



# Lake Tahoe Shoreline Plan

## 05 Policy Topic: Piers- Fish Habitat, Design, and Scenic Issues

V8

Last Updated 03.14.2017

## Brief Description

There are 768 piers located along the shoreline of Lake Tahoe. Approximately 43 of those piers are available for public use. Private residents and the public use piers for a wide variety of recreation purposes, including boating access, fishing, dining, walking, swimming, and viewing Lake Tahoe. Prior planning efforts looked to cap and meter the number of new piers at 110 by accepting up to five new private pier applications per year over the next 20 years plus up to 10 total new public piers. However, at this time, the Tahoe Regional Planning Agency (TRPA) cannot permit additional piers until the Shoreline Plan is adopted. Both TRPA and the Lahontan Regional Water Quality Control Board have a prohibition on new piers within fish spawning habitat. The following is an overview of **fish habitat, design, and scenic standards for piers** to inform policy considerations.

## Action Items

Action Item	Date	Name
Definitions needed for: Pier	Done Jan 2017	TRPA Staff
Consult with Coast Guard regarding navigational safety / length	Done Dec 2016	Liz Kingsland (NDSL) and Jan Brisco
Identify Issues	Done June 2016	Steering Committee members

## Statement of Intent

This memo provides a summary of relevant issues identified during scoping of the Shoreline Plan with the intent of providing context and background in support of the overall planning effort. The Shoreline Steering Committee's discussion of these issues has been ongoing since early 2016.

## Policy Issues to Consider in the Shoreline Plan

### Fish Habitat

#### Code not Current with Existing Science

The Lake Tahoe fish studies describe the distribution of fish communities in Lake Tahoe, as well as their interactions with littoral structures and habitat features. These studies, as well as more recent research from other areas could be used to help determine how and why to prioritize species, communities, features, or processes for protection. Current mapping of fish habitat differentiates between 1) littoral fish habitat for foraging and refuge from predators and 2) spawning habitat for littoral species, such as Lahontan redbreast minnows and Lahontan speckled dace. As noted by the Joint Fact-Finding sub-committee on fish habitat, the existing prohibitions of new structures in all fish habitat may not align with current scientific studies regarding fish distribution and habitats.

#### Fish Habitat Management Tools

Using fish habitat protection priorities, evaluate fish habitat mapping and how best to use that mapping to guide location of structures, construction timing, and mitigation. Data collected by Fish and Wildlife agencies might effectively inform management decisions.

#### Environmental Impacts

There is a need to address the demand for additional piers, which provide private and public access opportunities, while meeting environmental protection standards. There is a potential or perceived conflict between protecting the public trust resources and providing recreational access to the shoreline with structures such as private piers.

#### Define Fish Habitat and Priorities for Protection <sup>1</sup>

Specific fish habitat protection priorities still need to be defined. Such priorities would help focus protection measures for the protection of species, communities, habitat features, and/or processes (i.e. littoral drift).

#### Fish Habitat Mitigation

One steering committee member questioned the effectiveness of past fish habitat mitigation. Currently, mitigation occurs on a project-by-project basis.

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<sup>1</sup> See Joint Fact Finding discussion.

Mitigation banking provides an alternative approach that would provide more concentrated, contiguous habitat enhancement.

## Pier Design

### Definition and Inventory

The definition of an “existing” pier should be clarified to understand how many piers exist today and the desired or maximum build out. Many structures with old components that cross the high water line have been claimed to be “existing” piers and may qualify as such under the existing code definition. Owners of existing rock jetties have suggested that jetties be considered piers to qualify their application for pier improvements.

The definition of a pier might differentiate between a structure used for moorage and a structure used for other uses, such as viewing platforms or structures designed to alter localized littoral drift or to protect a beach from wave action.

### Demand for New Piers

Stakeholder interviews indicate that many interviewees doubt that many new piers would be built if the piers policy changed to allow for new construction. Others suggest that a demand for private piers and buoys exists given the many years of restrictions on construction and that significantly more development will occur on the shoreline of Lake Tahoe if the ban is lifted.

### Safety and Access

Several committee members emphasized that new pier design should accommodate safety, including navigational safety and safety for anyone who is out on the water, including swimmers. Other access issues that may affect pier design are being addressed by the Steering Committee.

### General Design Considerations

Options to manage pier design may include considerations such as location, construction type, construction time period, quotas, and category of structure (single- versus multi-use structures). The appropriate maximum and minimum length of the pier may depend on location around the lake. For example, in some bays where projected property boundary lines converge, new single-use piers may not be possible on each parcel, especially if extended to accommodate for low lake levels. In these areas, joint-use piers may be the only feasible option for shoreline access.

## Scenic

### Scenic Issues

Stakeholder interviews identified that piers can detract from the scenic value of Lake Tahoe. One steering committee member noted that piers can elicit conflicts among neighbors. Another steering committee member suggested that the design of piers, such as the use of floating piers, could be used to minimize visual impacts, if potential littoral drift issues are addressed.

### Permitting

Ordinances related to scenic resources and views can be complicated to implement and may add time and cost to a potential project. In some cases, such as coves, different permitting agencies have different projection lines because they are measured from different locations. Coordination among permitting authorities was also noted as an important consideration in the stakeholder interviews.

### Scenic Mitigation

New visible structures in the shorezone create scenic impacts. The mitigation necessary to implement an applicant's preferred design may be difficult to locate within a shoreline scenic unit, which may prohibit the construction of that design. Vegetation screening is generally proposed to mitigate for scenic impacts. However, drought and vegetation mortality can make mitigation success unpredictable and not entirely controllable. In order to facilitate mitigation opportunities and mitigation success, some have suggested developing a mitigation fee/bank as an alternative.

## Related Policy Issues

### Piers and Low Lake Level Adaptation

Issues related to low lake levels are addressed under a separate memo: Low Lake Level Adaption.

## Joint Fact-Finding

The Joint Fact Finding Committee has evaluated the questions listed below. Draft memos and meeting summaries are available at [ShorelinePlan.org](http://ShorelinePlan.org) under Joint

Fact Finding Committee meeting materials. The inventory is available via ShorelinePlan.org GIS mapping information.

- What is the inventory, including location, of existing structures (piers, slips, buoys, etc.)?
- Pier Maps: Do we need to update the existing pier map to show complete polygons?
- What structures have been approved and by which agencies?
- How many piers are public or quasi-public and where are they located?
- What is the best available science regarding the environmental impacts of shoreline structures?

## Fish Habitat

The Joint Fact-Finding sub-committee on fish habitat has summarized their review of pier and buoy impacts, finding that such structure placement has limited overall impacts on native fish populations and any such impacts can be mitigated. Spawning habitat (gravel) in the nearshore of Lake Tahoe is naturally limited due to upland geology. Where suitable habitat exists, spawning has been observed in the immediate spatial vicinity of piers and buoys. Empirical observations suggest that boating activity associated with piers and buoys does not appear to impact spawning activity or egg viability. The sub-committee has therefore recommended allowing for new structures along with an adaptive management framework supported by integrated science-based monitoring that emphasizes:

- No net loss of spawning habitat. Creation/restoration of fish habitat has been demonstrated to be effective in other systems and an extensive literature base exists on the subject.
- Develop a study and monitoring program to confirm that placement of new piers and buoys has limited impact (direct or via an interaction with non-native species) on native fish populations and that impacts are mitigated through design requirements.

In addition, the Joint Fact-Finding Committee recognized the following findings and recommendations related to Fish Populations in Lake Tahoe. Native fish populations in the nearshore of Lake Tahoe declined between the late 1980s and 2009. A 2014 survey revealed that since 2009 native fish populations have been stable or have shown a slight increase, but remain well below historic levels. While the cause of the decline in native fish populations requires additional research, it is likely that past pier and buoy placement is not the

underlying driver. The availability of spawning habitat is not likely to currently be a constraining factor for native fish populations in Lake Tahoe. Observed spawning activities appear to focus on a small subset of the substrates identified as suitable.

The monitoring and mitigation described above should be coordinated within a regional work program to identify and address the drivers of native fish decline in Lake Tahoe and identify and evaluate the relative efficacy of interventions to promote recovery of the impacted populations.

## Scenic

The scenic survey collected as part of the 2015 threshold evaluation report primarily targeted known areas of change in scenic conditions. The Joint Fact-Finding Committee recommended the compilation of an additional inventory (documented with photographs) to complement the threshold evaluation inventory of current scenic conditions at key locations to serve as a baseline and to inform the policy decisions. A scenic inventory with over 300 new photos was compiled during the 2016 Boating Season.

## Existing Data, Information & Science

### Fish Habitat

Consistent with the policies of the TRPA Regional Plan Shorezone Subelement and standards in the 1987 TRPA Code of Ordinances, several studies were conducted to evaluate the effects of shoreline structures on the fish community of Lake Tahoe. The Joint Fact Finding Committee confirmed with participation of Dr. Brent Allen and Dr. Sudeep Chandra academics that these studies still stand. Key findings of these studies are described below:

Byron, E., B. Allen, W. Wurtsbaugh, and Wayne and K. Kuzis 1989. Final Report: Littoral Structures and Its Effects on the Fish Community of Lake Tahoe.

Key Findings: With the exception of kokanee salmon and mountain whitefish, fish densities are highest in littoral (shallow water) habitats in the summer, and fish tend to move offshore in the winter. Lahontan reddsides comprise the majority of the summer littoral fish biomass. Densities of most littoral fish species are highest amongst habitats with boulders and steep slopes. Gravel and small cobble substrates, particularly near creek mouths, are used by spawning kokanee salmon, and these habitats are rare in Lake Tahoe. Piling piers and solid

bulkhead structures showed no statistically significant effects on littoral fish densities. Rock crib structures, however, were associated with high densities of Lahontan redbreast and rainbow trout. This relationship is thought to be a result of local attraction rather than increased production.

Beauchamp, D., W. Wurtsbaugh, B. Allen, P. Budy, R. Richards, and J. Reuter. 1991. Lake Tahoe Fish Community Structure Investigations: Phase III Report.

Key Findings: This study found that piers (pile and rock crib) either had neutral or positive effects on densities of littoral zone fishes, depending on their configuration. It found that pile piers had no significant effect on densities of any of the fish species or on the overall species composition. The density of Lahontan redbreasts and rainbow trout was significantly higher near rock-crib piers. The type of substrate underlying piers was a more important determinant of fish density than the piers themselves, with more complex substrates containing more fish. Despite this trend, the study found that the highest densities of sub-yearling fish occur over sandy substrates. Boat traffic in marinas and near piers caused fish schools to retreat to cover, but they usually returned to normal activity patterns within 30 seconds.

Allen, B. and J. Reuter. 1996. The Effect of Shorezone Structures and Associated Activities on the Spawning Success of Native Minnows.

Key Findings: This study confirmed that Lahontan redbreasts and Lahontan speckled dace spawned in gravel substrates. Spawning occurred in very shallow (<20 cm) water in the summer. Spawning behavior was not affected by boat activity. Direct disturbance in spawning areas resulted in temporary behavior change, but did not affect overall spawning activity. Egg survival was not impacted by moderate shoreline activity, but survival did decline with heavy shoreline disturbance. The conclusions from this study recommended prohibiting the construction of new structures where existing gravel substrate would be rendered unusable by spawning fish, as well as a mitigation where gravel substrate is impacted.

## Fish Habitat Mapping

In 2015, TRPA commissioned Spatial Informatics Group (SIG) to prepare the "Use of Remotely Sensed Imagery to Map and Quantify the Extent and Distribution of Lake Tahoe's Nearshore Substrates and Fish Habitats" Report ("2015 Fish Habitat Report"). The 2015 map provides improved accuracy and precision relative to

the 1984 “Spawning habitat” and “Feeding and/or Escape Cover Habitat” maps.

## Scenic

TRPA adopted threshold standards for Scenic Resources, including numerical standards for shoreline units. The Lake’s 72-mile shoreline is segmented into 33 individual “shoreline travel units,” each representing a portion of the shoreline (of varying length) that exhibits similar visual character. The scenic ratings are based on the 1982 Lake Tahoe Basin Scenic Resource Inventory Report. Shoreline travel unit ratings reflect scenic conditions looking toward the shore from the surface of Lake Tahoe at 300 feet offshore. The following aspects are considered and rated for shoreline travel units:

1. Man-made features along the shoreline
2. General landscape views within the shoreline unit
3. Variety of scenery within the shoreline unit

TRPA monitors and reports on the status of both attainment and non-attainment scenic areas every four years in a Threshold Evaluation Report. The 2011 Threshold Evaluation Report is available at: [www.trpa.org/regional-plan/threshold-evaluation](http://www.trpa.org/regional-plan/threshold-evaluation). The Final 2015 Threshold Evaluation Report is being presented for acceptance by the TRPA Governing Board at its December 2016 Board meeting.

## Existing Codes

The TRPA Code of Ordinances, Section 84.5: Piers, provides the following standards for piers:

### Location Standards

1. Density (one pier per littoral parcel)
2. Location (prohibition within 200 feet of stream inlets)
3. Prohibition on development within prime fish habitat
4. Length (elevation 6,219 feet or pierhead line)
5. Setbacks (5 feet for existing and 20 feet for new)
6. Density, length, and setback waivers for Multiple-Use Piers

### Design and Construction Standards

1. Width (maximum 10 feet)
2. Height (6,232 elevation; in limited situations 6,234 elevation)
3. Pier construction standards to facilitate water circulation

4. Prohibition on superstructures
5. Prohibition on fueling stations in residential areas
6. Width waivers for Multiple-Use Piers

## Scenic

The TRPA Code of Ordinances, Chapter 66: Scenic Quality includes the regulations and required findings for ensuring that a project will not result in a decrease of the 1982 shoreline travel route rating. To demonstrate compliance, TRPA requires that all applications for shoreline development, including piers, include a scenic assessment and comply with the following:

1. No net increase in visual mass.
2. Projects which propose an increase in visual mass must employ either of the following methods of scenic mitigation:
  - a. Each square foot of additional visible mass shall be mitigated on a 1:1 basis in shoreline travel units in attainment with scenic thresholds and on a 1:1.5 basis in shoreline travel units not in attainment with scenic thresholds. Notwithstanding the foregoing, each square foot of visible mass from an additional boat lift shall be mitigated on a 1:1.5 basis. Mitigation of visible mass shall occur first in the shorezone of the project area until all feasible mitigation opportunities are exhausted. Mitigation shall then occur in the shoreland portion of the project area as necessary to satisfy all required mitigation.
  - b. If there are not opportunities for onsite mitigation of visual mass impacts in the shorezone or shoreland of the parcel or project area, applicants may consult with a TRPA shorezone planner and mitigation options will be addressed on a case-by-case basis.