

BEST MANAGEMENT PRACTICES FOR THE BEAR LAKE BASIN

by Eric Jung for Bear Valley Residents, Inc.

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Bear Lake is the jewel of our community according to founder Bruce Orvis. It's literally the lifeblood of Bear Valley. It's a living, changing thing that requires our active participation in its care. It provides our drinking water, and it draws us to enjoy its views, the beaches, and the serenity of the water.

Everyone who uses it or owns property near it has an obligation to help with the care of the Lake. Bear Lake has occasional algae blooms which turn the water a pea soup color; and unfortunately you can observe that right now (August 2015). This is bad for several reasons. It threatens the ecological web of life which helps keep the water clean. It makes the water smell and look bad, and a lot less pleasant place to swim (for people and fish). And it makes the water more expensive to treat to drinking standards.

In 1987 an algae bloom was so bad that the eminent lake expert Dr. Charles Goldman was called in to do a study with recommendations for cleaning up the lake. Some of his recommendations were followed, including discontinuation of small fish stocking, and the "greening" of the lake was reversed but not completely eliminated. Other recommendations are discussed below.

EROSION

Erosion in the Bear Lake watershed is the biggest single cause of degradation of water quality. Erosion happens when the soil is destabilized or when natural patterns of runoff are disturbed, usually both. Soil going into the lake makes the water more turbid (dirty) and carries organic components which feed algae. Possible erosion causes include:

- **Construction activity.** County building codes set conditions for the issuance of a building permit which will include soil stabilization and erosion control measures. They may include setting up plastic membranes, wattles, or other barriers below the construction site to stop soil and debris from washing down; or creating channels to direct runoff to a stable natural watercourse, or to decrease the angle of runoff and slow it down. The County Building Department can help you plan your project to minimize erosion. If you have your house power-washed and painted, talk to the contractor about any chemicals they may be using and what measures they will take to minimize runoff. And don't let them wash their brushes and sprayers in the yard without some kind of containment.
- **Driveways.** A paved surface is stable; an unpaved driveway seldom is. So if you have a dirt driveway, think about paving it.
- **Diverting natural stream courses.** The ground surface in our area has countless natural watercourses, many of which operate for only a few weeks during spring runoff. They are generally stable, having worn their way down to rocks over time. You may desire to divert them, for construction, for footpaths, for driveways and parking areas. This approach can be complicated as it will likely require permits from 2-3 state and federal agencies since these small streams are often regulated as Waters of the U.S. and/or Waters of the State. It is probably best to design your construction project around these stable, natural watercourses and maintain a small setback from the bank of the stream as well.

- **Concentrating runoff.** Manmade objects - roofs, decks, footpaths, barbecues, horseshoe pits, fire pits, or driveways - prevent water from soaking into the soil in place and divert runoff, sometimes concentrating the runoff in other places. Note how water comes off these places. If you see channels forming in the dirt, there's erosion happening there. Think about using rocks or gravel to protect the soil in these places and give the water a gentler ride to the lake. Soil compaction in footpaths may change runoff patterns, either by diverting water away from the path; or if a rut is forming, by drawing water into the path and accelerating it. Think about stabilizing footpaths with tree rounds, rocks, wood chips, or gravel, and consider porous material over impermeable material.

- **Watering the yard.** Although watering the yard or even growing a lawn is frowned upon by the Lake Alpine Water Company, a few people still do it. Our natural vegetation has evolved with a pattern of wet springs and dry summers and falls, and the natural cycle has its own beauty. But as long as a few people still feel the need to turn on a sprinkler, they should monitor the watering carefully, not just turn on the water and walk away for a few hours. There should be no runoff or pooling. If you have ornamental flowers, use hand watering when possible; or install a drip irrigation system. And if you need to water your driveway to keep the dust down, you need to think about graveling or paving your driveway. If you are trying to help trees in your yard by extra watering, you may have the wrong trees. Aspens, for example, don't grow everywhere around here; they require specific conditions of soil, water, sun, and drainage. Consult with a forester before planting new native trees in your yard to make sure they're the right kind of tree in the right place, and won't require a lot of watering. If you want to help the trees already growing in your yard, consider thinning.

- **Tree cutting.** Bear Valley has become over-forested, with trees too close together for forest health and fire safety. BVRI now encourages good forest management practices by homeowners, including removal of superfluous trees (as determined by a registered forester). When removing trees, you should try to preserve natural ground cover. If skidding the logs off your lot makes ruts, rake and shovel to restore natural ground contours. Straw or wood chips can be used to stabilize the soil until the natural vegetation recovers.

- **Fire clearance.** Bear Valley homeowners have done a great job of complying with the 100-foot clearance rules for fire safety. At first, the rules were taken literally to mean raking away all duff down to bare dirt up to 30 feet away from houses. The Bear Valley Fire Department now knows that this is probably overkill, since it can lead to erosion. What they're looking for now is bare dirt up to 5 or 10 feet from the house. Beyond that, remove sticks and flammable vegetation. But it's okay to leave a layer of duff on the ground as long as it's not more than 4 inches deep.

POLLUTANTS

- **Yard chemicals.** There's really no reason to use fertilizer or herbicide in Bear Valley. If you have ornamental flowers and you think they need chemical help, they should be confined in watertight pots or flower beds. You probably have the wrong plants anyway. Local nurseries (Murphys, Angels Camp, Sonora) can help you select native flowers appropriate to our area which won't require chemicals or excessive watering. Consider organic mulch over chemicals.

If you have an outdoor barbecue or fire pit, be careful with charcoal starters or cleansers. Don't just dump them onto the ground.

- **Sewage.** Besides erosion, a leaky sewer pipe can cause the most damage to Bear Lake. If you notice unusual behavior in your sewer system (drains backing up or draining slowly), or see any signs outside of a leaky pipe, call the Bear Valley Water District immediately. Know where your cleanouts are, and keep them from getting covered or plugged up. You

should be able to find your cleanouts even in winter. If you're not sure about the status of your cleanouts, call the Bear Valley Water District and have them check it out.

- **Petroleum products.** Cars, snowmobiles, motorcycles, snow blowers, and ATVs inevitably put out fumes and fluids which get into the soil. Even paved driveways can leach out petroleum sealants. Watch for oil spots on the ground or the snow, and watch for the rainbow sheen on a stream or puddle. Keep machines in good running order and leak-free. If your car drips oil, put down carpet to catch it until you get it fixed. It only takes a few parts per billion of petroleum products in water to change the taste.

- **Car washing.** You should never wash your car in the lake basin. Take it to a car wash. Washing a car releases detergent, tar, dirt, bugs, and petroleum products into the soil.

- **Animal activities.** It may seem that a little dog doo in the yard couldn't possibly matter in the big picture, given that the whole forest is full of squirrels, birds, deer, etc. But remember that the dysenteric disease *Giardia* was present in all Sierra waters even before the white man came. From a drinking water standpoint, we're starting with one strike against us just from natural causes. One more dog won't make a big difference, but 50 or 100 dogs over 4 months of summer and fall will make a difference. Please use a pooper scooper. Bag up the stuff and put it in the trash.

Some dogs like to dig in pursuit of moles and marmots. This soil-disturbing activity should be discouraged around the lake.

Refrain from feeding waterfowl that stop to visit Bear Lake. We want them to visit, but we don't need them to stay. One goose makes two pounds of phosphorus a year in its droppings. Waterfowl contribute significantly to aquatic plant growth.

- **Why aren't dogs allowed in the water?**

Since Bear Lake is a principal drinking water source for the community, we're not supposed to have even people in the water. Lake Alpine Water Company, BVRI, and county representatives worked for years to get a legislative exemption from the state to allow human contact by demonstrating that conditions of temperature, dilution, limited seasonal recreational use, and good treatment facilities combine to justify an exception to the no-contact state rules. The exemption states clearly that no dogs are allowed in the lake or on the lakeside trail and beaches, and violations could get the exemption revoked.

- **Pest sprays.** Professional pest companies like Clark or Foothill are knowledgeable about what chemicals to use, how much, and where. Some homeowners still like to do their own bug prevention, and a few still have a secret stash of now-illegal chemicals like Malathion or DDT that they use around the outside of their house. If you're not qualified, leave it to the experts. If you still want to do it yourself, look for non-toxic chemicals that work by mechanical action rather than toxicity, like Clark Pest uses. Don't overdose, and keep it out of the soil as much as possible.

- **Trash.** Candy wrappers, soda cans or bottles, or cigarette butts should never be tolerated anywhere in Bear Valley, but especially not in the lake basin. Besides being eyesores and bear attractants, they break down and release pollutants into the lake. If you go for a stroll around the lake, take a trash bag with you so you can do a little cleanup along the way.

- **Household cleaners.** Don't dump spot removers, furniture polish, deodorizers, drain cleaners, oven cleaners, disinfectants, moth repellants, ammonia or similar window cleaners anywhere outdoors in Bear Valley and particularly not in the Lake watershed.

- **Maintenance supplies.** Don't dump out paint, varnish, lacquer, turpentine, stains, wood preservatives, roofing tar, or hot tub chemicals.

FISH

Bear Lake has a self-sustaining trout population. State rules for fishing licenses apply in Bear Lake. You must be a current member of BVRI to use the lake and beaches, including for fishing. The limit is two per day. The lake also has a population of perch which were wrongly introduced as bait fish. The perch compete with the trout for food and contribute to algae bloom. The perch limit is 25 a day (they like crickets) and they're good eating. Please do not introduce perch or any other species of live fish, amphibians, or crustaceans into the lake.

CONCLUSION

These tips should give you a good idea of how you can help take care of our lovely lake. Remember that your contribution may be small and incremental by itself, but in the big picture, it's important. Thanks for helping!

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