

ARIZONA DEPARTMENT OF TRANSPORTATION

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2009 ARIZONA WATERCRAFT SURVEY

Volume I –Executive Summary

Prepared by:
Behavior Research Center, Inc.
45 East Monterey Way
Phoenix, Arizona 85012

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Arizona Department of Transportation
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Arizona State Parks Board

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1.0 INTRODUCTION

The Arizona Department of Transportation (ADOT), the Arizona Game & Fish Department (AGFD) and the Arizona State Parks Board (ASPB) are required, under Arizona Revised Statutes (Sec. 28-5926), to conduct a study every three years on watercraft fuel consumption and recreational watercraft usage. The primary purposes of this effort are as follows:

- To determine the percentage of total state taxes paid to Arizona for motor vehicle fuel that is used for propelling watercraft; and
- To determine the number of days of recreational watercraft use in each of the state's counties by boat use days and person use days.

The fuel consumption data is collected to determine the allocation of motor vehicle fuel tax to the State Lake Improvement Fund (SLIF). The information on recreational watercraft usage patterns on Arizona's lakes and rivers is necessary, in part, to determine the distribution of SLIF funds to applicants.

In addition to collecting the above mandated information, this study also collected selected attitudinal and behavioral data on the following subjects:

- Water-based and non-water-based recreational activities participated in;
- Boating and water-based recreational facility needs;
- SLIF fund utilization priorities;
- Adequacy and focus of watercraft law enforcement activities; and
- Attitudes about selected watercraft and outdoor recreation issues.

The information contained in this report is based on two key study components:

- A statistically valid and projectable telephone survey of 6,787 registered watercraft owners in Arizona, California, Nevada and Utah.
- An audit/survey of the fuel sales and consumption patterns of: (1) marinas, (2) public agencies, and (3) concessionaires, commercial boat operators and excursion operators.

In addition to the boat owner surveys and the marina, agency and concessionary audits, this study also included a launch ramp survey. The launch ramp survey was conducted to check the ratio of in-state to out-of-state boaters at ten selected Arizona lakes and rivers.

The methodology utilized on the boat owner segment of this study paralleled the methodology used by BRC in the 1994, 1997, 2000, 2003 and 2006 Watercraft studies. The one exception to this is that the 2003 study did not include Utah boaters since the State of Utah would not release their boat owner database for use in the study.

To develop the most accurate data possible, the data collection effort was divided into 24 separate data collection segments spread over the 12-month period from June 24, 2008, to June 4, 2009. Using this format, a total of approximately 558 interviews were conducted each month with one-half being conducted between roughly the 1st and 5th of the month and one-half between roughly the 16th and 20th of the month. During each of the 24 interviewing segments, boaters were asked to recall their boating patterns for only the two weeks prior to the interview.

This study was designed and executed under the direction of a Technical Advisory Committee (TAC) comprised of representatives from each sponsoring agency. The Behavior Research Center (BRC) wishes to thank each of the following TAC members for their indispensable assistance in the successful completion of this most important project:

- Frank Darmiento, ADOT
- John Semmens, ADOT
- Tanna Thornburg, ASPB
- Kevin Bergersen, AGFD

The information generated from this study is presented in two volumes. **VOLUME I – EXECUTIVE SUMMARY** presents a brief summary review of the key study findings and the methodology employed. **VOLUME II – TECHNICAL REPORT** presents an in-depth analysis of the study findings and a detailed explanation of the study methodology.

The Behavior Research Center has presented all of the data germane to the basic research objectives of the project. However, if the TAC requires additional data retrieval or interpretation, we stand ready to provide such input.

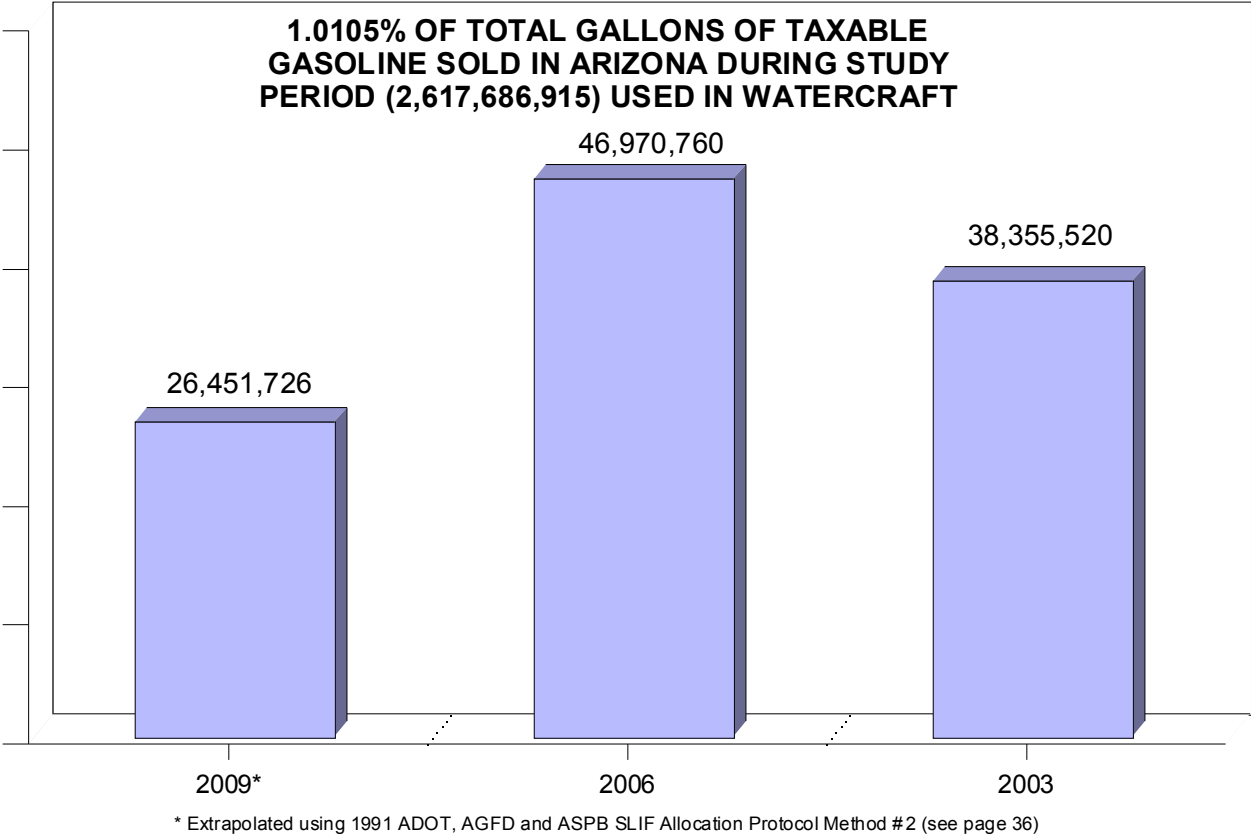
BEHAVIOR RESEARCH CENTER

2.0 SUMMARY OF THE FINDINGS

FUEL CONSUMPTION DATA

- Total gasoline used to propel watercraft in the state of Arizona between June 1, 2008, and May 31, 2009, is estimated to be 26,451,726 gallons using Protocol Method Number Two as agreed upon by the agencies in 1991. This total represents 1.0105 percent of the total 2,617,686,915 gallons of taxable gasoline sold in Arizona during the study period. This is the percentage which should be used for the SLIF allocation.

WATERCRAFT FUEL CONSUMPTION OF ARIZONA GASOLINE -- GALLONS



- The 2009 SLIF allocation of 1.0105 percent is down from the 2006 percentage of 1.7157. The primary reasons for the decrease are as follows:
 - The percent of boaters who used their watercraft on Arizona lakes and rivers in the prior two weeks decreased from 10.2 percent in 2006 to 9.0 percent in 2009.
 - The typical boater who used their watercraft on Arizona lakes and rivers in the prior two weeks used an average of 31.4 gallons over the two-week period compared to 43.0 gallons in 2006.
 - The typical boater who used their watercraft on Arizona lakes and rivers in the prior two weeks used it for 2.9 days, down from 3.4 days in 2006.

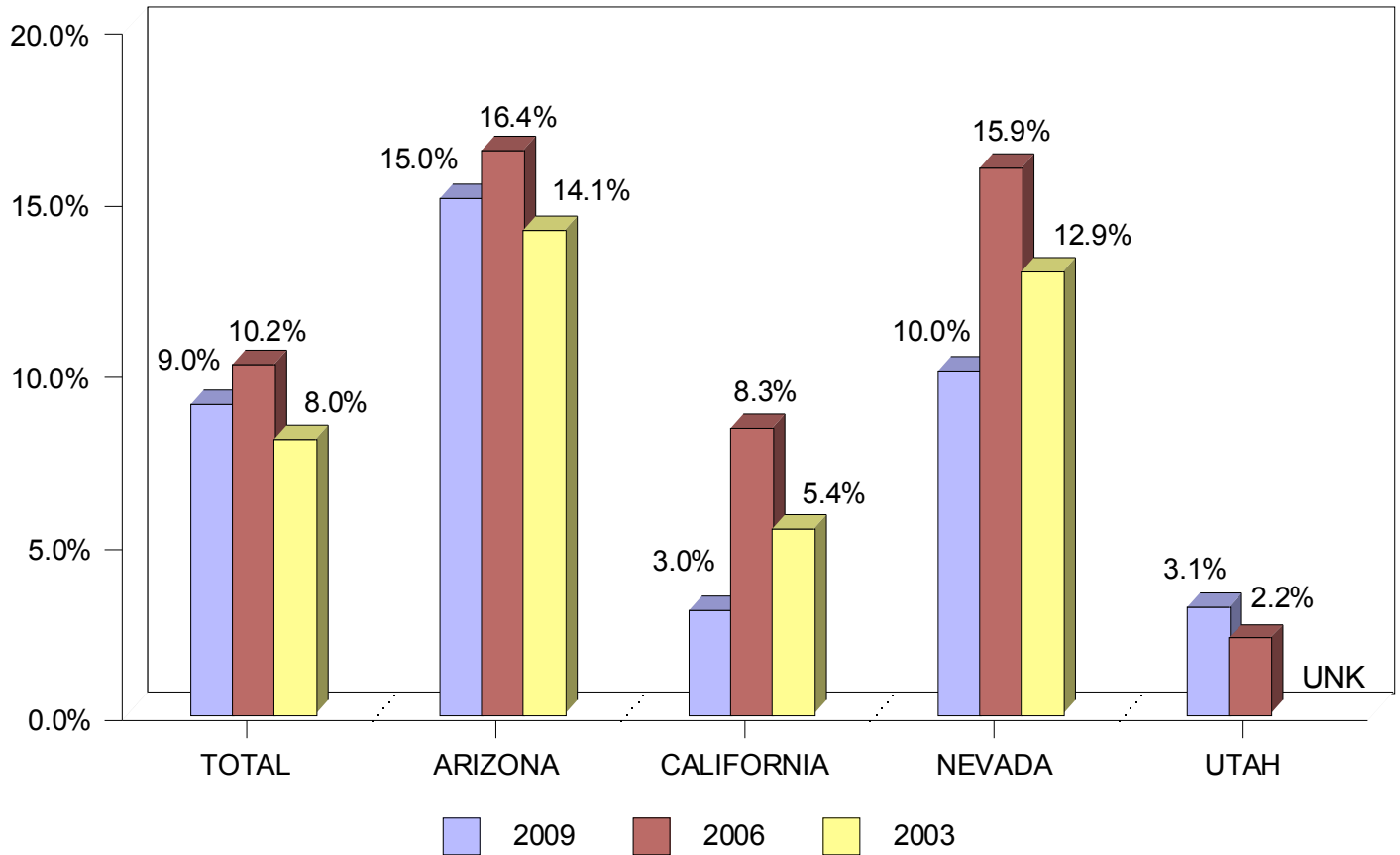
One explanation for the decrease in use and consumption from the prior study is the United States' current economy woes.

- The boating classification which continues to account for the largest amount of non-marina consumption is Class 2 (predominantly jet skis) with a reading of 36.7 percent. Among California boaters, this class accounts for 65.6 percent of consumption. In Arizona, Boat Class 5 (16' to 25' inboard and in/out) accounts for 33.3 percent of consumption.
- Gasoline is used to propel 98.6 percent of all boats, with the remainder utilizing diesel and aviation fuel.
- 94.5 percent of Arizona boaters purchase Arizona fuel compared to 65.0 percent of California boaters, 55.7 percent of Utah boaters and 17.0 percent of Nevada boaters.
- 91.5 percent of Arizona boaters purchase their Arizona fuel at a non-marina location compared to 84.0 percent of California boaters, 86.2 percent of Nevada boaters and 42.5 percent of Utah boaters.

USE OF WATERCRAFT IN ARIZONA

- 9.0 percent of registered watercraft owners in Arizona, California, Nevada and Utah use their boats in Arizona during any given two week period – down from 10.2 percent in 2006. Among Arizona watercraft owners, usage reaches 15.0 percent – down from 16.4 percent in 2006.
- As expected, the Arizona usage figure is above those for the other three states studied with 3.0 percent of California owners, 10.0 percent of Nevada owners and 3.1 percent of Utah owners indicating use in Arizona during any two-week period. The percentage of California owners using their boats is down sharply from 8.3 percent in 2006.

BOAT USE IN ARIZONA IN ANY GIVEN 2-WEEK PERIOD

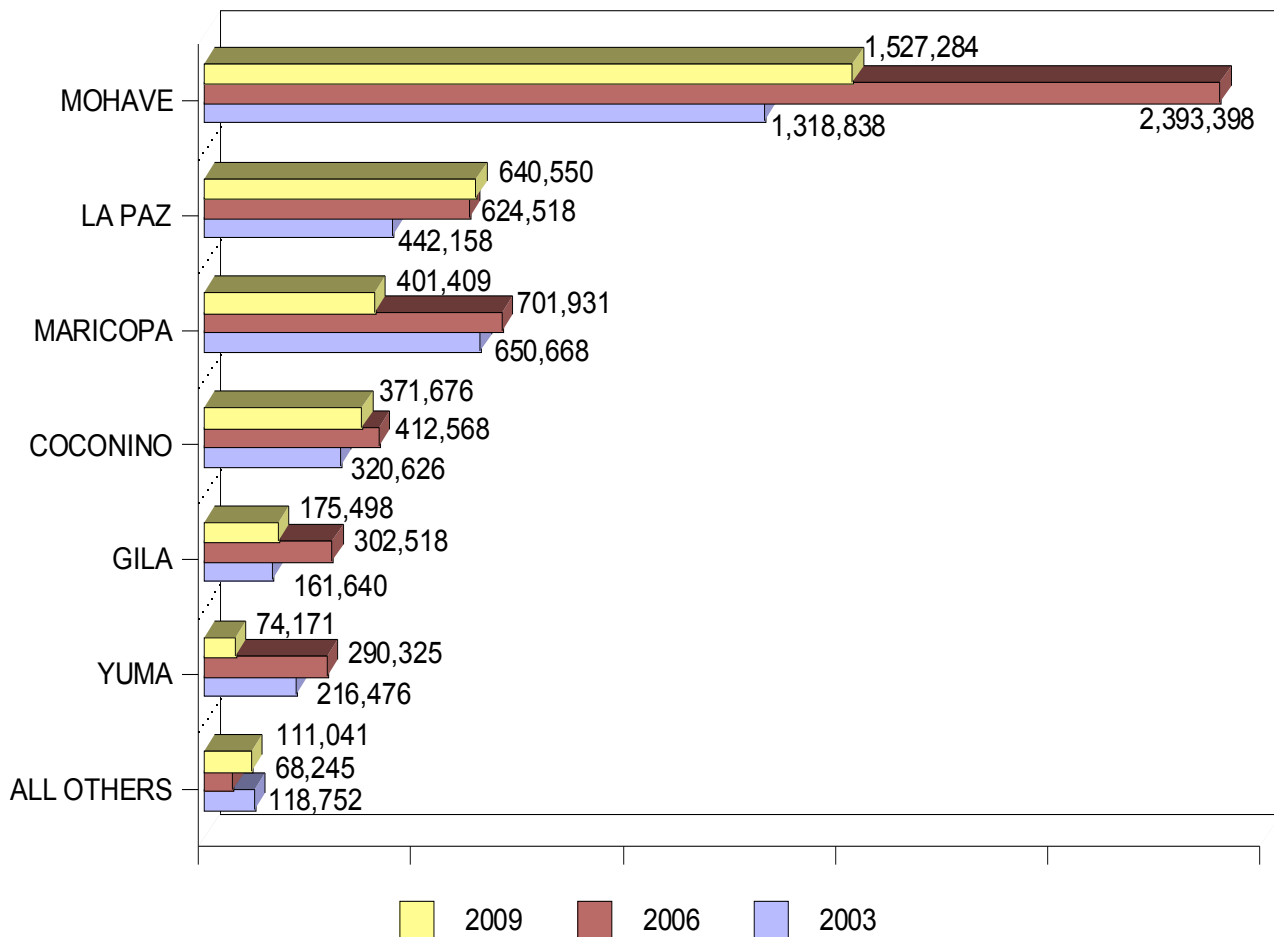


- 38.8 percent of all watercraft owners in the four-state survey universe utilized their boat in Arizona during the prior year – virtually unchanged from 38.2 percent in 2006. Among Arizona users, the figure reaches 62.8 percent (up from 57.5%) compared to 16.2 percent among California owners (down from 32.7%), 37.8 percent among Nevada owners (down from 42.6%) and 14.5 percent among Utah owners (up from 13.3%).

- Total boat use days in 2009 were 3,301,629, a 31 percent decrease over the 4,793,501 boat use days recorded in 2006. Similar to the prior studies, Mohave County is the dominant boating location in Arizona with 46.3 percent of total boat use days – down slightly from 49.9 percent in 2006.

BOAT USE DAYS BY ARIZONA COUNTY

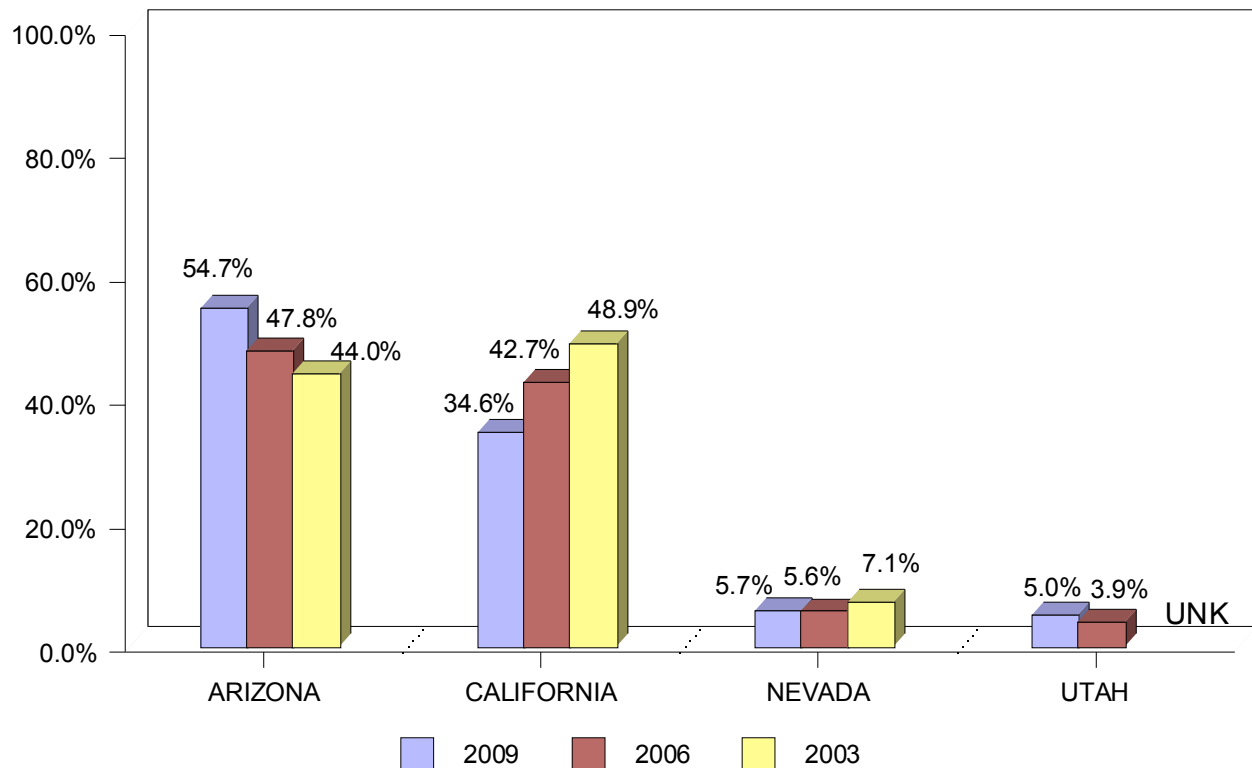
TOTAL BOAT USE DAYS: '09 = 3,301,629; '06 = 4,793,501; '03 = 3,229,153



- Person use days also decreased from 23,409,303 in 2006 to 15,941,792 in 2009 – a 32 percent decrease. As is the case with boat use days, Mohave County is the dominant boating location in Arizona, accounting for 47.6 percent of all person use days.

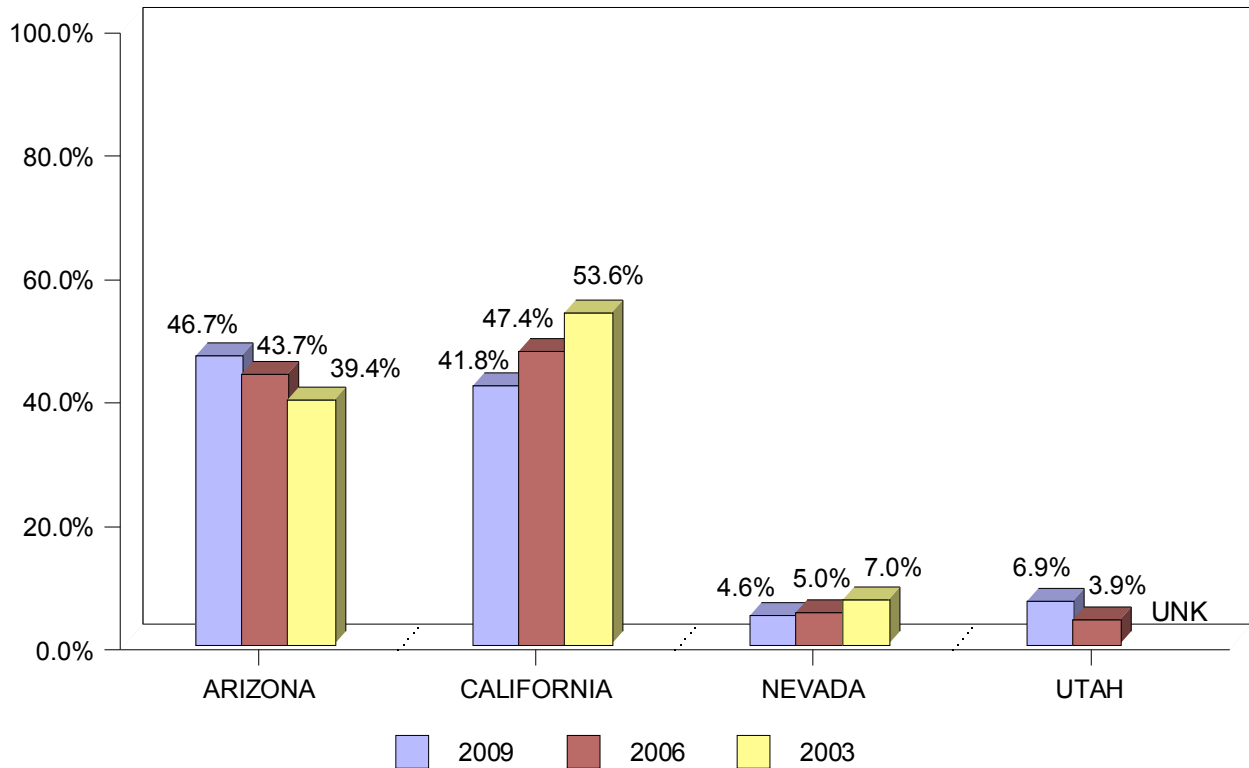
- Arizona boaters account for 54.7 percent of boat use days followed by California boaters with 34.6 percent, Nevada boaters with 5.7 percent and Utah boaters with 5.0 percent. These figures represent a major increase in boat use days among boaters from Arizona and a major decrease among boaters from California since the last study.

BOAT USE DAYS BY STATE GIVEN 2-WEEK PERIOD



- Unlike prior studies, California boaters do not account for the largest share of person use days. Thus we find that California boaters account for 41.8 percent of person use days (down from 47.4% in 2006) compared to 46.7 percent for Arizona boaters (up from 43.7% in 2006). The primary reason for California's high percentage in the prior studies was the fact that California boaters tended to have larger boating parties.
- Lake Havasu continues to be the state's most utilized lake in terms of both boat use days (765,084) and person use days (3,782,193).

PERSON USE DAYS BY STATE GIVEN 2-WEEK PERIOD



ADDITIONAL BOATING DATA

- The average daily expenditure for a boating trip in Arizona is \$302 – down from \$352 in 2006. The typical Arizona boater spends \$233 per day compared to \$408 for California boaters, \$133 for Nevada boaters and \$537 for Utah boaters.
- Public restrooms (23%) and launch ramps (20%) continue to be the most frequently mentioned needed facilities at boaters' favorite lakes.
- When boaters are asked to evaluate each of 22 specific boating and water-based recreational facilities at their favorite lake the facility registering the highest net positive reading is informational signs (+45%) followed by access roads (+44%), parking facilities for vehicles (+39%) and launch ramps (+39%). Three items continue to register net negative readings from roughly one-quarter of boaters or more: emergency telephones (-32%), drinking water outlets (-27%) and trash dumpsters accessible by boat (-19%).

- Seven percent of boaters are aware of the SLIF program, similar to the eight percent recorded in 2006 and nine percent in 2003. As might be expected, awareness is highest in Arizona with a reading of ten percent.
 - When boaters are asked if they feel the program’s funds should be use mostly for renovations or new building, a majority of boaters select renovations over new building – 57 percent vs. 26 percent. This reading for renovation is up slightly from the 2003 (53%) and 2006 (55%) readings.
 - When boaters are asked how important they feel each of six SLIF funding functions are, four of the functions are rated very or somewhat important by over eight out of ten boaters: 1) the construction of recreation support facilities such as restrooms, campgrounds and picnic tables (86%); 2) the construction of first-aid stations and other safety facilities (83%); 3) the construction of water-based boating facilities such as marinas, launch ramps and piers (83%); and 4) the purchasing of law enforcement and safety equipment such as patrol boats, radios and lights (80%). These four functions have remained at the top of the importance list over the past four studies.
 - When boaters are asked how important they feel each of seven uses should be if a new lake were being developed for boating, four receive ratings of very or somewhat important by more than 80 percent of the boaters: 1) general pleasure boating (92%); 2) fishing (89%); 3) water skiing (81%); and 4) power boating (80%). Sailing (63%) and jet skiing (64%) again received the lowest preference ratings.
- Stopping people who are boating while drunk (49%) and stopping people who are boating recklessly (48%) continue to be the two law enforcement activities which boaters would most like to see increased at their favorite lake or river. Also relating to law enforcement and safety issues at Arizona lakes, roughly three out of four boaters or more agree with the following attitudes:
 - That hands-on training should be required for boat rental customers (88%)
 - That boating law violators should be required to take a boating safety class, (85%)
 - That laws and regulations are being adequately enforced (81%)
 - That the minimum age for boat operators should be 16 years old (77%)
- Eight out of ten boaters (79%) support boating safety educational centers at Arizona lakes – virtually unchanged since 2003.
- A majority of boaters (65%) do not believe their favorite lake is too crowded, while 32 percent do.
- A majority of boaters (54%) believe the number of people using a lake should not be restricted during high use periods.

- 50 percent of boaters would support designating special areas for use only by jet skis – 47 percent would not.
- 47 percent of boaters believe their favorite lake needs additional primitive-type campgrounds, while 42 percent do not.
- Boaters continue to be split on whether the launch ramps at their favorite lake are too crowded (47% agree, 49% disagree).
- 45 percent of boaters believe their favorite lake needs additional developed campgrounds, while a like 45 percent do not.
- 42 percent of boaters believe their favorite lake needs additional RV hookups, while 47 percent do not.
- Boaters' top three single favorite boating activities continue to be fishing (31%), general pleasure boating (26%) and water skiing (18%).
- Eighty-five percent of boaters indicate that they are aware of the Quagga mussel with 46 percent indicating they know "a lot." In addition, 64 percent of boaters who are aware of the mussel, believe it is a "major threat" to Arizona's lakes and rivers.

3.0 RESEARCH METHODOLOGY

3.1 Introduction

To properly address the Departments' informational needs, it was necessary to collect information from a variety of population universes which either consume or sell Arizona fuel or utilize Arizona's lakes and rivers for recreational purposes. The specific universes studied during the course of this project were as follows:

Surveyed Universes:

- Arizona registered owners;
- Non-Arizona registered boat owners who utilize Arizona's lakes and rivers.

Audited/Surveyed Universes:

- Concessionaires, commercial boat operators and excursion operators who consume Arizona fuel;
- Public agencies which consume Arizona fuel; and
- Marinas servicing Arizona lakes and rivers which sell fuel.

The purpose of this section of the report is to address the procedures followed to collect the necessary information from these universes.

3.2 Boat Owner Survey – Sample Selection

In order to get an accurate picture of boaters' use of Arizona's lakes and rivers, this project component utilized a very large random sample of 6,787 Arizona, California, Nevada and Utah watercraft owners. A sample of this size is very unusual but was deemed necessary for this project due to its importance.

The sample of 6,787 watercraft owners utilized on this project component represents 1.10 percent of the 616,622 owners in the four-state region studied. As an example of how large this 1.10 percent sample of the total universe is, the typical statewide Arizona sample consists of approximately 800 respondents, or .00033 percent of Arizona's estimated 2,415,231 households, while the typical national United States sample consists of 1,500 respondents, or .00001 percent of the United States' estimated 115,306,103 households.

The following several pages of this report offer a detailed description on how the boat owner survey was conducted.

To determine the percentage of all fuel sold in Arizona attributable to propelling watercraft, it was first necessary to determine the total number of gallons sold to watercraft within the state. To arrive at this figure, the consumption patterns of two distinct user groups were studied: (1) Arizona registered boats for which gasoline is purchased in Arizona, and; (2) non-Arizona registered boats for which gasoline is purchased in Arizona.

A total of 616,622 Arizona and non-Arizona registered boat owners stratified by boat class were systematically random-sampled via telephone from current boat registration lists obtained from each state included in the study (Arizona Game & Fish Department, California Department of Motor Vehicles, Nevada Division of Wildlife and Utah Division of Motor Vehicles) to determine their fuel consumption and usage patterns during the study period. These figures were then projected to total boat registrations and the findings presented later in this report were calculated. The non-Arizona boaters' sample was drawn from the neighboring California counties of Imperial, Los Angeles, Orange, Riverside, San Diego and San Bernardino, the Nevada county of Clark and the state of Utah.

As may be seen on the following table, a total of 616,622 watercraft are registered in the sample universe. Of this total, 61.9 percent are located in California, while 21.8 percent are located in Arizona, 3.9 percent in Nevada and 12.4 percent in Utah.

In addition to the sheer volume of watercraft California contributes to the sample universe, several other interesting findings are also worth noting in Table 1:

Arizona Watercraft:

- High proportions of watercraft in class 4 (16' to 25' outboards).

California Watercraft:

- High proportion of class 2 watercraft (under 16' & in/out which is predominantly jet skis).

Nevada Watercraft:

- High proportion of watercraft in class 5 (16' to 25' in/out & in) and class 8 (over 25' in & in/out).

Utah Watercraft:

- High proportion of watercraft in class 5.

TABLE 1: WATERCRAFT POPULATION IN SAMPLE

BOAT CLASS	STATE OF REGISTRATION								TOTAL	
	ARIZONA		CALIFORNIA		NEVADA		UTAH		Number	%
	Number	%	Number	%	Number	%	Number	%		
1	25,085	18.6	55,396	14.5	2,827	11.8	14,105	18.4	97,413	15.8
2	26,614	19.8	129,218	33.9	6,777	28.3	13,322	17.4	175,931	28.5
3	5,611	4.2	15,108	4.0	23	.1	1,093	1.4	21,835	3.6
4	29,030	21.5	45,617	12.0	3,224	13.4	13,292	17.4	91,163	14.8
5	36,239	26.9	106,087	27.8	9,002	37.6	30,168	39.5	181,496	29.4
6	1,044	.8	10,195	2.7	183	.8	1,233	1.6	12,655	2.1
7	2,013	1.5	1,530	.4	183	.8	849	1.1	4,575	.7
8	8,500	6.3	11,633	3.0	1,665	6.9	2,296	3.0	24,094	3.9
9	500	.4	6,717	1.7	80	.3	163	.2	7,460	1.2
TOTAL	134,636	100.0	381,501	100.0	23,964	100.0	76,521	100.0	616,622	100.0
CUMULATIVE TOTAL		21.8%		61.9%		3.9%		12.4%		100.0%

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To develop the most accurate data possible, the data collection effort was divided into 24 separate data collection segments spread over the 12-month period from June 24, 2008, to June 4, 2009. Using this format, a total of approximately 558 interviews were conducted each month (250 Arizona, 224 California, 44 Nevada and 40 Utah) with one-half being conducted between roughly the 1<sup>st</sup> and 5<sup>th</sup> of the month and one-half between roughly the 16<sup>th</sup> and 20<sup>th</sup> of the month. During each of the 24 interviewing segments, boaters were asked to recall their boating patterns for only the two weeks prior to the interview.

At the beginning of this process, an analysis was made of the gasoline consumption variances that existed within each of the nine size/propulsion categories from the 2006 Arizona Watercraft Survey to determine the best method to stratify the current sample of boat owners to optimize sampling accuracy and efficiency. This analysis revealed that certain categories are very homogeneous and thus render relatively small standard deviations, while other classes are very heterogeneous and thus render relatively large standard deviations. This situation called for the use of a disproportional stratified sample in this segment of the study.

| CLASS | LENGTH     | PROPULSION                    |
|-------|------------|-------------------------------|
| 1     | Under 16'  | Outboard (prop)               |
| 2     | Under 16'  | Inboard & In/Out (prop & jet) |
| 3     | Under 16'  | Other (sail, oar, electric)   |
| 4     | 16' to 25' | Outboard (prop)               |
| 5     | 16' to 25' | Inboard & In/Out (prop & jet) |
| 6     | 16' to 25' | Other (sail, oar, electric)   |
| 7     | Over 25'   | Outboard (prop)               |
| 8     | Over 25'   | Inboard & In/Out (prop & jet) |
| 9     | Over 25'   | Other (sail, oar, electric)   |

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In disproportional stratified sampling, disproportionate sampling fractions are used to manipulate the number of cases selected from each strata (in this case, the nine size/propulsion classes), with the strata's standard deviations being used as the basis for allocation of cases. Those classes with proportionately larger standard deviations receive a proportionately larger number of cases, while those with proportionately smaller standard deviations receive a proportionately smaller number of cases. In essence, this sampling method allows us to select fewer cases from homogeneous classes and more cases from heterogeneous classes, thereby increasing overall sampling efficiency and accuracy. As a result, the final gasoline consumption estimates are sensitive to variations in consumption within the size/propulsion classes, thereby increasing the accuracy of the final estimate. In addition, this methodology meets the contract-required minimum of a margin of error of less than five percent at a 95 percent confidence level.

TABLE 2: TOTAL SAMPLING DISTRIBUTION

2006 Watercraft Survey

Boat Class	Length	Propulsion	Avg. (Mean) Daily Fuel Consumption	Standard Deviation	% of 2008 Registrations	Proportional Sample Distribution	+/- Margin Of Error At 95% Confidence	Disproportional Stratified Sample	+/- Margin Of Error At 95% Confidence
1	Under 16'	Outboard (prop)	7.0	8.1	15.8	1,024	3.1	1,000	3.2
2	Under 16'	Inboard & In/Out (prop & jet)	13.5	11.9	28.5	1,847	2.3	1,650	2.5
3	Under 16'	Other (sail, oar, electric)	4.2	6.1	3.5	227	6.6	250	6.3
4	16' to 25'	Outboard (prop)	8.4	6.3	14.8	959	3.2	1,075	3.0
5	16' to 25'	Inboard & In/Out (prop & jet)	17.6	24.3	29.4	1,905	2.3	1,780	2.4
6	16' to 25'	Other (sail, oar, electric)	4.4	9.0	2.1	136	8.6	150	8.2
7	Over 25'	Outboard (prop)	12.5	9.9	0.8	52	13.9	150	8.2
8	Over 25'	Inboard & In/Out (prop & jet)	24.2	24.9	3.9	252	6.3	275	6.0
9	Over 25'	Other (sail, oar, electric)	6.5	5.0	1.2	78	11.3	150	8.2
TOTAL			13.9	17.1	100.0%	6,480	1.2	6,480	1.2

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To properly address this study's informational needs, the total interview sampling base was distributed among Arizona, California, Nevada and Utah watercraft owners in the following fashion. This distribution does not exactly reflect the Boat Use Days distribution derived from the 2006 Watercraft Survey and was used because it allows for more sensitive county use data (since few Californians use any Arizona lakes except those adjacent to the Colorado River) without harming the ability to estimate the required fuel consumption data.

TABLE 3: SAMPLE DISTRIBUTION – BY STATE

| STATE      | BOAT USE<br>DAYS 2006 | SAMPLE<br>PERCENT | SAMPLE<br>NUMBER |
|------------|-----------------------|-------------------|------------------|
| Arizona    | 47.8%                 | 44.8%             | 3,000            |
| California | 42.7                  | 40.1              | 2,688            |
| Nevada     | 5.6                   | 7.9               | 528              |
| Utah       | <u>3.9</u>            | <u>7.2</u>        | <u>480</u>       |
| TOTAL      | 100.0%                | 100.0%            | 6,696            |

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On the following table is presented a review of the total number of interviews conducted by state and boat class. As Table 4 reveal, a total of 6,787 interviews were conducted during the course of this study – 3,066 Arizona, 2,708 California, 529 Nevada, 484 Utah. This volume is higher than the 6,696 initially planned for because additional interviews were conducted during each of the 24 interviewing segments.

TABLE 4: NUMBER OF INTERVIEWS COMPLETED

BOAT CLASS	TOTAL	STATE OF REGISTRATION			
		ARIZONA	CALIFORNIA	NEVADA	UTAH
1	1,022	537	365	48	72
2	1,719	605	893	147	74
3	291	146	121	0	24
4	1,126	666	314	73	73
5	1,806	795	702	165	144
6	168	24	96	24	24
7	169	97	24	24	24
8	293	172	72	24	25
9	193	24	121	24	24
TOTAL	6,787	3,066	2,708	529	484

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### **3.3 Boat Owner Survey – Questionnaire Development**

The survey questionnaire utilized on this project was developed by BRC in conjunction with the TAC (see Appendix B). The question areas were as follows:

#### **Watercraft Use:**

- Number of days watercraft used (prior 2 weeks, annually)
- Reasons for non-use
- Specific Arizona lakes and rivers visited (prior 2 weeks, prior 12 months)
- Number of boating trips made (prior 2 weeks)
- Presence of boat engine
- Horsepower of boat engine
- Types of fuel used
- Average daily fuel consumption
- Percent of fuel purchased in Arizona

#### **Destination Information:**

- Most frequently visited lakes or rivers
- Average dollar amount spent on typical boating trip

#### **Recreational Use Data:**

- Boating activities engaged in during the recreation day
- Number of people per boating party on a typical outing

#### **Boater Opinion:**

- Types of boating and water-based recreational facilities needed at lake or river most often visited
- Evaluation of water-based recreation facilities at lake or river most often visited
- Adequacy of boating law enforcement and the safety and education programs at lake or river most often visited
- Awareness of State Lake Improvement Fund (SLIF)
- SLIF program funding priorities
- General attitudes on selected boating issues

After approval of the preliminary draft questionnaire, it was pre-tested with a randomly selected cross-section of watercraft owners. The pre-test focused on the value and understandability of the questions, adequacy of response categories, questions for which probes were necessary and the like. Several minor changes were made following the pre-test and the final form received TAC approval.

This survey utilized a “split” sample methodology. Using this methodology, selected survey questions were designated core questions and asked of all survey respondents while other survey questions were asked of only one-third of the survey respondents. This methodology is commonly used when the volume of information desired is particularly extensive and the number of interviews to be conducted is of adequate size to justify splitting. Questions 1 through 17a were designated core questions for the purpose of this survey and asked of all study respondents. The remaining questions were asked of approximately one-third of the study respondents.

### **3.4 Boat Owner Survey – Data Collection**

All of the interviewing on this project was conducted at BRC's Computer-Assisted Telephone Interviewing (CATI) facility in Phoenix where each interviewer worked under the direct supervision of BRC supervisory personnel. All of the interviewers who worked on this project were professional interviewers of the Center. Each had prior experience with BRC and received a thorough briefing on the particulars of this study. During the briefing, the interviewers were trained on (a) the purpose of the study, (b) sampling procedures, (c) administration of the questionnaire, and; (d) other project-related factors. In addition, each interviewer completed a set of practice interviews to assure that all procedures were understood and followed.

As noted earlier, telephone interviewing on this study was conducted during 24 two-week time segments starting in June 2008 and ending in June 2009. During each segment, interviewing was restricted to Tuesdays, Wednesdays and Thursdays in order to avoid those days (Friday through Monday) on which the target universe (boat owners) was most likely to be away from home using their watercraft. Further, during the interviewing segment of this study, up to four separate attempts, on different days and during different times of day, were made to contact each selected boat owner. Only after four unsuccessful attempts was a selected boat owner substituted in the sample. Using this methodology, the full sample was completed and partially completed interviews were not accepted or counted toward fulfillment of the total sample quotas.

One hundred percent of the completed interviews were edited and any containing errors were pulled and the errors corrected. In addition, 15 percent of each interviewer's work was randomly selected for validation to ensure its authenticity and correctness. No problems were encountered during this phase of interviewing quality control.

As the data collection segment of this study was being undertaken, completed and validated interviews were turned over to BRC's in-house Coding Department. The Coding Department edited, validated and coded the interviews. Each interview that received final Coding Department approval was then transferred to the BRC Computer Department where a series of validity and logic checks were run on the data to ensure it was "clean."

The final step prior to running computer analysis of the survey data was to "weight" the data to reflect the actual distribution of watercraft found in the sample universe as revealed earlier in Table 1. This weighted data was only used in analyzing the attitudinal data collected in the survey, not in calculating the fuel consumption and boat use data.

### **3.5 Study Audits/Survey**

The second major data collection component on this project consisted of conducting audits of: (1) concessionaires, commercial boat operators and excursion operators; (2) government agencies, and; (3) marinas.

Each of these groups was audited/surveyed to collect the following information:

- **Concessionaires, Commercial Boat Operators and Excursion Operators:** To determine the amount of non-marina, Arizona gasoline they purchased.
- **Government Agencies:** To determine the amount of non-marina, Arizona gasoline subject to tax they purchased.
- **Marinas:** To determine the amount of gasoline purchased from Arizona distributors they sold.

In order to conduct these audits/surveys, it was first necessary to generate lists of each subject group. This was accomplished: (a) by using the lists compiled in previous Water-craft Surveys; (b) by reviewing telephone and Internet directories from around the state; (c) by reviewing AGFD's watercraft registration data base; (d) through discussions with selected chambers of commerce; (e) by referrals from other operators, agencies and marinas, and; (f) through discussions with AGFD Regional Supervisors.

All those on the identified lists were mailed a self-administered questionnaire along with a postage-paid, return mail envelope. Respondents were given approximately two weeks to respond to the mailing before follow-up telephone contact was undertaken and continued until a response was achieved. The audit/survey forms utilized during this study component are included in Appendix B of this report.

TABLE 5: NUMBER OF AUDITS/SURVEYS COMPLETED

**MARINAS**

|                                                 |    |
|-------------------------------------------------|----|
| Total forms mailed                              | 61 |
| No fuel sold/no Arizona fuel sold               | 27 |
| Sell Arizona gasoline                           | 23 |
| No longer in business                           | 8  |
| Did not respond after multiple attempts/refused | 3  |

**CONCESSIONAIRES**

|                                                  |     |
|--------------------------------------------------|-----|
| Total forms mailed                               | 174 |
| No fuel used/no qualified fuel used              | 70  |
| No longer in business                            | 43  |
| Arizona fuel used                                | 48  |
| Did not respond after multiple attempts/ refused | 13  |

**GOVERNMENT AGENCIES**

|                                                 |     |
|-------------------------------------------------|-----|
| Total forms mailed                              | 119 |
| No fuel used/not qualified fuel used            | 63  |
| Qualified Arizona fuel used                     | 45  |
| Did not respond after multiple attempts/refused | 10  |
| Office closed                                   | 1   |

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3.6 Launch Ramp Survey

The final major data collection component on this project consisted of conducting a launch ramp observation survey to determine the ratio of in-state to out-of-state boaters on selected Arizona lakes and rivers. The ten lakes and rivers selected for inclusion into this study phase were chosen by the TAC and included the inland and border waterways listed below. A total of six observations were conducted at each site during the peak launching hours from 6:00 a.m. and noon. The six observations were distributed so they covered the following time periods: (1) two weekday observations (one in the on-season, one in the off-season); (2) three weekend observations (two in the on-season, one in the off-season), and; (3) one holiday observation (Memorial Day, Fourth of July or Labor Day).

<u>LAKE/RIVER</u>	<u>LOCATIONS</u>
Bartlett	Public Ramp
Havasu	Lake Havasu Marina/ Sandy Point Marina
Martinez	Marina Ramp
Mead	Temple Bar
Mohave	Katherine's Landing/ Willow Beach
Parker Strip	Buckskin Mountain State Park
Pleasant	Marina/Public Ramps
Powell	Wahweap Marina
Roosevelt	Marina/Cholla Ramp
Saguaro	Public Ramps

Following completion of the boat owner surveys, the study audits/surveys and the launch ramp surveys, the data presented in the remainder of this report was compiled.