



# FLYING AMERICA'S WATERWAYS



**SEAPLANE OPERATIONS: A BRIEF OVERVIEW**

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*Flying America's Waterways*  
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## INTRODUCTION

Seaplanes – aircraft equipped for landing on the water – have captured the public’s imagination since the beginning of aviation. Perhaps the gentle “swoosh” of a landing seaplane appeals to our sense of grace, or the limitless destinations accessible by seaplane tickle our sense of adventure. Whatever the reason, seaplanes are fun, regardless of whether you are a spectator, passenger, or pilot.

Seaplanes date back to January 1911, when Glenn Curtiss lifted off in his Model D from San Diego Bay. By July, Curtiss had convinced the U.S. Navy to commission the Model D, the first aircraft ever used by the U.S. Navy. A few years later, in June 1916, William E. Boeing’s first airplane, the B & W, lifted off from Lake Union in downtown Seattle.

Seaplanes continued to dominate the aviation industry until World War II, when hundreds of airports were constructed, paving the way for more efficient land-based aircraft. Seaplanes rapidly faded from the spotlight, and the flying public had soon all but forgotten the seaplanes of years past.

However, seaplanes have not vanished entirely. They continue to carry out specialized missions such as fire fighting and law enforcement on a daily basis. In several parts of the country, including the Northeast, Florida, Alaska, and the Northwest, seaplanes carry tens of thousands of passengers each year to hundreds of destinations. Seaplanes have also found a niche in the recreational market, serving pilots and passengers with safe and convenient transportation to spectacular destinations.

Unlike cars or boats, seaplanes are not part of our day-to-day experience. Few people have seen a seaplane, much less flown in one. Unfortunately, this lack of exposure leads to misunderstandings, and even fear. This booklet addresses the topics that generate the most concern among communities and neighbors. As you will see, seaplanes are a safe and efficient means of transportation – just like cars and boats – and in fact can add exciting new dimensions to everyday life.

Michael Volk  
President, Seaplane Pilots Association

## SEAPLANES IN ACTION

Seaplanes are significantly more expensive to purchase and maintain than equivalent land-based aircraft, and thus are typically used only for specialized tasks: remote area access, surveillance, and recreation. Specific applications include fire fighting and fire spotting, law enforcement, wildlife and resource management, medical evacuation, cargo hauling, and transportation of scientists, sportsmen, and public officials.

In the Florida Keys, for example, seaplanes are used for law enforcement and patrol. The aircraft give officers a birds-eye view of activities on the surface, while amphibious capability makes it possible to set down on the water to assist boaters in trouble or intervene in illegal activities.

The U.S. Fish and Wildlife Service has a fleet of seaplanes that are used throughout the United States for safe and efficient surveillance of wildlife and occasional law enforcement action.



Seaplanes are also a cost-effective tool for fighting wildfires and remote structure fires. Water bombers such as the Martin Mars and Canadair CL-415 are used in British Columbia, Minnesota, North Carolina, California, and other locations to drop up to 45,000 gallons of water per hour on hot spots and fire lines.

## CASE STUDY: LIGHTHAWK

Seaplanes have been a critical component of resource management programs such as wildlife population surveys, fire fighting, and patrol since the beginning days of aviation. Many of today's hot environmental issues – deforestation, water pollution and acid rain, for example – are researched and monitored using seaplanes.

Although most resource management is performed by government-owned and operated seaplanes, there are exceptions. Founded in 1979, LightHawk is a contributor-funded organization that flies hundreds of missions covering over 180,000 miles each year in support of environmental conservation efforts. LightHawk specializes in monitoring and

documenting deforestation and other threats to fragile ecosystems throughout the Western Hemisphere. Seaplanes play a crucial role in LightHawk's fleet, transporting lawmakers, industry officials and advocates over remote watersheds for a first-hand look at the dramatic impact of logging and development on fisheries and water quality. The insights gained on these flights



directly impact the policies and regulations that protect the

health of the environment.

Seaplanes are the vehicles of choice for transportation in regions without developed roads or airports. The seaplane's ability to land on water gives it a greater margin of safety than land-based aircraft, and provides the option of landing for surface work such as water sampling or wildlife tagging. Unlike all-terrain vehicles, snowmobiles, land-based aircraft, helicopters, and motorboats, seaplanes do not need prepared surfaces and leave no trace of their visit. These factors, combined with speed and convenience, make seaplanes ideal for operations in remote, ecologically sensitive environments.

ROOM FOR ADDITIONAL COPY...OTHERWISE, I'LL MAKE THE PHOTO LARGER.



Seaplanes are used for charter and scheduled passenger service in a few parts of the country, carrying sportsmen to remote camps and resorts, tourists to the tropical islands of the Keys and Bahamas, Wall Street businessmen to downtown Manhattan, and scientists to field research sites.

In many places, seaplanes are themselves a tourist attraction. Many passengers take scenic aerial tours just as much for the novelty of a seaplane ride as for gazing at the setting below.

Although seaplanes can be found in commercial and public service throughout the United States, most seaplanes are used for personal recreation and transportation. Just as many of us enjoy a leisurely Sunday drive or a day out on the water, seaplane pilots enjoy flying out of town for an afternoon picnic or weekend getaway to the scenic lakes, rivers, and bays that dot the countryside.

## WHAT ABOUT THE ENVIRONMENT?

Seaplanes are capable of flying to some of the most pristine places on the planet, which begs the question, “Are seaplanes environmentally friendly?”

The answer is a resounding “Yes.”



Seaplanes have far less environmental impact than boats. Yes, seaplanes do burn gasoline, and yes, gasoline emissions do contribute to pollution. However, unlike boats, many of which burn an oily gasoline mixture in two-stroke engines, seaplanes are powered by clean-burning four-strokes. Further, seaplanes discharge their exhaust well above the water's surface, where it is dispersed by air currents. Boats discharge exhaust under the water's surface, where it contributes to water pollution.

Seaplanes are not typically stored in the water, so toxic anti-fouling bottom paint is rarely found on seaplanes. Like boats, a seaplane's floats must be pumped out from time to time to remove the water that gradually accumulates from leakage, spray and rain. Unlike boats, the bilge water in seaplanes is truly water, not the contaminated mixture of water and oily sludge that accumulates in the bilges of motorboats.

Seaplanes are environmentally non-obtrusive. Cars require roads that disturb watersheds and cause erosion, and boats generate wakes that erode shorelines while the underwater propeller stirs up sediments and dices underwater sealife. Seaplanes leave only a small, non-destructive wake less than 6 inches in amplitude, and do not disturb sediments or sealife. A seaplane can land, nudge up to a sandy beach, and depart again without leaving any trace of its visit.

## NOISY BUGGERS?

Quality of life is an important issue for everyone, but waterfront residents in particular treasure peace and tranquility. When it is proposed that seaplane operations be permitted, residents often fear noise impact on the scale of an international airport. In truth, even at major commercial seaplane facilities, operations are infrequent, and seaplane noise during takeoff usually lasts no longer than 30 seconds. The noise seaplanes generate is typically minimal compared to the constant drone of powerboats, personal watercraft, traffic, lawn mowers, and other more conventional noise sources.

Homeowners and regulators alike are concerned about the possibility of seaplane operations occurring on their quiet lake in large numbers. Many communities have expressed concern that seaplanes would descend on them like ants to a picnic if their waterway were opened to seaplane use. In fact, although 30,000 pilots have received the additional training necessary to obtain certification in seaplanes, it is estimated that fewer than 5,000 seaplane pilots are active in the United States. Over half of those pilots reside in Alaska. With very few exceptions, lakes that are open to



seaplanes experience fewer than a half-dozen operations per month.

Because waterways are not illuminated, seaplanes almost never operate after dark. Further, seaplane pilots are trained to avoid early morning operations for the sake of community relations. For residents, this means that noise generated by seaplanes will occur during daylight hours, not early in the morning or after dark.

Seaplane pilots work hard to limit the noise they generate by throttling back when possible, reducing the speed of their propellers, and avoiding flight over densely populated areas. Some communities have joined forces with pilots to establish flight patterns and operating procedures that minimize noise levels in sensitive areas.

## YIKES! INCOMING SEAPLANE!

Safety is the principle mandate of governments and municipalities. When the issue of permitting seaplane operations is raised, questions about their safety record immediately follow.

A review of National Transportation Safety Board accident reports covering a 13-year period ending in 1995 found only three seaplane-boat collisions involving boats. By comparison, U.S. Coast Guard statistics from this same 13-year period show over 12,000 recreational boating fatalities, and in a recent 5-year period, boats collided with other vessels 11,174 times.

Seaplanes are not immune to mishaps, but it is extraordinarily rare for such a mishap to involve persons or property other than



## CASE STUDY: LAKE UNION

Lake Union is a 580-acre lake nestled in the heart of Seattle. The lake is a popular recreation spot for sailboats, motorboats, kayaks, and personal watercraft, as well as a heavily traveled link between Lake Washington and Puget Sound.

Lake Union is also home to the largest commercial seaplane operator in North America, Kenmore Air Harbor. With more than 30,000 takeoffs and landings each year, there has never been a seaplane accident on the lake.

Boaters on Lake Union do not receive any special training for operating around seaplanes, and

there are no markings or special use areas established on the lake. The boaters are accustomed to the dense mix of seaplane and boat activity, and don't feel a need to be on the lookout for the seaplanes or alter their course or activity when seaplanes approach. Seaplane pilots are trained to take advantage of their lofty vantage point, both in the air and on the water, to pick and choose safe operating areas, avoid boats, and steer clear of obstacles.

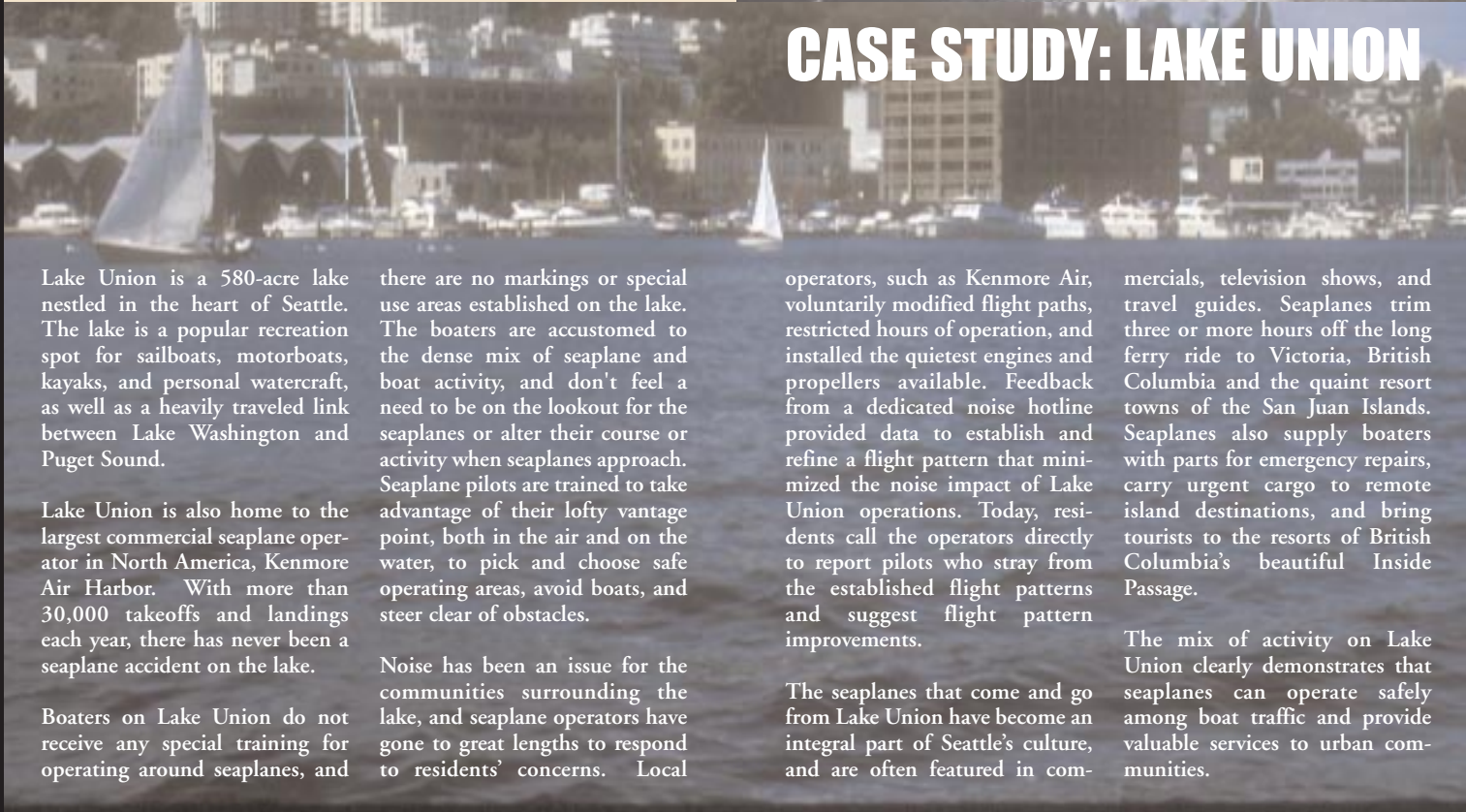
Noise has been an issue for the communities surrounding the lake, and seaplane operators have gone to great lengths to respond to residents' concerns. Local

operators, such as Kenmore Air, voluntarily modified flight paths, restricted hours of operation, and installed the quietest engines and propellers available. Feedback from a dedicated noise hotline provided data to establish and refine a flight pattern that minimized the noise impact of Lake Union operations. Today, residents call the operators directly to report pilots who stray from the established flight patterns and suggest flight pattern improvements.

The seaplanes that come and go from Lake Union have become an integral part of Seattle's culture, and are often featured in com-

mercials, television shows, and travel guides. Seaplanes trim three or more hours off the long ferry ride to Victoria, British Columbia and the quaint resort towns of the San Juan Islands. Seaplanes also supply boaters with parts for emergency repairs, carry urgent cargo to remote island destinations, and bring tourists to the resorts of British Columbia's beautiful Inside Passage.

The mix of activity on Lake Union clearly demonstrates that seaplanes can operate safely among boat traffic and provide valuable services to urban communities.





the seaplane and its occupants. Seaplanes are required to abide by the same right-of-way rules that boaters follow, and seaplane pilots are trained to work around boats without relying on boaters even being aware of the seaplane's presence. Seaplanes are not an inherent threat to public safety, a fact that is confirmed by NTSB accident records and court decisions.

When should seaplane operations be restricted for the sake of safety? There are certainly some waterways or portions thereof that are unsuitable for seaplanes, but most waterways are perfectly safe. The factors that determine the safety and suitability of a waterway for seaplane use are complex and often not readily apparent. For this reason, determination of a waterway's safety and suitability for seaplane operations is a task that should be undertaken in partnership with experts in the field, such as state aeronautics officials or the Seaplane Pilots Association.

## OPERATOR TRAINING & EXPERIENCE

Seaplane pilots are held to extraordinarily high standards of conduct and training by the Federal Aviation Administration (FAA). Pilots are required to obtain an absolute minimum of 40 hours (the national average is over 65 hours) of hands-on flight training with a certified instructor, receive extensive ground instruction, and pass a rigorous written, oral, and practical examination given by the FAA. Recurrent training and the endorsement of a certified flight instructor is required biannually. Certification in seaplanes requires additional training, and yet another practical flight examination by an FAA-certified examiner.

Training topics include use of prudent judgement, aircraft control and maneuvering, obstacle avoidance, landing area assessment, sensitivity to community concerns, and aircraft regulations. Many pilots gain additional training through safety seminars and independent instruction on advanced topics. Pilots take pride in their professionalism, and that professionalism is demonstrated in the sound judgement they exercise when at the controls of the airplane.

One of the most significant challenges facing the automobile and marine industry is operation under the influence of alcohol. The Federal Aviation Administration and many U.S. states have zero-tolerance policies for operating aircraft under the influence of alcohol. Not only does the law set strict limits on blood alcohol content, but pilots are prohibited from consuming any alcohol within eight hours of flying. Less than 1% of seaplane accidents are related to alcohol.





An aerial photograph showing a residential neighborhood with a large body of water. Numerous seaplanes are docked along the shoreline, and several buildings are visible. The water is dark, and the surrounding land is green with trees and houses.

## A SEAPLANE BASE HERE?

If boats were regulated the same way seaplanes are regulated, you might be required to apply for certification of a marina to dock your private boat at your private dock. You can imagine what your neighbors would think when they caught wind of your plans to establish a “marina” in their tranquil residential neighborhood.

In some states, seaplane owners need to obtain state approval to keep their seaplane at their home. This type of seaplane facility is referred to as a “seaplane base” by regulators, a term that evokes about the same emotional response as “marina” when proposed in a residential area. However, the vast majority of these facilities consist of nothing more than a private dock, beach or ramp and the owner’s airplane. Very few such facilities give rise to more than a dozen flights per year. If you aren’t sure exactly what the proponent is proposing, just ask.

## APPENDIX A:

### SEAPLANE PILOT POPULATION BY STATE

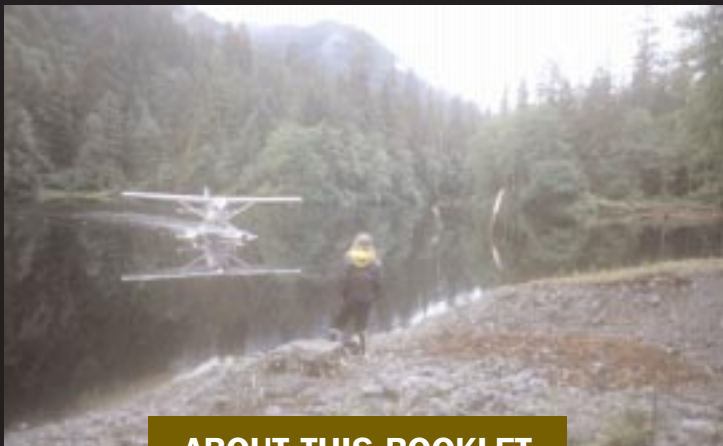
The following map shows the estimated number of active, certified seaplane pilots by state. These populations are based on FAA airman certificate data, adjusted downward to reflect the estimated inactivity of five out of six certified seaplane pilots and estimated activity rates by region. For example, a higher percentage of certified seaplane pilot population exercises their privilege to fly seaplanes in Alaska than in Oklahoma.



The Seaplane Pilots Association

The Seaplane Pilots Association (SPA) was established in 1972 to ensure fair regulation of seaplanes and provide pilots with safety and technical information. With over 7,500 members, most within the United States, the association is the leading organization in the field.

SPA regularly assists both pilots and communities in process of regulating seaplanes. We encourage equitable and educated policy for the benefit of both communities and pilots. We invite you to contact us via any of the means below if you have any questions about seaplane operations or would like to enlist our help in addressing any concerns that may arise.



## ABOUT THIS BOOKLET

With a gentle “swoosh,” a seaplane sets down on a rural lake in Maine and pulls up to the public dock. The townsfolk along the waterfront pause for a moment to watch the airplane. Some fondly remember the time when they flew in a seaplane, perhaps to a rustic fishing lodge for a weekend of relaxation or to get a birds-eye view of the autumn foliage. Others wonder what it would be like.

Seaplanes have always captured the imagination, but very few people have any significant exposure to seaplane operations. When seaplane operations come up for discussion at a city council meeting, public hearing, or legislative session, rarely do any of the participants have a clear understanding of facts. Fear of the unknown kicks in and seaplane pilots can find themselves outlawed on the basis of vaguely worded “concerns.”

These concerns that are so often expressed as fact are rarely anything more than fears rooted in misunderstanding. Seaplanes have been around since the beginning of aviation itself, and have a well-established safety record. Pilots are subject to rigorous training requirements, standards of conduct, and operating regulations mandated and enforced by the Federal Aviation Administration. Even the seaplanes are required to pass regular mechanical inspections. Seaplanes are also one of the most environmentally friendly modes of transportation available, and one of the best ways to access remote, ecologically sensitive areas.

This booklet discusses the valuable services provided by seaplane operations, addresses issues and concerns regarding these operations, and provides some background information on the history, utility, and benefit of seaplanes to individuals and communities throughout the country.