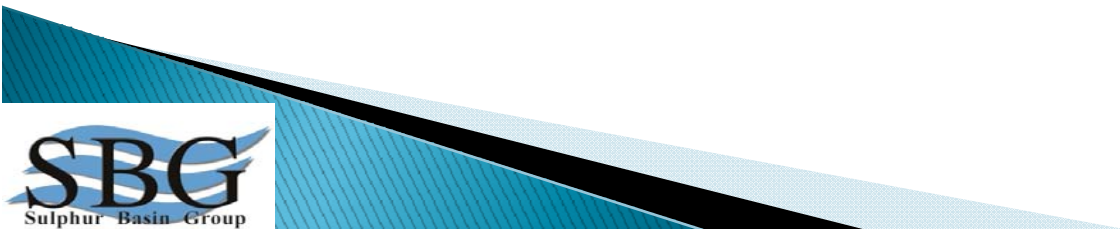


Timberland Use Distribution



Timberland Use Distribution

- ▶ Contacted three major timber users in the region to collect data.
- ▶ Users included the International Paper Texarkana Mill (Domino, Texas), the Domtar Ashdown Mill (Ashdown, Arkansas), and the West Fraser New Boston Mill (New Boston, Texas).
- ▶ West Fraser confidentially provided data.
- ▶ All three cited confidentiality and recommended the Texas A&M Forest Service document entitled “Harvest Trends 2013,” as the best source.

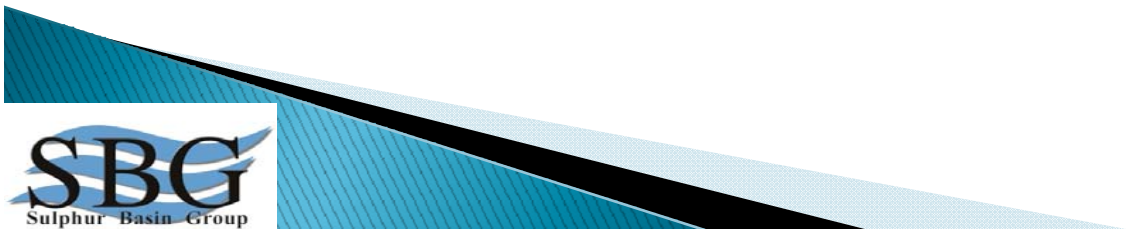


Timberland Use Distribution

| County | Volume Harvested (cubic feet) | | | | | |
|--------------|-------------------------------|---------------|-------------------|---------------|-------------------|---------------|
| | Pine | | | Hardwood | | Total |
| Bowie | 7,977,449 | 23.3% | 6,612,207 | 26.5% | 14,589,656 | 24.7% |
| Cass | 18,477,965 | 54.0% | 9,310,599 | 37.3% | 27,788,564 | 47.0% |
| Franklin | 326,276 | 1.0% | 1,144,085 | 4.6% | 1,470,361 | 2.5% |
| Morris | 1,896,567 | 5.5% | 1,160,139 | 4.7% | 3,056,706 | 5.2% |
| Red River | 4,509,199 | 13.2% | 5,140,016 | 20.6% | 9,649,215 | 16.3% |
| Titus | 1,001,683 | 2.9% | 1,566,883 | 6.3% | 2,568,566 | 4.3% |
| Total | 34,189,139 | 100.0% | 24,933,929 | 100.0% | 59,123,068 | 100.0% |

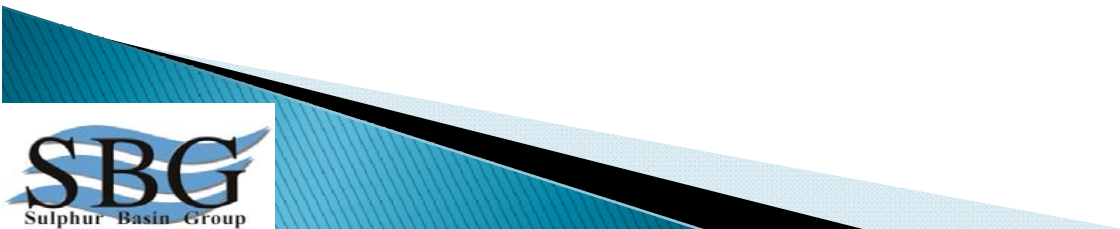
| County | Harvest Value (thousand dollars) | | | |
|--------------|----------------------------------|---------------|---------------|---------------|
| | Stumpage | | Delivered | |
| Bowie | 6,181 | 26.6% | 16,175 | 25.3% |
| Cass | 10,845 | 46.6% | 29,629 | 46.4% |
| Franklin | 539 | 2.3% | 1,616 | 2.5% |
| Morris | 1,078 | 4.6% | 3,182 | 5.0% |
| Red River | 3,546 | 15.2% | 10,366 | 16.2% |
| Titus | 1,077 | 4.6% | 2,891 | 4.5% |
| Total | 23,266 | 100.0% | 63,859 | 100.0% |

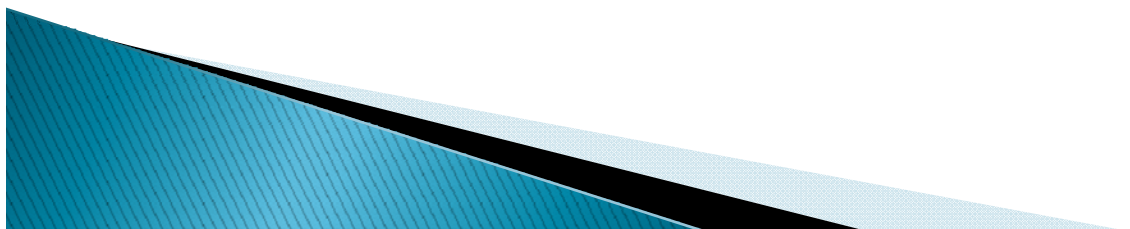
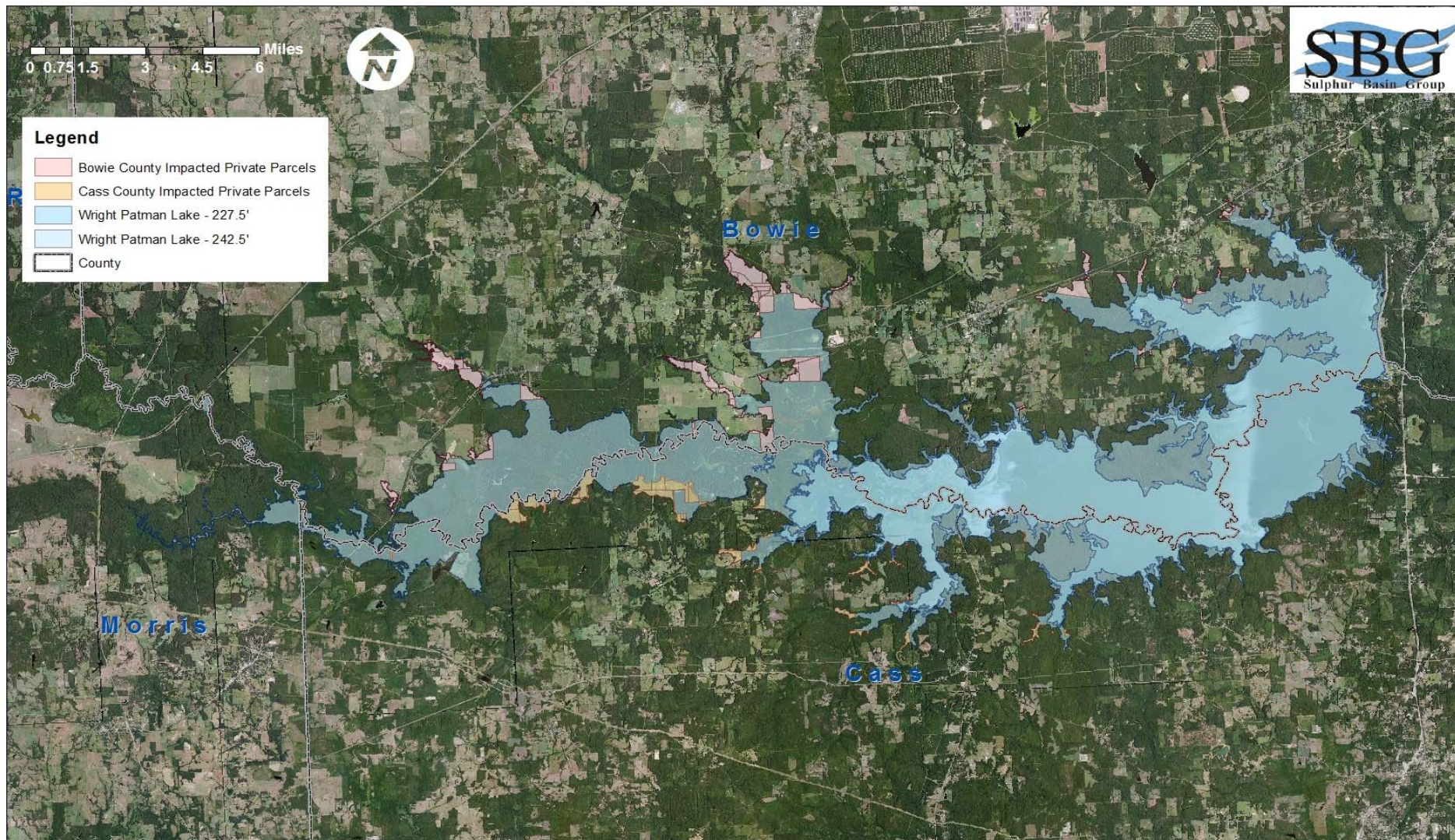
Timberland & Agricultural Land Impact Assessment Methodology

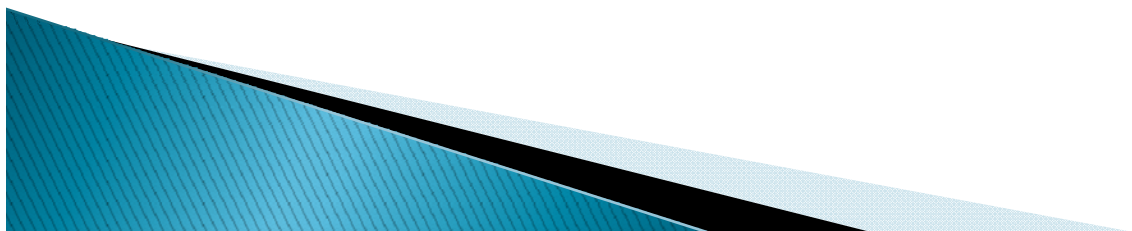
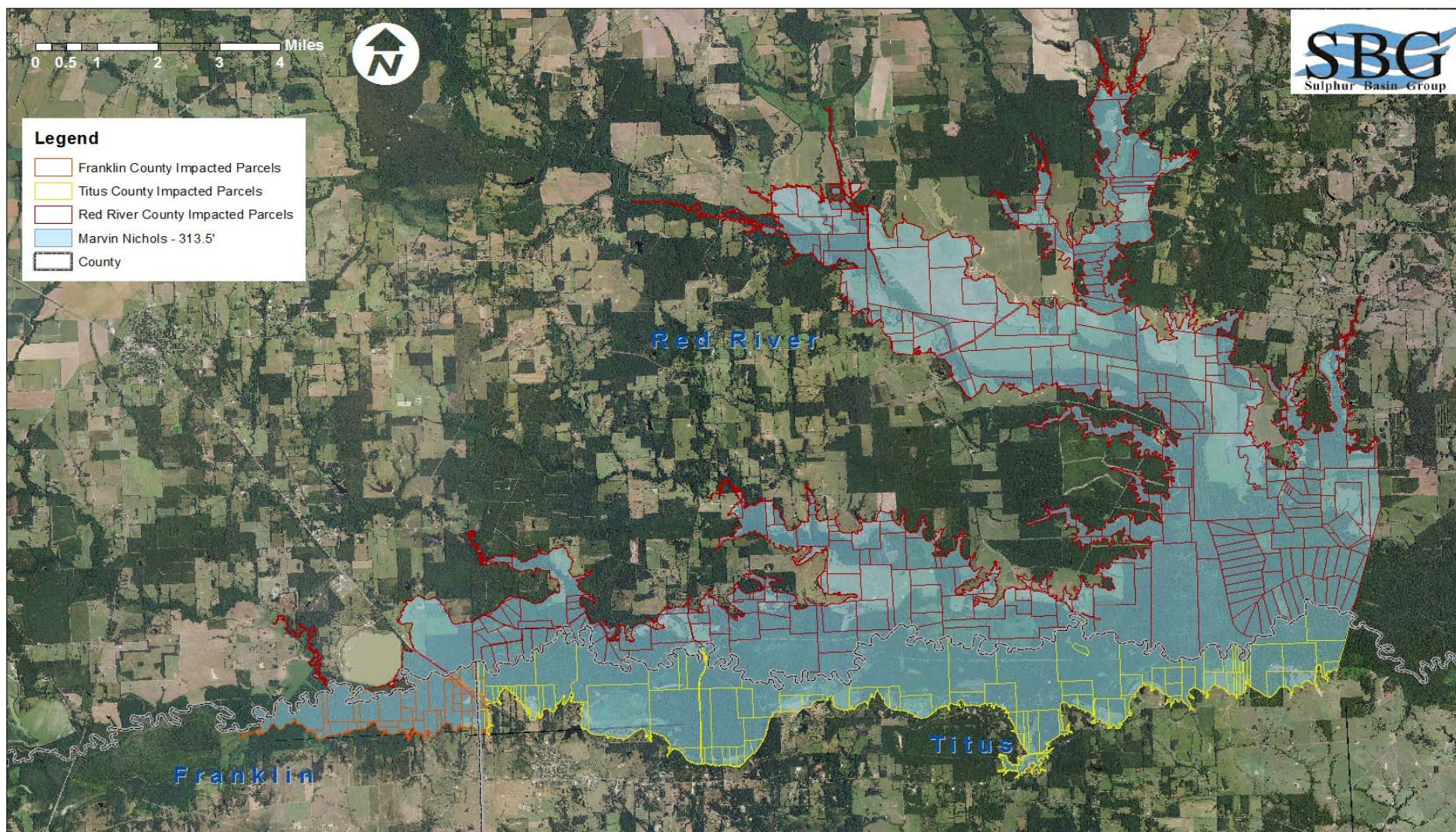


Assessment of Impact Area

- ▶ County Appraisal District (CAD) approach was very useful in estimating the type/quantity of timberland and agricultural land.
- ▶ CAD approach was not a good basis for assessing actual “value” of privately owned timberland or agricultural land.
- ▶ Impacted areas were generated by intersecting parcel and project boundaries, providing a database of impacted parcels.



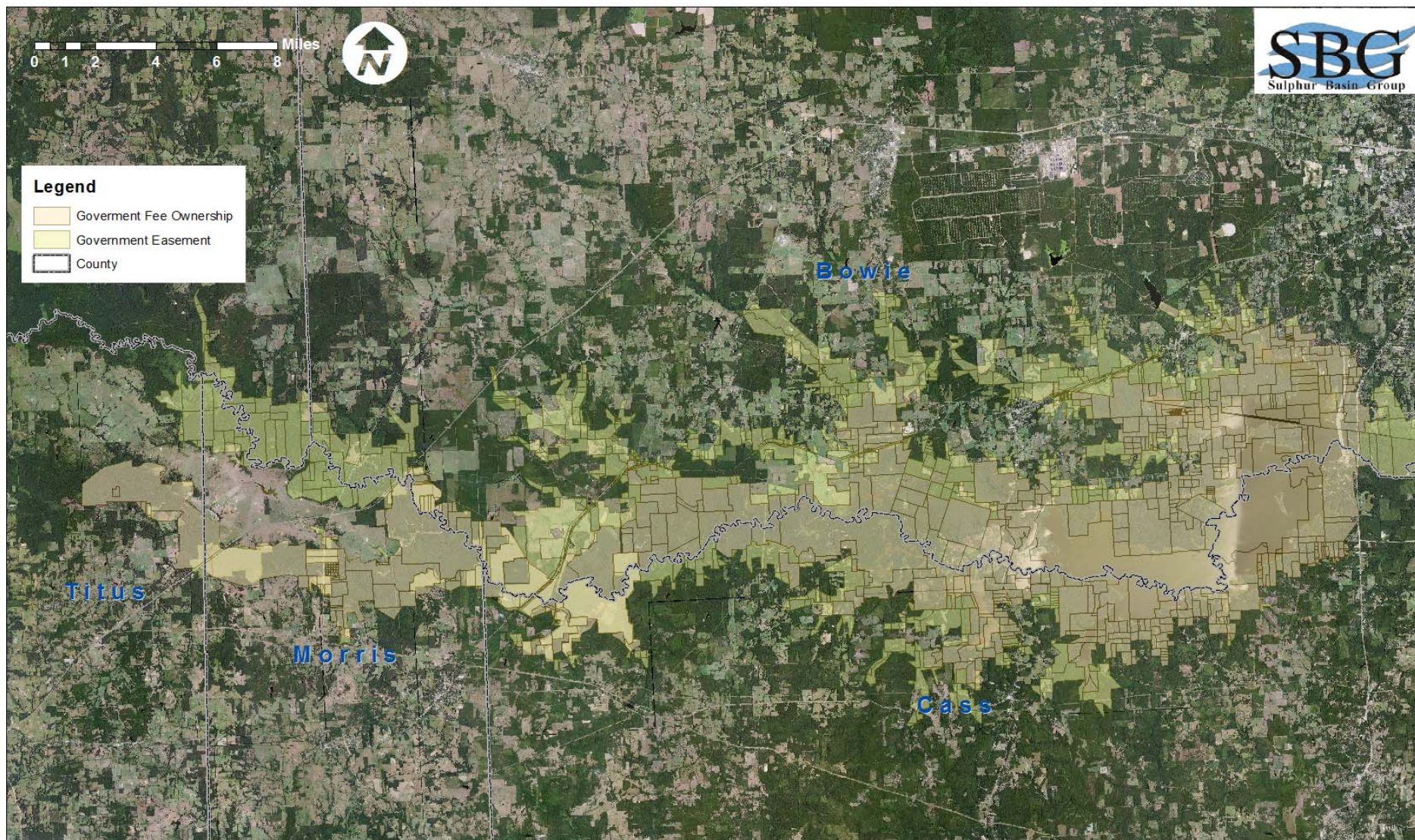




Assessment of Impact Area

▶ WPLR

- Corps provided GIS shape files for fee-owned government land, as well as for easements and land use classifications.
- Where there were conflicts the Corps shape files were assumed to be correct in most cases.
- Analysis done such that the Impacted Parcel database had complete coverage with no gaps.



Assessment of Impact Area

- ▶ General land use for each project study area boundary derived from this process is below:

| | Wright Patman Lake | Marvin Nichols Site |
|------------------------------|--------------------|---------------------|
| Project Area Size | 37,800 acres | 41,722 acres |
| Classification by percentage | | |
| Hardwood | 59.4% | 53.6% |
| Mixed | 32.1% | 13.7% |
| Pine | 5.4% | 3.2% |
| Range | 3.1% | 31.7% |

Assessment of Impact Area

- ▶ Common 21 Category Schema is as follows:
 - Hardwood (H1 – H4)
 - Mixed pine and hardwood (M1–M4)
 - Pine (P1–P4)
 - Rangeland (R1–R4)
 - Tilled cropland (TD) – one category only
 - Wildlife Reserve (Conservation Easement) further subdivided as:
 - WLDF–U (unclassified)
 - WLDF–R (rangeland)
 - WLDF–T (timber)
 - Waste – a category used only by Titus CAD representing “unusable” land

Assessment of Impact Area

- ▶ Total area of each classification for WPLR is shown below:

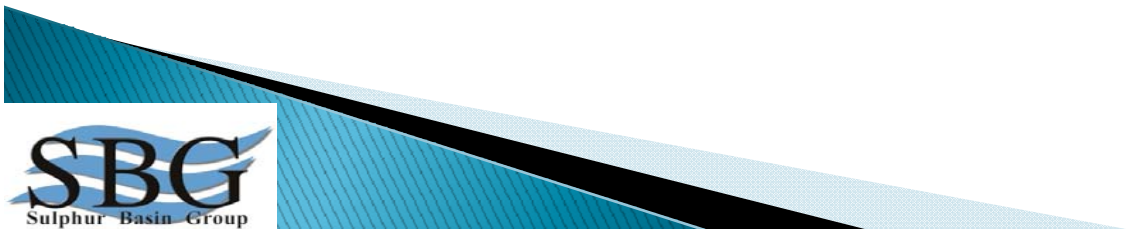
| WRIGHT PATMAN LAKE – ITEMIZED MARKET AREA IMPACT (ACRES) | | | | |
|--|----------|----------|------------|-----------|
| CLASS | BOWIE | CASS | GOVERNMENT | TOTAL |
| H1 | 1,166.96 | 68.66 | 16,034.13 | 17,269.75 |
| H2 | 400.70 | 91.93 | 2,747.27 | 3,239.90 |
| H3 | 297.33 | 91.19 | 1,476.74 | 1,865.27 |
| H4 | 0.00 | 66.82 | 0.00 | 66.82 |
| M1 | 8.30 | 301.15 | 9,073.82 | 9,383.27 |
| M2 | 115.78 | 200.12 | 144.35 | 460.25 |
| M3 | 329.40 | 75.51 | 395.43 | 800.34 |
| M4 | 0.00 | 56.88 | 0.00 | 56.88 |
| P1 | 11.24 | 27.82 | 1,956.55 | 1,995.60 |
| P2 | 22.89 | 0.00 | 0.00 | 22.89 |
| P3 | 34.68 | 0.00 | 0.00 | 34.68 |
| P4 | 0.00 | 0.00 | 0.00 | 0.00 |
| R1 | 68.38 | 238.82 | 0.00 | 307.20 |
| R2 | 469.67 | 0.00 | 0.00 | 469.67 |
| R4 | 187.31 | 48.15 | 0.00 | 235.46 |
| TD | 0.00 | 0.00 | 0.00 | 0.00 |
| WLDF-U | 0.00 | 143.87 | 0.00 | 143.87 |
| WLDF_R | 0.00 | 0.00 | 0.00 | 0.00 |
| WLDF-T | 0.00 | 0.00 | 1,410.94 | 1,410.94 |
| Waste | 0.00 | 0.00 | 0.00 | 0.00 |
| TOTAL | 3,114.40 | 1,410.92 | 33,239.23 | 37,746.55 |

Assessment of Impact Area

- ▶ Total area of each classification for MNR is shown below:

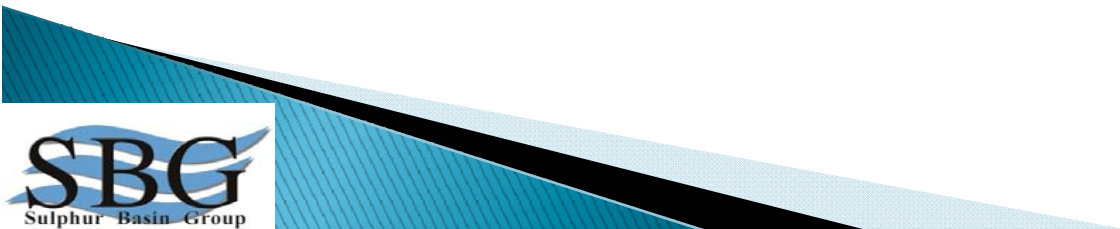
| MARVIN NICHOLS RESERVOIR – ITEMIZED MARKET AREA IMPACT (ACRES) | | | | |
|--|------------------|------------------|-----------------|------------------|
| CLASS | RED RIVER | TITUS | FRANKLIN | TOTAL |
| H1 | 759.10 | 476.26 | 823.97 | 2,059.33 |
| H2 | 12,328.83 | 1,891.82 | 26.66 | 14,247.31 |
| H3 | 3,300.79 | 871.31 | 714.98 | 4,887.08 |
| H4 | 11.02 | 1,043.11 | 0.00 | 1,019.17 |
| M1 | 61.16 | 0.00 | 0.00 | 61.16 |
| M2 | 943.98 | 75.19 | 0.00 | 1,019.17 |
| M3 | 948.11 | 1.89 | 0.00 | 950.00 |
| M4 | 11.81 | 616.15 | 0.00 | 627.97 |
| P1 | 0.00 | 111.34 | 0.00 | 111.34 |
| P2 | 4.48 | 526.96 | 0.00 | 531.44 |
| P3 | 0.00 | 468.89 | 0.00 | 468.89 |
| P4 | 0.00 | 214.36 | 0.00 | 214.36 |
| R1 | 121.81 | 111.34 | 49.67 | 282.82 |
| R2 | 0.00 | 526.96 | 0.00 | 526.96 |
| R3 | 0.00 | 468.89 | 0.00 | 468.89 |
| R4 | 11,169.61 | 214.36 | 12.94 | 11,396.90 |
| TD | 14.80 | 0.00 | 0.00 | 14.80 |
| WLDF-U | 0.00 | 0.00 | 0.00 | 0.00 |
| WLDF_R | 0.00 | 445.23 | 0.00 | 445.23 |
| WLDF-T | 0.00 | 3,019.39 | 0.00 | 3,019.39 |
| Waste | 0.00 | 83.57 | 0.00 | 83.57 |
| TOTAL | 29,675.50 | 11,167.02 | 1,628.22 | 42,470.73 |

Valuation Process for Timberland & Agricultural Land Impact Assessment



Valuation Process

- ▶ CAD data substantially informed the assessment of the quantity of timber and agricultural lands, but not quality/value.
- ▶ To assist with the quality/value process, SBG employed additional resources including:
 - Agricultural Land – American Society of Farm Managers & Rural Appraisers (ASFMRA); and
 - Timberland – Kingwood Forestry Services (KFS).



Valuation Process

▶ Agricultural Land

- The valuation process was based on the “lease value” approach typically in use by all CADs and other agencies.
- Values used for estimating value of impacted agricultural lands were adapted from ASFMRA’s publication “Texas Rural Land Value Trends 2013.”
- Used a factor of three times the values selected for rental/lease value (equivalent to three years of rental/lease).

Valuation Process

▶ Timberland

- Timber “density” and value of each timber classification was based on estimation and visual inspection by KFS.
- On the government-owned property, the sites inspected represented 94% of the classification types.
- Privately-held property was inspected where public access was available; this work was augmented with inspection of aerial imagery to assess parcel similarities.

Valuation Process

- ▶ Timberland (continued)
 - Although not as much of impacted timber could be inspected in MNR, as a rule, impacted timber within WPLR is larger and of better quality.
 - The estimated volumes of timber are expressed in tons and classified as Hardwood Sawtimber (HST), Hardwood Pulpwood (HPW), Pine Sawtimber (PST) & Pine Pulpwood (PPW).

Valuation Process

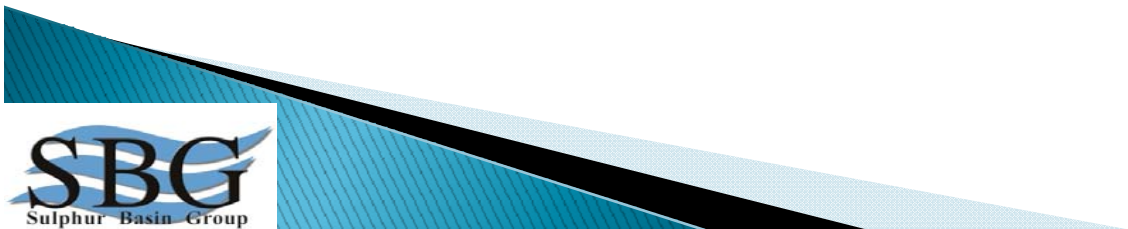
| WRIGHT PATMAN LAKE – ITEMIZED TIMBER VOLUME ASSESSMENT (TONS) | | | | |
|---|--------|--------|------------|-----------|
| CLASS | BOWIE | CASS | GOVERNMENT | TOTAL |
| H1 - HST | 35,009 | 2,060 | 360,768 | 397,836 |
| H2 - HPW | 18,032 | 4,137 | 123,627 | 145,795 |
| H3 - HPW | 8,920 | 2,736 | 44,302 | 55,958 |
| M1 - HPW | 332 | 12,046 | 362,953 | 375,331 |
| M2 - PST | 2,894 | 5,003 | 3,609 | 11,506 |
| M4 - HPW | 0 | 569 | 0 | 569 |
| M4 - PPW | 0 | 569 | 0 | 569 |
| P1 - HST* | 56 | 139 | 9,783 | 9,978 |
| P1 - HPW* | 169 | 417 | 29,348 | 29,934 |
| P1 - PST | 1,011 | 2,504 | 176,089 | 179,604 |
| P1 - PPW | 169 | 417 | 29,348 | 29,934 |
| P2 - HST* | 114 | 0 | 0 | 114 |
| P2 - HPW* | 343 | 0 | 0 | 343 |
| P2 - PST | 1,145 | 0 | 0 | 1,145 |
| TOTALS | 68,194 | 30,596 | 1,139,827 | 1,238,617 |
| *Pine classification have some hardwood that is accounted | | | | |

Valuation Process

| MARVIN NICHOLS RESERVOIR – TIMBER VOLUME ASSESSMENT (TONS) | | | | |
|---|-----------|---------|----------|---------|
| CLASS | RED RIVER | TITUS | FRANKLIN | TOTAL |
| H1 – HST | 22,773 | 14,28 | 24,719 | 61,780 |
| H1 – HPW | 18,978 | 11,906 | 20,559 | 51,483 |
| H2 – HST | 61,644 | 9,459 | 133 | 71,237 |
| H2 – HPW | 369,865 | 56,755 | 800 | 427,419 |
| H3 – HPW | 99,024 | 26,139 | 21,449 | 146,612 |
| H4 – HPW | 110 | 10,431 | 0 | 10,541 |
| M1 – HS* | 612 | 0 | 0 | 612 |
| M1 – HPW* | 1,223 | 0 | 0 | 1,223 |
| M1 – PST | 1,223 | 0 | 0 | 1,223 |
| M1 – PPW | 306 | 0 | 0 | 306 |
| M2 – HST | 4,720 | 376 | 0 | 5,096 |
| M2 – PPW | 9,440 | 752 | 0 | 10,192 |
| M3 – HPW | 28,443 | 57 | 0 | 6,280 |
| M4 – HPW | 118 | 6,162 | 0 | 6,280 |
| M4 – PPW | 59 | 3,081 | 0 | 3,140 |
| P1 – HPW* | 0 | 557 | 0 | 557 |
| P1 – PST* | 0 | 5,567 | 0 | 5,567 |
| P1 – PPW | 0 | 1,113 | 0 | 1,113 |
| P2 – HST* | 0 | 0 | 0 | 0 |
| P2 – PST | 112 | 13,174 | 0 | 13,286 |
| P2 – PPW | 134 | 15,809 | 0 | 15,943 |
| P3 – HPW* | 45 | 5,270 | 0 | 5,314 |
| P3 – PPW | 0 | 23,444 | 0 | 23,444 |
| P4 – PPW | 0 | 5,359 | 0 | 5,359 |
| TOTALS | 651,868 | 217,019 | 67,701 | 936,588 |
| *Pine classifications have some hardwood that is accounted. | | | | |

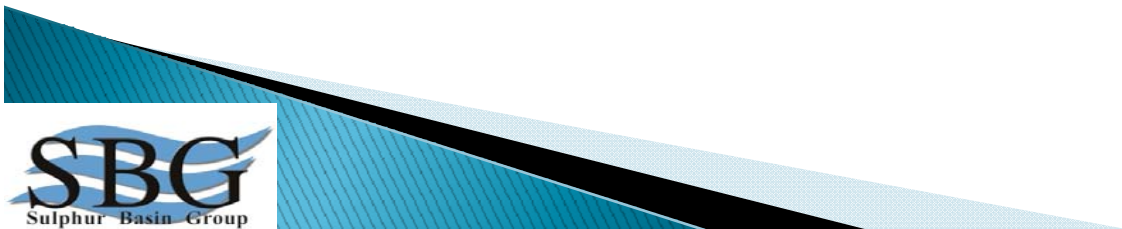
Per Acre Valuation

- ▶ Estimated value for each land cover classification was based on “Stumpage” (\$/ton) and estimated density in tons per acre.
- ▶ Density values differ for each project site based on the inspection effort.
- ▶ Estimates provided in the following tables:



Per Acre Valuation

| WRIGHT PATMAN LAKE | | | | | |
|--------------------|---------------|---------------|---------------|---------------|------------|
| STUMPAGE (\$/TON) | \$ 35.00 | \$ 15.00 | \$ 30.00 | \$ 8.00 | VALUE |
| PRODUCT | HST (TONS/AC) | HPW (TONS/AC) | PST (TONS/AC) | PPW (TONS/AC) | (\$/ACRE) |
| CATEGORY | | | | | |
| H1 | 30 | 40 | | | \$1,650.00 |
| H2 | 15 | 45 | | | \$1,200.00 |
| H3 | | 30 | | | \$ 450.00 |
| H4 | | 15 | | | \$ 225.00 |
| M1 | 10 | 40 | 20 | 5 | \$1,590.00 |
| M2 | | 15 | 25 | 5 | \$1,015.00 |
| M3 | | 15 | | 10 | \$ 305.00 |
| M4 | | 10 | 10 | | \$ 230.00 |
| P1 | 5 | 15 | 90 | 15 | \$3,220.00 |
| P2 | 5 | 15 | 50 | 30 | \$2,140.00 |
| P3 | | 10 | | 60 | \$ 630.00 |
| P4 | | 5 | | 25 | \$ 275.00 |



Per Acre Valuation

| MARVIN NICHOLS RESERVOIR | | | | | |
|--------------------------|----------|----------|----------|---------|-----------------|
| STUMPAGE (\$/TON) | \$ 35.00 | \$ 15.00 | \$ 30.00 | \$ 8.00 | VALUE (\$/ACRE) |
| PRODUCT | HST | HPW | PST | PPW | |
| CATEGORY | | | | | |
| H1 | 30 | 25 | | | \$1,425.00 |
| H2 | 5 | 30 | | | \$ 625.00 |
| H3 | | 30 | | | \$ 450.00 |
| H4 | | 10 | | | \$ 150.00 |
| M1 | 10 | 20 | 20 | 5 | \$1,290.00 |
| M2 | 5 | 30 | 5 | 10 | \$ 855.00 |
| M3 | | 30 | | | \$ 450.00 |
| M4 | | 10 | | 5 | \$ 190.00 |
| P1 | | 5 | 50 | 10 | \$1,655.00 |
| P2 | | 10 | 25 | 30 | \$1,140.00 |
| P3 | | 10 | | 50 | \$ 550.00 |
| P4 | | 5 | | 25 | \$ 200.00 |

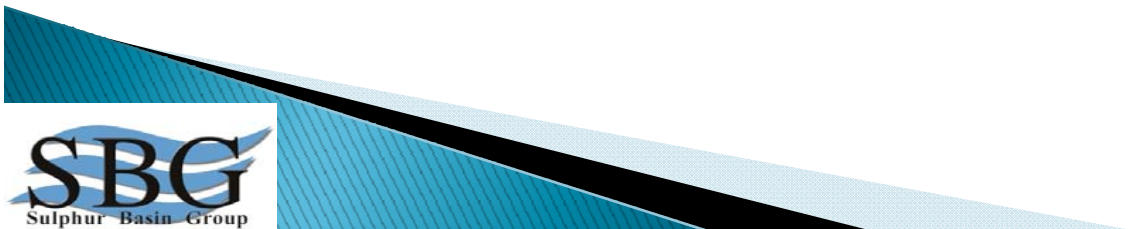
Per Acre Valuation

- ▶ On the basis of these land cover unit values, a summary of the overall estimated value of hardwood and pine sawtimber and pulpwood within the WPLR & MNR study areas are below:

| | HST | HPW | PST | PPW | TOTAL |
|---------------------|--------------|--------------|------------|-----------|--------------|
| Wright Patman Lake | \$19,262,603 | \$17,379,554 | 11,397,617 | \$723,932 | \$48,763,706 |
| Marvin Nichols Site | \$4,855,341 | \$10,697,914 | \$755,160 | \$475,978 | \$16,784,393 |

Timberland & Agricultural Land Impact Assessment

Summary & Conclusions



Summary & Conclusions

- ▶ WPLR comprises about 35,200 acres of impacted timberlands (between 242.5' & 227.5' elevations;
- ▶ MNR comprises about 26,200 acres of impacted timberlands beneath the 313.5' elevation; and
- ▶ The total value of both timberland and agricultural land resources for each project is shown by County or Government in the following tables:

Summary & Conclusions

Total Market Impact Summary – Wright Patman Lake

| PARCELS | TOTALS | TIMBERLAND | RANGE/CROP | WPA-RANGE | WPA-TIMBER |
|------------|--------------|--------------|-------------|-----------|------------|
| BOWIE | \$2,955,549 | \$2,878,320 | \$77,229 | \$0 | \$0 |
| CASS | \$4,432,503 | \$1,087,311 | \$3,345,192 | \$0 | \$0 |
| GOVERNMENT | \$45,432,998 | \$44,798,075 | \$0 | \$0 | \$634,924 |
| TOTAL | \$52,821,051 | \$48,763,706 | \$3,422,421 | \$0 | \$634,924 |

Summary & Conclusions

Total Market Impact Summary – Marvin Nichols Site

| ARCELS | TOTALS | TIMBERLAND | RANGE/CROP | WPA-RANGE | WPA-TIMBER |
|-----------|--------------|--------------|------------|-----------|-------------|
| RED RIVER | \$12,122,136 | \$11,594,247 | \$527,888 | \$0 | \$0 |
| TITUS | \$5,197,786 | \$3,677,581 | \$128,089 | \$33,392 | \$1,358,724 |
| FRANKLIN | \$1,522,086 | \$1,512,564 | \$9,522 | \$0 | \$0 |
| TOTAL | \$18,842,008 | \$16,784,393 | \$665,499 | \$33,392 | \$1,358,724 |

Summary & Conclusions

| CATEGORY | HST | HPW | PST | PPW |
|---------------------------|----------------|------------------|----------------|----------------|
| BOWIE | 41,273 | 81,498 | 5,216 | 6,851 |
| CASS | 6,589 | 27,788 | 13,530 | 4,248 |
| GOVERNMENT | 502,498 | 1,049,351 | 361,175 | 79,393 |
| WPL TOTAL | 550,360 | 1,158,637 | 379,921 | 90,491 |
| RED RIVER | 89,749 | 546,125 | 6,055 | 9,939 |
| TITUS | 24,123 | 124,221 | 19,117 | 49,558 |
| FRANKLIN | 24,852 | 42,849 | 0 | 0 |
| MNR TOTAL | 138,724 | 713,194 | 25,172 | 59,497 |
| COMBINED TOTAL | 689,084 | 1,871,831 | 405,093 | 149,989 |
| WPL %-age Combined | 80% | 62% | 94% | 60% |
| MNR %-age Combined | 20% | 38% | 6% | 40% |

► Combining

- Bowie/Cass Hardwood: 66.7%
- Bowie/Cass Pine: 84.7%

End of Presentation

