

reduce and/or prevent impacts to shallow water spawning areas.

The U.S. Fish and Wildlife Service Biological Opinion is included in the final EIS in Appendix F. The biological opinion has concurred with the National Park Service determination that the preferred alternative is not likely to jeopardize the continued existence of the Southwestern willow flycatcher, bonytail chub, razorback sucker, or desert tortoise, and is not likely to destroy or adversely modify designated critical habitat for bonytail, razorback, or tortoise. In addition, the U.S. Fish and Wildlife Service agreed with the determination of no effect on the bald eagle and Yuma clapper rail. The mitigation adopted under the modified preferred alternative in the final EIS includes measures to protect spawning and nesting areas.

There is no definitive literature describing scientific measurements of PWC noise (*see* DEIS, p. 144). To address this lack of scientific data, the National Park Service contracted noise measurements of motorized vessels, including PWC, at Glen Canyon in 2001. The noise source data from this study was used in the Lake Mead draft and final EIS soundscape analysis because the results were not dependent upon or influenced by park geology or other environmental factors.

At Glen Canyon, sound measurements were made of a number of boats and PWC as they passed by a microphone mounted above the front of an instrumented boat. As stated in the technical report (NPS, 2002 or HMMH, 2002—Draft Technical Report on Noise: Personal Watercraft and Boating Activities at Glen Canyon National Recreation Area), controlled pass-by measurements of three PWC and one motorboat were conducted at several different speeds. Many boats and PWC were also randomly measured. In all cases, a radar gun was used to determine speed and a laser range finder was used for distance. After normalizing measurements to a common distance, maximum sound levels were computed both for 15 and 25 meters, the distance at which National Park Service watercraft noise emission regulations apply. One of the conclusions from the measurements at Glen Canyon was that, except for the boats with V-8 engines (which were louder), no significant differences were found in the sound levels produced by PWC and the other boats that were measured in the study.

Comments Related to Water Quality

15. Some comments expressed concern about the amount of raw fuel spilled into the water or on the

shoreline when PWC were refueled by owners/operators at sites other than fuel docks.

NPS Response: The refueling of boats at the shoreline is legal. Illegal refueling occurs when the refueling results in the pollution or contamination of park waters. As noted in the final EIS under alternative C, "Resource Protection" section, the spillage of fuel during shoreline operations is a concern at Lakes Mead and Mohave. Polluting or contaminating park waters during refueling, including fuel spillage, is a citable offense under 36 CFR, 2.14(a)(6). Safe refueling practices need to be included in boating safety courses. The National Park Service will recommend the States of Nevada and Arizona include these procedures as part of the boating education curriculum.

16. A single commenter stated, the proposed rule, at page 56790, states that "based on fuel consumption estimates, between 1½ and 3 gallons of fuel is discharged into the water during a two-hour ride on a PWC." The rule goes on to say that during the summer weekends in high use areas, there are as many as 1,700 PWCs on the lakes, which "could result in 1,275 and 3,400 gallons of unburned fuel discharged per hour into Lakes Mead and Mohave combined." The commenter goes on to say that these statements are nonsense and supported by no technical information.

NPS Response: The National Park Service is concerned about pollution in any form and exhaust gasses from two-stroke marine engines is no exception. We recognize that a certain amount of exhaust smoke and smell is inherent with any two-stroke engine and that the comment addressed excessive amounts from PWC. We acknowledge the findings of the Environmental Protection Agency's (EPA) 1991 study that indicate two stroke engines lose roughly 25% of the fuel they consume unburned into the water, resulting in high levels of hydrocarbon emissions from these engines. The smoke and smell from PWC could be attributed to unique operational characteristics of those vessels. PWC are often operated with throttle settings that transition from idle to full throttle and back to idle, typically in a rapid and repeated sequence. These are the basis for the above analysis. While some PWC are converting to the new technology, the percentage of the PWC fleet has not yet made the conversion to the more efficient models. Consequently, the calculation of the potential discharge is valid.

17. One comment stated, the primary water quality concern that has been identified regarding continued PWC use

is the discharge of unburned gasoline and gasoline additives from conventional carbureted two-stroke engines, as well as the spilling of such components during refueling (National Park Rulemaking at page 56790, DLMP/EIS (Lake Management Plan/Draft EIS) at pages 102, 133, 124, 188). PWC emissions in the Lake Mead area have already been reduced 25% below the 1998 baseline conditions.

NPS Response: We agree that water quality impacts from PWC and other carbureted two-stroke engines have declined since 1998 due to the conversion of carbureted two-stroke engine technology to cleaner technology. However, our goals for the reduction of emissions cannot be achieved without the proposed 2012 restrictions.

The final EIS addresses impacts from PWC use as well as all watercraft on Lake Mead and Lake Mohave. Four alternatives were analyzed. Alternative A would continue the prohibition of use of PWC in the Lake Mead NRA. Alternative B would prohibit all carbureted two-stroke engines beginning in 2004. Alternative C assumes a ban on two-stroke carbureted engines for all vessels, including PWC, after 2012. Alternative D assumes that no ban would take place and that two-stroke engines would be converted in accordance with the Environmental Protection Agency's assumptions (40 CFR parts 89–91, "Air Pollution Control; Gasoline Spark-Ignition and Spark-Ignition Engines, Exemptions;" rule, 1996). Alternative C (the modified preferred alternative) is compared to alternative D because alternative D allows for a mix of older model-two stroke carbureted engines with the EPA compliant cleaner engine models (two stroke fuel injected and four stroke engines) through the life of the plan. A brief summary of the analysis of surface water quality impacts to Lakes Mead and Mohave found in the Final EIS for alternatives C and D are described below.

The approach to evaluating surface water quality impacts is found in Appendix G of the Final EIS. Engine conversion, restriction by engine type, and the total boating capacity used to calculate impacts varies between alternatives C and D. Alternative C uses a combined total boating capacity of boats for both Lakes Mead and Mohave of 5,055 boats at one time, while alternative D uses a combined total boating capacity of 5,800 boats at one time. These boating capacities reflect the heaviest use period of the summer. The threshold volumes required to meet water quality standards at Lake Mead