Suite 102 – 810 Waddington Drive
Vernon BC
V1T 8T3

Phone: 250.542.9020
Fax: 250.542.5070
Email: office@cwsaa.org
Web: www.cwsaa.org

CWSAA Environmental Guidelines and Recommendations

Compiled by CWSAA Environmental Committee

Prepared by Adam Sherriff

CWSAA Environmental Committee Chair

September 2009

~ "THE VOICE OF THE SKI AREA INDUSTRY IN WESTERN CANADA" ~

Table of Contents

A. INTRODUCTION

The Canada West Ski Areas Association Environmental Guidelines and Standards are designed to assist its members in achieving environmentally based goals while developing resort operations. Resorts are dependent on the environments that they operate within, and without these beautiful and pristine places to call home, mountain resorts would not exist. To minimize the impacts of our actions these standards and recommendations are set out by CWSAA to emphasize its commitment to the environment, and the protection of natural lands.

Through collaboration with various resorts in Western Canada, these Guidelines are designed to assist and motivate ski areas/resorts to improve and adopt their practices regarding environmental issues to the highest standards available. These Guidelines provide room for development and growth by all resorts, large and small, without hampering smaller operations. With proper implementation and practice, many of the CWSAA standards and recommendations will not only improve the environmental footprint of participating ski areas/resorts, but also illustrate tremendous financial benefit through cost saving programs.

By adopting these standards, CWSAA members are moving forward as an industry to continue to improve and develop their commitment to Environmental Best Practices. With innovation and adaptation, many resorts have the opportunity to become leaders in the field of environmental practices in mountain environments.

This document was created with the collaboration of members of the CWSAA environmental committee for all members of CWSAA to adopt and follow. The standards and recommendations are set out to provide resorts with the ability to adapt these programs to fit within their operational structure.

B. ENERGY CONSERVATION

Resort areas are primarily energy consumers. Energy conservation within resorts is not only environmentally responsible, but also financially responsible. With the creation of innovative products, hydro company incentives and alternate energy sources resorts can strive to reduce their electricity demands while continuing to develop responsibly.

1. Operations

Resort operations consist of all activities required to operate the resort. Through careful planning and upgraded products, power consumption can be reduced in all aspects of daily operations. Although upgrading costs may be restrictive, newer, more energy efficient products often show quick returns on investment.

Goal	CWSAA Guidelines	Advanced Practices
Reduce energy consumption through improved product use and innovative ideas.	Contact the local hydro supplier and complete a power audit. Educate staff on power saving programs. Identify areas of power savings and implement savings programs. Update/replace older, less efficient equipment with new energy efficient models. Use programmable heaters in all lift huts/lift stations.	Purchase high efficiency snow making systems. Research alternative energy for remote locations. Research power generation utilizing resort assets. Install motion activated lighting in lift drive stations.

2. Facilities

Resort facilities are often the center point of activity. Due to the large power demand from these buildings, huge energy savings can often be achieved. Through public and staff education regarding resort initiatives, all visitors can become ambassadors for power saving programs. With increased initial investments on new projects, years of savings can be achieved when utilizing "green" building practices.

Goal	CWSAA Guidelines	Advanced Practices
Reduce the consumption of electricity in all resort facilities.	Contact the local hydro supplier and complete a power audit. Educate staff and guests on power saving initiatives. Purchase energy efficient appliances. Utilize energy efficient lighting. Use programmable thermostats for all applicable buildings. Conduct internal power audits to identify areas of high consumption and low utilization. Ensure all unused electrical equipment is off.	Install motion activated lighting in less frequented areas. Construct buildings with high energy efficiencies. Maximize natural light and heat for new construction. Research alternate heating/cooling for resort properties.

C. WASTE MANAGEMENT

An effective waste management strategy is essential to a resort focused on improving its environmental practices. By managing our waste and focusing on reduction, reuse, and recycling, resorts can inevitably lower their overall footprint by increasing their solid waste diversion rate from landfills. Reducing waste will increase productivity, minimize the operations footprint, and reduce operating costs.

1. Solid Waste

Solid waste is often the unseen result of resort operations. By working with staff and guests to minimize waste before it enters the waste stream, a resort can dramatically reduce its operational footprint while saving on waste removal services.

Goal	CWSAA Guidelines	Advanced Practices
Utilizing the "reuse, reduce, recycle" principles minimize the amount of waste created from a resort operation.	Work with suppliers to minimize packaging on bulk orders. Track waste production monthly. Promote pre-cycling by ordering products with minimum packaging, or recyclable packages. Plan and design projects utilizing recycled products. Ensure adequate receptacles are in place for public to minimize litter. Store and reuse building supplies. Conduct public education campaigns regarding resort efforts to reduce waste and ways public can participate. Promote proper backcountry ethic—pack it in, pack it out. Ensure all waste storage facilities are animal proof.	Negotiate contracts based on minimal packaging. Set a company standard for percentage or recycled goods in paper products. Utilize compactors to reduce freight and tipping fees. Utilize non disposable cutlery and flatware in all restaurants. Utilize compostable cutlery when reusable is not appropriate. Compost food waste from restaurant and food services. Create staff involvement through events focused on waste and recycling collection around the resort area.

2. Recycling

Recycling is the minimum a resort can do to reduce waste. By focusing on reducing and reusing, the amount of products left to be recycled can be dramatically reduced. All available waste products that are recyclable should be removed from the waste stream and sent to the appropriate facilities for recycling. With proper signage and design, resorts can engage the public to participate in recycling programs, thus doing their part to increase the environmental initiatives of a resort.

Goal	CWSAA Guidelines	Advanced Practices
Recycle all available products and reduce the amount of solid waste produced.	Conduct a waste survey to identify recyclable products. Create a streamline sorting facility that allows for quick, efficient sorting of materials. Work with local municipalities to increase recycling options. Ensure there is a recycling receptacle within sight of every waste receptacle. Educate staff on products that are recyclable in your region. Continue to strive towards improved recycling facilities. Engage staff in recycling programs. Provide staff offices with recycling bins. Ensure paper recycling is present throughout office and administration buildings.	Purchase products based on your ability to recycle the container. Provide guests with the option of purchasing recycled products. Participate in municipal waste meetings. Place a recycling receptacle beside every waste receptacle. Track recycled products sold vs. returned goods.

D. TRANSPORTATION

Resort dependency on fossil fuels continues to create large environmental and economical footprints. Through streamlining transportation, reducing dependency on fossil fuels, and researching alternative energy sources, resorts can minimize their output of climate changing emissions while reducing their operations costs. All aspects of transportation must be examined, from on-mountain travel by resort personnel, to resort guest travel options.

1. On Mountain

Vehicular travel is essential to the safe operation of resort environments. Fuel not only represents a tremendous operational cost, but is also one of a resort's largest environmental impacts. Through anti-idling campaigns, proper vehicle maintenance, and staff training, fuel costs can be reduced dramatically while showing a reduction in resort emissions.

Goal	CWSAA Guidelines	Advanced Practices
Reduce emissions produced through vehicle emissions.	Conduct a fuel audit to identify key areas of reduction. Incorporate an anti-idling program resort wide. Establish signage for "idle free zones" throughout the resort. Conduct regular maintenance on all motors to ensure they are operating at their most efficient rate. Plan on-mountain work to complete all works by various departments during the same construction window to reduce travel and mobilization costs. Provide shuttle services throughout the resort to minimize vehicle traffic.	Research/utilize alternate fuel sources. Upgrade and replace older "2 stroke" snow machines with newer, more fuel efficient "4 stroke" motors. Implement tracking software for resort snowcats to identify idling times, travel routes, and fuel consumption. Create resort layout to reduce dependency on vehicle transportation by guests.

2. Resort Access

The transportation of guests from city centers to resorts presents many environmental challenges. Vehicles produce tons of climate changing emissions that directly threaten the ski industry. To minimize the amount of emissions produced, each resort should address its transportation needs individually, and design a transportation plan that engages the reduction of vehicular emissions.

Goal	CWSAA Guidelines	Advanced Practices
Engage all staff and guests to reduce the amount of vehicular emissions produced while travelling to and from resorts.	Create a public transit transportation system. Promote car pooling/ ride sharing. Create affordable employee shuttles. Conduct educational campaigns about vehicle emissions. Create incentive programs for staff and guests.	Provide discounted prices for car pooling parties. Provide preferred parking for car pooling guests. Staff incentives to reward car pooling. Utilize company vehicle for staff commuting. Provide a ride share/ car pool board or webpage. Team up with alternately fueled transportation services.

E. WATER CONSERVATION

Water conservation will continue to be an essential component of resort operations. With changing climates comes the threat of reduced water sources. Mountain operations rely heavily on water to fulfill all aspects of their program. By designing programs and practicing water conservation, resorts can reduce their daily consumption while increasing their efficiency.

1. Operations

Outdoor operations often put large demands on local water supplies. Snowmaking, landscaping, and irrigation can put tremendous strains on water supplies. By ensuring all hoses and couplings are in operational condition and free of leaks, large amounts of water and money can be conserved.

Goal	CWSAA Guidelines	Advanced Practices
Reduce water consumption in all outdoor aspects of resort operations.	Conduct regular maintenance on all hoses and valves to minimize leakage. Utilize snowmaking equipment during optimal conditions. Utilize snow melt whenever possible to refill reservoirs. Design resort landscaping to minimize watering demands. Document and monitor all water uses.	Promote xeriscape practices. Purchase and operate new, high efficiency snowmaking systems. Utilize water timers to ensure watering is conducted under ideal conditions.

2. Facilities

Resort facilities utilize water for a wide range of services and demands. Saving water where high flow faucets are not required can show substantial reduction in water consumption. Analyzing your water consumption to highlight high demand buildings and identifying the demand will assist in the overall conservation of water in facilities.

Goal	CWSAA Guidelines	Advanced Practices
Reduce water consumption in all resort facilities.	Record and monitor water use. Identify areas with high conservation possibilities. Promote water conservation through signage and education.	Install low flow water faucets and toilets. Utilize water-free urinals where applicable. Operate composting toilets in remote locations. Ensure adequate metering on all facilities.

F. MOUNTAIN ENVIRONMENT

Our environment is our greatest asset: without natural surroundings, mountain landscapes and remote settings, resorts would have nothing to offer. As stewards of the land resorts operate on, CWSAA members strive to keep the environment pristine and natural while operating a resort that is welcoming to all ages and abilities. Resorts recognize that our impacts can affect others and all efforts are made to minimize the impacts of our actions. Resorts must operate with the theory that they are not based on the environment, but are part of the environment and that their success is directly related to the health of the surrounding environment.

1. Bear Aware

Resorts are often surrounded by pristine and undeveloped landscapes. These landscapes are home to many animals both large and small. Bears are an essential part of the mountain ecosystems and all efforts must be made by resort operations to ensure these animals stay wild. Mountain resorts are ideal bear habitat, used by bears for thousands of years. Resorts must learn and adapt to these creatures in a way that does not promote their habituation to unnatural food sources.

Goal	CWSAA Guidelines	Advanced Practices
Reduce human/bear conflicts throughout the resort communities.	Ensure all outdoor garbage receptacles are animal proof. Provide public education about living in bear country. Provide staff education on working in bear country. Record and document all human/bear conflicts.	Record and map bear activity. Identify key bear habitat throughout resort property. Work with contractors to promote bear aware work procedures.

2. Fish and Wildlife Tracking and Monitoring

Mountain resorts are often home to an extensive variety of wildlife. Habitat protection is essential to the survival of many species of fish and wildlife and while operating resorts, CWSAA members must always include habitat protection in their planning process. By monitoring fish and wildlife habitat uses throughout resort area, detailed plans can be created to minimize the effects of development on both the wildlife and their crucial habitat.

Goal	CWSAA Guidelines	Advanced Practices
Track and monitor wildlife habitat uses throughout resort property to assist in minimizing the effects of development.	Create a tracking program to record wildlife sightings. Utilize tracking records to identify key wildlife habitats. Cross reference wildlife sightings with a current list of federally and provincially endangered or threatened species. Minimize disturbances in winter ranges. Avoid activity in known calving/ nesting/denning habitats.	Create detailed mapping to identify habitats with high wildlife values. Create detailed maps of all fish bearing streams throughout the resort. Forward significant wildlife sightings to government officials. Develop educational programs surrounding important habitat/endangered wildlife for public education.

3. Forest and Ecosystem Health

Construction and development works can occasionally lead to damage to vegetation and thriving ecosystems to the extent that it is not possible to return to its original state. To minimize damage and prevent erosion vegetation communities must be re-established as soon as possible after works have been completed.

Goal	CWSAA Guidelines	Advanced Practices
Forest and ecosystem health are essential to the long term success of ski resorts. Through proper monitoring and reclamation resorts will strive towards maintaining an environment as close to natural as possible.	Protect sensitive ecosystems. Minimize compaction off established trails. Minimize the spread of invasive plant species. Cover freshly seeded areas with a mulch to retain soil moisture. Use existing roads and trails whenever feasible. Monitor health of forest. Monitor the effect/spread of insects and disease.	Create detailed maps of forest and ecosystem types present on resort property. Map all insect/disease infected areas. Follow government recommendations for the removal of infected wood species. Utilize gladding over run clearing when applicable.

4. Stream and Riparian Area Management

Water quality and sediment management are an integral part of the management of mountain ecosystems. Not only does water quality affect ski resorts environmentally, but financially as well. Riparian areas act as filters for the aquatic environment and disturbance must be avoided whenever possible.

Goal	CWSAA Guidelines	Advanced Practices
Maintain the highest possible water quality and minimize any works in riparian areas.	Road crossings and culverts must be sized to allow for passage during flood levels. Mark and designate riparian areas adjacent to work sites. Minimize use of pesticides and herbicides around water courses. Follow government regulations surrounding “in stream” works and riparian areas.	Map all watercourses within resort CRA. Create works around water courses to minimize damage. Plan trails, roads, and paths to utilize the same crossings whenever possible to minimize impact.

G. SLOPE WORKS

On-mountain slope works is an integral part of ski operations. Through proper planning and design, erosion control, and reclamation projects, ski slopes can be enhanced to dramatically improve the ski experience, improve drainage, and enhance habitats. As stewards of the environment, it is the responsibility of CWSAA members to strive towards maintaining a fully functional and sustainable mountain environment. To enhance the CWSAA Slope Works Best Practice it is recommended that all participating resorts complete a thorough slope works document specific to their location prior to work being commenced.

1. Planning and Design

The planning and design phase of slope works must take all environmental impacts into consideration to ensure the completion of a successful project. When planning a new project, ensure that all local, provincial and federal regulations are addressed prior to project initiation. Working windows are often short in mountain environments, thus planning must be precise to coincide with suitable ground conditions, moisture content, and access. All aspects of the plan must address the goal of planning and design for slope works. Whenever possible, plans will be designed to limit works near watercourses and riparian areas.

Goal	CWSAA Guidelines	Advanced Practices
Plan all possible slope works for completion during periods of reduced environ-mental, financial, and visual impacts.	Ensure all works are completed during designated work windows under provincial legislation. Design plans to have minimum environmental impact. Ensure all plans adhere to local riparian regulations. Designate a monitor for, during, and after completion of works.	Design projects into small segments and short timeframes to reduce the amount of disturbed land.

2. Erosion/Sediment Control

All slope works that require the removal of top soil and organics will require some form of erosion and sediment control measures. While undertaking works on slopes, maximum effort will be put forth to ensure that valuable top soil resources are maintained and little or no foreign sediment is introduced into watercourses. Sedimentation, even in minimal amounts, can have detrimental effects to aquatic life downstream of an operation. By striving to minimize the construction footprint and practicing appropriate erosion and sediment, BMP's reclamation costs can be dramatically reduced.

Goal	CWSAA Guidelines	Advanced Practices
Minimize the effects of erosion and sediment while conducting Slope Works.	Abide by all provincial rules and regulations regarding soil erosion and sediment controls. Create a detailed erosion/sediment control program before works are initiated. Utilize machines to create surface roughness to minimize erosion potential/maximize seed germination. Create and maintain water bars on all new slope works projects. Perform regular maintenance on all structures. Inspect all control measures after significant weather events.	Design erosion control plans utilizing bio-engineering practices. Utilize fully biodegradable erosion control products. Remove and store all topsoil and organics for use during reclamation.

3. Reclamation Plan

Once completed, all project locations should resemble a natural state. Re-vegetation of a slope is the only long-term solution to erosion control. A ski slope that has been manipulated to improve the skiing experience can still return to a very natural vegetated state while allowing for quick snow cover. By utilizing vegetation that roots quickly and remains relatively low in height, both the goal of a smooth groomable slope and a vegetated productive slope can be reached. All on-slope areas that have been manipulated should be rehabilitated to as close to natural as possible. Benefits of reclamation include reduced erosion, reduced sedimentation, increased wildlife habitats and visual appeal.

Goal	CWSAA Guidelines	Advanced Practices
Return all disturbed sites back to a natural, sustainably vegetated state .	Create a detailed reclamation plan prior to beginning earthworks. Begin seeding and reclamation works at the earliest opportunity post works. Utilized a mulch or erosion control blanket to aid in seed germination. Seed selection should be based on site, elevation, soil type, and desired results. Monitor site to ensure proper reclamation, site stability, and projected outcome are reached.	Utilize low impact machinery that will manipulate the grade/earth without removing organics. Start reclamation projects immediately after a specific area is completed. Collect and store organic materials during the construction phase to be redistributed during rehabilitation.

4. Trail Clearing

The creation of smooth, flowing ski trails is essential to ski resort operations. With high demand on grooming operations, resorts must work to enhance their skiable terrain to a condition in which snowcats can operate safely on the slope. Trail clearing can be completed through a variety of means, dependant on the project goals and the terrain. Trails that are well-planned and executed in the most effective manner for the specific site will become a cost savings with reduced maintenance issues.

Goal	CWSAA Guidelines	Advanced Practices
Through proper planning and design, create a ski trail that fits within the existing layout that does not negatively affect its surroundings while providing an ideal skiable surface.	Using proper mapping, all ski trails will be laid out away from environmentally sensitive areas Avoid riparian zones wherever possible. Ensure detailed layout/mapping to prevent accidental removal of vegetation by contractors. Ensure a site plan is created for all new trails. Identify the slope clearing method chosen based on both cost and environmental impact. Ensure all erosion and sediment control measures are implemented. Retain all lumber of marketable value. Remove all waste lumber following local and provincial regulations.	Utilize mapping programs to create buffers around all environmentally sensitive and riparian areas prior to laying out trails. When working in sensitive sub alpine areas, utilize helicopter logging to reduce the footprint of the project. Design runs to reduce the amount of access roads created. De-activate and re-vegetate access roads immediately after completion. Utilize environmentally friendly machinery that removes debris while leaving organics. Utilize a mill to turn cleared trees into valuable lumber. Chip all waste lumber for mulch.

5. Brushing/Glading

Brushing and glading are utilized to clear runs of undesirable vegetation and space trees for tree skiing areas at a resort. Work is most often completed by crews utilizing hand tools. All efforts should be made to ensure slopes remain vegetated to protect against erosion and promote native plant growth. While working, all provincial regulations should be followed for safe work practices and environmental considerations.

Goal	CWSAA Guidelines	Advanced Practices
Remove undesirable vegetation and small trees to enhance the skiing experience while ensuring minimal environmental damage.	Complete proper mapping and layout to ensure no excess vegetation is removed. Follow all provincial forestry legislation. Mark all riparian zones as per provincial riparian regulations. Removal of all debris that may have accidentally entered a water course. Ensure all fueling stations and gas containers are stored away from water courses as per provincial regulations. Remove all fallen debris from game trails to maintain travel corridors.	Utilize mapping to mark all riparian areas, wildlife areas and wildlife trails. Leave vegetation intact around game trails to create cover. Mark all wildlife trees within glading area. Remove all woody debris from the site through low impact methods. Plan glading with wildlife movement and visual appearances in mind.