Supplemental Information on
Lake Tahoe Shorezone Proposed Program

January 31, 2007
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SECTION A

MITIGATION IMPLEMENTATION AND MONITORING PROGRAM
FOR THE LAKE TAHOE SHOREZONE ORDINANCE AMENDMENTS
Mitigation Implementation and Monitoring Program for the Lake Tahoe Shorezone Ordinance Amendments

The Tahoe Regional Planning Agency (TRPA) has prepared this Mitigation Implementation and Monitoring Program (MIMP) to provide a concise summary of the mitigation programs included in the Shorezone program, their implementation schedule, and agencies and parties responsible for implementation. By certification of the Lake Tahoe Shorezone Ordinance Amendments EIS and approval of the program, TRPA formally adopts these measures as conditions of approval and commits to their implementation.

The MIMP for the Lake Tahoe Shorezone Ordinance Amendments is a guidance document that will be in place throughout the program’s 22-year planning period. It is intended to be a living document, however, to be revised as needed—with Governing Board approval—to achieve environmental goals and performance standards. Future revisions may be technical (e.g. boater sewage management practices, exotic species control and eradication techniques), financial (e.g. fee modifications), or procedural (e.g. monitoring mechanisms, partner entities). The objective is to maintain robust mitigation programs that improve the quality of the environment and allow flexibility to adapt to changing conditions over time. As lead agency under the Lake Tahoe Planning Compact, TRPA is responsible for the overall implementation and management of the MIMP, in cooperation with identified partner entities.

The MIMP is detailed on the attached table. Elements of the program include:

**Environmental Enhancement Feature/Mitigation Program:** This column details the mitigation programs and environmentally-based project elements included in the plan that will provide ongoing environmental benefit.

**Potential Environmental Effects Addressed:** This column lists the one or more environmental issue areas benefited by the mitigation program or project feature.

**Performance Standard/Baseline/Threshold for Action:** This column lists the performance standards, environmental baseline values to which TRPA is committing, and/or the thresholds for management action.

**Implementation Schedule:** This column identifies the projected implementation schedule of the programs and their elements.

**Funding Source:** This column identifies anticipated funding sources to support the programs.

**Monitoring Mechanisms:** This column identifies the monitoring mechanisms projected to be used by TRPA to assess the success of the mitigation measures and environmental enhancement features.

**Responsible Entity:** As lead agency under the Tahoe Regional Planning Compact, TRPA is identified as the responsible entity in all cases.

**Partner Entities:** Many programs involve the coordination, consultation, and partnership of other government agencies, local groups and the public. Potential partner entities are identified by program.
Tahoe Regional Individual Boaters Planning Agency

Marina Operators

Concessionaires

Lahontan Regional Water Quality Control Board

Annual water quality monitoring program (ongoing)

Fire Districts

Local Agencies

TRPA Enforcement Coordination with marina operators

Mitigation Implementation and Monitoring Program

TRPA shall implement a Blue Boating Program (referred to in the EIS as the ONRW Boat Pollution Reduction Program) as an element of the Shorezone program to mitigate for potential water quality, air quality, and noise impacts that may occur from increased boating activity that may be accommodated by the Shorezone structures allowed by the program. The Blue Boating Program shall contain the following primary elements:

Boater Education: The program shall include a boater education campaign to promote environmentally-conscious boating behavior. Education elements shall include, but not be limited to printed material, signage, and media. Education messages will include but not be limited to Lake Tahoe’s status as an Outstanding National Resource Water (ONRW) and the levels of protection afforded by the designation; federal, state, and local laws and regulations to which boaters must adhere; descriptions of penalties for non-compliance; boat inspection and washing to preclude import and transport of exotic aquatic species; resources and services available to the boating public.

Blue Boating Sticker: TRPA shall require all boats on Lake Tahoe to acquire a Blue Boating Sticker. To receive a Blue Boating Sticker a boater must self-certify compliance with TRPA noise standards, bilge practices, sewage management, and engine tuning requirements; attest that he/she has read and understands written materials describing same; pay the required fee. Boat stickers will be issued annually and for defined, shorter periods and will be available at TRPA offices, through the mail, and potentially online, at marinas, and other locations within and outside of the Tahoe Region.

Noise Compliance: Boaters will be required to meet TRPA noise standards and observe the 600-foot no-wake zone. Aftermarket devices such as “Silent Choice” which increase boat noise will not be permitted on the lake. Boaters will be required to self-certify compliance prior to acquiring a Blue Boating Sticker.

Bilge Practices: Boaters will be required to properly dispose of bilge water at pump-out stations and make appropriate use of bilge sponges, mats, pillows and pads. Boaters will be required to self-certify compliance prior to acquiring a Blue Boating Sticker.

Sewage Management: Boaters will be required to properly dispose of human waste at pump-out stations. In coordination with marina operators, TRPA will dedicate funding from the Blue Boating Program to provide free or substantially subsidized sewage disposal to recreational boaters to discourage illegal

<table>
<thead>
<tr>
<th>Environmental Enhancement Feature/Mitigation Program</th>
<th>Potential Environmental Effects Addressed</th>
<th>Performance Standard/Baseline/Threshold for Action</th>
<th>Implementation Schedule</th>
<th>Funding Source</th>
<th>Monitoring Mechanisms</th>
<th>Responsible Entity</th>
<th>Partner Entities</th>
</tr>
</thead>
</table>
| Blue Boating Program, ONRW Water Pollution Prevention Program | Water quality  
- Hydrocarbons  
- nitrogen oxides  
- nitrogen phosphorus  
- particulates  
- bacteria and fecal coliform  
- exotic aquatic species | Water Quality (see DEIS Table 5-6 at page 5-24 for detail):  
- Maintenance of TRPA numerical standards, surface discharge, and management standards; TRPA 208 Plan standards; Goals and Policies; Code of Ordinances; and Plan Area Statements  
- Maintenance of States of Nevada and California discharge and water quality standards | Full implementation of boat education in 2007 with heavy education emphasis in 2007 and 2008; maintenance of education program through dissemination of boat sticker registration materials thereafter | Boat sticker fees, anticipated to range from $20 to $200 per boat. Fees will be assessed annually for adequacy; modification beyond inflationary adjustment may be made with TRPA Governing Board approval. | Annual water quality monitoring program (ongoing) | Tahoe Regional Planning Agency | Individual Boaters  
Marina Operators  
Concessionaires  
Lahontan Regional Water Quality Control Board  
Fire Districts  
Local Agencies  
Other MWTAG Members |
Mitigation Implementation and Monitoring Program
Shorezone Ordinance Amendments
January 31, 2007

Environmental Enhancement Feature/Mitigation Program | Potential Environmental Effects Addressed | Performance Standard/Baseline/Threshold for Action | Implementation Schedule | Funding Source | Monitoring Mechanisms | Responsible Entity | Partner Entities
---|---|---|---|---|---|---|---
dumping of sewage into Lake Tahoe. Boaters will be required to self-certify compliance prior to acquiring a Blue Boating Sticker.

**Horsepower/Engine Star Ratings:** TRPA shall base the Blue Boating Sticker fee on boat engine horsepower, California Air Resources Board’s current rating system for boat engines (star rating), or a combination. Higher horsepower engines produce higher levels of particulates, a key concern with regard to loss of lake clarity, and lower engine star ratings produce higher emissions overall. Higher polluting boats shall pay a higher fee.

Boat sticker fees are anticipated to range from $20 to $200. Fees will be assessed annually for adequacy and adjustments may be made with TRPA Governing Board Approval.

**Boat Washing:** TRPA shall emphasize the need for boat inspection and washing in the boater education element of the Blue Boating Program to reduce the potential for import and spread of exotic aquatic species (e.g. Eurasian milfoil and zebra mussels). TRPA shall identify boat washing stations in and around the Region and include this information in its public education materials. Boat washing stations may include marinas, car washes, and new facilities. A portion of the boat sticker fees may be used to fund new boat washing facilities.

**Particulate Offsets:** As described in the EIS, annual emissions of particulates—unlike other constituents—are projected to increase with future increases in boating activity. TRPA shall dedicate funding from the Blue Boating Program to offset particulate emissions in the Lake Tahoe Region that contribute to declining lake clarity. Particulate offsets will be achieved through one or more of the following methods, or an as-yet undetermined method that can be demonstrated to be equally or more effective:

- **Wood Stove Rebate Program** – Offer financial incentive for homeowners to replace non-compliant wood stoves with TRPA-approved models.
- **Street Sweeping** – In coordination with local agencies, fund the purchase and/or operation of street sweepers in the Tahoe Region.
- **Wood Chippers** – In coordination with local fire districts, fund the purchase and operation of wood chippers to discourage residual slash pile burning.

**Lake Tahoe Public Access Program and Fund**

TRPA shall require payment of a $100,000 fee to the Lake Tahoe Public Access Fund (LTPAF) for each new private pier. TRPA shall require payment of $20 per square foot for pier expansions. The fee shall be collected with each new pier application or application for expansion. The LTPAF shall provide the means to

- **Land- and water-side public access**
- **Maintain adequate:**
  - lateral passage of pedestrians along the Shorezone,
  - access or ability to navigate by
- **Collection of fees shall commence with the first application for new or expanded piers received after approval by the TRPA Governing Board of the**
- **LTPAF fees, $100,000 per new pier and $20 per square foot for pier expansion at program initiation. Fees will be assessed annually for adequacy; modification**
- **TRPA Environmental Review (project-specific review and assessment by TRPA staff)**
- **Threshold Update**
- **Lake Regional Planning Agency**
- **Environmental community (e.g. Sierra Club, League to Save Lake Tahoe)**
- **Lakefront property owners (e.g. Tahoe**
### Environmental Enhancement Feature/Mitigation Program

**Potential Environmental Effects Addressed**

- Motorized or non-motorized watercraft
- Opportunities for top-line fishing
- Opportunities for low-impact, non-motorized recreation

**Performance Standard/Baseline/Threshold for Action**

- Shorezone Ordinance Amendments
- The LTPAF Advisory Board shall be established and convene within 6 months of collection of the first fees to identify priority public access projects.

**Implementation Schedule**

- Beyond inflationary adjustment may be made with TRPA Governing Board approval.

**Funding Source**

- (every 5 years)

**Monitoring Mechanisms**

- Lakefront Owners Association

**Responsible Entity**

- California Tahoe Conservancy

**Partner Entities**

- Nevada Division of State Lands

- California State Lands Commission

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### Buoy Fee and Enforcement Program

- TRPA shall require payment of a $500 permit application fee for a first buoy, and $1,000 for each additional buoy. The additional $500 for the second and subsequent buoys will fund start-up costs for the Buoy Enforcement Program. An annual fee of $175 per buoy would be charged beginning in the third year. Buoy fees will be used to fund watercraft and buoy compliance and monitoring, water quality monitoring, and environmental improvement projects.

<table>
<thead>
<tr>
<th>Water quality</th>
<th>Water-side public access</th>
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<tbody>
<tr>
<td>Water Quality (see DEIS Table 5-6 at page 5-24 for detail):</td>
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<tr>
<td>Maintenance of TRPA numerical standards, surface discharge, and management standards; TRPA 208 Plan standards; Goals</td>
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</table>

Collection of fees shall commence with the first application for new buoys or buoys to be recognized after approval by the TRPA Governing Board of the Shorezone Ordinance Amendments. Program start-up will occur in the first two years, 2007 and 2008. Substantial public outreach and education will occur in 2007, and buoy enforcement, water quality monitoring, and Shorezone improvement projects will ramp up to full implementation after two years. Annual fees will be collected.

Buoy fees, $500 for the first buoy and $1,000 for the second. Application fees are $500 per buoy. The additional $500 for the second buoy shall contribute to funding the start-up costs of the buoy enforcement program. Annual fee of $175 per buoy will be charged thereafter. Fees will be assessed annually for adequacy; modification beyond inflationary adjustment may be made with TRPA Governing Board approval.

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<tr>
<th>Responsible Entity</th>
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<tr>
<td>TRPA Enforcement Program</td>
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<tr>
<th>Partner Entities</th>
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<tr>
<td>Lakefront property owners</td>
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<td>Marina operators</td>
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<tr>
<td>Public agencies</td>
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<tr>
<td>Environmental Enhancement Feature/Mitigation Program</td>
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<td>-----------------------------------------------------</td>
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</tbody>
</table>
| **Fish Habitat Mitigation Fee and Restoration Program**
For projects that result in substrate disturbance of prime fish spawning habitat, TRPA shall require payment of $483 per square foot of disturbance. The fee is based on cost estimates for actual spawning habitat restoration, labor and materials, monitoring of the restoration project, and TRPA project oversight, planning and design. | Fisheries Soils (protection of substrate) | Maintain quality and quantity of fish spawning habitat at current levels | Collection of fees shall commence with the first application for structures that disturb spawning habitat after approval by the TRPA Governing Board of the Shorezone Ordinance Amendments. | Fish habitat mitigation fees, $483 per square foot of substrate disturbance. Fees will be assessed annually for adequacy; modification beyond inflationary adjustment may be made with TRPA Governing Board approval. | Direct monitoring of restoration projects | Tahoe Regional Planning Agency | California Department of Fish and Game Nevada Department of Wildlife |
| **Stream Mouth Protection Zones**
TRPA shall prohibit new structures within mapped stream mouth protection zones, defined as the area inclusive of the historic meander of streams that support migratory fish habitat. The zones reflect the ability of the creek to meander within a given range and are consistent with TRPA's intent to restore the natural function of streams as part of the EIP.
Processes have been established for property owners to adjust | Fisheries | Maintain adequate ability of the stream to meander within its historic range at its discharge point to Lake Tahoe and maintain fish access to spawning habitat upstream | Ongoing. Applications shall be reviewed for consistency with this provision after submittal to TRPA. | Staff review supported by application fee | Staff review | Tahoe Regional Planning Agency | None |
### Mitigation Implementation and Monitoring Program

**Shorezone Ordinance Amendments**  
**January 31, 2007**

<table>
<thead>
<tr>
<th>Environmental Enhancement Feature/Mitigation Program</th>
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<th>Responsible Entity</th>
<th>Partner Entities</th>
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<td>the estimated width included in the EIS to the actual historic meander based on historic aerial photos and site-specific information.</td>
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<td><strong>Public Drinking Water Intake Setbacks</strong></td>
<td>Human health and safety</td>
<td>Maintain quality of raw public drinking water supply at current levels (i.e., with no treatment required)</td>
<td>Ongoing. Applications shall be reviewed for consistency with this provision after submittal to TRPA.</td>
<td>Staff review supported by application fee</td>
<td>Staff review</td>
<td>Tahoe Regional Planning Agency</td>
<td>Public water purveyors</td>
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<tr>
<td>TRPA shall prohibit new structures within ¼ mile of public drinking water intakes unless a risk assessment demonstrates to the satisfaction of the drinking water purveyor that the public drinking water supply is sufficiently protected from degradation. Such a determination may be made after consideration of design changes, limits on allowable uses, alternative construction methods, or other appropriate protection measures.</td>
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<td><strong>Shorezone Preservation Areas</strong></td>
<td>Scenic Wildlife Vegetation Recreation</td>
<td>Maintain TRPA thresholds in all identified areas</td>
<td>Ongoing. Applications shall be reviewed for consistency with this provision after submittal to TRPA.</td>
<td>Staff review supported by application fee</td>
<td>Staff review</td>
<td>Tahoe Regional Planning Agency</td>
<td>U.S. Forest Service California State Lands Commission Nevada Division of State Lands California Tahoe Conservancy Tahoe Keys HOA Glenbrook HOA</td>
</tr>
<tr>
<td>TRPA shall prohibit new structures within Shorezone Preservation Areas (SPAs), defined areas of pristine shoreline, to the maximum extent possible consistent with the laws governing other resources management agencies, and to enhance natural resource values including wildlife habitat, sensitive plants, scenic values, and undeveloped recreation.</td>
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<td><strong>Maintenance of Buoy Floats and Chains</strong></td>
<td>Water quality Human health and safety</td>
<td>Minimize loss or damage to boats from inadequate or faulty buoy floats and chains</td>
<td>Ongoing. Certification of inspection shall be submitted to TRPA upon payment of the annual buoy fee</td>
<td>Staff review supported by buoy fee</td>
<td>Staff review</td>
<td>Tahoe Regional Planning Agency</td>
<td>Buoy owners</td>
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<td>TRPA shall require bi-annual inspection of buoy floats and chains and self-certification of such inspection at the time of payment of the annual buoy fee.</td>
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<td><strong>Pier Eligibility Restrictions</strong></td>
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<tr>
<td>► TRPA shall prohibit new pier construction on parcels that are deed-restricted from piers or structures</td>
<td>Scenic</td>
<td>Maintain TRPA scenic thresholds</td>
<td>Ongoing. Applications shall be reviewed for consistency with this provision after submittal to TRPA.</td>
<td>Staff review supported by application fee</td>
<td>Staff review</td>
<td>Tahoe Regional Planning Agency</td>
<td>Applicants</td>
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<td>► TRPA shall prohibit construction of single-use piers in scenic non-attainment areas unless a second parcel has been deed-restricted from pier eligibility.</td>
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<td>► TRPA shall prohibit new pier construction on stranded parcels, which are parcels located landward of a strip parcel that is owned by another entity or that has been set aside for public use where the land owner does not own the underlying fee title to high water</td>
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<td>► TRPA shall prohibit new development potential on parcels that establish new littoral ownership through boundary line adjustment.</td>
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<td>► TRPA shall limit total allowable density of piers based on shoreline character type.</td>
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<tr>
<td><strong>Pier Design Standards and Scenic Mitigation</strong></td>
<td>Scenic</td>
<td>Maintain TRPA scenic thresholds</td>
<td>Ongoing. Applications shall be reviewed for consistency with this provision after submittal to TRPA.</td>
<td>Staff review supported by application fee</td>
<td>Staff review</td>
<td>Tahoe Regional Planning Agency</td>
<td>Applicants</td>
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<tr>
<td>Environmental Enhancement Feature/Mitigation Program</td>
<td>Potential Environmental Effects Addressed</td>
<td>Performance Standard/Baseline/Threshold for Action</td>
<td>Implementation Schedule</td>
<td>Funding Source</td>
<td>Monitoring Mechanisms</td>
<td>Responsible Entity</td>
<td>Partner Entities</td>
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<tr>
<td>TRPA shall require new piers to comply with design standards established for single- and multiple-use piers. Refer to TRPA Code Chapter 54 for complete description, but single use standards include:</td>
<td>Maintain adequate:</td>
<td>consistency with these provisions after submittal to TRPA.</td>
<td>Vegetation and landscaping improvements backed by performance bond</td>
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<td>➢ Maximum length shall be 150 feet, or distance required to reach 6,219 ft elevation, or pierhead line, whichever is less</td>
<td>➢ lateral passage of pedestrians along the Shorezone,</td>
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<td>➢ Maximum visible mass shall be 220 square feet</td>
<td>➢ access or ability to navigate by motorized or non-motorized watercraft</td>
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<td>➢ Maximum width shall be 6 feet, maximum pierhead shall be 30 feet long by 10 feet wide, maximum catwalk shall be 30 feet long by 3 feet wide</td>
<td>➢ opportunities for top-line fishing</td>
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<tr>
<td>➢ Piers shall be single pile unless dictated otherwise for safety</td>
<td>➢ opportunities for low-impact, non-motorized recreation</td>
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<td>➢ Visible mass must be mitigated onsite at a 1:1 ratio in a scenic attainment unit, and with deed restriction of a second eligible parcel and 1.5:1 scenic mitigation in a scenic non-attainment unit</td>
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<td>➢ All properties must achieve a contrast rating of 25</td>
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<td>Refer to TRPA Code Chapter 54 for complete description, but multiple use standards include:</td>
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<td>➢ Maximum visible mass shall not exceed 280 square feet</td>
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<td>➢ Length may vary to reach navigable water</td>
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<tr>
<td>➢ Visible mass must be mitigated onsite at a 1:1 ratio in a scenic attainment unit, and with deed restriction of additional parcels and 1.5:1 scenic mitigation in a scenic non-attainment unit</td>
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<td>For all projects requiring implementation of scenic mitigation, a performance bond would be required to ensure that vegetation and landscaping improvement are implemented.</td>
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<tr>
<th>Emerald Bay Restrictions</th>
<th>Water quality</th>
<th>Reduce detectable concentrations of hydrocarbons in Emerald Bay as compared to existing conditions</th>
<th>Ongoing. Upon approval of the Shorezone Ordinance Amendments, TRPA shall request El Dorado County adjust county ordinances to reflect new speed limit. Action by Board of Supervisors is expected prior to 2007 boating season.</th>
<th>No funding required</th>
<th>Enforcement shall be conducted by the El Dorado County Sheriff and California Department of Parks and Recreation</th>
<th>Tahoe Regional Planning Agency</th>
<th>El Dorado County Sheriff California Department of Parks and Recreation</th>
</tr>
</thead>
</table>

| Annual Limit on Pier Approvals | Scenic Land- and water-side | Maintain TRPA scenic thresholds | Ongoing. Applications shall be reviewed for consistency with these provisions after submittal to TRPA. | No funding required to implement provision | Staff review | Tahoe Regional Planning Agency | None |
Mitigation Implementation and Monitoring Program  
Shorezone Ordinance Amendments  
January 31, 2007

<table>
<thead>
<tr>
<th>Environmental Enhancement Feature/Mitigation Program</th>
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<th>Partner Entities</th>
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<tbody>
<tr>
<td>accepted to no more than 10 per year for a total of 220 private piers over the term of the Shorezone program. The ten applications accepted shall be those that would retire the greatest length of littoral frontage from future shorezone development.</td>
<td>public access</td>
<td>provisions after submittal to TRPA.</td>
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SECTION B

BLUE BOATING FACT SHEET
Blue Boating Fact Sheet

The Tahoe Regional Planning Agency has been working for nearly 20 years to find solutions to community-wide disagreements over the regulations affecting the construction of piers, buoys, and other shorezone-related issues. The shorezone is the place where the lake meets the land at Lake Tahoe. After analyzing six different alternatives about how much development could be allowed in the shorezone over the next 22 years, the TRPA has a proposed program that finds middle ground on the issue while protecting Lake Tahoe.

The proposed shorezone program is Alternative 6A in the environmental document. As part of Alternative 6A, TRPA is developing a boat pollution reduction program called Blue Boating. The program is designed to address impacts to Lake Tahoe associated with increases in boating by encouraging the use of cleaner boat engines. Boating impacts are being addressed—including those that would occur regardless of implementation of the shorezone program—over a 22-year planning period. The program will also provide increased boater services, such as free sewage pump out options, to promote more environmentally conscious boating behavior.

With fast-growing communities surrounding Lake Tahoe, projections show a potential 30 percent increase in boating on Lake Tahoe over the next 22 years. Along with the potential for additional buoys and piers on the lake, the goal of the Blue Boating Program is to take a proactive approach, relying on creative actions and public education, to protect Lake Tahoe from pollution. The program will include extensive outreach and public education informing lake users of the new program and its benefits to Lake Tahoe. Boaters must be informed of the regulations existing on the lake and why such guidelines are important in preserving Tahoe for future generations. The first two years of the program will consist of public education. In 2009, additional components of the program will be launched, such as a boat certification program.

Reducing Pollution from Increased Boating:

Lake Tahoe has a special status called “Outstanding National Resource Water” under the federal Clean Water Act which requires the Region to be held to a non-degradation standard for the lake. While striving to achieve a lake clarity level of about 100 feet, TRPA is addressing what’s causing the reduction in the lake’s transparency—one contaminant is particulate matter. Particulate matter is one of several byproducts of combustion from boat engines. As engines become cleaner-burning over time, pollutants associated with boating such as hydrocarbons and nitrous oxide are projected to decrease. However, research shows that particulate matter produced by boats is expected to increase with increased numbers of boats on Lake Tahoe. Particulate matter consists of very fine particles that do not settle on the lake’s bottom, but rather stay suspended in the water and contribute to a loss of clarity by making the water appear cloudy.

TRPA’s goal is to address particulate matter created by boats without limiting boating use on Lake Tahoe. Therefore, the Agency is working to reduce the particulate matter entering the lake by focusing on a multitude of other contributing sources such as road dust, woodstoves, and burn piles. Keep in mind that every time visitors or locals drive around Lake Tahoe to launch their boats, dust is kicked up that ultimately ends up in Lake Tahoe. Fine particles kicked up by tires on the roads are being addressed with the Blue Boating Program.
Boat Certification Sticker Program

Under the Blue Boating program, TRPA will be working with boaters to promote cleaner boating habits through the boat certification program. In 2009, boaters will be required to “self-certify” during a registration process that would result in a Blue Boating Sticker, indicating they are certified in proper engine tuning, noise reduction, clean bilge practices and proper sewage disposal.

- Horse Power Rating System: TRPA’s current policy prohibiting the use of carbureted two-stroke engines will remain in place. The proposed sticker program—to be implemented in 2009—includes a structured fee program based on the horse power rating of the boat engine. The greater the horse power of the engine, the more fuel it burns, which results in more particulate matter being emitted. The Blue Boating Program is being developed so that greater horse power boat engines would be charged a higher fee than those with lower horse power engines. This sticker would be renewed on an annual basis. In addition, a temporary sticker would be available for those boaters only coming up for a weekend or a few times a year. This temporary sticker would not be based on horse power and would have a flat fee. Boaters who want to obtain the temporary sticker would still be required to self-certify as to all elements of the program described below. Funds obtained from the fees would be used for particulate matter cleanup efforts around Lake Tahoe and enhanced boating services. Fee levels are preliminary and are subject to change based on actual boating numbers over the next two years. They are provided now to give the boating public a general sense of the approach being planned under the Blue Boating Program.

- 50 HP and under Possible Fee $20 Per Year
- 51 – 200 HP Possible Fee $40 Per Year
- 201 – 400 HP Possible Fee $80 Per Year
- 401 – 600 HP Possible Fee $100 Per Year
- 601+ HP Possible Fee $200 Per Year
- Temporary (3-7 days) Possible Fee $50 Per Duration

Other Blue Boating Program Elements

- Engine Tuning: Boats entering Lake Tahoe will be required to be tuned prior to entering the lake to reduce both water and air emissions. Out-of-town boaters who do not have electronically controlled engines will be required to have their boats tuned to Lake Tahoe’s elevation and will need their propellers set at the appropriate pitch.

- Noise Reduction: Boaters will be required to meet TRPA-approved decibel levels. It is important to implement such noise guidelines for the protection of wildlife and the well-being of surrounding communities. Aftermarket devices such as “Silent Choice” which actually increase boat noise from the exhaust would not be permitted on the lake.

- Clean Bilge: Under the Blue Boating Program, TRPA will provide boaters with bilge sponges, devices which absorb contaminants like fuel and coolant in the bilge prior to “pumping out.”

- Proper Sewage Management: Boaters will be informed that discharging sewage into the lake is strictly prohibited. Devices that allow direct discharge of sewage into the lake will be
required to be removed. The Blue Boating Program is being designed to allow for FREE sewage disposal at local marinas.

- **Invasive/Aquatic Species Protections:** As invasive, exotic species continue to threaten Lake Tahoe, the Blue Boating Program will include educational information about the importance of keeping boats free from milfoil and other species. Boaters will be advised to perform visual inspections before launching in the lake to ensure no invasive weeds are transported into Lake Tahoe. Should conditions warrant, funds from the Blue Boating Program could be earmarked for boat washing facilities around the Tahoe Region. The proposed shorezone program contains specific programs to eliminate milfoil and other exotic weeds and programs are currently underway which attack this issue.

- **Monitoring:** Water quality monitoring will be conducted on a regular basis in order to ensure that anticipated pollutant levels are not being exceeded. If trends show an increase in pollutant levels, fees could be reviewed to consider enhanced mitigation measures, or implementing elements based on the California Air Resources Board (CARB) Star program, or the phase out of more polluting engines could be considered.

- **Enforcement:** In order to ensure that boaters are adhering to the program, the TRPA Watercraft Team will have a visible presence on Lake Tahoe every summer season. Building on TRPA’s proven track record of enforcing the carbureted 2-stroke engine ban, the Watercraft Team will use an educational approach combined with their active presence on the lake to enforce the program. Blue Boating Stickers will be displayed on boat windshields or other conspicuous areas to show compliance. The sticker would indicate the horse power range of the engine and a unique identifying number. TRPA staff will be able to observe these stickers and verify whether the boat owner has paid the annual fee and if the horse power rating on the sticker matches the engine on the boat. Spot inspections can also be made at marinas, ramps, etc. in order to verify that the owner has self-certified for all elements of the program.

- **Mitigation:** A portion of the fees collected from the boat sticker would be used to help fund different strategies that can help reduce the total amount of particulate matter that reaches Lake Tahoe and to help reduce the introduction of invasive aquatic species. Such components could include:
  
  o Funding the purchase and/or operation of street sweepers in the Region.
  
  o Funding a rebate program that creates an incentive for homeowners to replace an existing non-complaint wood-burning stove with a TRPA-approved model.
  
  o Funding the purchase and operation of wood chippers to discourage the use of burn piles as a means to dispose of yard debris.
  
  o Funding the purchase of boat washing facilities around the basin.

- **Budget:** In order to determine the costs associated with this program, an accurate number of different boats that utilize Lake Tahoe is needed. Based on the number of buoys and slips around the lake, and taking into consideration the ramp usage around the lake, conservative estimates show that 7,100 different boats recreate on Lake Tahoe per year. With a median fee for the boat sticker at $80, approximately $570,000 would be generated annually.
The anticipated annual program costs are as follows (starting in 2009):

- Programmatic Costs (includes staff and equipment)  $150,000
- Continuous Outreach Materials (2009 and beyond)  $20,000

**Total Annual Costs**  $170,000

TRPA will form partnerships with the business and marina communities as well as the public at large to educate boaters about the program. It is anticipated that during the first two start up years, $100,000 will be required for effective outreach.

The projected costs associated with mitigation are as follows:

- Street Sweeper  $250,000
- Street Sweeper Operator  $50,000
- Boat Wash Facility  $150,000
- Wood Stove Rebate  $500 per rebate
- Wood Chipper  $5,000

The annual costs associated with mitigation will vary depending on the frequency of street sweepers and boat wash facilities purchased, how many individuals participate in the wood stove rebate and how many wood chippers are needed. After subtracting programmatic costs, approximately $400,000 could be available for mitigation annually.

The Governing Board will take action to approve the Blue Boating Program in its entirety in the future. This program outline is intended to provide an overview for the public and to reaffirm the Agency’s commitment to implementing the program in the phased manner explained in this document.
SECTION C

WATER QUALITY MONITORING PROGRAM
Water Quality Monitoring Program

Objective

The following is a proposal for long term water quality monitoring in Lake Tahoe to maintain Outstanding National Resource Water (ONRW) non-degradation standards, protect public health and drinking water supplies, and maintain Tahoe Regional Planning Agency (TRPA) Thresholds. The monitoring program objectives are to assist in assuring non-degradation from levels determined from the 2002 water quality sampling, to assist in maintaining human health, and to assist in attaining TRPA thresholds. The nondegredation standard as set forth in the ONRW regulations allows for limited short term exceedences in water quality constituents, but no negative trend should be observed. Long term water quality sampling is needed to establish a baseline and determine trends. High boat traffic areas and locations of more frequent and/or higher levels of detection will be monitored to determine if management actions are needed to preclude adverse effects to human health, especially near public beaches and drinking water intakes.

This Water Quality Monitoring Program has been developed with the assistance of the Motorized Watercraft Technical Advisory Group (MWTAG) whose members include representatives from U.S. Geological Survey; Tahoe Environmental Research Center; University of Nevada, Reno Academy for the Environment; Lahontan Regional Water Quality Control Board; Nevada Division of Environmental Protection; California Air Resource Board; and Tahoe Regional Planning Agency.

I. OVERVIEW AND PREVIOUS STUDIES

The proposed Shorezone Ordinance Amendments analyzed in the Final Environmental Impact Statement (Lake Tahoe Shorezone Ordinance Amendments, November, 2006) propose limited increases in the number of piers and buoys on Lake Tahoe over the next 22 years. Although levels of boating activity are known to be increasing on an annual basis even in the absence of a Shorezone program, it is assumed that the addition of shorezone structures would accommodate an increase in boats and boat traffic. As part of the mitigation for this increase and to address the potential cumulative condition, water quality monitoring is needed to understand changes in water quality over time (including peak use periods, periodically, and seasonally) and maintain the ONRW baseline condition. The ONRW baseline for clarity-declining nutrients such as nitrogen, phosphorus and fine particulates was established by the Tahoe Research Group in 1968-1971. The baseline for hydrocarbons and fuel related constituents only (e.g. MTBE and boat engine combustion by-products such as PAHs) are the measured 2002 levels. This new baseline was set after marked improvements in water quality were realized following the full implementation of the ban on two-stroke carbureted engines and engines that did not meet EPA’s 2006 emission standards. Selected hydrocarbons at nine sites have been monitored as follow up to the ban, effective June 1, 1999.

A study was completed in 2003 to determine the occurrence and toxicity of polycyclic aromatic hydrocarbons (PAH) in Lake Tahoe. The results indicate that concentrations in Lake Tahoe are very small and short-lived, (photo-degradation within 48 hours). Once a year limited sampling for fecal coliform bacteria has been conducted at public beaches and near drinking water intakes as part of a citizen monitoring effort called Snapshot Day, and specific areas with higher levels of detection have been identified. Nutrient sampling in the lake is conducted by the
Tahoe Environmental Research Center and historically shows extremely low concentrations. This information will be included in the Annual Monitoring Report for the Shorezone.

II. WATER QUALITY ISSUES

Increased boat traffic over time, assumed to be due in part to additional shorezone structures, (e.g. buoys) has the potential to add pollution and unwanted discharge into Lake Tahoe. Bacteria from potential spills and holding tank discharges may adversely affect water quality and public drinking water supplies. Unabated, long term accumulation and toxicity is possible for some constituents, especially with regard to PAH and phosphorus in sediments.

The monitoring program as currently planned will emphasize water quality characterization and monitoring in the vicinity of sensitive resources, including popular swimming areas and drinking water intakes. Drinking water purveyors expressed concern about construction of Shorezone facilities in proximity to drinking water intakes, resulting in a 1/4-mile setback from such intakes, unless an assessment concludes that the risk of an adverse occurrence is within acceptable limits. Notwithstanding the location of Shorezone structures, it is judged to be important that monitoring in these areas be conducted to proactively protect human health.

III. CONCEPTS AND METHODOLOGY

HYDROCARBONS AND PAH SAMPLING

It is neither possible nor meaningful to determine a direct effect of gasoline-related pollution from any single new pier or buoy. The best method of characterizing water quality is to select lake-wide monitoring locations covering areas of high traffic (such as Emerald Bay) and the potential highest density of new piers and buoys. TRPA has conducted baseline monitoring for approximately 10 sites from pre- and post- carbureted two-stoke ban conditions, and a more robust monitoring program funded by Shorezone mitigation fees is planned that would add new sites to more accurately determine current conditions, especially along the north and west shores. The establishment of updated conditions can then be compared with future sampling to determine changes or trends. The data will be reviewed annually and if any significant increase in a constituent is seen, expanded sampling will be conducted the next year to determine if it was a random isolated occurrence (a badly tuned or out of compliance boat engine that just passed the site), or a potential source or problem in that area. The proposed budget will include some contingency for this event.

The program as planned would include:

- The suite of hydrocarbons associated with gasoline byproducts that has historically been analyzed and that is proposed is listed in Table 1:
### Table 1

<table>
<thead>
<tr>
<th>Hydrocarbon Compounds</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>teri</em>-amyl alcohol</td>
</tr>
<tr>
<td>benzene</td>
</tr>
<tr>
<td>diisopropyl ether (DIPE)</td>
</tr>
<tr>
<td>o-xylene</td>
</tr>
<tr>
<td>toulene</td>
</tr>
</tbody>
</table>

Monitoring Locations and Frequency:

- Sampling for hydrocarbons and PAH is typically performed the next business day after the major summer holidays including Memorial Day, Independence Day and Labor Day. Sampling is also conducted one day in mid-August when boating density is generally high. PAH sampling will be limited to 5 sites with placement of Semi-Permeable Membrane Devices deployed from mid July to mid August. These devices are much more efficient to determine long term toxicity than individual grab samples.

- These four dates at 21 sites per sampling equals 84 samples.

- Two to three quality assurance samples (both sample blank and duplicates) adds 10 samples.

- Additional randomly selected sites at drinking water intakes and popular boating areas.

- Total hydrocarbon/PAH samples from above are 94 samples not including the randomly selected sites.

<table>
<thead>
<tr>
<th>Previous Sample locations (Appendix A)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>California (8)</strong></td>
</tr>
<tr>
<td>Tahoe City</td>
</tr>
<tr>
<td>Tahoe Keys at Homeowners Lagoon</td>
</tr>
<tr>
<td>Tahoe Keys at Nun Buoy</td>
</tr>
<tr>
<td>Ski Run Marina</td>
</tr>
<tr>
<td>Kiva Beach</td>
</tr>
<tr>
<td>Mid-Lake at TRG Buoy (2001, 2006)</td>
</tr>
<tr>
<td>Emerald Bay at Diver’s Buoy</td>
</tr>
<tr>
<td>Emerald Bay near Fannette Island (added in 2005)</td>
</tr>
</tbody>
</table>

Four sites for which TRPA has some historic data will be re-instated; Homewood, Kings Beach, Glenbrook and Cave Rock. Glenbrook and Cave Rock are locations of lake water intakes. Potential additional sites were determined based on existing and potential buoy density and from potential pier density.
New Sample Locations (Appendix A)

<table>
<thead>
<tr>
<th>California (8)</th>
<th>Nevada (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rubicon Bay</td>
<td>Sand Harbor launch</td>
</tr>
<tr>
<td>Homewood</td>
<td>Round Hill Pines (intake)</td>
</tr>
<tr>
<td>Lakeridge or Skyland (intake)</td>
<td>Cave Rock (intake)</td>
</tr>
<tr>
<td>Sunnyside/Tahoe Tavern (intakes)</td>
<td>Glenbrook (intake)</td>
</tr>
<tr>
<td>Sierra Boatworks/Carnelian Bay</td>
<td></td>
</tr>
<tr>
<td>Agate Bay (National Av. intake)</td>
<td></td>
</tr>
<tr>
<td>Kings Beach</td>
<td></td>
</tr>
<tr>
<td>Tahoe Meadows/Lakeside Marina (intake)</td>
<td></td>
</tr>
</tbody>
</table>

- A winter or spring sample date will be added at least once every 3 years to verify the absence of hydrocarbons outside the boating season.

- The mid-lake station will also be sampled at least every 3 years to maintain the long-term correlation of little boat activity and corresponding extremely low concentrations.

BACTERIA SAMPLING

The limited sampling for bacteria in Lake Tahoe requires a robust first year sampling program. Currently the Lahontan standard is “fecal coliform shall not exceed a log mean of 20 counts per 100 milliliters of water during any 30-day period.” However EPA is recommending E-coli as the preferred measurement for pathogens. In order to provide for past and future comparisons, both fecal coliform and E. Coli will be sampled at least 4 times each month from May to October, (6 months) at selected drinking water intakes, and high density beaches for a total of 432 samples (Appendix B). Turbidity sampling will also be conducted to develop a relationship between areas of higher turbidity and pathogens (similar to the practice by the water purveyors).

Potential public and private beach areas include:

- **California (7)**
  - Timber Cove/Bijou Creek outlet
  - Emerald Bay
  - Lake Forest
  - Kings Beach
  - Ski Run
  - Baldwin Beach
  - Regean Beach

- **Nevada (4)**
  - Incline Beach
  - Sand Harbor
  - Zephyr Cove
  - Nevada Beach

Drinking water intakes:

- **California (3)**
  - Sunnyside
  - Agate Bay/National Av.
  - Lakeside Marina

- **Nevada (4)**
  - Glenbrook
  - Lakeridge
  - Cave Rock
  - Round Hill Pines Resort
Total sites in California is 22, Nevada has 15 (many locations have multiple sampling). This preliminary site selection may be revised with the assistance of the Motorized Watercraft Technical Advisory Group (MWTAG) as part of the Shorezone Program’s adaptive management framework.

IV. SAMPLING PROCEDURES AND REPORTING

A request for proposals (RFP) for this monitoring program will be solicited according to the TRPA Financial Policy and Purchasing Manual. The proposal will provide details of a Work Plan that includes: a brief project description and objectives; services to be performed and a timeline; Standard Operating Procedures and Quality Assurance/Quality Control procedures that will be implemented and documented; and project deliverables or reports. Each year an annual report including monitoring program information and findings will be compiled and distributed for review by the MTWAG or similar scientific peer review group. Comments and adjustments to the monitoring program will be incorporated and presented to the TRPA Governing Board, and posted on the Shorezone page of the TRPA website.

V. COST

The estimated* cost for the monitoring program is:

- $117,000 for the 120 (includes random samples) hydrocarbon and PAH samples;
- $41,472 for 432 bacteria samples;
- $5,500 for TRPA assistance in the form of turbidity and bacteria sampling and boat operation costs

The total estimated cost for the Shorezone Water Quality Monitoring Program is $163,972 per year.

- This monitoring program cost was prepared based on previous and proposed USGS analytical and consultant costs. It is expected that these costs will be refined and updated as sampling constituents and sites are finalized.
SECTION D

EXPLANATORY INFORMATION ABOUT BOATING EMISSIONS AND AIR QUALITY ANALYSIS INCLUDED IN THE SHOREZONE FEIS
Various groups have asked for additional explanation about the revised air quality analysis and calculations provided in the Shorezone FEIS (particularly Appendix 8, “Revised Air Quality Emission Calculations”).

The emission calculations provided in the 2004 DEIS and 2005 SDEIS for the various alternatives (shown in Table 8-7 of the DEIS) were based on the following assumptions:

- Boat engine emission rates were obtained from the California Air Resources Board (CARB) and calculated for a 100-day “year” to correlate with the Tahoe Basin boating season.

- 2004 emissions levels were calculated for the entire lake, based on the fleet mix identified in the 2002 JD Fransz boating survey. This emissions total was then divided by the number of boats on the lake in 2004 to arrive at a generalized “emissions per boat” calculation. This calculation was then multiplied by the number of boats under each alternative to provide a comparison of the increase in emissions from 2004 to buildout under each alternative.

All comparisons of emissions were based on this emission calculation, which is an adjusted approximation from partial data.

For the FEIS, TRPA and EDAW recalculated the emissions estimates based on more accurate information that is now available, including updated data from CARB on emissions from different types of boats, emission factors of various pollutants provided by EPA, and industry standards of horsepower and boat loading factors (i.e., the percentage of time an engine operates at maximum horsepower) for various types of boats. In addition, the calculation was extended over a 365-day year to be consistent with CARB data.

Looking at the spreadsheets in Appendix 8 of the FEIS, the following provides an explanation of the information provided in each column as it relates to the document:

**A – Watercraft Type:** These categories indicate the general types of watercraft found on Lake Tahoe (provided by CARB); consistent with DEIS and SDEIS and based on data from the JD Fransz survey. These categories are groups by similar engine type (see below).

**B – Engine Type:** This column indicates engine technology type (also provided by CARB). For example:

- G2 FI = Gasoline 2-stroke with fuel injection
- G4 FI = Gasoline 4-stroke with fuel injection
- G4 = Gasoline 4-stroke
- G4/G2FI = Gasoline 4-stroke or gasoline 2-stroke with fuel injection
- D = Diesel

**C – TRPA Assumptions:** These are the assumptions made by TRPA in calculating boat emissions. These assumptions take into consideration unique characteristics of the Basin that are not reflected in a general statewide inventory or watercraft fleet mix. In most cases, the comments are directed toward the emissions factors used for each category of watercraft.

**D – Average hp 2000:** The average horsepower of the category fleet mix is indicated, as estimated for the year 2000 (ARB). For example, the average horsepower of an inboard, 2-stroke, fuel injected watercraft is 250hp. Most of this information was provided by CARB, with some gaps filled by TRPA.
E – **Avg. Load Factor (%):** This indicates the average percentage of power the engine is using in relation to its maximum rated horsepower (as provided by CARB). Although an engine may be rated for 250 horsepower, the boater does not continuously use all this horsepower during its typical use period.

F – **Yearly Trips (2004 #s):** This column shows the number of boat outings that occur each year for each category of watercraft, based on the best available information, which in this case, was 2004 baseline data provided in the JD Fransz study used in the DEIS.

G – **Avg. hrs/trip:** A calculation was made of the average number of hours used during each boat outing.

H – **Hours/Year:** In column H, TRPA calculates the average hours per year for each category of watercraft. (Formula = F*G)

I – **HC Emission Factor:** Hydrocarbon emission factors are those provided by CARB. These numbers are in the form of grams of emissions, per horsepower used, per hour of operation (g/hp-hr). For example; if the engine has an emission factor of 26.29 g/hp-hr, this means it puts out 26.29 grams of emissions for each horsepower it is using each hour. Therefore, a typical 250-hp 2-stroke inboard motor would emit (26.29 grams of hydrocarbons [column I])*(250 hp [column D])*(21% average load factor [column E]) or 1380 grams of hydrocarbons per hour of operation.

J – **NOx Emissions Factor:** Oxides of nitrogen emission factors are provided by CARB, as described for column I above.

K – **CO Emissions Factor:** Carbon monoxide emission factors are provided by CARB, as described for column I above.

L – **PM Emissions Factor:** Particulate emission factors are provided by CARB, as described for column I above.

M – **HC Emissions Tons/Year:** Hydrocarbon emissions are calculated in English tons (2000lbs.) per year. [Formula = (D*E*H*I) / (454 grams/lb*2000 lbs/ton*100 Load factor conversion to percent)]

N – **NOx Emissions Tons/Year:** Oxides of nitrogen emissions are calculated in English tons (2000lbs.) per year. [Formula = (D*E*H*J) / (454 grams/lb*2000 lbs/ton*100 Load factor conversion to percent)]

O – **CO Emissions Tons/Year:** Carbon Monoxide emissions are calculated in English tons (2000lbs.) per year. [Formula = (D*E*H*K) / (454 grams/lb*2000 lbs/ton*100 Load factor conversion to percent)]

P – **PM Emissions Tons/Year:** Particulate matter emissions are calculated in English tons (2000lbs.) per year. [Formula = (D*E*H*L) / (454 grams/lb*2000 lbs/ton*100 Load factor conversion to percent)]

Q – **Notes:** In some cases, emission factors were not available for every instance. Therefore, some assumptions needed to be made. These are indicated in this field.

The progression of calculations from 2004 to 2014 and 2024 in the Appendix 8 spreadsheets reflects an assumed increase in boating of 1.5% per year, as indicated in the Fransz survey and other sources cited in the DEIS. The attached revision of the spreadsheet includes a calculation of the change from 2004 to 2024. The tons per year numbers in bracketed red are overall reductions in emissions; the numbers in white are overall increases. As described in the FEIS, only the annual PM emissions increase over that period.

The revised spreadsheet indicates a very slight increase in the emission estimates compared to the FEIS calculations. This is due to the fact that the FEIS used a 15% increase in boating activity for
every 10 years (based on indicated boating trends described in the DEIS), instead of a 1.5\% increase each year. Revised calculations to account for an annual 1.5\% increase, including compounding, results in a minor increase in activity and corresponding emission results.
Lake Tahoe 2004

Boating Emissions Analysis for Shorezone EIS

<table>
<thead>
<tr>
<th>Watercraft Type</th>
<th>Engine Type</th>
<th>TRPA Assumptions</th>
<th>Avg. hp 2000</th>
<th>Avg. Load Factor (%)</th>
<th>Yearly Trips (2004 #s)</th>
<th>Avg. hrs/trip</th>
<th>Hours/Year</th>
<th>HC</th>
<th>NOx</th>
<th>CO</th>
<th>PM</th>
<th>HC</th>
<th>NOx</th>
<th>CO</th>
<th>PM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outboard</td>
<td>G2 FI</td>
<td>Use CARB 2007 fuel #</td>
<td>120</td>
<td>32</td>
<td>5,488</td>
<td>4</td>
<td>21,906</td>
<td>21.9</td>
<td>6.31</td>
<td>43.5</td>
<td>7.1</td>
<td>20.335</td>
<td>5.859</td>
<td>40.381</td>
<td>6.563</td>
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<tr>
<td>Inboard/Outboard</td>
<td>G2 FI</td>
<td>2007 PWC</td>
<td>185</td>
<td>21</td>
<td>1,073</td>
<td>4</td>
<td>4,052</td>
<td>21.03</td>
<td>7.19</td>
<td>38.41</td>
<td>6.9</td>
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<td>1,247</td>
<td>6,859</td>
<td>1,196</td>
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<tr>
<td>Inboard</td>
<td>G4 FI</td>
<td>Assume same as G4</td>
<td>250</td>
<td>21</td>
<td>45,808</td>
<td>4</td>
<td>163,232</td>
<td>6.03</td>
<td>134.8</td>
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<tr>
<td>Outboard</td>
<td>G4 FI</td>
<td>Assume same as G4</td>
<td>36</td>
<td>32</td>
<td>9,751</td>
<td>4</td>
<td>36,844</td>
<td>5.82</td>
<td>155.8</td>
<td>0.07</td>
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<td>Inboard/Outboard</td>
<td>G4 FI</td>
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<td>185</td>
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<td>0.992</td>
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</tbody>
</table>

Notes:
- *Source = JD Fransz 2002
- *Source = CARB 06/06
- *Source = TRPA
- Charles Emmett (TRPA)

* Notes:
- Gasoline 2-stroke
- Gasoline 4-stroke
- Fuel injection

2004 Totals
- 233,210 Emissions
- 875,431

2024 Totals
- 312,753 Emissions
- 1,179,079

Delta Change
- 80,543
- 303,648

1 ton = 2000lbs

Usage is much greater than the Hagglere Bailly report for some years.
## Lake Tahoe 2014

### Boating Emissions Analysis for Shorezone EIS

**Updated**: 1/12/2007  
**Base Year**: 2014

Yearly trips were grew by 1.5% annually from the 2004 base year

<table>
<thead>
<tr>
<th>Watercraft Type</th>
<th>Engine Type</th>
<th>TRPA Assumptions</th>
<th>Avg. hp 2000</th>
<th>Avg. Load Factor (%)</th>
<th>Yearly Trips (2004#'s x 1.5% annually increase)</th>
<th>Avg. hrs/trip</th>
<th>Hours/Year</th>
<th>HC</th>
<th>NOx</th>
<th>CO</th>
<th>PM</th>
<th>Emission Factors (g/hp-yr)</th>
<th>Emissions in Tons/Year</th>
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<tbody>
<tr>
<td>Inboard</td>
<td>G2 FI</td>
<td>2040 PWC</td>
<td>250</td>
<td>21</td>
<td>13,720</td>
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| **Total** | **269,489** | **1,015,973** | **184,327** | **156,22** | **3652.391** | **72.229** |

**G2** = Gasoline 2-stroke  
**G4** = Gasoline 4-stroke  
**D** = Directly from CARB

*Source = JD Fransz 2002  
*Source = CARB 2006  
*Source = TRPA

1 ton = 2000 lbs

---

5
## Lake Tahoe 2024

### Boating Emissions Analysis for Shorezone EIS

**Updated:** 1/12/2007  
**Base Year:** 2024  
Yearly trips were grew by 1.5% annually from the 2004 base year

<table>
<thead>
<tr>
<th>Watercraft Type</th>
<th>Engine Type</th>
<th>TRPA Assumptions</th>
<th>Avg. hp 2000</th>
<th>Avg. Load Factor (%)</th>
<th>Yearly Trips (2004#'s x 1.5% annually increase)</th>
<th>Avg. hrs/trip</th>
<th>HC NOx CO PM</th>
<th>HC NOx CO PM</th>
<th>Emission Factors (g/hp)</th>
<th>Emissions in Tons/Day</th>
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</thead>
<tbody>
<tr>
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<td>3.32</td>
<td>16.48</td>
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</table>

**TRPA Assumptions**

- Avg. hp: 2000
- Avg. Load Factor (%): 1.5%
- Yearly trips: 2004 #'s x 1.5% annually increase
- Avg. hrs/trip: 28,660
- HC: 9.02
- NOx: 3.32
- CO: 16.48
- PM: 6.9

**Engine Assumptions**

- G2 = Gasoline 2-stroke
- G4 = Gasoline 4-stroke
- FI = Fuel injection

**Emission Factors (g/hp) and Emissions in Tons/Day**

- Jetboard: 15,525 g/hp, 17,770 tons/day
- Inboard/Outboard: 5,407 g/hp, 2,106 tons/day

**Source:** JD Fransz 2002  
**Source:** CARB 06/06 David Chou  
**Source:** TRPA Charles Emmett

1 ton = 2000lbs
Buoy Fees Fact Sheet

For nearly 20 years, the Tahoe Basin community has disagreed about the regulations affecting the construction of piers, buoys and other shorezone-related issues. The Tahoe Regional Planning Agency’s proposed shorezone program is the best attempt to find middle ground on the controversial issue while protecting Lake Tahoe, according to Agency officials.

Many questions have arisen on buoy fees and the rationale behind the proposed fees in Alternative 6A, which is the proposed program option. All littoral (lakefront) property owners are eligible to apply for two buoys, per existing precedence established by the Army Corps of Engineers. Here are the facts on fees and how they have been calculated.

Under the proposed program, all non-TRPA permitted buoys would pay a $500 application fee to get an initial TRPA permit. Funds would be used only to pay for the administrative costs of permitting.

For the second buoy, an additional $1,000 would be charged—a $500 application fee and $500 to fund a new buoy enforcement program. The program costs include substantial start-up expenses. These costs have been estimated as follows:

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
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</thead>
<tbody>
<tr>
<td>Boat lease:</td>
<td>$21,717/yr</td>
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<tr>
<td>Watercraft staff and crew</td>
<td>$162,653/yr including benefits</td>
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<tr>
<td>Administrative staff</td>
<td>$37,276/yr</td>
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<tr>
<td>Boat slip</td>
<td>$6,000/yr</td>
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<td>Fuel</td>
<td>$8,000/yr</td>
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<tr>
<td>Public outreach</td>
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<tr>
<td>TOTAL</td>
<td>$285,646</td>
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Estimates indicate that 1,000 lakefront owners will either have a second buoy or boat lift currently not permitted by TRPA. At $500 per buoy, $500,000 could be generated to support the buoy enforcement program. We currently anticipate a 2-year period (2007-2008) during which buoys would be permitted. The annual costs to maintain the enforcement program include all expenses outlined above (less the initial public outreach costs) plus an annual expense of $10,000 for maintenance and equipment, bringing the two-year cost to approximately $530,000.

**Annual Fees**

Annual fees for every buoy in the lake would be $175 and would begin in 2009. This fee will likely be collected on a bi-annual basis so that buoy owners can submit the required bi-annual buoy chain inspection certification. This fee can be adjusted to include the State buoy permitting fees if we achieve the “one-stop shop” approach that we desire for the convenience of the public.

**Where the Money Goes From Buoy Fees**

- Watercraft and buoy enforcement and monitoring program.
- Water quality monitoring program.
• Shorezone Environmental Improvement Program (for the estimated 5,826 buoys already accounted for in the Regional Plan evaluation of environmental impacts) or into the Lake Tahoe Public Access Fund (for any new buoys over the 5,826).

Assuming 6,000 buoys are permitted going forward, estimated revenue projections are at $1,050,000 annually. The distribution of funds are planned as follows:

• Buoy enforcement program - estimated to cost $245,000 annually

• Water quality monitoring program - estimated to cost $164,000 annually

• High priority Shorezone EIP projects listed in Appendix 6 of the final environmental document. These high priority shorezone EIP projects will be updated in collaboration with TRPA's EIP partner agencies, and made part of the EIP Update scheduled for release in July 2007. Any additional funds associated with new buoys could go into the new Public Access Fund and would be subject to the conditions described for that program.
SECTION F

HABITAT MITIGATION FOR PROJECTS IN LITTORAL SPAWNING HABITAT
Habitat Mitigation for Projects in Littoral Spawning Habitat

Introduction

Currently, the TRPA Code of Ordinances prohibits the placement of new piers, boat ramps, mooring buoys, or floating docks or platform in areas identified on the TRPA Prime Fish Habitat Map as “Feeding and/or Escape Cover habitat” and “Spawning Habitat”. Chapter 54 of the current Code of Ordinance states that TRPA shall reconsider the location standards for these structures once a fish study assessing construction and use impacts on fish habitat and spawning areas has been completed.

The “Fish Study” was conducted in four phases. The “Fish Study” identified the substrates that provide littoral spawning habitat to be the most limited in the Shorezone of Lake Tahoe. The study found that the construction of and the activity associated with open pile piers, mooring buoys, and floating docks and platforms had neither a positive or negative effect on fish. Open pile piers create small areas of actual physical disturbance or unavailable habitat (the area of each pile is approximately 1 square foot), and habitat is available between each pile. The study concluded that the environmental impacts of open pile piers can be mitigated and that mitigation would compensate for the loss of available habitat.

The proposed Code of Ordinance identifies in Subsection 54.13.C a $5,000 fish spawning habitat mitigation fee for any project that adds, modifies, or expands a pier in spawning habitat to fund fish habitat restoration projects in the Shorezone. In addition, Subsection 54.4.F states that all projects located in spawning habitat shall do one of the following:

- Replacement of “in-kind” gravels at 1.5 to 1, or
- Restoration and /or enhancement of spawning habitat, where appropriate, at 1.5 to 1, or
- Fund a portion of a spawning habitat restoration and /enhancement project at a rate of 1.5 to 1.

Objective

Under the proposed Shorezone Program (Alternative 6A) the construction of additional structures and the expansion and modification of an existing pier that would displace littoral fish spawning habitat will require that habitat loss be restored at 1.5:1. It is the objective of this mitigation strategy to mitigate for the loss of spawning habitat availability and make progress towards littoral spawning habitat threshold goals.

Staff has reviewed this program again based on comments from other agencies and stakeholders and is proposing changes to the mitigation fund to provide more equity (the program is based on the actual amount of area disturbed or made unavailable for spawning), more easily understood (all projects in spawning habitat mitigate on a square foot basis instead of mixing the two strategies of Subsection 54.13.C and 54.4.F), and the tracking of available mitigation funds for restoration projects will be streamlined.

Methodology

Initial cost estimates for littoral zone habitat mitigation were solicited from Basin agencies and private consultants. Estimates for habitat restoration were broken down into three components; labor and materials, monitoring, and project planning and design to facilitate proper calculation. Estimates for restoration costs may change as more data is incorporated into this preliminary
analysis. However, monitoring and oversight costs are not likely to change based on additional data.

**Labor and Material Estimate:**

Currently the restoration cost estimate for labor and materials is based on a single estimate submitted by a private consultant specializing in shorezone projects. The total cost of the sample project was estimated at $25,500 for 1500 sq/ft of restoration, or $17.00 per sq/ft. Because this estimate is based on a single project, this estimate is likely to underestimate the costs per sq/ft on smaller projects and those requiring underwater restoration, as these project will require more base logistical cost per square foot restored. A doubling of per square foot cost is a reasonable estimate which results in a cost of $35 per sq/ft. Because disturbance in spawning habitat is mitigated at 1.5:1, the per square foot cost of $35 is multiplied by 1.5 to produce the final cost per square foot of spawning habitat disturbed. Based on the above analysis, the estimate for labor and materials is $52.50 per sq/ft disturbed for spawning habitat in 2006 dollars. As indicated above, this cost estimate may be refined as the costs for additional projects become available.

**Monitoring Estimate:**

The cost estimate for restoration monitoring is based on information obtained from the U.S. Forest Service, and two private consultants. These cost estimates were based on 4 years of monitoring (one year pre-project and three years post project). The square footage surveyed in the estimates varied in that Consultant A based costs on 3000 sq/ft of survey area and the USFS and Consultant B based costs on 30,000 sq/ft. The monitoring methodologies used and subsequently the person-hours required in each estimate also varied, with the USFS and Consultant B using equivalent methodologies and Consultant A using less labor intensive methods.

Monitoring of restoration projects is difficult to break down to a per sq/ft cost. As only large changes in area (such as the ten fold increase in the above estimates) are likely to increase costs. Based on the data from the USFS and consultants, cost for the average pier would be between $40,000 and $50,000 or between $2 and $13 per sq/ft depending on methodologies used. This cost would be able to be more accurately established once a littoral project monitoring protocol is developed and accepted Basin wide and will most likely trend toward the $13 figure. Because disturbance in spawning habitat requires a 1.5:1 mitigation the $13 figure is multiplied by 1.5 to produce the final mitigation cost. Based on the above methods, mitigation monitoring would cost $19.5 per sq/ft disturbed for spawning habitat in 2006 dollars.

**Project Planning and Design Estimate:**

The cost estimate for project oversight for restoration and monitoring is based on 40% of total project costs. An estimate of 40% of the project cost for planning and design was provided by the USFS. The 2004 draft Shorezone EIS identified 5 top Environmental Improvement Program (EIP) projects for fisheries restoration in the littoral zone totaling $4,799,000, 40% of that figure is $1,919,600. If one divides this figure by 230 piers, the contribution of project to restoration design and planning is approximately $8,346. If one uses 20 sq/ft as the average pier disturbance (150 ft pier), then the planning and design cost per sq/foot disturbed is $417.
Proposed Mitigation Fee:

To produce the mitigation cost for projects in littoral spawning habitat one must total the per square foot costs for labor and materials, monitoring, and design and planning. The calculation for mitigation cost per square foot disturbed is shown in Appendix Table 1. The resulting total mitigation fee for disturbance in littoral spawning habitat is $482.50 per square foot of disturbance. For a 150 foot pier and the resulting 20 sq/ft of disturbance, the total mitigation fee would be $9,650.

<table>
<thead>
<tr>
<th>Cost Element</th>
<th>Per Square foot Disturbed Cost</th>
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<tbody>
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<td>Labor and Materials</td>
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<tr>
<td>Monitoring</td>
<td>$13.00</td>
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<td>Project Planning and Design</td>
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<tr>
<td><strong>Total Mitigation Cost</strong></td>
<td><strong>$482.50</strong></td>
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</table>

Mitigation Costs Comparison:

There are two important comparisons to be made, one between this fee structure and the private share of the EIP, and another between this fee structure and the initially proposed structure.

To compare with the EIP private share, if one first uses 20 sq/ft as the average pier disturbance, and multiplies by 220 private piers there is likely to be 4,400 sq/ft of disturbance. If one then multiplies by $482.50 the total contribution to mitigation will be $2,123,000. The identified private share of the cost for the top 5 projects is 55.73% of $4,799,000 or $2,674,483. The total contribution to identified littoral EIP projects does not exceed the private share.

To compare this fee structure with the initial proposed mitigation fee structure one needs to compare the cost of a 50, 150, and 300 foot piers under each alternative structure, assuming that all pilings are within spawning habitat.

A 50 ft pier is likely to result in 6.5 sq/ft of disturbance and under the proposed fee structure would require $3136 in mitigation fees. A 150 foot pier as indicated above is likely to generate $9,650 in mitigation fees under the proposed fee structure, and a multiple-use 300 ft pier would result in 40 sq/ft of disturbance and cost $19,300 in mitigation fees under the new structure. Under the initial mitigation fee structure these piers would require a $5,000 base fee plus 1:1.5 mitigation of area disturbed without a per square foot cost. The assigning of a per sq/ft cost makes this new proposed fee structure more understandable to applicants, equitable, and makes it easier to track mitigation for individual projects.
Lake Tahoe Shorezone Continual Improvement and Adaptive Management Framework

Introduction

The proposed Shorezone Ordinance Amendments are a comprehensive body of policy intended to guide development in the Shorezone of Lake Tahoe over the next 22-years. With such a long planning horizon, the mitigation programs identified in the EIS are intended to be flexible enough to adapt to changing conditions. Changes in the natural environment (water quality, air quality, species composition); new or modified federal, state, and local regulations (emission air quality thresholds, TMDL implementation); improvements in technology (cleaner fuels and boat engines, monitoring precision, laboratory techniques), and other changes over time will influence what actions TRPA and/or its partner agencies will take to maintain and improve the quality of the environment.

This paper explains what TRPA means by “adaptive management” vis-à-vis the proposed mitigation programs, describes why it appears in the Shorezone EIS, describes how continual improvement and adaptive management will be conducted in the context of the Shorezone plan and notes the next steps planned in fully developing the Shorezone Management System Implementation plan.

Incorporating Continual Improvement and Adaptive Management into the operations of the Shorezone Plan indicates TRPA’s commitment to continuing to improve our understanding of the natural and human systems within the Shorezone ecosystem, to seek continuous improvement of the Shorezone Plan based upon new scientific or technical information as it’s developed and to recognize the uncertainty inherent in some of the proposed management actions/policies and TRPA’s commitment to reducing that uncertainty through monitoring, scientific inquiry, and adaptation.

Continual Improvement Management Cycle

At the core of the Adaptive Management System as it is developing is a continual improvement management cycle characterized by the following four steps:

- **Plan** — identify and analyze the problem to be addressed
- **Do** — develop and implement solutions
- **Check** — evaluate the results of the implemented solution
- **Act** — adopt and adjust the solution

The role of the Adaptive Management System will coordinate and implement these agency activities to accomplish the performance goals of the Shorezone Program. Implementation of continuous improvement will close the information loop by presenting relevant new or collected, information to managers and decision makers in a timeframe and format that will inform those regarding future decisions.
Adaptive Management

The working definition of Adaptive Management is the following:

Adaptive management incorporates research into actions. Specifically, it is the integration of design, management and monitoring to systematically test assumptions in order to adapt and learn.¹

The System is designed so that the best available knowledge will systematically inform planning and management activities. Adaptive management is ultimately dependent upon the ability of institutions to integrate new information into management decisions and approaches².

Reflecting the need to generate, document, and use new information, the key elements of the Shorezone Adaptive Management System will be:

- **Explicit documentation of conceptual models** that describe relationships between drivers, pressures and management activities on the system of interest. Numeric models can numerically represent these system dynamics, and should be described in a manner that makes assumptions explicit.

- **Testing assumptions** by systematically implementing actions based on well-researched hypotheses and monitoring actual results.

- **Sustained and focused monitoring** that addresses targeted questions (Boesch, Manley & Melis 2006), as well as monitoring of implementation success and resource conditions.

- **Structured information flow resulting in recommendations** that are delivered in context and utilize terms meaningful to management decision makers. A reporting and recommendation development schedule can help provide timely input into decision making.

- **Adapting management and monitoring approaches** based on analysis of monitoring results and research findings, and changing assumptions and plans to reflect new information.

- **Learning** through methodical documentation of processes to avoid repeating mistakes and to encourage information transmittal.

The degree of adaptive management to be employed will depend upon the level of concern and uncertainty related to specific management decisions. Those management decisions made relating to topics of high concern and low certainty will most benefit from active adaptive management. The figure below describes a potential management system cycle that relates continual improvement to adaptive management and provides a mechanism for both types of information to inform management decisions. Continual improvement activities include tracking and reviewing whether projects have been implemented as planned and if these projects are expected to have significant benefit as built. Results from periodic 5-year Threshold review that is conducted on a basin-wide basis will also inform management decisions about mitigation enhancements. Adaptive management investigations are employed to reduce uncertainty

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¹ Adaptive Management: A Tool for Conservation Practitioners, Salafsky, Margoluis and Redford.
² USFS Sierra Nevada forest Plan Amendment
related to the current understanding of the system and to test the effectiveness of different implementation options.

The purpose of the Shorezone Continuous Improvement and Adaptive Management framework is to identify the steps and processes necessary to detect environmental change, report annually and respond in a timely manner to the changing conditions, social objectives, and new information. Being able to detect change or differences in the system responses to the implementation of the Shorezone Plan is a function of three correlated factors:

- The expected baseline variability of the indicators
- The strength of the response being measured
- The effectiveness of the Shorezone Monitoring Plan and sampling design to detect the change in the response that is significantly different from the natural variability

This framework will provide needed feedback for long-term improvement of environmental thresholds related to the Shorezone Plan. It is an iterative and deliberate process of applying

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3 This diagram is based on the adaptive management cycle used by CALFED (Healey, et al., 2004).
principles of scientific investigation to reduce any key uncertainties. With greater understanding of the shorezone ecosystem, TRPA can constantly refine the Shorezone Plan and the Shorezone Monitoring Plan Objectives.

**Management Questions and Shorezone Monitoring Plan Objectives**

The environmental impacts have been evaluated in the Final Environmental Impact Statement for the Shorezone Ordinance Amendments. The following related management questions will be continually addressed by both the Shorezone Monitoring Plan and the Shorezone Continual Improvement and Adaptive Management Framework:

**Water Quality:**

1. Does increased boat traffic over time, assume partially due to additional shoreline structures (mooring), have the potential to add pollution and unwanted discharge into Lake Tahoe?

2. Do bacteria from spills and holding tank discharges adversely affect water quality and public drinking water supplies?

3. Does the increase in boating traffic and additional shoreline structures adversely impact the accumulation and toxicity levels for PAH and Phosphorus in sediment? Can these impacts be mitigated utilizing accepted restoration techniques?

4. Does the increase in boating traffic and additional shoreline structures adversely impact the accumulation of contaminants (NO₂, NOx, Particulate Matter (PM) and Hydrocarbons in Lake Tahoe? Can these impacts be mitigated utilizing accepted restoration techniques?

**Air Quality:**

1. Does the increase in boat traffic over time, assumed due to additional shoreline structures (moorings) have the potential to add air pollution to the Lake Tahoe Region air-shed?

2. What impacts will the proposed actions have directly on TRPA’s Air Quality thresholds attainment status? Can these impacts be mitigated utilizing accepted restoration techniques?

**Scenic:**

1. Does the increase in shoreline structures (moorings) adversely impact the Scenic Threshold for Travel Route Ratings for Lake Tahoe Shoreline? Can these impacts be mitigated utilizing accepted restoration techniques?

**Noise:**

1. Does the increase in boating traffic and additional shoreline structures (moorings) increase noise levels along the shoreline? Can these impacts be mitigated utilizing accepted techniques?

2. Do the increased noise levels in the Shorezone adversely impact fish in their spawning habitat?

3. Do the increased noise levels in the Shorezone adversely impact terrestrials?
Exotic Species:

1. Does increased boat traffic over time and additional shoreline structures (moorings) have the potential to add/increase invasive weeds (milfoil, pondweed) in the nearshore of Lake Tahoe?

2. Does increased boat traffic over time and additional shoreline structures (moorings) have the potential to add/increase exotic terrestrial species into Lake Tahoe?

Fisheries:

1. Does increase additional shoreline structures (piers and buoys) have the potential to have long term adverse impacts to the non-degradation standard of fish habitat (feed and cover, spawning)? Can these impacts be mitigated utilizing accepted restoration techniques?

Monitoring Objectives/Performance Measures

Developed monitoring objectives and performance measures will help identify through monitoring and measuring techniques whether significant environmental impacts have occurred. TRPA developed the present monitoring objectives and performance measures with the best available science and information. Using the Shorezone adaptive management framework, these monitoring objectives and performance measures will be refined as new information and tools become available; therefore, this is a ‘living document’ and will be updated annually to reflect the best available science, measurements, tools and information. The table below summarizes the monitoring objectives and performance measures relied on presently to assess the success of the Shorezone Program. The Mitigation Implementation and Monitoring Program concept paper provides a more comprehensive look at the monitoring objectives and performance measures as they relate to TRPA Environmental Threshold Carrying Capacities and provides a general description of how these measures will be used.

<table>
<thead>
<tr>
<th>Threshold</th>
<th>Issue</th>
<th>Monitoring Objectives</th>
<th>Performance Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Quality-</td>
<td>Ozone</td>
<td>Meet TRPA and CARB/EPA regulatory standards for all; establish potential air deposition for particulate; long term trend for regional visibility</td>
<td>Not to exceed .08 ppm in an 8 hour period.</td>
</tr>
<tr>
<td>Emissions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air Quality-</td>
<td>Nitrates (NO₂) and NOₓ</td>
<td>Reduction in direct DIN load on Lake Tahoe from atmospheric sources by approximately 20 percent of the 1973-1981 annual average.</td>
<td>No TRPA standard at this time, relates to deposition and loading for lake clarity</td>
</tr>
<tr>
<td>Emissions</td>
<td>Carbon Monoxide (CO)</td>
<td>Meet TRPA and EPA health based standard regulatory standard</td>
<td>Not to exceed 6 ppm in an 8 hour period.</td>
</tr>
<tr>
<td>Air Quality-</td>
<td>Particulate Matter (PM₂₀ and PM₁₀)</td>
<td>Reduction in direct DIN load on Lake Tahoe from atmospheric sources by approximately 20 percent of the 1973-1981 annual average.</td>
<td>California standard for PM₁₀ = 20 µg/m³ annual arithmetic mean; PM₂₀ = 12 µg/m³ annual arithmetic mean</td>
</tr>
<tr>
<td>Emissions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Threshold</strong></td>
<td><strong>Issue</strong></td>
<td><strong>Monitoring Objectives</strong></td>
<td><strong>Performance Measures</strong></td>
</tr>
<tr>
<td>---------------</td>
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</tr>
<tr>
<td>Water Quality</td>
<td>NEARSHORE TURBIDITY</td>
<td>Decrease sediment load as required to attain turbidity values not to exceed 3 NTU in littoral Lake Tahoe. In addition, turbidity shall not exceed 1 NTU in shallow waters of Lake Tahoe not directly influenced by stream discharges.</td>
<td>Nearshore spring runoff near tributaries not to exceed 1 NTU annual average; .5 NTU lake wide; 20 NTU for dredging and disturbance from localized projects or aquatic taxa removal.</td>
</tr>
<tr>
<td>Water Quality</td>
<td>(BTEX) Hydrocarbons</td>
<td>Long term monitoring for gasoline related by-products in Lake Tahoe and other water bodies as needed. No long term negative trend to maintain ONRW status baseline from 2002 sampling season.</td>
<td>Maintain human health and drinking water standards, 1 ppb for benzene, 150 ppb for toluene.</td>
</tr>
<tr>
<td>Water Quality</td>
<td>Bacteria (fecal and E-coli)</td>
<td>Maintain EPA and state discharge standards for human health and beneficial recreational uses. The CA Fecal standard is 20 counts per 100 ml in any 30 day period. E-Coli ??</td>
<td>Fecal CA standard 20 counts per 100 ml in any 30 day period. E-Coli</td>
</tr>
<tr>
<td>Water Quality</td>
<td>Pelagic Lake Tahoe Winter Clarity Nutrients</td>
<td>Average Secchi depth, December-March, shall not be less than 33.4 meters, California: Secchi disk transparency shall not be decreased below levels recorded in 1967-71 based on a comparison of seasonal and annual mean values.</td>
<td>Achieve baseline nutrient levels recorded 1967-71.</td>
</tr>
<tr>
<td>Fisheries</td>
<td>Lake Habitat</td>
<td>Establish lake habitat existing condition and maintain non-degradation for fish habitat (feed and cover, spawning)</td>
<td>TRPA Threshold attainment and Non degradation</td>
</tr>
<tr>
<td>Fisheries</td>
<td>Pre/Post Project Assessments</td>
<td>Non-degradation standard applies to fish habitat in Lake Tahoe.</td>
<td>TRPA Threshold attainment and Non degradation</td>
</tr>
<tr>
<td>Invasive Species</td>
<td>Aquatic Weeds</td>
<td>Ongoing monitoring to track invasive weeds (milfoil, pondweed) in the nearshore of Lake Tahoe. Surveys then used to prioritize and coordinate removal actions, and to develop management strategies and control mechanisms.</td>
<td>Control and/or eradication of invasive taxa</td>
</tr>
<tr>
<td>Invasive Species</td>
<td>Aquatic Taxa</td>
<td>The monitoring program has not yet been developed for aquatic taxa outside of invasive weeds. A plan would consist of annual or semi-</td>
<td>Control and/or eradication of invasive taxa</td>
</tr>
<tr>
<td>Threshold</td>
<td>Issue</td>
<td>Monitoring Objectives</td>
<td>Performance Measures</td>
</tr>
<tr>
<td>-----------------</td>
<td>----------------------------</td>
<td>--------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Noise</td>
<td>Shoreline Noise</td>
<td>annual lake-wide inspections of the near shore environment for exotics (zebra and/or quagga mussels), or other taxa as needed.</td>
<td></td>
</tr>
<tr>
<td>Noise</td>
<td>Impact on Fisheries</td>
<td>Watercraft noise is set at the Preferred Speech Interference Level (PSIL) criteria used to establish the 600 ft. no wake zone adopted in 1997.</td>
<td>Various consultants have been contracted by other agencies (USFS, NDOW) to measure snowmobiles and watercraft. No set protocol has been adopted.</td>
</tr>
<tr>
<td>Noise</td>
<td>Impact on Terrestrials</td>
<td>Any single-event noise measurement made with a Type I sound level meter using the A-weighting and &quot;slow&quot; response pursuant to applicable manufacturer's instructions, except that for sounds of a duration of two seconds or less, the &quot;fast&quot; response shall be used.</td>
<td>TRPA Threshold attainment and Non degradation</td>
</tr>
<tr>
<td>Scenic Resources</td>
<td>Shoreline Travel Route</td>
<td>Community noise equivalent levels (CNEls) calculated pursuant to the Code, Section 23.4, listed in Compliance Measures.</td>
<td>TRPA Threshold attainment and Non degradation</td>
</tr>
<tr>
<td>Scenic Resources</td>
<td>Photo Monitoring and</td>
<td>Scenic quality rating as measured by a unitless total score of relative scenic quality of 184 specific scenic resources visible from Lake Tahoe looking toward the shoreline.</td>
<td>TRPA Threshold attainment and Non degradation</td>
</tr>
</tbody>
</table>

TRPA is mandated under the Tahoe Regional Planning Compact to attain and maintain environmental threshold carrying capacities, and pursuant to the Regional Plan Goals and Policies, to conduct a comprehensive threshold evaluation every five years. The evaluation assesses whether each threshold is being achieved and/or maintained, makes specific recommendations to address any identified issues, and directs general planning efforts for the next 5-year period.

With provisions for annual monitoring and reporting to the Governing Board, in conjunction with the comprehensive threshold evaluation that occurs every five years, TRPA has in place ample safeguards to assess the status of the lake for all environmental thresholds, and to adjust elements of the mitigation programs or the Shorezone plan itself, if necessary, to adhere to its environmental commitments and achieve or exceed identified performance standards.
Specifically, TRPA will evaluate the data and information collected through monitoring data and information gathered the previous year. Successful adaptive management depends on collectively evaluating the effectiveness of our mitigation programs and management activities in moving the Shorezone Plan forward while maintaining and attaining TRPA Environmental Thresholds. TRPA will evaluate the Shorezone Monitoring Program, mitigations implemented and provide an overview of the resource condition and trends as related to the performance indicators and standards described above.

Mitigation Program and Adaptive Management Examples Demonstrate the Rigor of the Approach

Potential impacts identified in the EIS that identify adaptive management as an information feedback mechanism for long-term program success include fisheries, water quality, scenic, air quality, and noise. Examples of adaptive management to address Fisheries are provided for illustrative purposes.

**Fisheries Habitat Example**

- Non Degradation of Littoral Fish Habitat
- Conceptual Model Cause and Effect
- Mitigation Program Goals

**Mitigation Program Goals**

1. Remove 1.5 replaced

**Conceptual Model**

- Cause and Effect
- Implement Pier Projects
- Conduct Research
- Identify Targeted Research
- Develop Hypotheses and Testing Approach
- Assess Implications of New Information & Develop Recommendations
- Adapt
  - Refine Restoration Plan
  - Refine Monitoring Plan/Methodologies
  - Revise Mitigation Goals
  - Revise Project List & Selection

**Steps to Develop and Implement an Adaptive Management System For the Shorezone plan**

While significant detailed analysis has been completed related to the Shorezone EIS, in order to systematically implement adaptive management this information must be arranged in a manner
that will inform ongoing decision making. The following steps could be completed in approximately a 12 month timeframe.

**Step 1: Clearly Articulate Goals**
Shorezone planning has been based on achieving several goals, including maintaining Thresholds. The goals will be what drives management decisions and will be recorded so that the continuous improvement and adaptive management process can be further designed to support these goals.

**Step 2a: Develop a Shorezone System diagram**
Dozens of factors interact to influence the physical, biological and aesthetic condition of the Shorezone. Management decisions are made based on assumptions of how these interactions relate, and the assumptions will be made explicit by developing a system diagram, or conceptual model. The model will assist by:

- Making implied assumptions explicit and open to review and discussion
- Allowing those assumptions that have not been well supported through scientific study or experience to be identified as uncertain and systematically tested through targeted monitoring and research

The existing Shorezone analysis efforts have identified many of the linkages within the system. By putting them on a single diagram, they can be used as a point of reference that will assist in directing discussions and decision making.

The system diagram will be developed with the opportunity for scientific reviewers to review and iterate drafts until a sufficient level of agreement is achieved to gain its acceptance.

**Step 2b: Develop process steps and identify roles in the continuous improvement and adaptive management process.**
Continuous improvement and adaptive management are practices that require focused effort. Specific responsible parties, timeframes and actions will be identified related to Shorezone issues. Resource allocations will be planned into agency budgets and agreements developed between stakeholder agencies and with the scientific community before adaptive management will be implemented.

**Step 3: Develop a management plan in relationship to the system diagram**
The Shorezone EIS has already analyzed and committed to many management alternatives and mitigation measures. These would be periodically reviewed and shown in relationship to the system diagram developed in Step 2a. Building out the system diagram to show how management actions relate may identify new opportunities for additional or improved mitigation measures and will communicate how a particular management activity is linked to achieving the performance standards (e.g., thresholds or nondegradation). Further, certain management activities with uncertain effectiveness can be identified for focused monitoring and research.

**Step 4: Identify indicators and develop a monitoring plan.**
Again, the existing Shorezone EIS analysis has already identified indicators and monitoring activities. These should be reviewed and potentially revised with the assistance of the system diagram. The system diagram will assist in identifying points in the system that will be more important to measure than others for understanding the progress towards achieving goals.
(status and trend indicators) as well as for monitoring the effectiveness of management activities.

**Step 5: Implement continuous improvement and adaptive management process**
Staff resources, data infrastructures and management support will be required to implement the continuous improvement and adaptive management process. The first annual and five-year cycles should be seen as beta test runs of the system that will require significant attention. Following the completion of this first cycle, the processes would be reviewed and modified with the expectation of improving efficiency and results from the process in subsequent cycles.
SECTION H

PUBLIC ACCESS MITIGATION FEE FOR PIER EXPANSION
Public Access Mitigation Fee for Pier Expansion

The California State Lands Commission expressed concern about reduced water-side public access from expansion of existing piers. TRPA is addressing this valid concern by proposing a mitigation fee that is consistent with that required for new piers. As with new piers, the fee would be contributed to the Lake Tahoe Public Access Fund (LTPAF).

Recommended Methodology

The rationale for the pier expansion mitigation fee is akin to the nexus for the new pier mitigation fee. The basis for the mitigation is that pier construction impairs public recreational access along the lake. To mitigate the creation of a pier structure, an equivalent amount should be removed. In the event that this direct mitigation is not possible, a fee is applied which equates to the cost of removal. The fee represents the cost to create equivalent recreational access elsewhere.

The table below contains the costs of pier removal, which were collected from local contractors. The total pier removal cost is based on the maximum pier construction dimensions allowed under the new Shorezone Ordinances. This total fee amount is expressed as a cost per square foot so the mitigation fee for pier expansion will be based on the areal extent of the expansion.

<table>
<thead>
<tr>
<th>Table 1. Pier Mitigation Fee Calculation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unit Costs</strong></td>
</tr>
<tr>
<td>Labor $300/hr</td>
</tr>
<tr>
<td>Piling Crew $600/hr</td>
</tr>
<tr>
<td>Machinery $300/hr</td>
</tr>
<tr>
<td>Trucking $100/hr</td>
</tr>
<tr>
<td>Disposal $12/cubic</td>
</tr>
<tr>
<td>Land $7,900/linear ft</td>
</tr>
<tr>
<td><strong>Pier Removal Cost:</strong></td>
</tr>
<tr>
<td>Item</td>
</tr>
<tr>
<td>Walk-way</td>
</tr>
<tr>
<td>Pier head:</td>
</tr>
<tr>
<td><strong>Total Pier Removal</strong></td>
</tr>
<tr>
<td><strong>Expansion Mitigation Fee (per square foot)</strong></td>
</tr>
</tbody>
</table>

Example:
A current shoreline property owner has an existing pier which they would like to extend. The current piers dimensions are 100ft x 6ft with a 30ft x 10ft pier head. The expansion will be to the maximum allowable 120ft x 6ft with a 30ft x 10ft pier head. The recreational access mitigation fee applied to the expansion is

\[ 120\text{ft x 6ft} = 720 \text{ square feet} \]
\[ 100\text{ft x 6ft} = 600 \text{ square feet} \]
\[ = 120 \text{ square feet of pier expansion} \]

Mitigation Fee = 120 sqft of expansion x $20 mitigation fee
\[ = $2,400 \text{ recreational access mitigation fee} \]
Alternative Proposals

Several alternative proposals were suggested, but as shown below there are short comings to these methodologies.

Alternative 1: Update of Existing Fee

There currently exists a $30 per linear foot mitigation fee for new and expanded pier construction. Alternative 1 suggests an update from 1987 monetary values through a CPI inflation.

Potential Issues

As outlined in Chapter 56 of the code:

56.0 Purpose: The environmental threshold for fisheries includes a management standard requiring restoration of fish habitat in Lake Tahoe as well as a standard for nondegradation of fish habitat in Lake Tahoe. To assist in providing funds for restoration of fish habitat and to mitigate any possible degradation, a fee shall be assessed pursuant to this chapter.

56.1 Applicability: Mitigation fees shall be collected for the new construction and the expansion of piers, boat ramps and marinas.

56.5 Use of Mitigation Fees: Mitigation fees collected pursuant to this chapter shall be used to fund studies assessing existing or potential impacts created by shorezone structures, or methods for achieving restoration within the shorezone, or to fund fish habitat restoration projects.

As the Code states, the purpose of the fee is to mitigate fish habitat disturbance caused by pier, boat ramp and marina construction. Although fees may have previously been used for a number of various EIP/shorezone projects, it should not be used as the basis for the new fee. In addition, the proposed Shorezone Ordinances already include a separate mitigation fee for fish spawning habitat. The LTPAF is a new fund which should not be connected to old fees. It is not recommended that current fees be based on numbers for which justification no longer applies.

Alternative 2: New Pier Fee Basis

A second proposed method for calculating an expansion fee is to simply take the $100,000 mitigation fee proposed for new piers and divide it by 150 feet, the maximum linear footage of a single-use pier.

Potential Issues

As stated in both the original rational and the recommended methodology, the total public access mitigation fee is the sum of demolition costs and shoreline easement. A pier expansion consists of an extension of a current structure. Therefore there is no additional loss of shoreline. Following the rationale for the original mitigation fee, the expansion represents a loss of waterside access and the equivalent cost is the cost of removal. The expansion fee should therefore reflect only the demolition portion as illustrated above. A second point following this rationale is that it should be square footage, not linear. Although it is a small amount by width, a pier extension represents a loss of access both in length from shoreline and width parallel to shoreline.
SECTION I

ANNUAL SHOREZONE REPORT TO THE GOVERNING BOARD
Annual Shorezone Report to the Governing Board

In response to public concerns about the effectiveness of mitigation and the use of fees assessed through the implementation of Alternative 6A, a provision was added to provide an annual report to the TRPA Governing Board. This annual report will (a) describe progress on implementing the various Shorezone programs, (b) identify the fees collected through the program and the projects and programs those fees fund, (c) report the results of various monitoring programs and actions TRPA has taken as a result of that monitoring, and (d) assess the effectiveness of the environmental protection features provided in the Shorezone ordinances.

The format of the annual report has not yet been determined, and would normally be designed as an implementation feature once the ordinances have been adopted. However, in the interest of disclosing to the public the nature of the annual report, TRPA has proposed an outline of the contents of the report. This may change and evolve as the program is adjusted through adaptive management. But the intent of the report is to give the Governing Board an annual snapshot of progress in meeting thresholds as a result of this program, to identify those environmental protection features that are working as well as those that are not, and to recommend changes to the Shorezone program in response to monitoring results.

Currently, in January of each year, TRPA provides an annual report to the Governing Board on all applications received by the TRPA Branch of Environmental Review Services, the nature of those applications, and the numbers and kinds of permits that are issued. This report will include a breakdown of all types of Shorezone permits issued by TRPA, i.e., piers, buoys, shoreline protective structures, etc., and whether they are expansions or modifications of existing structures, new structures, repairs, replacements, relocations, etc.

In addition, the report will include a Shorezone addendum that addresses the amount of fees collected, how those fees were used, and whether any adjustment to fees are recommended by staff.

Projects and actions
A. Piers
   1. New piers approved – types (public, private, multi- or single use), and locations
   2. Modifications/expansions
   3. QE pier repairs and in-kind replacements
   4. Transfers and relocations
B. Buoys
   1. Number of permits issued and type (private, homeowner association, marina)
   2. Number of grandfathered buoys approved
   3. Number of illegal buoys removed
   4. Total number of buoys in the Lake
C. Other shorezone structures approved by type

Fees collected and use of funds
A. Application fees
B. Annual buoy fees
C. Lake Tahoe Public Access Fund fees
D. Fisheries mitigation fees
E. Blue Boating Program fees

Shorezone monitoring program
A. Water quality monitoring results
B. Numbers and types of boats in Lake Tahoe

Assessment of effectiveness of environmental protections
A. Fisheries mitigation
B. Blue Boating program
C. Speed limits and no-wake zones
D. Status and trend of attainment of thresholds related to Shorezone

TRPA staff recommended actions
SECTION J

PROPOSED CODE AMENDMENTS
TECHNICAL CORRECTIONS AND POLICY CLARIFICATIONS
MEMORANDUM

To: TRPA Governing Board

From: Staff

Date: January 31, 2007

Re: Proposed Shorezone Code Amendments -- Technical Corrections and Policy Clarifications

On January 11 and 12, 2007, TRPA staff held two "test runs" of the proposed Shorezone Amendment Code of Ordinances. Those in attendance identified areas of the Code needing possible clarification and raised suggestions for Code refinements for TRPA's consideration. The clarifications and suggestions raised by commenters are outlined below.

Some items are followed by a "Staff Proposal" for resolution of the comment. Because of the volume of comments and suggestions, not all items presently include a recommended staff resolution. These items are still under consideration and a recommendation will be forthcoming.

This memo focuses on comments received during the Code "test runs." Other comments on Code text have been received from various state agencies, and agency comments and suggestions are also being addressed by staff with Code text edits.

Before the Advisory Planning Commission (APC) meeting on February 14, 2007, staff will transmit to the APC and Governing Board a revision of this memo together with a "redline/strikeout" version of the Shorezone Code Chapters reflecting all staff proposals for text edits to the Code.

I. Typos and Corrections

A. 52.2.C(2)(e): Change reference from 54.4.A to 54.5.A

B. 52.4.D(5): Insert on second line a "the" before "subsections"

C. 54.5.A(c): Insert in heading "and Catwalk" after "Pier"

D. 54.5.D(4): Delete parenthetical after 6225'; Change 6129 to 6219 (do global search and replace for 6129)

E. 54.6.C(3): Change in third line "its" to "it"
F. 54.14.C: Correct the Emerald Bay speed limit from 5mph to 7mph

II. Technical Corrections and Additions to Fill Recognized Gaps

A. 54.4.B(2): A pier relocation raises issues more akin to a new pier than to an existing pier.

   **Staff Proposal:** Add pier relocations to the additional structures section of sub (a) instead of to existing structures of sub (b).

B. 52.4.D: During the Code test run, a gap in the Code was discovered for small buoy fields that may serve a commercial facility, such as Gar Woods or a hotel/motel.

   **Staff Proposal:** Add a Code provision that addresses allowing an appropriately sized buoy field for lakefront commercial/tourist accommodation uses (e.g. Hyatt, motel).

C. 51.2.B: Add charter boat and water taxi service to list of permissible uses in lakezone and shorezone.

   **Staff Proposal:** Yes.

D. 29.2.F: Add a provision in Chapter 29 that requires new shorezone structures to be appropriately set back from historical/cultural artifacts/structures.

   **Staff Proposal:** Yes.

E. 54.4.F (general fish habitat finding): Add a sub (2) that site selection and design is coordinated with appropriate local and state agencies;

   **Staff Proposal:** Yes.

F. 54.4.J (general sensitive plants finding): Add reference to Tahoe Yellow Cress Conservation Strategy in Chapter 75.

   **Staff Proposal:** Yes.

III. Code Clarifications Under Consideration

A. Section 54.5.C(5)(b) allows fences below highwater to water line. California State Lands and the Attorney General's Office have objected to this as a violation on the California side of California law (the public trust).

   **Staff proposal:** Add a provision requiring consultation with and concurrence by a responsible agency or other entity with an interest in public access that might be affected by the proposed project.
B. Non-Conforming Structures.

1. Standards in Sections 54.7.D (removal of nonconforming shorezone structures as condition of approval of shorezone project) and 54.8 (repairs allowed only if structure is made conforming) are too restrictive. The unintended effect may be to discourage necessary repairs, maintenance, or improvement projects generally.

Staff Proposal: Under consideration.

2. There are some structures that meet the current pier definition but will not meet the new definition. Do they become non-conforming structures? Can they be repaired/ replaced in kind or must they be removed? Are they subject to the provisions described above?

Staff Proposal: Under consideration.

3. Jetties/breakwaters: These existing structures are listed as permissible structures in the shorezone Plan Area Statements. The proposed Code provides no design standards for them as no additional such structures are permitted.

Staff Proposal: Under consideration.

C. Section 53.4.A Exempt/Qualified Exempt/Project for Repair/Replacements Criteria (major/minor issue).

1. The current proposed Code uses lakebed disturbance as a criterion to divide projects needing TRPA review from E/QE activities. As drafted, the Executive Director would issue guidance on disturbance levels fitting the QE and E categories for each structure.

Staff Proposal: Modify this provision to make most “in-kind repair and replacement” projects qualified exempt. An in-kind repair/ maintenance project if wholly above the water surface need only meet color criteria. If below water-surface, project is QE as long as applicant calls USA-DIG, does not disturb additional substrate or TYC, and is not in fish spawning habitat.

D. Pier Location and Design.

1. Section 54.5.A(1)(c) 50’ pier separation. At what point(s) is this required separation measured?

Staff Proposal: At the narrowest point between the two structures in navigable water.
2. Section 54.5.A(2) for Private Piers.

   a. Sub (c) Pier length:
      i. The "lesser of" limitation for pier length (150’, elevation 6219, or pier head line) limits piers in shelf areas (primarily westshore) to 150 ft, which some point out may prevent their utility. The same standard may lead to very short unusable pier in deep water because of the 6219 limitation.

         **Staff Proposal:** Under consideration.

      ii. Extra length for multiple use is limited to piers serving 5 or more parcels. Commenters have said this is so restrictive that it will be impossible for a multiple use pier to aggregate that number of parcels, thereby discouraging the multiple use structure entirely.

         **Staff Proposal:** Reduce the aggregation requirement from 5 to 3 parcels in order not to unduly discourage multiple use piers and to provide relief from the 150 foot restriction, where applicable.

   b. Sub (d) Pier head
      i. Pier head is limited to 10x30. Commenters want flexibility to design 300 sq. ft. in any configuration rather than having dimensional limits.

         **Staff Proposal:** Under consideration.

      ii. Pier head length (30’) for multiuse piers will not allow placement of the two allowed 12,000 lbs boat lifts if placed end to end on the same side of the pierhead. Commenters claim it is an issue of boating and navigation safety to force docking on the leeward side if boat lifts must be placed on opposite sides due to dimensional constraints.

         **Staff Proposal:** Under consideration.

   c. Section 54.5.A(3): Unlike private piers, few design standards are specified for public piers. Comment is that the impacts of public piers therefore have not been adequately assessed.
Staff Proposal: Leave this provision as drafted. Public pier projects will be the subject of later site-specific proposals that will undergo additional detailed environmental analysis. Specific design details to minimize environmental effects will be specified as part of the project and will be based on the purpose and need for the public pier.

E. Application for Additional Piers

1. Section 52.3.D Timing of LTPAF fee and BMP certification: $100K and BMP certificate now due w/in 60 days (30-day extension possible) of TRPA’s annual top 10 ranking. Commenters say it is unreasonable to collect up front the $100,000 fee before the applicant knows whether the pier application will ultimately be successfully approved.

   Staff proposal: Revise this Code section to allow the presentation of credible evidence of the availability of the $100,000 LTPAF fee at the time of initial application. Actual payment of the fee would be due and payable at the time of permit acknowledgement.

2. Section 52.3.C(1) How to measure linear lake frontage: TRPA must rank all piers applications according to length of linear lake frontage, and it’s not clear how that measurement will be made.

   Staff Proposal: Staff is contacting licensed surveyors to ascertain an acceptable measurement method relied upon in the industry and will specify the method to be used in the permit application checklist rather than making it a provision of the Code.

3. Section 52.3.C(3) The Code currently states no appeal may be taken from TRPA’s listing of the top ten applications. Commenters say this is unfair.

   Staff proposal: No change to this provision because the application ranking factors are numeric and objective and will be based upon standard methods of measurement that will be certified by a licensed surveyor. There is no staff judgment applied to these numbers, and therefore no appeal would be necessary.

F. Section 54.5.B(1) Buoy Location:

1. Commenters state that the 350 foot limit from shore is too limiting in some locations and flexibility should be allowed. As drafted, the Code limits private buoys to placement no greater than 350 feet offshore, except during low water conditions when they may be temporarily relocated at greater distance offshore to reach
navigable water. For buoy fields, there is no outer limit in the Code.

**Staff Proposal:** Under consideration.

2. Maximum depth of 6219 is too limiting.

**Staff Proposal:** Under consideration.

3. Commenters say that the specified grid pattern requires relocation of many existing buoy fields, and the analysis has not considered the environmental effects of relocating that many buoy anchors. They also ask for the practical recognition that there needs to be some flexibility for designing around natural features.

**Staff Proposal:** Under consideration.

4. Commenters suggested buoys fields use a 40' instead of a 50' grid.

**Staff Proposal:** Under consideration.

5. Commenters suggest a minimum 100 foot distance be required between the end of piers and the beginning of an allowed buoy field.

**Staff Proposal:** Under consideration.

6. Buoy field for coves. Commenters note that the location standards for buoy fields may not work in a cove.

**Staff Proposal:** Under consideration.

7. Projection lines: From what point(s) will the parcel projection lines be extended? Staff is evaluating these questions raised by commenters.
   a. From high or low water?
   b. Straight line or Agan’s alternative?

8. Buoy fields/littoral owners
   a. Section 52.4.D(5): littoral owner private buoys vs. buoy field buoy(s).

**Staff Proposal:** To avoid this potential conflict with California State lands regulations, staff proposes to delete the opening phrase, “At the election of the owner, …"
b. Section 54.5.B(1)(d): projection line differences from high and low water.

**Staff Proposal:** Under consideration.

F. Section 52.4.E Buoy Recognition.

1. Clear and convincing standard is too high. Will the agency accept letters of "recognition" from other agencies such as COE?

**Staff Proposal:** A letter from COE with nothing more is unlikely to be enough to recognize a buoy as having existed since before 1972. If that is the only evidence an applicant can provide, then staff recommends that the applicant submit a new buoy permit application instead of relying on grandfathering provisions.

2. What proof is required to establish continuous use?

**Staff Proposal:** Examples of the type of evidence that could provide the basis for recognition include aerial photos, affidavits, and photographs. Use need not be constant, but only reasonably continuous. The meaning of continuous is a question of fact to be assessed based on the facts and evidence presented.

3. Commenters would like buoy fields to be included under the “buoy recognition” (or “grandfathering”) provisions of the Code.

**Staff Proposal:** So as to prevent the automatic recognition of buoys that may have been illegally added to buoy fields through unauthorized expansions of the field, staff proposes to use the buoy field grid pattern to define the number of allowable buoys in an existing or new buoy field.

G. Section 54.6 Scenic Mitigation.

1. Section 54.6.D(2) Commenters claim the requirement to mitigate additional boat lifts by offsets in the shorezone is too strict. They suggest mitigation be allowed under a hierarchy of first mitigate in the shorezone until there is no further available mitigation, then mitigate in the backshore, and then apply shoreland mitigation.

**Staff Proposal:** Under consideration.

2. Commenters note that a “25” visible magnitude score may not be achievable for some steeper parcels; therefore flexibility should be allowed.

**Staff Proposal:** Under consideration.
3. Commenters note that the hard hammer is too harsh a result where it is physically unachievable to mitigate in the shorezone for structures that create additional visible mass.

   **Staff Proposal:** Under consideration.

4. Can unused shoreland scenic capacity be used to mitigate additional structure in the shorezone.

   **Staff Proposal:** Under consideration.

5. Can the visible portion of a boat on buoy be used to reduce the mitigation obligation of additional boatlifts when trading out a mooring for a boatlift?

   **Staff Proposal:** Under consideration.

H. **Marinas:**

1. Master Plan trigger for >4 parking spaces is too strict.

   **Staff Proposal:** Under consideration.

2. 52.5.E: Does the Code allow marinas to convert buoys to slips?

   **Staff Proposal:** Under consideration.

3. A provision is needed to allow sheet pile replacement

   **Staff Proposal:** Under consideration.

I. **Section 52.6 Stream-mouth Protection Zones**

1. Lakeward limit of zone?

   **Staff Proposal:** Under consideration.

2. Zone for Truckee River outlet?

   **Staff Proposal:** Under consideration.

J. Commenters stated that the “net benefit” standard in 54.7.B is too harsh and should be changed to require only that the structure be brought “closer to conformance.”

   **Staff Proposal:** Under consideration.