APPENDIX D

Applicant Rebuttal
Alternatives Analysis

File No. 2002-00017

Laurel Marina and Yacht Club, Inc.

South Fork Holston River Mile 56.5, Sullivan County, TN

Rob Todd Fax 781-6667

S&ME

December 15, 2005

Mr. Dale Thomas
P.O. Box 1646
195 Shady Ford Road
Bristol, Tennessee 37621

Reference: **Response to Regulatory Comments**
Laurel Marina Expansion
Highway 421
Bristol, Tennessee
S&ME Proposal No. 1404-05-285-A

Dear Mr. Thomas:

S&ME, Inc. (S&ME) is pleased to submit this correspondence to address regulatory comments regarding the water quality permit application for the proposed marina expansion. These services are being provided to you in general accordance with our existing agreement established by acceptance of S&ME Proposal No. 1404-05-285-A.

Background

S&ME has been requested by Laurel Marina to provide general consulting services pertaining to the permit application. Services include representing Laurel Marina at public hearings hosted by regulatory bodies, and assisting (on an as requested basis) with response to objections or comments against the proposed action. This correspondence is to serve as a response to objections or comments against the proposed action. Specifically, this letter provides information relative to mitigation for loss of surface water area and information regarding the potential presence of pyritic shale within the proposed expansion area.

S&ME, Inc., Tri-Cities Branch
2153 Highway 75
Blountville, Tennessee 37617

Mailing address:
P.O. Box 1118 TCAS
Blountville, Tennessee 37617

(423) 323-2101
(423) 323-5272 fax
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Response to Objections or Comments

Mitigation for Loss of Surface Water: South Holston is a lake with more than 7,580 surface acres of water. The lake elevation is seasonally altered and controlled by the Tennessee Valley Authority. The summer pool elevation at the subject site is 1729 and occurs approximately three to four months of the year. The winter pool elevation is 1703 and occurs for a much greater portion of the calendar year. The proposed marina expansion and associated parking lot construction will serve to reduce the surface area of the lake by 0.943 acres during summer pool (elevation 1729) for a 0.01 % total loss of surface water area during summer pool. The proposed alteration would result in a surface water area increase of 1.416 acres or 0.02% of total surface water area during winter pool (elevation 1703). Thus during the majority of the year, the proposed impact would serve to create more surface water area. The proposed action will not affect flood storage volume or power generation capacity for the reservoir. A copy of the elevation, surface area, and volume data for the existing and proposed development conditions was prepared by Holbrook Surveyors, Inc. and is attached for your reference.

However, the regulatory comments have a requested an evaluation of the potential mitigation for the loss of surface water area. In order to create a net increase in surface water acreage during summer pool (elevation 729), the area of material removed from the bank would have to be increased and would result in a larger alteration to the subject site than currently proposed by the applicant. Such an approach would result in greater areas of cut/fill and consequently, a greater alteration to the natural storm water runoff of the subject site. The applicant has reduced the size of the proposed expansion by modifying the roadway design and reducing the number of slips to be added. The design plan modification will minimize impact to subject site by utilizing fill material naturally occurring in the project area and minimize the physical alteration of the project site.

Similar actions have been permitted on the South Holston Lake. Painter Creek Marina (Painter Springs Branch, South Fork Holston River Mile 60.5R) was issued a permit that allowed harbor excavation and fill associated with the construction of additional floating covered boat slips. The construction was performed in approximately 1999 to 2001. Furthermore, there is no established regulatory mitigation standard for mitigation of lake volume or surface water loss. If mitigation for such loss is pursued by the agencies, regulatory citing should be provided to enable preparation of an appropriate response by the permit applicant.

Despite agency concern regarding loss of surface water and access by the general public, the agencies should recognize that this cove is currently readily accessible to the general public only by boat. Vehicle access is controlled by a security coded gated access road across private property for members of Laurel Marina. Due to concerns over vandalism, dumping, and/or illicit activities in this remote area, vehicle access will continue to be restricted. However, no restrictions on use of the access road are in place for bikers, hikers, walkers, runners, fisherman, or hunters who wish to use the access road. Thus, development by Laurel Marina has increased access to the surface waters of the lake for all those in the general public who wish enter by foot or bike. Without the availability and use of the road system developed by Laurel Marina and Yacht Club, access to the general public would only be available by overland hiking through private land with permission to the U.S. Forest Service lands.

Based on our evaluation of the alternatives, mitigation for loss of surface water is not being proposed at this time. This conclusion is based on the following:

- There is an overall net increase in surface water acreage over the majority of the year.
- Mitigation for the seasonal loss of surface water acreage would result in additional impact to the subject area.
- Flood storage volume and power generation capacity are not affected.

Public access to surface waters of South Holston Lake has increased as a result of Laurel Marina and Yacht Club developments.

- There is no established regulatory mitigation standard for mitigation of lake volume or surface water loss, and mitigation has not been required on similar permitted actions within the South Holston impoundment. To impose such requirements for this proposed action would be inconsistent with precedent and other similar permitted actions.

Pyritic Shale Potential: The project area is mapped within the Sevier Shale of the Ordovician System. The Sevier is typified as a blue-gray calcareous shale. Bedrock exposures within the project area are consistent with the Sevier Shale. The Sevier Shale is documented to contain localized inclusions of pyrite. Our experience in this region has found these occurrences to be more frequent near the contact with the Knox Group. Pyritic shale lenses within the Sevier are characterized by charcoal to black coloration within unweathered portions of the formation in contrast to the more common blue-gray coloration of the unweathered formation. Pyrite is not a concern within the soil residuum and weathered phases of the formation since any pyrite (that may have been present within the parent bedrock of the soil residuum and weathered shale) has already fully oxidized and there is no potential for further additional acid formation. Thus, the concern with pyrite in the Sevier is limited to unweathered shale with charcoal to black coloration.

The project has been subdivided into three zones of grading activity. An engineer from S&ME observed these zones on November 21, 2005 during low winter pool (elevation 1705). Zone 1 includes proposed soil excavation and fill of the cove for the parking lot on the northwest side of the project area. Zone 1 is predominately sandy clay with some cobble rock with one seam of highly weathered shale in the lake bed below summer pool. Zone 2 includes proposed excavation along the northeast side of the project. Zone 2 includes indurated shale exposures in the lake bed below summer pool. Exposures are also evident in

the existing road cut above summer pool within the Zone 2 segment of the project. Zone 3 includes proposed excavation along the southeast side of the project. Zone 3 is predominately sandy clay with some cobble rock in the lake bed below summer pool. Shale bedrock is not apparent in Zone 3 in the lake bed below summer pool.

Hard bedrock samples were obtained from Zone 2 at two locations that indicated the darkest coloration. One sample (S-1) was obtained from a bedrock exposure in the existing roadway cut outside the proposed excavation limits. Another sample (S-2) was obtained from a bedrock exposure below the road and within the project Zone 2 proposed excavation limits. Both samples were tested for pyritic content and neutralization potential. The results reflect minimal pyrite content and excess capacity within the bedrock to neutralize any acid formation from pyrite. Test results are as follows, and laboratory sheets are appended to this letter.

Sample	Pyritic Content	Neutralization Potential
	0.02%	432.35 tons excess
	0.00%	402.45 tons excess

Test results of unweathered bedrock within the project vicinity indicate pyritic shale and acid formation is a minimal concern. Bedrock excavation for fill in the cove is planned to occur from Zone 2 where the rock samples were obtained and tested. Bedrock is planned for use as fill material in the bottom of the cove in order to develop a stable base for the remainder of the soil fill for the parking lot. If hard bedrock seams are encountered during excavation from Zones 1 and 3, the bedrock will be left in place as natural structure and any soil from around the unweathered seams will be excavated. Thus, minimal hard bedrock from Zones and 3 will be located within the cove fill further reducing any potential for acid formation.

Closing

S&ME appreciates the opportunity to be of service to you. If you have any questions regarding the outlined scope of work, or if we may be of any further assistance, please call.

Sincerely,

S&ME, Inc.

Julie L. Hickling, P.G.
Project Geologist

P. Alan Williams, P.E.
Environmental Services Manager

Enclosures: Holbrook Survey Data Sheet
Certificate of Analysis

cc: Mr. Robert Baker, TDEC, Nashville, TN
Mr. Carl Olsen, USACE, Nashville, TN
Mr. Stan Davis, TVA, Knoxville, TN
Ms. Ann Patrick, TVA, Kingsport, TN
Ms. Jennifer Wilson, Graphic Bliss Advertising

JLH/PAW/nc

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Holbrook Surveyors Inc.

15 Solar Street
Bristol, VA 24201
Phone: (276) 669-6658 Fax: (276) 669-491

	EXISTING CONDITIONS		PROPOSED GRADE	
ELEVATION	SURFACE AREA (ACRES)	VOLUME (C.Y.)	SURFACE AREA (ACRES)	VOLUME (C.Y.)
703	52	57 777	.668	447 901
729	18.554	33,506	.61	188,2

SPECTRUM
LABORATORIES

RECEIVED
DEC - 5 2005

MAILING: P.O. BOX 1578, COEBURN, VIRGINIA 24230-1578
SHIPPING: 1014 LAUREL AVE., COEBURN, VIRGINIA 24230

CERTIFICATE OF ANALYSIS

For: S & ME, INC.
2153 HIGHWAY 75
BLOUNTVILLE, TN 37617-5839
PROJECT # 1404-05-285A, LAUREL MARINA

Invoice #: C-5610

Date Received: 11/28/2005

Acid-Base Accounts

Lab # ~	Analyst	Paste pH	% Sulfur		Neutralization Needed * (FROM % SULFUR)	Neutralization Present	Additional Neutralization Needed *	Neutralization Excess *
175694	JSL	8.62	0.02	**	0.63	432.98		432.35
175695	MM	8.73	0.00		0.00	402.45		402.45

* tons of CaCO3 equivalent per 1000 tons of material
** % Pyritic Sulfur
~ Sample ID

175694	S-1	SHALE BEDROCK ROAD CUT ABOVE AREA #2
175695	S-2	OUT CROP BELOW ROAD CUT AREA #2

DANIEL McFADDIN
Laboratory Manager
11/29/2005

PHONE (276) 679-7097 • (276) 679-7092
FAX (276) 395-6740

July 19, 2006
US Army Corps of Engineers
Lisa Morris
3701 Bell Road
Nashville, TN 37219

RE: Laurel Marina & Yacht Club Expansion
Alternative Analysis: Parking Lot Fill
Shallow Water Habitat Mitigation

Dear Ms. Morris;

Thank you for the opportunity to provide additional information and clarification regarding the proposed Laurel Marina & Yacht Club expansion, specifically in regard to the construction of a new parking area and the impact the expansion will have on the surrounding shallow water habitat.

I. ALTERNATIVE ANALYSIS: PARKING LOT FILL

Alternative 1: Utilize Private Land For Parking, Relocate Parking Lot or Build Parking Structure

- There is no private land with road access within one mile of the proposed expansion area. The private land currently owned by Laurel Marina & Yacht Club is approximately one mile from the proposed slip expansion, and is too far away to provide ready access for slip holders.
- The existing parking lot is at capacity due to the current customer base of Laurel Marina & Yacht Club.
- The US Forest Service will not permit any cut, fill or excavation above the 1747' elevation, nor will it permit the building of any permanent structures such as a parking garage on US Forest Service Land.
- Construction of a parking garage on the existing parking lot is not economically feasible due to the fact that the current lot was created by fill and would require significant reinforcement below the 1747' elevation to bear the weight of such a structure. Additionally, a parking garage would impede accessibility to the dealership for sales and service and would restrict traffic flow.
- A parking structure would degrade the aesthetic quality of the reservoir.

Alternative 2: Utilize Fill Material From Another Location

- The US Forest Service and the Tennessee Valley Authority will not allow additional fill to be brought in from outside the current harbor limits due to loss of flood and power storage.
- The US Forest Service will not permit any cut, fill or excavation above the 1747' elevation.

Alternative 3: Utilize A Sea Wall And Fill For Parking Lot

- Construction of a sea wall is not TVA's preferred method of stabilization.
- Construction of a sea wall would require additional fill to be brought in from outside the current harbor limits.
- Natural material stabilization promotes aquatic habitat enhancement.

Alternative 4: Reduce The Size Of The New Parking Lot

- While the number of proposed slips requested in the expansion was reduced from 306 to 211, Laurel Marina & Yacht Club requested no reduction in the size of the parking lot. This is due to the fact that 181 of the 211 remaining slips are designated as double occupancy slips, which would accommodate 362 boats, plus 30 single occupancy slips for a total of 392 boats. At an average of two cars per boat, that is a maximum potential of 784 cars that could require access to the slips. If only 25% of these cars are available at peak usage, that represents 196 spaces, the size of the parking lot we propose.

Conclusion: The procedure for using the current fill is the same as is utilized for parking in other locations on the reservoir. The reason the fill for the parking area has been chosen as the preferred alternative is because relocating the parking lot to private land, building a structure on US Forest Service land, constructing a sea wall or reducing the size of the parking lot are not feasible based on geographic, economic or regulatory restraints.

Preferred Alternative: To be granted approval to proceed with construction of a new 196-space parking lot, utilizing fill from within the current harbor limits of Laurel Marina & Yacht Club.

II. SHALLOW WATER HABITAT MITIGATION

Before any mitigation was proposed, the proposed parking lot area was evaluated for alternatives, including minimization and avoidance. Ultimately, construction of a new parking lot to accommodate the growth that will accompany the expansion of Laurel Marina & Yacht Club must be done onsite because it is the only justifiable alternative.

Following is a summary of our proposed mitigation procedures:

1. The mitigation site chosen is in an area lacking in shallow water and structural habitat for fish and wildlife. Mitigation will stimulate the creation of a new shallow water habitat.

2. The total lake surface area will be reduced by approximately 9/10 of an acre or less during the full pool period of May through August. The reduction will be offset by a net gain of 2.14 additional acres of shallow water habitat during the remaining eight months, when fishing is considered at its best on the reservoir.

3. The proposed area for the parking lot is a small cove that is narrow and shallow. Boathouses are currently moored to the banks year round, making the area less accessible and desirable to the public for fishing.

4. The proposed mitigation will create a flat area that is more than double the size of the area being filled.

5. The proposed area has been within the marina harbor limits since 1988. We have seen the lake level more than 10 feet below the proposed cut area and we know there is minimal solid rock hard pan in this proposed excavation area. Soil and rock tests by a licensed engineering firm confirm this.

6. Natural rock and natural rock with riprap will be used for a stabilization wall, and if rock is not available, gabion baskets will be used where needed. Construction of a sea wall is not TVA's preferred method of stabilization. The use of gabion baskets and natural rock will promote a more natural area that is conducive to the habitat.

7. The proposed area of expansion is a problem area where wave action erosion has occurred in the past. The process of stabilization will help prevent further erosion. The

front of the new slips will create an underwater wave-breaker for additional erosion control, further protecting this area of shoreline.

8. During construction, hay bales, which are stronger than silt fences, will be used to control the flow of sediment into the lake. Upon completion of the excavation, the hay bales will remain in the lake providing nutrients that will attract fish.

9. Long-term habitat enhancements will consist of constructing five anchored brush piles, eleven 10' x 15' flats, 10 boulder piles and eleven smallmouth spawning benches. (Please refer to attached site plan for placement and spacing).

10. Mitigation efforts will be extended outside the current harbor limits to compensate for any loss of shallow habitat and to improve and expand accessibility to the public.

Conclusion: The mitigation measures in this plan represent a commitment by Laurel Marina & Yacht Club to protect and enhance the shallow water habitats and shoreline on South Holston while simultaneously maximizing availability and access of public recreation use of the reservoir.

Thank you for further evaluating our chosen alternative to construct a parking lot at Laurel Marina & Yacht Club utilizing fill from within our existing harbor limits. Please don't hesitate to contact me if I can provide any additional information or address any questions you may have.

Sincerely,

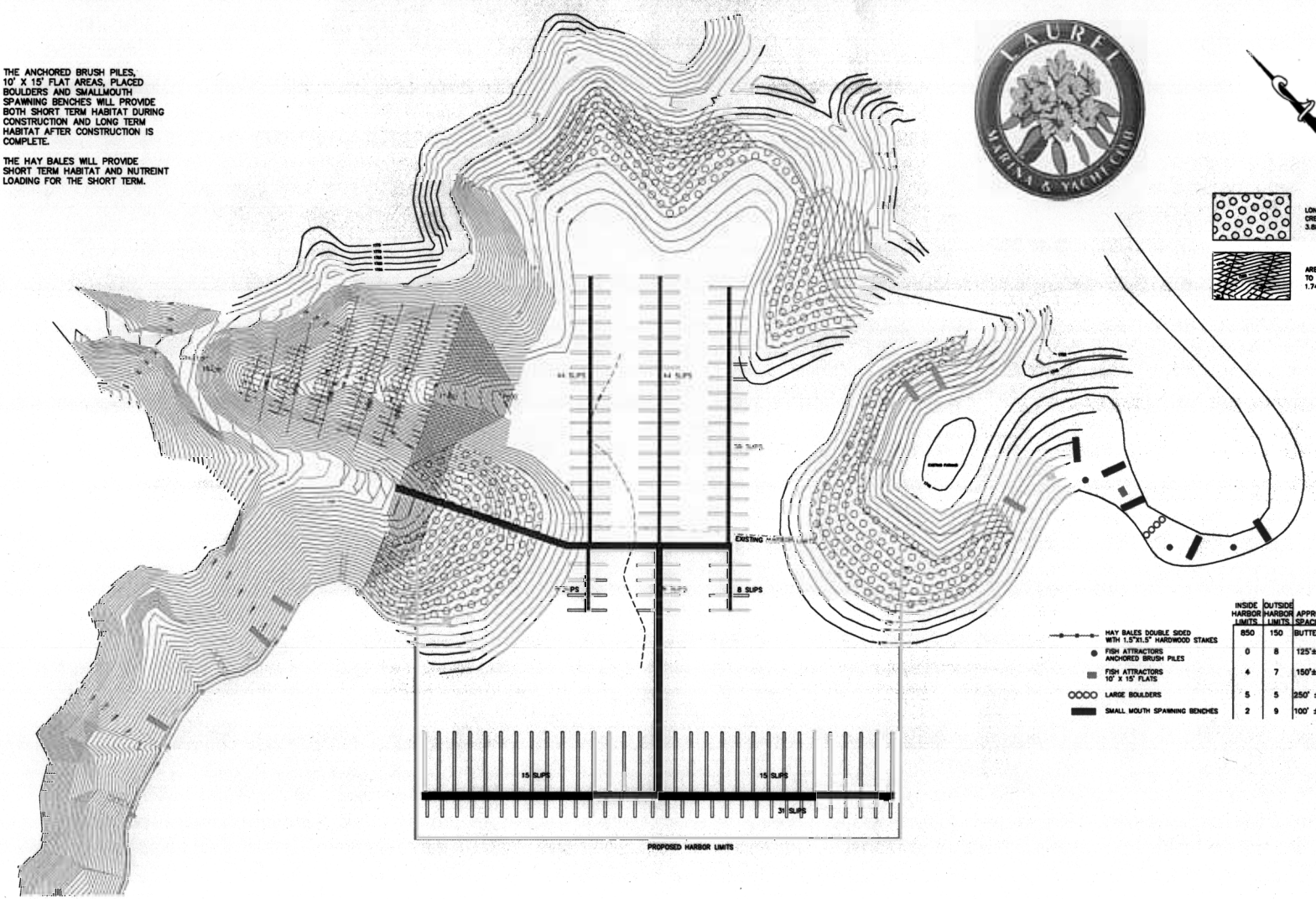
Dale T. Thomas

Dale T. Thomas
Owner & General Manager
Laurel Marina & Yacht Club
(423) 878-5656

CC: Anne Patrick, Tennessee Valley Authority

THE ANCHORED BRUSH PILES, 10' X 15' FLAT AREAS, PLACED BOULDERS AND SMALLMOUTH SPAWNING BENCHES WILL PROVIDE BOTH SHORT TERM HABITAT DURING CONSTRUCTION AND LONG TERM HABITAT AFTER CONSTRUCTION IS COMPLETE.

THE HAY BALES WILL PROVIDE SHORT TERM HABITAT AND NUTREINT LOADING FOR THE SHORT TERM.



	INSIDE HARBOR LIMITS	OUTSIDE HARBOR LIMITS	APPROX SPACING
HAY BALES DOUBLE SIDED WITH 1.5"X1.5" HARDWOOD STAKES	850	150	BUTTED
FISH ATTRACTORS ANCHORED BRUSH PILES	0	8	125'±
FISH ATTRACTORS 10' x 15' FLATS	4	7	150'±
LARGE BOULDERS	5	5	250' ±
SMALL MOUTH SPAWNING BENCHES	2	9	100' ±

0' 80' 160' 240'

LAUREL MARINA & YACHT CLUB

KING'S COVE II

TVA TRACT NO. XTSH-1 (SH-370)
SOUTH FORK HOLSTON RIVER
MILE 57.2 TO 57.7

HOLBROOK SURVEYORS
115 SOLAR STREET
BRISTOL, VIRGINIA 24201
(276) 669-6658

LAUREL MARINA YACHT CLUB

DRAWN BY:	DATE:	
JCM	07/19/06	PLAN VIEW KINGS'S COVE II
APPROVED BY:	DATE:	
TFH	07/19/06	
SCALE: 1 INCH =80 FT.	SHEET OF	PROJECT: LM-PLAN-FINAL.DWG

LAUREL MARINA ECONOMIC STUDY
SUBMITTED BY APPLICANT

9. **Anticipated Economic Impact of your Project:**
$32,360,864.14 **(See attached table)**

9A. **Projected cost estimate and funding source (if project is to be completed in phases, please include time schedule and costs for each phase):**

1. Construct 10 houseboat slips and 20 sport boat covered slips ($245,000). **Start as soon as possible, complete Sept. 2005.**

2. Construct parking area (approx. 196 spaces) within current harbor limits from base of current road (1747') down to low winter pool levels of 1703'-1708'. All excavation for proposed parking area will occur below the 1747 elevation and as per the plan supplied is divided into three grade areas. See table below: ($860,830.00). **Start 10/05, complete 05/06.**

3. Construct remainder of slips (see attachment) for large houseboats, covered slips and open slips for sailboats / houseboats. ($2,000,000). **Start 05/06, complete 12/09.**

9B. **Number of jobs to be created:**

(Please also see 9D)
Number of jobs to be created
Near-Term: 100
Long-Term: 10

9C. Negative socioeconomic impacts considered:

None considered being a problem

9D. Expected public and investor benefits:

Upon approved as submitted, Laurel Marina & Yacht Club will begin the process of construction of the 196 space parking facility. Once the required fill for the parking area is moved and stabilized, construction will begin on building 167 slips outside current harbor limits. (See attached plan) Although we will begin filling these slips as they are built, our economic model doesn't reflect any occupancy until year three. This economic impact study is a regional study encompassing a four state area including Southeast Kentucky, Southwest Virginia, East Tennessee and Northwest North Carolina.

ECONOMIC IMPACT STUDY NARRATIVE
(See Attached Five Year Economic Impact Table)

A) *Actually construction costs for the proposed project total $3,105,830.00. This costs include planning and engineering, fill relocation/excavation, fill stabilization, paving and marking of proposed parking area, guard rails, handicapped access, and slip and walkway construction. These expenditures will involve companies in Southwest Virginia and/or East Tennessee and are direct expenditures incurred by Laurel Marina/Dale Thomas. Total projected construction costs do not include interest on loans paid to regional banks to complete construction. Should these figures be included the cost would be significantly higher.*

B) *The next line items in this study address actual boat sales over the five-year period and are based on 100% occupancy at the end of the five-year period at an estimated average cost of $300,000.00 per large houseboat, $50,000.00 per small, open slip houseboat and $25,000.00 per pleasure boat. This expansion would create additional market opportunities for all boat dealers in the region. In addition to the actual costs of boats that would be required to fill the proposed slip expansion, there are several other factors that are not included in this study that will increase the economic impact substantially should they be taken into consideration. First, nearly 25% of new boat sales include trade-ins that would be resold in the market. Second, this study doesn't include the economic impact to regional banks that would most likely finance a large portion of these boats. Third, and not included in this study but the most important to the wellbeing of our region, is taxes paid on the sale and/or value of these boats. This figure could reach hundreds of thousands of dollars over a five-year period.*

C) *Slip rental figures are based on projected rental fees paid directly to Laurel Marina which is based on 50% occupancy across the board for year three, the first year we take any slip rental into consideration as construction will take place over the first two years. Year four figures are based on 75% occupancy for large houseboats, 65% occupancy for small pleasure boats in covered slips and 65% occupancy for small houseboats in open slips. The reasoning behind a higher percentage for large houseboat slips is the fact that at present there are no available large houseboat slips on South Holston Lake and few, if any, available slips on any of the reservoirs*

Northeast Tennessee. Year five figures are based on 100% occupancy for large houseboats, and 85% occupancy for both pleasure boats in covered slips and small houseboats in open slips. Year five figures are based on present averages presently reflected upon occupancy of all five marinas presently doing business on South Holston Lake.

D) *Employment figures are based on actual costs of one full time employee during year one and two that will oversee project development and construction. Year three figures include three full time employees, a harbormaster, an assistant harbormaster and a marina manager that will oversee operations. The figure also includes three seasonal employees that will work during a 20-week period. Year four includes the three full time employees as described above and four 20-week seasonal employees. Year five increases seasonal employee base to a five 20-week workforce.*

E) *Figures contained in reference E are based on fuel and marina purchases, boat service/maintenance and expenses associated with travel to and from the marina. These figures only take into account people traveling from within the four state region outlined within this study. During 2004, the Laurel Marina & Yacht Club customer base included people from ten states. (TN, VA, KY,OH ,WV, GA, IL, IN, NC, SC)*

F) *Average costs paid to Bristol Tennessee Electric for electricity by houseboat owners based on occupancy rates described above at $45.00 per month per houseboat.*

G) *Average costs paid to internet service providers by houseboat owners figured at a rate of $39.00 per month per houseboat.*

H) ***H, I J and K*** *are based on figures of the cost of doing business at Laurel Marina and were derived from actual amounts paid out during the 2003 calendar year. These figures include any and/or all costs not included elsewhere within this narrative that are direct costs of day to day marina operations.*

As you can see from both the actual study and the narrative, this study is heavily weighted toward the conservative side and as accurate as is humanly possible. Should one take into consideration, boat trade-ins, taxes, interest paid to banks as well as inflation, the economic impact both directly and indirectly could be substantially higher than $32,244,988.63. This study is based on actual numbers, includes no time based multipliers and no speculative research.

DESCRIPTION	NOTES	NARRATIVE	YEAR ONE	YEAR TWO	YEAR THREE	YEAR FOUR	YEAR FIVE	TOTALS
Construction / Excavation		A	989,954.49	2,000000.00				3,105,830.00
Boat Sales – Large Houseboats		B						18,900,000.00
Boat Sales – Small Houseboats		B						1,400,000.00
Boat Sales – Pleasure Boats		B						4,650,000.00
Slip Rental – Large Houseboats		C			160,000.00	235,000.00	315,000.00	710,000.00
Slip Rental – Small Houseboats		C			35,000.00	45,000.00	72,000.00	152,000.00
Slip Rental – Pleasure Boats		C			167,400.00	216,000.00	268,600.00	652,000.00
Employment		D	53,280.00	57,720.00	143,090.00	151,440.00	164,800.00	570,330.00
Houseboat Seasonal Expenditures		E			184,000.00	270,250.00	362,250.00	816,500.00
Pleasure Boat Seasonal Expenditures		E			147.660.00	190,440.00	251,160.00	589,260.00
Electricity – Houseboats		F			24,840.00	35,100.00	46,980.00	101,920.00
Wireless Internet - Houseboats		G			22,052.40	31,161.00	41,707.80	94,919.20
Utilities – Marina		H			26,245.85	30,282.73	35,775.14	92,303.72
Advertising		I			38,617.38	44,409.98	51,071.47	134,098.83
Insurance		J			52,847.19	58,524.40	67,303.06	178,674.65
Other Costs of Doing Business		K			61,331.64	70,531.38	81,164.72	213,027.74
							TOTAL	**32,360,864.14**