



Bike Park Operations and Maintenance Plan



Bike Park Operations and Maintenance Plan

Action Sports Construction

CONTENTS:

SECTION I: OPERATIONS

1. Operations Plan Overview
2. Bike Park Operations and Rules

SECTION II: RISK MANAGEMENT

3. Risk Management Plan

SECTION III: MAINTENANCE

4. Maintenance Plan
5. General Park Maintenance Activities
6. Bike Park Specific Maintenance Activities
7. Routine Maintenance Procedures Bike Park Riding Areas & Features
8. Routine Maintenance of Dirt Riding Features
9. Standard Maintenance of Asphalt Riding Surfaces
10. Routine Maintenance of Steel And Wood Riding Features
11. Routine Seasonal and Annual Maintenance

Bike Park Operations and Maintenance Plan

Action Sports Construction



SECTION I: OPERATIONS

1. Operations Plan Overview
 - 1.1 Purpose
 - 1.2 Reference Document
 - 1.3 Adaptive Management and Annual Review

2. Bike Park Operations and Rules
 - 2.1 Park Closures
 - 2.2 Weather Based Closures
 - 2.3 Precipitation Based Closures

Bike Park Operations and Maintenance Plan

Action Sports Construction

1. OPERATIONS PLAN OVERVIEW

1.1 Purpose

The purpose of this Operations Plan (PLAN) is to ensure the highest quality construction, maintenance, operation and management of the park facility (PARK) and to ensure comprehensive integrated risk management practices and protocols are established and maintained by all parties for the lifetime of the project.

1.2 Reference and Recording Document

The PLAN should be used as both as a reference tool for ensuring best practices and as an archive tool for logging and recording operations. The PLAN should be readily accessible by all staff, outside contractors, and volunteers in order to ensure best management practices are being followed.

1.3 Adaptive Management and Annual Review

The PLAN should be reviewed by and updated on an annual basis to identify, analyze and mitigate any potential issues related to the successful operation of the PARK. Operations and programming should be adapted, based on the annual review process, to best manage for risk and positive user experience. The review process should include representatives and input from but not limited to; Operations staff and supervisors, risk management, Fire, EMS, PRNS Management, and a professional bike park consultant.

Bike Park Operations and Maintenance Plan

Action Sports Construction

2. BIKE PARK OPERATIONS AND RULES

2.1 Park Closures

Park closures will occur periodically throughout the year for a variety of weather conditions and routine maintenance.

2.2 Weather Condition Based Closures

Weather condition based closures from extreme weather conditions from heavy precipitation, high winds, extreme heat and or cold should be expected throughout the year. Planning for these closures and communicating the reasons for the closures to park staff and the public is critical to reducing and minimizing maintenance and maintaining optimal riding conditions in the park.

2.3 Precipitation Based Closures

Rain, sleet, hail and snow will most likely occur during the winter season and may require park closure for days to weeks or even months a time. The length of the closure is dependent upon a variety of factors including the forecasted weather conditions for the season, the weather conditions prior to the precipitation event, the drainage capacity of the soils, and the condition of the vegetation and landscaping within the park itself. Closures due to precipitation are done both to ensure safe user experiences and to minimize erosion and degradation of features due to usage.

TESTING GUIDELINES: When determining if the park should be closed due to precipitation park staff will be relied upon to perform a 3-Step visually and physically inspection process of the park and riding features.

Step 1 - Visual Inspection: If there are visible puddles, running water or standing water, the park should be closed until these areas have fully drained.

Step 2 - Physical Inspection (Walking the site): If there are no visible puddles or standing water park staff should walk the site. If while walking the site their shoes displace soil, soil sticks to the soles of their shoes or their shoe print is visible the park should remain closed until the ground has fully drained and dried.

Step 3 - Physical Inspection (Riding the site): If park staff are able to walk the site without displacing soil or leave shoe prints behind, then they should ride the park on their bike. When riding each of areas of the park the tires should not displace excessive soil ($\frac{1}{8}$ " deep) and tracks should not be left behind that are more than ($\frac{1}{8}$ " deep). If these conditions are not met the park should remain closed until the soils have fully drained and dried.

Bike Park Operations and Maintenance Plan

Action Sports Construction

SECTION II: RISK MANAGEMENT

3. Risk Management Plan
 - 3.1 Signage
 - 3.2 Routine Inspection

Bike Park Operations and Maintenance Plan

Action Sports Construction

3. Risk Management Plan

The PARK was designed to promote safe, fun and progressive riding experiences for riders of all ages and skill levels. The following steps shall be employed to ensure a safe environment is maintained, over time, at the bike park:

3.1 Signage

(1a) The bike park shall maintain clear and visible signage at all bike park entrances. (1b) Entrance signage will clearly inform users of bike park rules, riding etiquette, hours of operation, and required use of basic safety equipment (helmets), and emergency contact information. (1c) Signage will be routinely inspected and maintained in compliance with the bike park maintenance plan.

SIGNAGE INSPECTION AND MAINTENANCE STANDARD: All signage shall be routinely inspected to ensure that signage is in place, secured properly and legible. Signage must be maintained and cleaned of graffiti, stickers, etc. Signage that has been removed or otherwise vandalized must be replaced as soon as possible.

3.2 Routine Inspection and Maintenance

(2a) The bike park boundary fencing, gates, riding features and site furnishings shall be routinely inspected and maintained.

Bike Park Operations and Maintenance Plan

Action Sports Construction



SECTION III: MAINTENANCE

4. Maintenance Plan
5. General Park Maintenance Activities
6. Bike Park Specific Maintenance Activities
7. Routine Maintenance Procedures Bike Park Riding Areas & Features
8. Routine Maintenance of Dirt Riding Features
9. Standard Maintenance of Asphalt Riding Surfaces
10. Routine Maintenance of Steel and Wood Riding Features
11. Routine Seasonal and Annual Maintenance

Bike Park Operations and Maintenance Plan

Action Sports Construction

4. Maintenance Plan

4.1 The maintenance plan includes a routine of general maintenance and bike park specific tasks to be performed by staff, outside contractors and volunteers.

4.2 General Maintenance Activities

These activities include but are not limited to; opening and closing of access gates, general inspection of park signage, boundary fencing and access gates, emptying of trash and recycling containers, emptying and cleaning of restroom facilities, general landscape maintenance, maintenance of PARK infrastructure and site amenities and periodic seasonal closure of the park due to weather conditions, etc. These activities can be performed by untrained staff and general volunteers.

4.3 Bike Park Specific Maintenance Activities

These activities include but are not limited to; routine inspection and maintenance of park signage, inspection and maintenance of riding features and site infrastructure. These activities should be performed by trained staff, volunteers, or outside contractors.

5. General Maintenance Activities

5.1 General Maintenance activities can be performed by general Staff and/or Outside Contractors and do not require specialized training. These activities include but are not limited to:

5.2 *Monthly maintenance activities include:*

1. General landscape maintenance and weed control around the site.

5.3 *Seasonal maintenance activities include:*

1. Periodic closure of the park due to weather conditions.

5.4 *Annual maintenance activities include:*

1. Annual inspection by a qualified contractor, of the landscape maintenance and weed control around the site.

Bike Park Operations and Maintenance Plan

Action Sports Construction

6. Bike Park Specific Maintenance Activities

6.1 Bike Park specific maintenance activities need to be performed by specialized trained Staff, Outside Contractors and/or Volunteers and include but are not limited to:

6.2 *Routine maintenance activities include:*

1. Inspection and maintenance of all signage at bike park entries and bike park features.
2. Inspection and maintenance of all trails, riding features and elements.
3. Closure of riding areas or elements that require additional maintenance.
4. Removal of all hazardous debris, trash, rocks, etc. throughout the park on riding surfaces, and within fall zones (bailout lines) of riding features.
5. Irrigation of dirt features to reduce erosion and dust and to maintain proper soil compaction.

6.3 *Weekly maintenance activities include:*

1. Inspection and maintenance: resurfacing of dirt features by filling, packing and smoothing pits, holes and gouges, brake bumps, erosion, etc. in all riding surfaces.

6.4 *Monthly and Seasonal maintenance activities include:*

1. General landscape maintenance and weed control within the site.
2. Inspection, maintenance of site drainage.
3. Periodic closure of the park due to weather conditions.

6.5 Annual maintenance activities include:

1. A post winter inspection by a qualified contractor is recommended prior to the resurface and stabilize riding surfaces.

Bike Park Operations and Maintenance Plan

Action Sports Construction

7. Routine Maintenance Procedures of Bike Park Riding Areas and Features

7.1 Maintenance Assessment of Dirt Features

All dirt features should be maintained consistently with hard compacted, smooth and consistent surfaces. All dirt features over time will erode due to rider usage, and weathering forces including drying out in the hot sun, drying out and weathering through wind erosion, and becoming saturated by rain.

7.2 Maintaining Compacted Dirt Surfaces

In order to maintain compacted surfaces it is important to properly moisturize condition and then compact dirt surfaces. If areas consistently become loose and uncompacted it might be necessary to excavate the soil in the area and add new soil with a higher clay content to achieve better compaction. In areas that consistently become saturated adding a higher sand content soils will help with drainage. The hazard that uncompacted surfaces create is that riders wheel can rapidly slow causing riders to fall or slip. Uncompacted surfaces also slow riders momentum and create non-optimal riding conditions.

DIRT FEATURES COMPACTION GUIDELINE: When an area becomes larger than (8" long by 8" wide) of loose or uncompacted soil, performing spot maintenance is required to bring the area up to standard. Uncompacted soil is soil that is loose and can be displaced with a broom. Properly compacted soil is firm and stable and does not subside when a rider rolls over it. If you are using a compaction testing tool it is typical to achieve an 85% compaction rate at minimum.

7.3 Maintaining Smooth and Consistent Dirt Surfaces

In order to maintain smooth and consistent surfaces it will require spot maintenance in areas where erosion pits, holes, cracks and fissures develop. These inconsistencies can occur because the underlying soil was not compacted properly, because of rider use and because of animals such as squirrels, etc. that dig underground tunnels. In order to maintain the proper surfacing adding additional fill dirt to the areas, moisture conditioning and compaction will be required.

DIRT FEATURES SURFACING GUIDELINE: When a hole, pit or crack becomes large enough for a riders tire to become effected it is time to perform spot maintenance and repair the area. The proper standard is to repair any hole, pit or crack more than (2" wide or 2" deep).

CLOSING DIRT FEATURES GUIDELINE: When a hole, pit or crack in the main line of riding feature becomes larger than (3" wide or 3" deep) the feature should be closed and maintained to proper grades. When an area larger than (12" wide by 12"long) becomes loose or uncompacted the feature should be closed until maintenance has been performed.

Bike Park Operations and Maintenance Plan

Action Sports Construction

8. Routine Maintenance of Dirt Riding Features

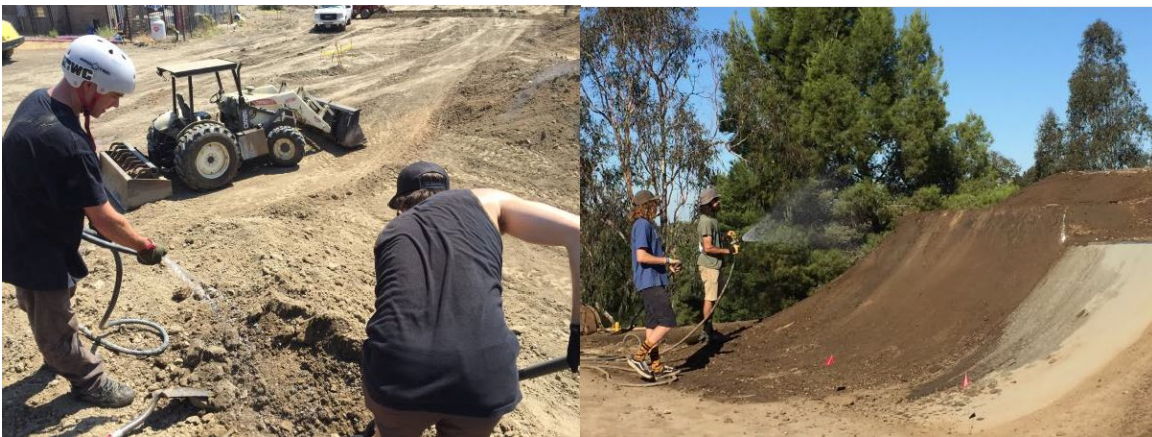
8.1 The following routine maintenance procedure for the routine maintenance of dirt riding features is outlined in a 5-Step process that includes: moisture and soil conditioning, filling, shaping, and compacting.

STEP 1: MOISTURE CONDITIONING

Moisture/water should be applied at all stages of the maintenance process to make the soil mix as workable as possible. It is often helpful to condition the soil hours or even days prior to working, especially in very dry conditions. Properly conditioned soil is not so wet that it is puddling or muddy and also not so dry that it is dusty and chunky. Properly conditioned soil is a consistent color and a consistent feel that is plastic easy to shape and compacted.



Using the quick couple network onsite moisture condition soil prior to beginning work.



Workers processing materials mixing soil and water together and continue to moisture condition throughout the process to ensure good compaction.

STEP 2: SOIL CONDITIONING

Prepare the soil for working by excavating the area that requires maintenance with shovel, rake, pick, power tiller, machine or auto sifter. When conditioning soil the most important thing is to chop up and pulverize all of the compacted soil, dirt clods etc. while removing any organic

Bike Park Operations and Maintenance Plan

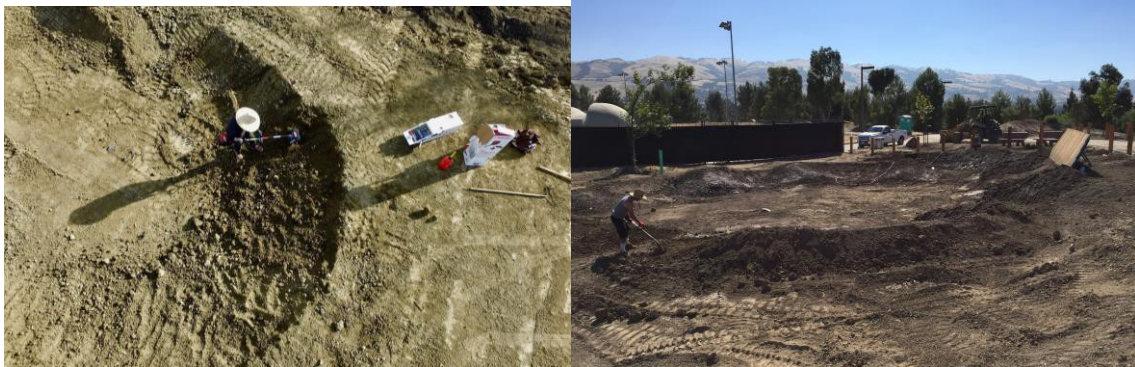
Action Sports Construction

material, trash, debris or rock. Work this material into a fine granular soil mix and moisture condition. When filling cracks, holes or jump lips make sure to rough up the area being repaired and moisture condition to ensure adhesion of the new soil with the existing.

SOIL MIX GUIDELINE: All of the soil onsite was either excavated on site or imported from one of 4 different sources. Overall the existing site soil is a good mix with a fairly high clay content, however as different areas of the park had different types of soil imported, there are areas that have more sandy and/or more clay based soils. As the park becomes actively used it will be necessary to amend the drier sandy soils with higher clay content soils to achieve better compaction in areas that become dry, loose and uncompacted. To a lesser extent it might be necessary to amend some of the higher clay content soil with a more sandy mix to enhance drainage in areas that retain water and remain wet after irrigation and or rain events.

IDEAL SOIL MIX GUIDELINE: The ideal soil mix for dirt features at bike parks is a high clay content soil approach (40% Clay / 60% Sand). Imported soil should be free of rocks, pebbles, trash and debris and samples should be provided and approved prior to delivery to the site.

ONSITE SOIL STOCKPILE: It is recommended to keep an onsite soil stockpile that is easily accessible for loading machines and equipment and consists of a high quality soil mix.



Aerial view showing worker prep a berm turn using a tiller. Prepping a larger area with a tiller.



Condition soil with rake or shovel, chop up clods, then smooth, shape and compact.

Bike Park Operations and Maintenance Plan

Action Sports Construction



Conditioning a larger work area with a skid steer. Conditioning a soil stockpile with an auto sifter.

STEP 3: FILLING AND SHAPING

Once the work area has been moisture conditioned, the soil has been conditioned use the prepared soil to fill any cracks, pits, holes, etc. that might exist in lifts of a few inches at a time. Use shovel, hand tamper, vibrating plate compactor or machine bucket to compact each lift then add more prepared soil as needed to repair the work area to the surrounding grades.

FILLING AND SHAPING GUIDELINE: When filling and shaping dirt features shape to constant radiuses, match and blend grades to the existing feature. When shaping the dirt jumps match jump take of grades to the concrete kicker ramps which are 12.5' radius. All features in the park will require finish grading and shaping that are not possible to easily or effciently measure or check as they are composed of compund curves, etc. therefore the proper technique is to finish grade and then ride test to ensure proper flow.



Finished jump set. Using a tiller to condition soil and fine tune landing.

Bike Park Operations and Maintenance Plan

Action Sports Construction



Using shovels to pack and shape dirt jump lip. Using the concrete kicker to shape to.



Continue to moisture condition, soil condition, shape and compact throughout the process.



Final shape jump set with kicker lip on the front end and a lander transition on the back end.

Bike Park Operations and Maintenance Plan

Action Sports Construction

STEP 4: COMPACTING

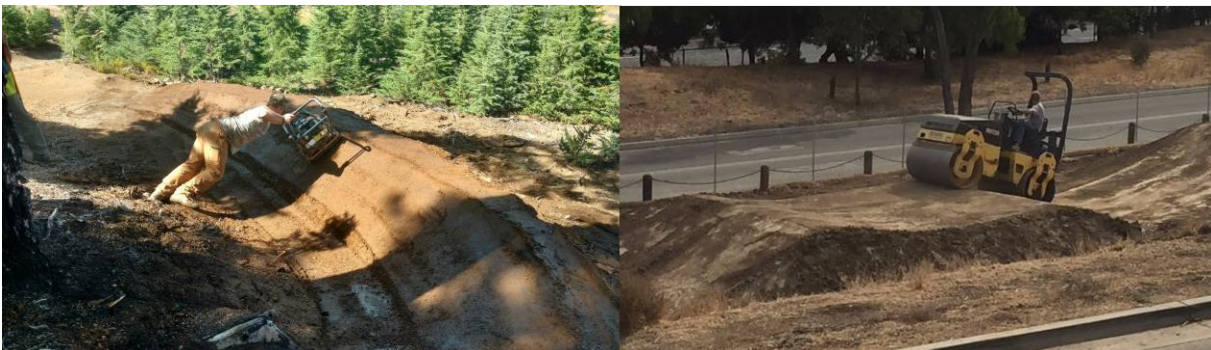
Once the work area has been filled and shaped a final round of compaction will ensure the highest quality end product. Using shovel, hand tamper, vibrating plate compactor, machine bucket, water roller or vehicle moisture condition soil and the repeatedly compact area until a high level of compaction is achieved.



COMPACTION GUIDELINE: When compacting an area the final condition should be such that if you walk or ride over the surface you are not leaving shoe prints or tracks deeper than (1/16" deep). Soil should not be displaced. If you are using a compaction testing tool (85%) compaction or higher is recommended.



Using a push broom to smooth out the jump lip and prep for final compaction. Final compaction with golf cart.



Compacting a berm turn with a vibrating plate compactor. Compacting the large dual slalom features with a roller compactor.

Bike Park Operations and Maintenance Plan

Action Sports Construction

STEP 5: RIDE TESTING

Ride testing at each stage of the process to ensure proper flow and good geometries is critical.



Ride testing the dirt jumps after a long build day.

9. Standard Maintenance of Asphalt Riding Surfaces

An Asphalt riding surface is a rapidly growing element incorporated into municipal cycling facilities. An asphalt riding surfaces is highly durable and requires very little maintenance. In order to maintain its durability, it is recommended to sweep or blow the asphalt free from any leaves or debris as needed. Keeping the leaves and other debris from building up on top of the asphalt surface helps prevent the tar binder within the asphalt from drying out. This helps prevents cracking in the pavement as well as helps maintain a positive drainage flow. It is also recommended to seal the asphalt with a rubberized urethane sealant one year after the initial install of the asphalt riding surface. It is then recommended to reapply the sealant every 2-4 years depending on the climate.



Bike Park Operations and Maintenance Plan

Action Sports Construction

10. Routine Maintenance of Prefab Steel Framed and Wood Riding Features

STEP 1: CREATE ACCESS TO EQUIPMENT

In order to gain access to the framework, anchors, fasteners, screws, bolt heads, etc. of the prefab riding features it might be necessary to excavate soil near the feature or even to remove pieces of the feature itself or parts of the framework, or materials. This might require the usage of tools such as pry bars, rock bars, automotive straps, and equipment such as skid steers with forks, etc. Refer to PBR documentation for all feature maintenance.

STEP 2: REMOVE FASTENING HARDWARE

In order to replace broken or damaged boards, parts or components the first step is to remove the fastening hardware. While most of the fastening hardware is stainless steel, galvanized or powder coated, hardware becomes weatherized and corroded over time. In addition fastening hardware can become marred, stripped, or broken at time of installation. In order to remove hardware it is useful to apply lubricant prior to the physical remove of the fastener. Make sure to use the properly sized tool for the job and to ensure that you are working in a safe manner as fasteners can quickly loosen or give way unexpectedly. Be prepared with a cutting tool such as a grinder in case fastener have become fixed in position due to weatherization or corrosion. Note which pieces have been removed and in what order to be able to replace.

STEP 3: MATCH REPLACEMENT MATERIALS, HARDWARE AND FASTENERS

Once the damaged materials and hardware have been removed, it must be matched with new materials and hardware. This might involve cutting boards down to size or ordering replacement parts from the manufacturer.

STEP 4: INSTALL REPLACEMENT MATERIALS, HARDWARE AND FASTENERS

Once matched materials have been sourced install the new items using the notes from the removal process to ensure all of the critical fasteners have been reinstalled properly.

STEP 5: FIELD AND RIDE TESTING

Once the installation of the replacement materials has been completed make sure to field and ride test by slowly putting weight on the repaired piece. If the repaired area seems to be structurally sound and is holding weight, make sure to ride test to ensure it is functioning properly.

11. Routine Seasonal and Annual Maintenance

Seasonal maintenance includes; end-of-season maintenance, drainage maintenance, start-of-season maintenance, weed control, and soil stabilization.

11.1 End-of Season Annual Maintenance

End of season maintenance is critical for the operation of the park. End of season maintenance should coincide with the forecasted rainy season when the bulk of the rain is expected. During this period the park and or specific riding features should be closed for general operations and be prepared for seasonal protection, drainage maintenance and larger scale seasonal maintenance.

Bike Park Operations and Maintenance Plan

Action Sports Construction

11.2 Drainage maintenance and protection

Maintenance of drainage features and ensure proper grading away from features and into drainage systems - inlets, basins etc. should be performed prior to close of season and before the seasonal rains come. This is a critical step to minimize pre-season maintenance and ensuring the minimal erosion of features, infiltration of dirt in storm water systems, etc. Drainage inlets, basins, etc. should be protected in areas where there is minimal vegetative growth that holds the soil together. In these areas additional straw waddles, filter fabric, etc should be strategically deployed to slow the movement of water and sediment into drainage systems.



Winterizing drainage inlets with straw waddles and filter fabric will ensure they don't clog or release sediment into the storm water system.

11.3 Start-of-Season Maintenance

At the start of the riding season, post winter, routine maintenance will be required. This maintenance will include resurfacing of features to repair any damage or erosion caused by rain or other weathering. The grading will include fill any holes, cracks or erosion ruts that have formed. Clearing, cleaning out and enhancing and areas that might have sedimented in with heavy rainfall. In addition to this routine maintenance at the start of each season larger scale grading and regrading of features might be required to address any risk management and/or riding quality issues identified in the previous season of operations. In addition to these maintenance activities soil stabilization and weed control activities will be a major priority at the start-of-season.

11.4 Grading and Resurfacing of features

Start-of-season maintenance will include substantial grading and resurfacing of riding features. Each of the riding zones should be worked and maintained from top to bottom fix any issues, making any necessary maintenance repairs and modifying any features that have been identified in the annual review process.

Bike Park Operations and Maintenance Plan

Action Sports Construction



Applying soil stabilizer at the beginning of the season to extend the functional life of a pump track.

11.5 Weed Control

Weed control will have to be performed at the start of season and should include aggressive trimming and cutting of vegetation on non-riding surfaces that will limit growth, while leaving roots and minimal growth intact to ensure good soil stabilization. All riding surfaces should be cleaned of all vegetative growth using a combination of weed whacker, propane torch. In addition pesticide and pre emergent should be applied to kill and prevent vegetative growth over the season.



Annual weed growth to be expected shown in the skills trail and dirt jumps. Applying pesticide and pre-emergent seasonally is recommended to minimize weed growth.



Burning weeds with a propane torch and weed whip or brush cutter.