Chapter 4 Airport Maintenance Guidelines

In This Chapter
• What is the annual operational schedule for airports? • What needs to be done at the airports on a seasonal basis? • How should the airports and their airfields be maintained? • What are WSDOT's standards for maintenance? • What is the standard process for removing airspace obstructions?

In order to maintain the highest possible quality of facilities and services for its airport users, WSDOT Aviation's airport maintenance guidelines provide general operating and maintenance procedures for the state-managed airports. The following sections provide specific standards, as well as general guidelines that may be tailored to fit the unique operating characteristics for each individual airport. Most of the airports are rural and low activity with minimal infrastructure.

Airport maintenance is accomplished through various resources including airport volunteers, WSDOT maintenance crews, and maintenance contractors. Additionally, it should be noted that the WSDOT Aviation Airport Manager (also referred to herein as the "Airport Manager") has the ultimate responsibility for ensuring that the sections within this chapter are utilized, maintained and updated. Specifically, the Airport Manager is responsible for the following:

- Review and update each section's current standards and applications as required on an annual basis.
- Review and update this section's checklists, forms, and logs as required on an annual basis.
- Maintain records of all checklists, forms, and logs.

Section Contents

Make Sure
- Check that the sections are current!
- Do they need to be updated?

Key Section Dates

Information is only as good as its current relevance. Therefore, it is important that the information contained within this chapter be updated on a regular basis to ensure that it remains appropriate to current conditions. The following table presents the dates that each section was formally adopted by WSDOT Aviation, as well as the scheduled date for the next internal review of each section to ensure its currency.

Section	Current Date	Scheduled Review Date
4.1 Describe the WSDOT Aviation Airport Operational Procedures and Schedules	7/1/10	6/1/11
4.2 Describe the WSDOT Aviation Airfield Maintenance Guidelines	7/1/10	6/1/11
4.3 Describe the WSDOT Aviation Airport Maintenance Guidelines	7/1/10	6/1/11
4.4 What Are Vegetation Control Guidelines	7/1/10	6/1/11
4.5 What Are the Obstruction Identification and Removal Practices	7/1/10	6/1/11
4.6 Chapter References and Supporting Documentation	NA	

4.1 Describe the WSDOT Aviation Airport Operational Procedures and Schedules

To provide uniform standards and limit risk, WSDOT Aviation must establish guidelines for annual and seasonal maintenance activities at the state-managed airports. This section will address this issue as well as airport opening and closing procedures, and general system maintenance procedures.

Annual Airport Activities

The following maintenance activities are general guidelines in keeping WSDOT airports operational on a seasonal and annual basis. More specific instructions on seasonal opening and closing procedures are discussed in the later portion of this section. Also note that an Annual Airport Activities form that summarizes the following activities has been provided at the end of this section to help the Airport Manager organize, track, and document this process.

Winter Season Activities (December, January, and February)	
Documentation	
1	Review and update airport 5010s, WSDOT Aviation website and Airport Facilities Directory (AFD).
2	Review and update WSDOT *Aviation Operations Handbook*, as required.
3	Review WSDOT *Aviation General Aviation Security Guidelines* manual for currency.
4	Review Airport Security Plans for each state-managed airport for currency and update as appropriate.
5	Review all property management documentation for currency, including airport leases, special use agreements, through-the-fence (TTF) agreements, rights of entry agreements, easements, and similar documents.
6	Review all WSDOT Adopt-an-Airport agreements to ensure they are up to date and reflect current people/organizations responsible for maintenance.
7	Review airport maintenance program and all associated contracts for currency.
8	Review all established contractor and supply vendor agreements for currency.
9	Review contracts for fertilizer, herbicides and other products to ensure currency for next spring.
10	Review annual airport herbicide applications from the previous year to ensure complete documentation and appropriate personnel licensing.
11	Schedule Spring volunteer work parties and identify priorities for each airport.
12	Meet with WSDOT maintenance supervisors to review maintenance plans and develop maintenance schedules for applicable airports.
Supply Controls	
1	Scope and budget fertilizer, herbicides, and seeding/planting quantities that will be required for the upcoming year.
2	Order fertilizer, herbicides, and seeding/planting quantities required for the upcoming year.
3	Scope and budget requirements for airport-related materials (i.e., windsocks/wind cones, frames, tie-down chain material, other parts and supplies) and place order with vendor.
4	Order airport-related materials required for the upcoming year.
Administration	
1	Meet with WSDOT maintenance supervisors and establish airport maintenance schedule for the upcoming year.
2	Establish WSDOT Adopt-an-Airport maintenance schedule and schedule volunteer work parties for the upcoming year.
3	Establish date for airport caretakers' orientation seminar and notify participants (will include FirstAid/CPR training).
4	Identify capital projects and conduct the necessary cultural resource, environmental, and applicable construction design efforts.

Operations	
1	Conduct any general maintenance and construction activities at available airports (given seasonal access limitations).
2	Conduct any required tree removal activities at available airports (given seasonal access limitations).
3	Conduct required maintenance operations on WSDOT Aviation equipment.

Spring Season Activities (March, April, and May)	
Documentation/Supply Controls/Administration/Operations	
1	Conduct year's initial airfield inspections to determine that seasonal airports are ready for opening. Includes inspection of all airport buildings to determine what, if any, damage occurred during the winter months. The section on "Seasonal Opening" will provide a reference tool for this activity. (See Airport Maintenance Inspection Form at the end of this section for requirements.)
2	Conduct airport orientation seminar for maintenance personnel (includes First Aid/CPR training).
3	Fertilize airports listed in "Fertilizer" section of this handbook.
4	Apply initial general herbicide application at airports as referenced under Section 4.4 of this handbook. (*Note:* Follow up spot applications will also be made in the summer season during airport inspections.)
5	Inspect and repair applicable irrigation and potable water systems and turn on water at airports having irrigation and/or potable water systems.
6	Conduct mowing operations after completion of fertilizing at available airports (given seasonal access limitations).
7	Conduct any scheduled maintenance and construction activities at available airports (given seasonal access limitations).
8	Install runway edge pavement lights, reflective markers and other support tasks.
9	Install airport guest log book.
10	Inspect and refurbish airport markings.

Summer Season Activities (June, July, and August)	
Documentation/Supply Controls/Administration/Operations	
1	Conduct mowing operations after completion of fertilizing at all airports.
2	Conduct routine airfield inspections at all airports. Inspections are to occur during each airport visit.
3	Conduct routine/scheduled maintenance activities at all airports.
4	Conduct any scheduled construction activities at airports.
5	Initiate and develop special studies, i.e., airport master plan/ALP, vegetation management plan.
6	Initiate project applications, environmental and or cultural resource reviews, and applicable construction design efforts as needed.

Fall Season Activities (September, October, and November)	
Documentation/Supply Controls/Administration/Operations	
1	Conduct annual fall turf seeding and vegetation planting activities.
2	Provide courtesy update/call to FAA to confirm the planned closing schedule of airports (typically November 1).
3	Drain and winterize all irrigation and potable water systems.
4	Close all appropriate airports, per the close airports checklist and post on the aviation website.
5	Write letter to airport maintenance volunteers thanking them for their summer activities.
6	Report volunteer hours worked.
7	Remove runway edge pavement lights and reflective markers.
8	Identify capital improvements, planning and other needed projects and submit projects to the Director for inclusion in the Statewide Airport Capital Improvement Program (ACIP) for the following year.

Activities Occurring on an Ongoing Basis	
Documentation/Supply Controls/Administration/Operations	
1	Review and document any construction as-built plans and basemaps that may have been updated during the previous construction season.
2	Conduct any applicable airport planning efforts.

Seasonal Airport Opening Activities

Prior to opening an airport, a WSDOT representative should verify that all aviation, recreational, and maintenance facilities are fully functional and operational for airport users and operators. Depending on the seasonal weather conditions, a seasonal opening date may fluctuate and thus dates should be established on a per airport basis. Some seasonal openings and closures are dictated by the operating agreement with other agencies. For the majority of the seasonal airports, June 1 will be the targeted opening date. The Airport Manager should visit the at least one to three months prior to opening as the following items should be inspected.

A Seasonal Airport Opening Procedure Form has also been included at the end of this chapter to help the Airport Manager organize, track and document this process. This form acts as a supplement to the Airport Maintenance Inspection Form (see below) that should also be completed during the airport opening process.

Airport Opening General Guidelines
Aviation Facilities
The following aviation-related facilities should be examined and inspected prior to openings: • Runways (condition, grass length, debris, damage, weed control, etc.) • Runway Approaches/Obstructions • Runway/Taxiway Lights/Markers • Aircraft Parking (including hangars and tie-down areas) • Aircraft Loading Areas • Helicopter Pads • Aircraft Fueling Areas • Wind Indicators/Segmented Circles • Airport Signage • Fences, Gates, and Locks • Other Structures, Facilities, and Equipment • Cameras, Utilities, etc. • Mailboxes and Guest Sign-in Books
Recreational Facilities
The following recreational facilities should be examined and inspected prior to openings: • Picnic Tables • Shelters • Sanitary Facilities • Trash Disposal Facilities • Drinking Water • Non-Aviation Related Signing (airport identification, recreational, directional, etc.) • Ground Vehicle Parking Areas
Maintenance Facilities
The following maintenance facilities should be examined and inspected prior to openings: • Irrigation Systems • On-Site Equipment (tractors and mowers, ATVs, chainsaws, weed cutters, miscellaneous hand tools, etc.) • Equipment Storage Buildings • Airport Access Roads • Materials Stored at Airport for Replacement and Repair (windsocks, signs, posts, fence wire, irrigation system parts, etc.)

Seasonal Airport Closure Activities

Before officially closing an airport for the season, a WSDOT Aviation representative should conduct a final inspection to determine if any necessary maintenance repairs are needed for following year. In addition, a final inspection will allow WSDOT Aviation to ensure that all airport equipment is protected from any winter storms.

A Seasonal Airport Closing Procedure Form has also been included at the end of this section to help the Airport Manager organize, track and document this process. This form acts as a supplement to the Airport Maintenance Inspection Form (see below) that should also be completed during the airport closing process. The following table lists general guidelines in preparing airports for a seasonal closure.

Airport Closure General Guidelines	
1	Store or secure any aircraft tie-down equipment.
2	Close fuel lines if necessary.
3	Cover or store any recreational equipment that may be damaged during winter storms.
4	Remove any remaining trash from the disposal facilities.
5	Follow the procedures for the fall-shut down checklist for sprinkler systems.
6	Store and secure all airport maintenance equipment.
7	Verify if any replacement materials are needed for airport repairs. In this event, there will be sufficient time to order and receive items before seasonal openings.

Regular Airport Inspections

Inspections of the state-managed airports are to be conducted a minimum of three times a year by an authorized WSDOT Aviation representative. Additionally, an inspection is to occur at an airport each time an authorized WSDOT Aviation representative visits the airport.

The WSDOT Aviation representative is to complete an Airport Maintenance Inspection Form (see below) and return it to the Airport Manager for review and filing.

4.2 Describe the WSDOT Aviation Airfield Maintenance Guidelines

Airfield maintenance refers to all maintenance activities directly related to airport areas that accommodate aircraft operations. Proper runway grading, marking, and lighting guidelines should be followed in order to provide users with the safest possible operating environment and all maintenance and repairs shall be noted in the airport maintenance log. Additionally, snow removal procedures will allow those airports open year-round to maintain operations through periods of inclement winter weather. Along with providing runway access, aircraft parking and wind cone maintenance are additional aspects of maintaining a safe and effective airfield to meet the demands of local and transient customers. Also as detailed in Section 3.2, maintenance crews shall comply with all applicable airport rules and regulations. Vehicles operating beyond the aircraft parking areas should have the necessary lights and warning signals (i.e., amber rotating beacon) to operate in the airport movement area that would include the runway environment. Specifically, this section addresses the following items.

- Turf Runways and Runway Safety Area
- Gravel Runways
- Paved Runways
- Runway Pavement Markings
- Runway Lighting
- Runway Edge Markers
- Snow Removal
- Aircraft Parking
- Segmented Circle/Wind Cone Maintenance

Turf Runways, Runway Safety, and Infield Areas

Turf runways and runway safety areas should be mowed at least three times during the growing season to about 2 inches in height in order to maintain a desired overall grass height. It is important that the turf height is uniform and regular maintenance of turf runways will also prevent weeds and other unwanted plant life from developing. Runway shoulders, infields, turf aircraft parking areas, and building foundations should be moved at least once during the growing season to about 6 inches in height depending on desired overall grass height.

Proper fertilizing, weed control, seeding, mowing, and watering will ensure level turf surfaces.

WSDOT Aviation shall have the turf runways fertilized on a regular basis to maintain height uniformity. Fertilizer shall be standard commercial fertilizers supplied separately or in mixtures containing the percentages of total nitrogen, available phosphoric acid, and water soluble potash. They shall be applied at the rate and to the depth specified herein. (A recommended general fertilizer has a formula of approximately 10-8-6, which is 10 percent nitrogen, 8 percent phosphoric acid, and 6 percent of potash.) However, the specific mix shall be determined by WSDOT Region Maintenance based on local environmental conditions. Seeding dates, species, and seeding rates must be compatible with local climate and soil conditions. Due consideration must be given to longevity of plants, resistance to traffic and erosion, and attraction of birds or large animals. More than one seeding season may be specified, if appropriate.

Keeping the runway turfs properly irrigated will better help pilots identify WSDOT's airports. Due to seasonal fluctuations, sprinkler schedules should be adjusted as needed to ensure proper turf growth. ***Note:*** The water shall be sufficiently free from oil, acid, alkali, salt, or other harmful materials that would inhibit the growth of grass.

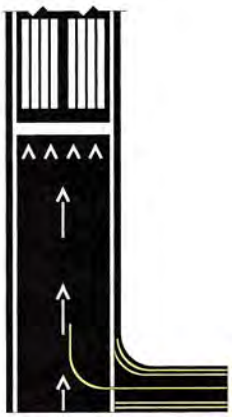
Gravel Runways

Rolling and compacting is required at the state-managed airports having gravel runway surfaces. Each of these runways shall be inspected annually for compaction by the Airport Manager, at whose discretion further scheduling for compacting by a WSDOT Region Maintenance asphalt roller will be arranged. Additionally, at the discretion of the Airport Manager, oiling of the runways to promote compaction shall be conducted on an annual basis or as needed to address airport safety

Paved Runways

The goal of any pavement maintenance program is to provide a safe and operable pavement for the least possible cost. An effective maintenance program will provide the owner with sufficient information to assess how to obtain the greatest return for funds expended. As such, paved runways at the state-managed airports shall be inspected annually for condition assessment to coordinate with the existing WSDOT Aviation Pavement Management Plan. Based on yearly inspections and being consistent with the Pavement Management Plan, preventive maintenance (including crack sealing, pavement markings, fog sealing, slurry seal, etc.) will be scheduled.

Runway Pavement Markings



In general, runway pavement markings are comprised of anything painted on a runway (e.g., runway numbers, thresholds, edges) and are usually painted a minimum of every three to five years. This schedule can be accelerated based on the requirements of the pavement management plan and any associated maintenance. The approved paint and equipment for runway pavement marking maintenance will be provided by WSDOT and will be in accordance to the specifications detailed in FAA AC 150/5340-1J, *Standards for Airport Markings*, as well as any additional WSDOT pavement marking requirements.

Runway Lighting

Runway lighting fixtures whether elevated or in-pavement require a high degree of maintenance. The primary issue with elevated light fixtures is they are more easily susceptible to being run over or damaged. Therefore, broken glass or electric wiring may be exposed creating a hazard to airport users. Of the state-managed airports, three currently have runway lighting, all of which are elevated.

A preventive maintenance scheduled provided by the FAA is shown below and is likewise reflected above in Section 4.1. ***Note:*** Replacement light bulbs at all state-managed airports shall meet the lighting fixture manufacturer technical specification. Additionally, inspection of the state-managed airport lighting systems shall be conducted by the Airport Manager or a qualified person identified by the Airport Manager. Repairs and replacement shall be noted in the maintenance pavement log.

Runway Lighting Preventive Maintenance Schedule
Routine Checks
At those state-managed airports that have a caretaker or local contractor, visually check lights on a weekly basis for dimly lit bulbs, burned out/broken lamps, or dislocated/broken fixtures. Record the location of these fixtures and make corrections as soon as possible. In addition, check lenses for cleanliness.
Monthly Checks
Check the orientation of all lenses as misaligned lights will either appear dimmer or brighter than those properly aligned. Realign all lights that have been moved out of alignment. Check lamp sockets for cleanliness and a good connection. Lastly, inspect and clean the weep hole in frangible coupling for stake-mounted lights.
Semi-Annual Checks
It is important to check the ground elevation around the light fixtures to ensure that the frangible point is approximately 1 inch above the ground. WSDOT shall grade any surfaces that are less than 1 inch above ground elevation. The height of the lights should not exceed 14 inches when located within 5 feet of a runway or taxiway edge. The lights may be raised 2 inches for every foot beyond 5 feet in snow regions of Washington. Therefore, at the 10 foot position lights can be a maximum height of 30 inches. An increase in height may be permitted assuming that an overhanging part of an aircraft expected to use the runway could clear the light by 6 inches. Check light bases and housing for moisture as well as corrosion and check gaskets, seals, and clamps for deterioration and damage.
Annual Checks
For seasonal WSDOT airports, annual checks should be conducted prior to the season's airport opening. A WSDOT representative should check each light carefully for cracking, corrosions, or shorts. In addition, clean contacts to ensure lamp fitting and check the condition of all connections.

Additional maintenance procedures relating to lamp replacement, spare unit replacement, film disc cutouts, inspections, cleaning, and moisture may be found in FAA Advisory Circular 150/5340-26A, *Maintenance of Airport Visual Aid Facilities*. The figure below depicts runway lighting preventative maintenance procedures.

	Maintenance Requirement	Daily	Weekly	Monthly	Semi Annual	Annual	Unscheduled
1.	Inspect for outages; repair as necessary.	X					
2.	Check cleanliness of lenses.	X					
3.	Perform photometric testing (HIRL) and check light alignment and orientation.			X			X
4.	Realign lights as needed.			X			X
5.	Clean fixtures and sockets.						X
6.	Check light elevation.				X		
7.	Check for moisture in lights.				X		
8.	Inspect fixture for rust and deterioration.					X	
9.	Check lamp fitting and clean contacts.					X	
10.	Check gaskets.					X	
11.	Remove snow and/or vegetation from around lights.						X

Runway Edge Markers

Runway edge markers differ from pavement markings in that the former are individual units installed along the edge of a runway, while the latter is simply paint on pavement. ***Note:*** Markers should be present on turf runways where pavement markings are not possible. Keeping runway edge markers functional and visible to airport users increases the level of safety at the state-managed airports. These airfield markers should be inspected at the opening and close of each season as well as on routine airport inspections as described in Section 4.1. The Airport Manager will determine guidelines for replacing runway edge markers on a case-by-case basis.

The markers currently utilized by WSDOT Aviation for all of its applicable airports is Valley Illuminators, L-853 – Markers, Retroreflective, in compliance with FAA AC 150/5345-39C, *Specification for L-853, Runway and Taxiway Retroreflective Markers*.

The installation and removal schedule for these markers is detailed in the Annual Airport Activities form.

Snow Removal

Snow, ice, drifting snow, and reduced visibility at airports in areas subject to below freezing temperatures can severely affect wintertime operational safety. The presence of snow, ice, or slush on paved airport movement surfaces frequently causes hazardous conditions that contribute to aircraft accidents, incidents, and reduced traffic volumes, resulting in delays, diversions, and flight cancellations. Airport management's approach to snow and ice control procedures on paved surfaces will largely determine the extent to which these effects can be minimized.

Note: *For the state-managed airports, only three airports have paved runway surfaces, and of those, only Methow Valley and Woodland have snow removal operations.*

1. **Management** – Since the state-managed airports that conduct snow removal operations are not directly monitored by the Airport Manager, WSDOT Aviation normally utilizes a contractor located on or near those airports to report on snow accumulation. However, it is important to state that the WSDOT Aviation Airport Manager will ultimately determine when snow removal operations shall begin through coordination with those individual contractors.

   Additionally, during winter events, those contractors shall continuously check the runway for snow depth and braking. WSDOT Aviation shall issue a NOTAM if any snow conditions present a hazard to aircraft operations further necessitating closing the airport.

2. **Vehicles** – As detailed in Section 3.2, all snow removal vehicles should be equipped with a two-way radio communication device that shall monitor the airport CTAF at all times. Outside contractors operating snow removal vehicles on the airport shall understand and comply with all applicable airport rules and regulations. Vehicles operating beyond the aircraft parking areas should have the necessary lights and warning signals (i.e., amber rotating beacon) to operate in the airport movement area that would include the runway environment.

3. **Snow Removal Priorities**

Priority 1	Clear the main runway using a continuous circuit pattern starting from leading edges and working towards centerline.
Priority 2	Clear parallel taxiways using a continuous circuit pattern starting from the leading edges and working towards the centerline.
Priority 3	Clear aircraft parking and tie-down areas with snow being relocated to stockpile areas.
Priority 4	Plow airport access roads and public parking lots as the last and final snow removal priority.

4. **Snow Removal Equipment** – WSDOT Aviation shall maintain a listing of snow removal equipment utilized on its airports.

5. **General Snow Removal Procedures** – While conditions at individual airports vary widely and may require special removal methods or techniques, there are general criteria that should be followed as closely as possible. In general, airport users should be promptly notified, and a NOTAM should be issued immediately, advising of unusual airport conditions. The following should be considered in your snow removal plans.

6. **Initiating Snow and Ice Control Operations** – Start snow and ice control operations on Priority 1 areas beginning with the primary instrument runway or active runway, as soon as snow or frozen precipitation begins to fall. Sweepers, if available, should be used to keep the center bare. As soon as snow has accumulated to a depth that cannot efficiently be handled by the sweepers, displacement plows and rotary plows should be dispatched to remove the build up. If the pavement is warm enough for snow to compact and bond, or if freezing rain is forecast, anti-icing chemicals should be applied prior to the start of precipitation or as soon after its start as possible. When snow has melted or begins to accumulate, or any ice that has formed has been disbonded from the pavement by the chemical, sweepers should remove this residue.

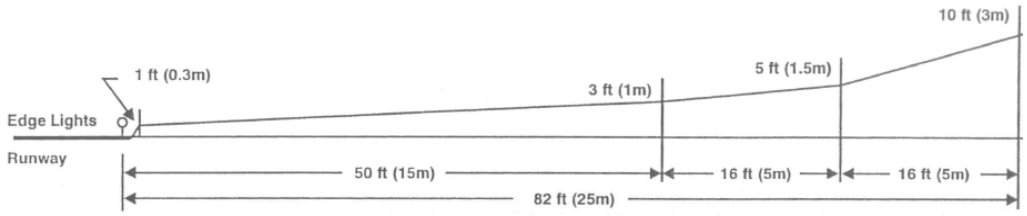
7. **Storm Severity** – The intensity of a snowstorm will determine the extent of the area to be cleared initially. The objective should be to clear the entire Priority 1 area; but should snowfall be too heavy to accomplish this, operations should be reduced to keeping the center of the Priority 1 runway and its taxiway open. If the full width of the runway cannot be cleared, this situation should be reported in a NOTAM giving details of the cleared width to allow each operator to judge the suitability of conducting operations, since aircraft requirements differ. If this width will not meet minimum operational requirements, operations should be reduced further or curtailed, and efforts should be concentrated on satisfying those requirements.

8. **Clearing the Runway** – Clearance of snow from the runway is accomplished most effectively by operating a plow team in echelon, using a number of displacement plows to move the snow with a minimum of rehandling into a windrow which can then be cast beyond the edge lights by a rotary plow. The number of displacement plows to be used should be based on the volume of snow handled and the capacity of the rotary plow. Blades should not be dropped onto the pavement until the equipment is in order to avoid damage to pavement and equipment. A safe distance should be maintained between vehicles operating in a team to avoid accidents resulting from loss of visibility. If visibility suddenly drops to near zero, while plowing operations are in progress, equipment should stop immediately and radio its position to the supervisor or snow desk. No further movement should be attempted until visibility improves.

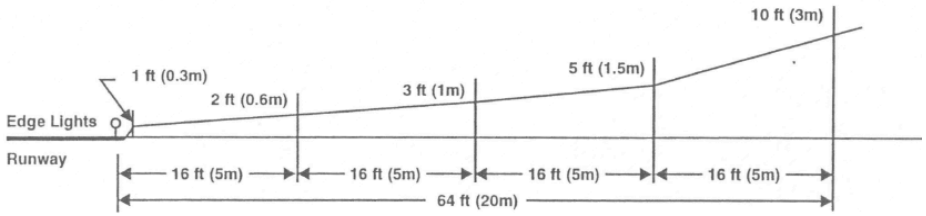
9. **No-Wind Condition** – If no wind is blowing, snow can be cleared to either side of the runway. Selection of casting direction can then be based on storage capacity of the field adjacent to the runway; visibility considerations, avoidance of structures, NAVAID's or other devices; and least effort clearance. If a wind is blowing, however, free choice of clearance direction may not be possible because movement of snow into the wind will result in considerable drifting back onto the cleared areas and will reduce the operator's visibility. In the case of a cross wind, clearance is best accomplished by plowing and casting with the wind regardless of the situation on the side of the runway where the snow will be deposited.

10. **Coordination of Equipment** – Equipment movements must be carefully timed and coordinated to ensure an orderly turnaround and safe reentry at the start of the return pass.

11. **Snow Bank Height** – The height of a snow bank on an area adjacent to a runway, taxiway, or apron should be reduced to provide wing overhang clearance and preclude operational problems caused by ingestion of ice into turbine engines or propellers striking the banks prior to the area being reopened to aircraft operations. (The following figure shows the desired maximum snow height profile which generally should be obtained.) This profile should be checked for the most demanding airplanes used at the airport to ensure that props, wing tips, etc., do not touch the snow with a wheel at the edge of the full-strength pavement. When conditions permit, the profile height should be reduced to facilitate future removal operations and to reduce the possibility of snow ingestion into jet engines. Also note that snow banks should not be allowed within the area between a glideslope and the runway.



a. Runways and Taxiways Used by Airplanes in Design Groups V and VI.*



b. Runways and Taxiways Used by Airplanes in Design Groups I, II, III, and IV.*

* As defined in AC 150/5300 13

12. **Areas of Attention** – Movement areas where aircraft will operate at high speeds such as turnoffs should receive the same snow and ice control attention as runways. Areas of low speed operation such as taxiways and ramps can also be critical under some conditions. Directional control and braking action should be maintained under all conditions.

13. **Runway Lights** – In heavy snow areas, it is helpful to place flags on flexible stakes extending 1 or 2 feet above the edge lights. Visibility is enhanced by using international orange flags. Time and effort in clearing snow from around the lights is minimized by plowing as close as possible to them. The remaining snow can be blown away using a truck-mounted air blast unit, the air blast from a broom, or by spraying with liquid deicing chemical. In some cases, edge lights may be raised. As a last resort, hand shoveling may be necessary.

14. **Airport Signs** – The face of all signs and all lights should be kept clear of snow and in good repair at all times, with priority given to lights and signs associated with instrument approach functions.

    Pavement Markings – Striated pavement markings are useful in reducing ice buildup.

    More detailed information on developing and implementing a snow removal plan during winter operations may be found in the FAA AC 150/5200-30C, *Airport Winter Safety and Operations*.

Aircraft Parking

Aircraft parking provides local and itinerant aircraft users with space to store their aircraft. These designated areas should be maintained to support all aircraft operations. WSDOT Aviation should inspect these spaces for cracking in pavement/ruts in turf or gravel and take corrective action as necessary. In general, remove any type of FOD from aircraft parking areas.

Segmented Circle/Wind Cone Maintenance

Segmented circles aid pilots in locating obscure airports and provide a centralized location for such indicators and signal devices as may be required on a particular airport. Typically co-located with the segmented circle are wind cones or windsocks that provide wind surface conditions at airports. These should be located in a position that affords maximum visibility to pilots in the air and on the ground.

These structures should be carefully checked during opening, closing, and routine inspections for any imperfections. FAA specifies certain requirements for the wind cone and segmented circle equipment, which can be found in FAA AC 150/5340-5C, *Segmented Circle Airport Marker System*, and FAA AC 150/5345-27D, *Specification for Wind Cone Assemblies*. The FAA also lists preventative maintenance procedures in FAA AC 150/5340-26A, *Maintenance of Airport Visual Aid Facilities*, for lighted wind cones which are outlined below. (***Note:*** These are also reflected in Section 4.1.)

Segmented Circle/Wind Cone Preventive Maintenance Schedule
Routine Checks
At those state-managed airports that have a caretaker or local contractor, visually check bulbs on a weekly basis to ensure they are burning each night. If the lights are not burning at full capacity, check to see that the voltage is not too low by verifying with the manufacturer's specifications. If the wind cone is not lighted, then ust check the integrity of the structure.
Monthly Checks
Since weekly checks are unlikely to be performed at every state-managed airport, monthly checks have a greater priority. The wind cone assembly should swing freely in a 360 degree position without encountering any obstructions, and the condition of the fabric should be examined at close range. Replace fabric that is badly worn or faded in color and remove any obstructions blocking wind cone movement.
Bi-Monthly Checks
If the wind cone is lighted, replace lamps after 80 percent of the rated life prior to 90 percent of rate lamp life. A schedule of necessary lamp replacements should be established and updated periodically. When replacing lamps, clean globes as well.
Semi-Annual Checks
Clean and lubricate wind cone bearings as cold weather conditions may cause the wind cone to be sluggish. Also, take insulation reading to ensure that power is not being lost as a result of insulation deterioration.
Annual Checks
Annual checks should be conducted at the opening for seasonally active WSDOT airports. During this inspection, secure and tighten the assembly bolts as needed. In addition, check the electrical wiring and the ground system. The ground system should be checked for loose connections as well as resistance. Repaint wind cones/ segmented circles as necessary.

The figure below depicts lighted wind cone preventative maintenance procedures.

	Maintenance Requirement	Daily	Weekly	Monthly	Bimonthly	Semi Annual	Annual	Unscheduled
1.	Check lamp operation.	X						
2.	Check photocell operation.	X						
3.	Check for freedom of motion of wind cone frame.			X				
4.	Check condition of wind cone fabric.			X				
5.	Check lamp age for scheduled replacement.				X			
6.	Clean glassware.				X			
7.	Check paint on segmented circle.				X			
8.	Clean and grease bearings.					X		
9.	Read insulation resistance.					X		
10.	Check mounting bolts.						X	
11.	Check wiring at hinge.						X	
12.	Check grounding system resistance.						X	
13.	Check paint on wind cone structure.						X	
14.	Remove vegetation and check condition at foundation.							X

4.3 Describe the WSDOT Aviation Airport Maintenance Guidelines

This section addresses specific airport maintenance guidelines that are not exclusive to airfield activities. Specifically, this section addresses the following items.

- **Airport Signage** – Highway/road, landside and airside airport signage provide direction to airport users and operators. It is essential that signage is maintained and complies with current standards mandated by WSDOT and/or FAA.
- **Sprinkler Maintenance** – Maintenance of the sprinkler systems is a crucial aspect of most airports given the turf runways and surrounding landscapes. The proper sprinkler or irrigation procedures will provide users with a safe and aesthetically pleasing operating environment.
- **Access Road Maintenance** – It is incumbent upon WSDOT Aviation to provide safe access to its state-managed airports through proper inspection and maintenance of access roads.
- **Fencing and Gate Maintenance** – The proper inspection and maintenance of airport fencing and gates are essential in maintaining the safety and security of airport.

Sign Maintenance

All airport signage should serve as a visual identifier for airport users. Directional and location signs should adhere to WSDOT Aviation and FAA specifications. Some general guidelines of sign maintenance include:

- Remove any obstructions from signage that may cause it to be unreadable.
- Repaint any signs that have faded due to age and weathering.
- Replace signs that no longer serve any airport function.
- Verify that signage is securely grounded either to a facility structure or natural base.
- Review any updated FAA or WSDOT regulations to ensure that signage is compliant with current standards.

For those signs that require replacement, the following procedure shall be observed.

Sign Replacement Procedure	
1	Airport Manager identifies/establishes specifications for sign to be replaced. *Note:* Due to the potentially wide variety of signs in use at the state-managed airports, it will be incumbent upon the Airport Manager to utilize appropriate sign design specifications. These may be found within WSDOT Aviation, WSDOT, or FAA (see references below).
2	Airport Manager or WSDOT Region Maintenance contacts WSDOT Yakima Sign Shop, places order and supplies shipping information.
3	WSDOT Yakima Sign Shop completes order and ships to WSDOT Region Maintenance or local airport caretaker/sub-contractor.
4	WSDOT Region Maintenance or local airport caretaker/sub-contractor replaces sign.

Sprinkler Maintenance

Proper sprinkler maintenance is an important aspect of landscaping and water conservation. WSDOT Aviation shall follow the manufacturers' maintenance specifications for all airport irrigation systems in order to appropriately maintain those systems. For basic sprinkler systems, the following preventive maintenance schedule should be utilized. (***Note:*** This is also reflected in Section 4.1.)

Spring Checklist
It is important to properly test the sprinkler system during the spring season in preparation for the peak summer season when the system will need to be fully functional and operational. Below are a few considerations: • Close all manual drains. • Open up the main valve allowing water to fill between cross connection prevention assembly. • Pressurize the mainline from backflow prevention. Assemble and have one valve open to allow trapped air to escape through the sprinkler heads. • Run the entire sprinkler system. – Be mindful of signs of leakage or damage to the sprinkler heads. – Make sure that spray patterns are adjusted accordingly and are not blocked by any other materials. – Clean any clogged sprinkler heads or nozzles. – Replace any worn or damaged heads or nozzles.
Summer Checklist
The automatic sprinkler systems should be adjusted to a base schedule with possible fluctuations depending on seasonal rainfall patterns. WSDOT Aviation should specify an objective growth pattern to determine the necessary usage of water and to control maintenance budget costs. In addition, WSDOT Aviation should check for broken and misguided heads during routine inspections.
Fall Shut-down Checklist
WSDOT Aviation should winterize the sprinkler system prior to the winter season. The following procedures should be followed: • Turn off the system. • Follow manufacturers' recommended procedures for draining the system.

Stormwater Management Maintenance

Stormwater control systems at the state-managed airports are comprised primarily of drainage ditches, culverts, cross-culverts, detention ponds, bio-swales and stormwater drains. WSDOT Aviation shall inspect all stormwater management facilities and systems prior to spring opening of the airports for debris, clogs, and dams (as reflected in Section 4.1).

Any required maintenance of the systems will be coordinated by WSDOT Aviation with WSDOT Region Maintenance or appropriate sub-contractors to ensure proper operation of the system. All such maintenance operations shall follow applicable state environmental, construction, and safety standards (see WSDOT *Aviation Stormwater Design Manual* and the WSDOT *Regional Roadway Maintenance Program Manual* reference below).

Access Road Maintenance

In terms of maintenance, WSDOT Aviation considers access roads at the state-managed airports to be the equivalent as roads within the WSDOT *Regional Roadway Maintenance Program Manual*. Therefore, the Airport Manager shall utilize the latest edition of the manual for access road maintenance requirements.

Fencing and Gate Maintenance

In terms of maintenance, WSDOT Aviation considers fencing and gates at the state-managed airports to be the equivalent as fencing and gates within the WSDOT *Regional Roadway Maintenance Program Manual* and the WSDOT *Design Manual* M 22-01, Chapter 560. Therefore, the Airport Manager shall utilize the latest edition of the manual for fencing and gates maintenance requirements.

4.4 What Are Vegetation Control Guidelines

Vegetation control serves dual functions by providing users with some degree of native aesthetics and reducing wildlife hazards at airports. Additionally, effective and appropriate vegetation control can help reduce the development of obstructions on and around an airport, a critical factor for maintaining safe airport operations (see Section 4.5).

Note: WSDOT Aviation is currently working to update its specific vegetation control guidelines by formally establishing an aviation component within each region's Vegetation Management Plan (VMP). See Section 6.4.

For the purposes of the state-managed airports, vegetation includes all native and nonnative species of plant life. It is the responsibility of WSDOT Aviation to limit growth of vegetation in identified areas on and around an airport that may create airspace obstructions or hazards, or otherwise attract unwanted wildlife. Noxious weeds on airports shall also be addressed and controlled. The type and growth of each vegetative species will vary at different airports and further research is needed to develop and integrate a vegetation management practice for state-managed airports.

Due to the importance of appropriate vegetation control, WSDOT Aviation, in coordination with other resource agencies and land owners (where applicable), will be developing and integrating vegetation management plans for the state-managed airports located within one of nine WSDOT regions. Currently, WSDOT has adopted Vegetation Management Plans (VMP) for each WSDOT region within the state and have indicated that the VMP's were designed to incorporate other transportation assets such as rest areas and scenic vistas. As indicated above, it is the intent of WSDOT Aviation to develop an aviation component within each region's VMP. See Section 6.4 for additional information.

The primary work effort will be developed during the development of the Airport Master Planning process, other planning functions initiated at the state-managed airports or WSDOT regional updates. The VMP aviation component should include a typical cross section of the airport operations area and vegetation management zones that described maintenance considerations similar to the Roadside Vegetation Management Zones described in Figure 2 of the manual. The aviation component will also identify standards and specifications unique to airports. Once the draft aviation component has been completed, it will be circulated to the appropriate local organization, state, and/or federal agency for review and comment.

In the absence of a VMP, general vegetation control best management practices established within WSDOT should be utilized. The following sections include WSDOT Aviation's current standard approach/procedures with respect to vegetation control. These are described and/or referenced below.

General Vegetation Control

All vegetation control activities at the state-managed airports shall utilize appropriate existing vegetation procedures and specifications as detailed by WSDOT guidelines, standards, and manuals (see references below). Control methods must fully consider impacts to the airport and aircraft operations as well as address hazardous wildlife issues and vegetation obstructions that may impact critical airspace surfaces.

As stated above, WSDOT will utilize VMPs to determine the most appropriate tools, techniques and timing, for accomplishing prioritized vegetation maintenance activities. These plans, once developed, become the basis of an ongoing process of refinement and crew training, using annually documented experience of each area's proven success and lessons learned. Further information is provided in Section 6.5.

Note: One of the primary components of a VMP is the establishment of vegetation that is appropriate within an airport environment. With respect to this, WSDOT Aviation has already compiled a listing of appropriate native plants for use on the state-managed airports. This listing, Vegetation Recommendations for Airport Settings, has been provided at the end of this section for reference purposes.

Herbicide Use

Herbicides are efficient and effective tools for vegetation management and weed control. However, WSDOT recognizes there may be potential impacts to health and the environment, and minimizes herbicide use wherever possible. WSDOT uses herbicides in the following ways.

WSDOT Herbicide Use Purposes	
1	Maintain a vegetation-free strip at the edge of the pavement where necessary.
2	Maintain a vegetation-free paved or gravel runway or to control vegetation and noxious weeds on a turf runway.
3	Selectively control and eliminate undesirable plants within the airport operating environment.

Historically, about 60 percent of the herbicides used by WSDOT were for annual maintenance of a vegetation-free strip at the edge of pavement. For herbicides used to control weeds and other unwanted plants, WSDOT follows a process that helps ensure herbicides are used appropriately and only when necessary in combination with other effective control measures. The ultimate goal in any treatment is to replace unwanted vegetation with appropriate native plants. In many cases, herbicides are an effective tool for initial control of a problem that does not attract hazardous wildlife. When combined with other control measures, herbicide use can be minimized or eliminated over time.

Two important factors in herbicide selection and application are potential risks to human health and the environment. It is a current WSDOT policy that any herbicide used on state highway right of way be screened through a scientific risk assessment specific to application rates and methods used by the agency. This policy is reasonably applicable to state airports, as well. If certain herbicides are found to have a potential for higher toxicity to human health or the environment, their use on state airports may be limited, phased out, or immediately eliminated.

Important
- WSDOT has a very robust vegetative management program and support network established.

Findings from a 2005 WSDOT study indicated that for most herbicides in most situations, WSDOT's use of herbicides pose a low to very low potential risk to human and environmental health. In cases where the potential risks were calculated to be above low, WSDOT has placed limitations on use to further minimize potential for exposure. A table following this section (Herbicides Approved for use on WSDOT Rights of Way) outlines WSDOT use for individual herbicide including precautions and restrictions where they apply.

General Mowing and Trimming

WSDOT Region Maintenance or designated sub-contractor shall conduct mowing operations based on an approved airport-specific schedule and plan, see subsection 4.2.1. More frequent mowing operations will include turf runways, runway safety areas, turf taxiways, and all navigational aids, including wind socks, segmented circles, and runway lights, as appropriate. Additional areas, although on a less frequent schedule will include runway shoulders, infields, turf aircraft parking areas, and building foundations.

It is anticipated that all state-managed airport runways and safety areas (as appropriate) will be mowed a minimum of three times annually. All mowing and trimming operations shall abide by WSDOT standards, referenced below. Based on seasonal weather patterns, a mowing schedule will fluctuate based on monthly actual rainfall totals. It is important to inspect each airport on a regular basis to determine when mowing is needed and to anticipate such conditions based on weather forecasts.

General Vegetation Control

WSDOT Region Maintenance or designated sub-contractor shall also conduct general vegetation control activities at the state-managed airports in conjunction with the regularly scheduled mowing operations. These vegetation control activities will be based on an approved airport-specific plan. While a formal herbicide program will be developed as part of the upcoming VMPs, it should be noted that there is a general prioritization at the state-managed airports in terms of weed clearance as shown in the following table.

Airport Weed Clearance Priority	
1	Runway
2	Runway edge/shoulders
3	Runway lights
4	NAVAIDs (including wind socks, segmented circles, weather reporting equipment, etc.)
5	Helipads
6	Taxiways

Secondary clearance zones at the state-managed airports would include, but not be limited to, the following areas.

Airport Secondary Weed Clearance Zones	
1	Runway safety areas
2	Runway approach areas
3	Aircraft parking areas
4	Airport access drive
5	Automobile parking areas
6	Building foundations

4.5 What Are the Obstruction Identification and Removal Practices

Regardless of their size and operational levels, all airports have airspace surfaces established around them through a variety of regulatory means. The primary purpose of these airspace surfaces at a given airport is to ensure the safety of aircraft operating at or around that airport. This is particularly applicable for aircraft transitioning from air to ground and/or ground to air, when aircraft are typically most vulnerable to conflicts with ground-based objects. While the processes and requirements associated with these surfaces can be extremely complex (further detail is provided in Section 6.2 and Section 6.4), the critical consideration associated with all of them is that it is generally best for aircraft safety that these surfaces are kept clear of all man-made and natural obstructions.

It is a critical mission of WSDOT Aviation to protect the airspace above and surrounding the state-managed airports in order to help ensure the safety of aircraft transitioning from ground to air and vice versa. In the event of a natural or artificial obstruction to navigable airspace, WSDOT Aviation should follow FAA FAR Part 77 guidelines in identifying, reporting, and removing the obstruction. ***Note:*** The potential for such natural hazards (i.e., trees) is even more likely in remote parts of Washington where native plant life may pose the biggest threat to runway approach surfaces.

Important
- It is *critical* for safety to mainain airspaces that are clear!

This section describes the overall obstruction identification and removal process established by WSDOT Aviation for the state-managed airport system. It should be noted that this process will typically involve several levels of analysis, coordination, and action within WSDOT Aviation, WSDOT, and oftentimes other agencies, including FAA. As such, the process described below will include references to other related sections within this handbook that further describe other specific components of this process.

The following section encompasses WSDOT Aviation's current standard airport obstruction evaluation and removal process for the state-managed airports. ***Note:*** All of these steps shall be coordinated directly with the WSDOT Aviation Airport Manager.

Phase 1 – Identification and Planning	
1	Potential obstructions at the state-managed airports are identified through one or more of the following processes: • Annual airport 5010 inspections. • Routine WSDOT Aviation airport inspections (see Section 4.1). • Routine WSDOT Aviation airport maintenance as part of a Vegetation Management Program. • Airport Master Plan and airport layout plan. • Notifications from pilots and/or other agencies (including FAA).
2	Following the identification of potential obstructions, the Airport Manager will make a determination as to whether the potential obstructions: • Are not critical to airport operations and therefore no further action is required. • Are not critical to airport operations at that time, but require monitoring. • Warrant additional analysis. • Require remediation. The Airport Manager will make this determination through coordination within WSDOT Aviation, and with other interested agencies, as required.

Phase 2 – Design	
For obstructions that potentially require remediation, the Airport Manager will initiate the following planning and coordination efforts. (*Note:* Some of these will have to be conducted through a dedicated airport planning effort.)	
1	Identity obstruction type(s) and quantities.
2	Identify obstruction location(s) (on-airport/off-airport).
3	Coordinate with WSDOT Environmental, as required.
4	Coordinate with local jurisdictions, the USDA, and the FAA, as required.
5	Identify property considerations for off-airport obstructions (including property acquisition, avigation easements, etc.).
6	Identify and scope environmental considerations based on obstruction locations, including permitting requirements.
7	Negotiate and resolve considerations for off-airport obstructions (including real property values, property acquisition, acquiring avigation easements, etc.).
8	Determine if obstruction removal meets criteria for maintenance activity (WSDOT Region Maintenance) or capital project (competitive bid process).

Phase 3 – Permitting	
The Airport Manager will initiate the following processes for remediating the identified obstructions if identified as a capital project	
1	Coordinate with WSDOT Environmental Services to determine if removal would be exempt from environmental regulations.
2	Coordinate with local, state and federal jurisdictions, to determine permits and other requirements, as appropriate.
3	Coordinate with appropriate representatives and agencies to obtain appropriate environmental permits.
4	Obtain appropriate easements/access/right-of-entry permits.
5	Coordinate with other appropriate agencies having jurisdictional authority within the airport environment, including land owners.

Phase 4 – Construction	
The Airport Manager will initiate the following processes for remediating the identified obstructions	
1	Determine if remediation can be removed by WSDOT or if a qualified contractor should remove the obstruction.
2	If a qualified contractor is required to remove the obstruction WSDOT shall conduct a competitive bid process or other type of agreement as required to comply with WSDOT contracting standards (WSDOT *Advertising and Award Manual* M 27-02), resulting in the selection of a qualified contractor.
3	Service Agreement or On Call agreements may be easier for smaller projects
4	Conduct obstruction removal in compliance with established WSDOT standards, per WSDOT *Regional Roadway Maintenance Program Manual*.

Note: WSDOT Aviation must evaluate obstruction removal projects on an airport by airport basis as budget constraints and clearance requirements may adjust the priority level of such initiatives.

4.6 Chapter References and Supporting Documentation

Chapter References

The following tables include references for additional and/or supporting information with respect to the various sections of this chapter. This has been provided with the intent of providing the reader with a current listing of appropriate sources for additional information and research.

4.2 Describe the WSDOT Aviation Airfield Maintenance Guidelines
• FAA AC 150/5200-30C, *Airport Winter Safety Operations*. FAA. 9 December 2008
• FAA AC 150/5340-26A, *Maintenance of Airport Visual Aid Facilities*. FAA. 4 April 2005
• FAA AC 150/5370-10D, *Standards for Specifying Construction of Airports*. FAA. 30 June 1999
• FAA AC 150/5380-6B, *Guidelines and Procedures for Maintenance of Airport Pavements*. FAA. 28 September 2007
• FAA AC 150/5340-1J, *Standards for Airport Markings*. FAA. 29 April 2005
• FAA AC 150/5345-39C, *Specification for L-853, Runway and Taxiway Retroreflective Markers*. FAA. 14 September 2006
• FAA AC 150/5340-5C, *Segmented Circle Airport Marker System*. FAA. 14 September 2007
• FAA AC 150/5345-27D, *Specification for Wind Cone Assemblies*. FAA. 2 June 2004

4.3 Describe the WSDOT Aviation Airport Maintenance Guidelines
• WSDOT *Regional Roadway Maintenance Program Manual* (RRMP) M 51-01 www.wsdot.wa.gov/publications/manuals/fulltext/m51-01/maintenance.pdf
• WSDOT *Aviation Stormwater Design Manual*, 9/15/2009 www.wsdot.wa.gov/aviation/airportstormwaterguidancemanual.htm
• WSDOT *Sign Fabrication Manual* M 55-05 www.wsdot.wa.gov/publications/manuals/m55-05.htm
• FAA AC 150/5340-18E, *Standards for Airport Sign Systems*, 09/12/08
• FAA AC 150/5360-12E, *Airport Signing and Graphics*, 09/18/08
• WSDOT *Design Manua*l M 22-01 www.wsdot.wa.gov/publications/manuals/m22-01.htm

4.4 What Are Vegetation Control Guidelines
• WSDOT *Regional Roadway Maintenance Program Manual* (RRMP) M 51-01 www.wsdot.wa.gov/publications/manuals/fulltext/m51-01/maintenance.pdf
• WSDOT *Design Manual* M 22-01 www.wsdot.wa.gov/publications/manuals/m22-01.htm
• WSDOT *Standard Specifications for Road, Bridge, and Municipal Construction* M 41-10 www.wsdot.wa.gov/publications/manuals/m41-10.htm
• WSDOT *Airport Stormwater Guidance Manual* www.wsdot.wa.gov/aviation/airportstormwaterguidancemanual.htm

4.5 What Are the Obstruction Identification and Removal Practices
• Federal Air Regulation (FAR) Part 77 – *Objects Affecting Navigable Airspace*. FAA. 30 April, 2009
• FAA AC 150/5300-13, ch. 14, *Airport Design*. FAA. 1 November 2008
• FAA AC 70/7460-1K, *Obstruction Marking and Lighting*. FAA. 1 February, 2007
• FAA AC 150/5345-43F, *Specification for Obstruction Lighting Equipment*. FAA. 12 September, 2006
• FAA AC 150/5190-4A, *Model Zoning Ordinance to Limit Height of Objects Around Airports*. FAA. 14 December, 1987

Supporting Documentation

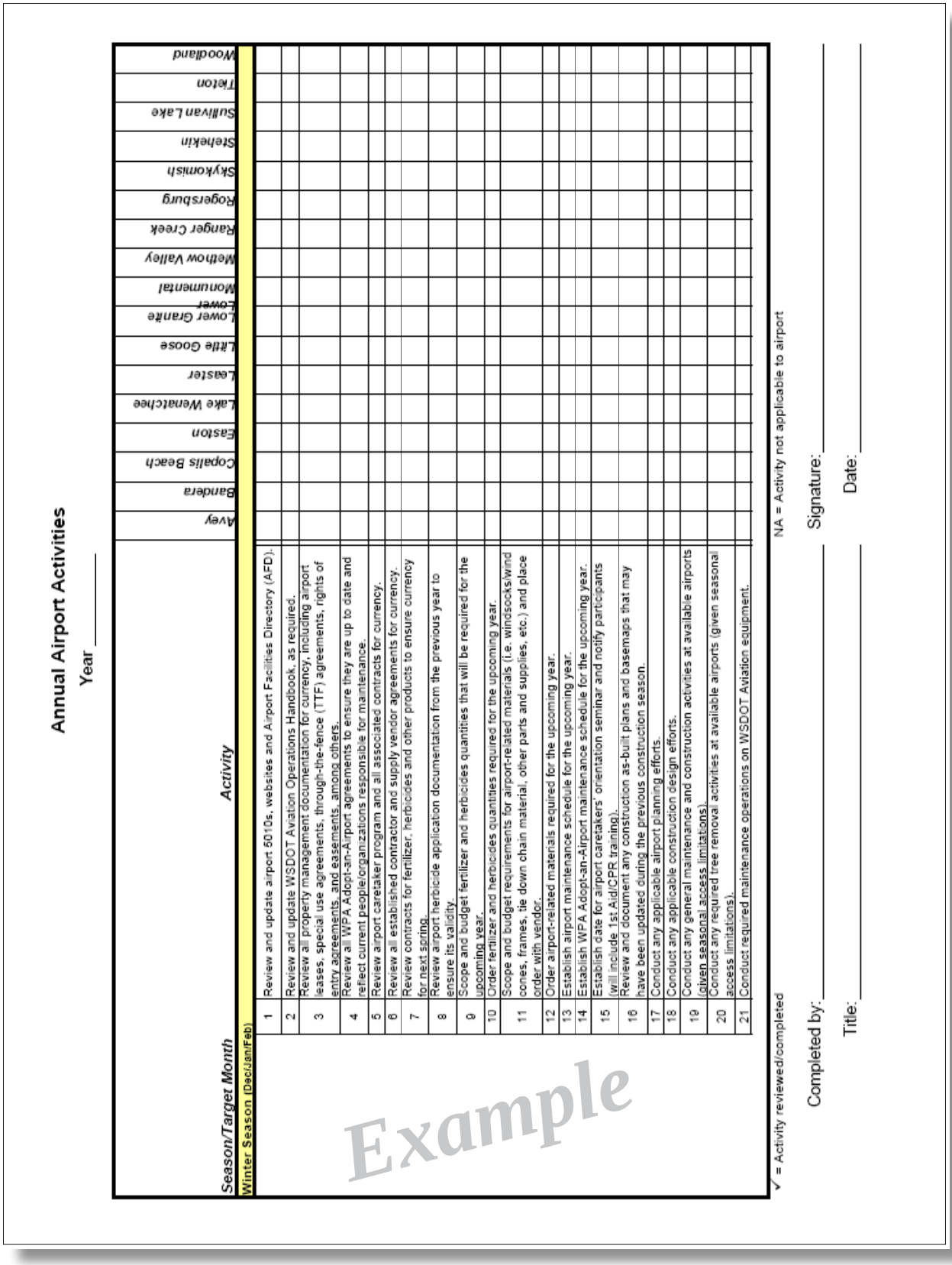
The following tables include supporting WSDOT Aviation-specific documents and resources to support the implementation of the various sections of this chapter. The following table provides a listing of these documents and resources.

4.1 Describe the WSDOT Aviation Airport Operational Procedures and Schedules
• Annual Airport Activities Form
• Airport Maintenance Inspection Form
• Seasonal Airport Opening Procedure Form
• Seasonal Airport Closing Procedure Form

4.2 Describe the WSDOT Aviation Airfield Maintenance Guidelines
• WSDOT Aviation Pavement Management Plan

4.4 What Are Vegetation Control Guidelines
• Herbicides Approved for Use on WSDOT Rights of Way
• Vegetation Recommendations for Airport Settings

4.5 What Are the Obstruction Identification and Removal Practices
• FAA Form 7460-1



Annual Airport Activities

Year _____

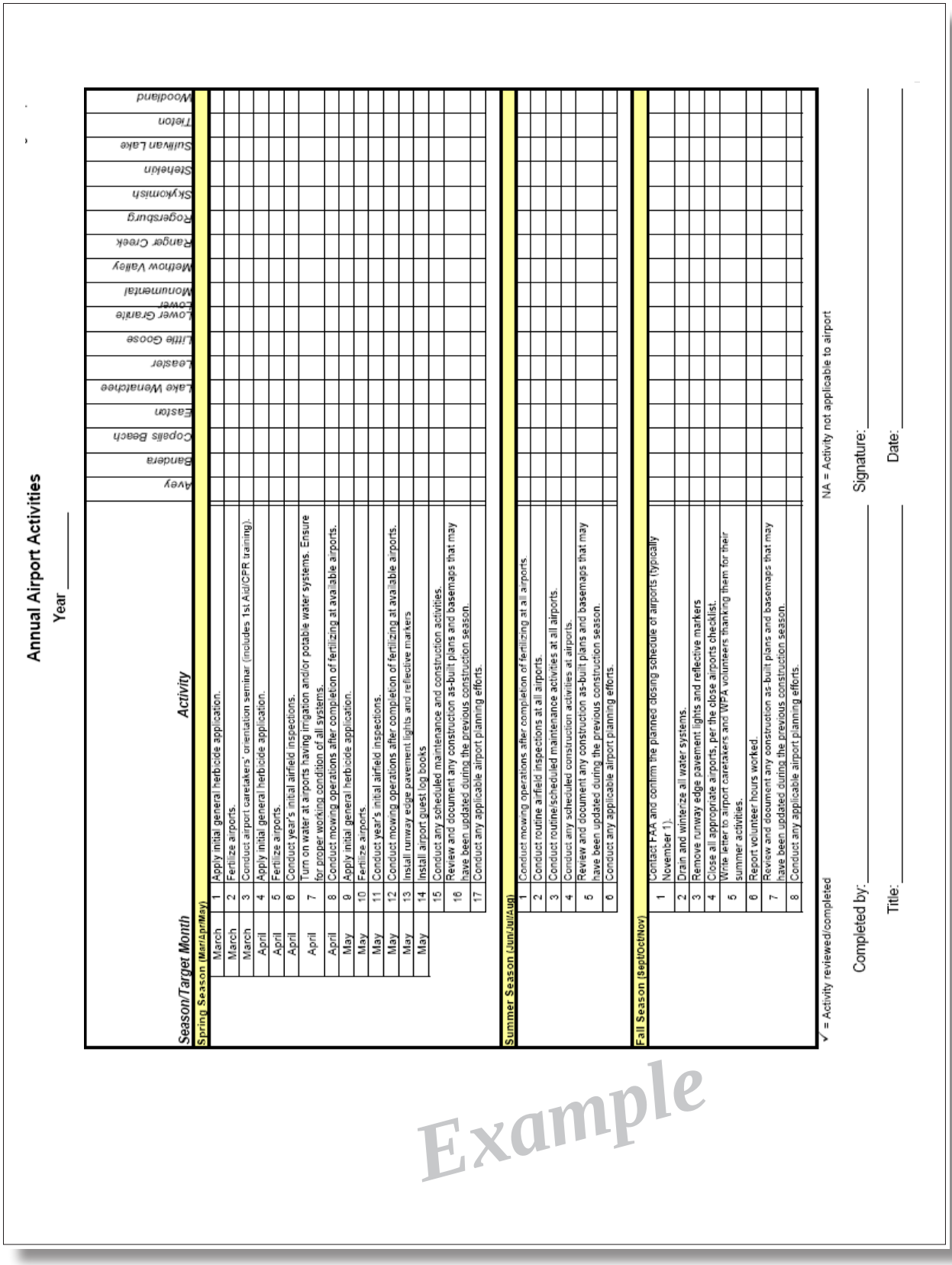
Season/Target Month		Activity	Avey	Bandera	Copalis Beach	Easton	Lake Wenatchee	Leaster	Little Goose	Lower Granite	Lower Monumental	Methow Valley	Ranger Creek	Rogersburg	Skykomish	Stehekin	Sullivan Lake	Triton	Woodland
Winter Season (Dec/Jan/Feb)	1	Review and update airport 5010s, websites and Airport Facilities Directory (AFD).																	
	2	Review and update WSDOT Aviation Operations Handbook, as required.																	
	3	Review all property management documentation for currency, including airport leases, special use agreements, through-the-fence (TTF) agreements, rights of entry agreements, and easements, among others.																	
	4	Review all WPA Adopt-an-Airport agreements to ensure they are up to date and reflect current people/organizations responsible for maintenance.																	
	5	Review airport caretaker program and all associated contracts for currency.																	
	6	Review all established contractor and supply vendor agreements for currency.																	
	7	Review contracts for fertilizer, herbicides and other products to ensure currency for next spring.																	
	8	Review airport herbicide application documentation from the previous year to ensure its validity.																	
	9	Scope and budget fertilizer and herbicides quantities that will be required for the upcoming year.																	
	10	Order fertilizer and herbicides quantities required for the upcoming year.																	
	11	Scope and budget requirements for airport-related materials (i.e. windsocks/wind cones, frames, tie down chain material, other parts and supplies, etc.) and place order with vendor.																	
	12	Order airport-related materials required for the upcoming year.																	
	13	Establish airport maintenance schedule for the upcoming year.																	
	14	Establish WPA Adopt-an-Airport maintenance schedule for the upcoming year.																	
	15	Establish date for airport caretakers' orientation seminar and notify participants (will include 1st Aid/CPR training).																	
	16	Review and document any construction as-built plans and basemaps that may have been updated during the previous construction season.																	
	17	Conduct any applicable airport planning efforts.																	
	18	Conduct any applicable construction design efforts.																	
	19	Conduct any general maintenance and construction activities at available airports (given seasonal access limitations).																	
	20	Conduct any required tree removal activities at available airports (given seasonal access limitations).																	
	21	Conduct required maintenance operations on WSDOT Aviation equipment.																	

✓ = Activity reviewed/completed NA = Activity not applicable to airport

Completed by: _____ Signature: _____

Title: _____ Date: _____

Annual Airport Activities Form



Annual Airport Activities

Year _____

Season/Target Month		Activity	Avery	Bandera	Copalis Beach	Easton	Lake Wenatchee	Leaster	Little Goose	Lower Granite Lower	Monumental	Methow Valley	Ranger Creek	Rogersburg	Skykomish	Stehekin	Sullivan Lake	Triton	Woodland
Spring Season (Mar/Apr/May)																			
March	1	Apply initial general herbicide application.																	
March	2	Fertilize airports.																	
March	3	Conduct airport caretakers' orientation seminar (includes 1st Aid/CPR training).																	
April	4	Apply initial general herbicide application.																	
April	5	Fertilize airports.																	
April	6	Conduct year's initial airfield inspections.																	
April	7	Turn on water at airports having irrigation and/or potable water systems. Ensure for proper working condition of all systems.																	
April	8	Conduct mowing operations after completion of fertilizing at available airports.																	
May	9	Apply initial general herbicide application.																	
May	10	Fertilize airports.																	
May	11	Conduct year's initial airfield inspections.																	
May	12	Conduct mowing operations after completion of fertilizing at available airports.																	
May	13	Install runway edge pavement lights and reflective markers																	
May	14	Install airport guest log books																	
	15	Conduct any scheduled maintenance and construction activities.																	
	16	Review and document any construction as-built plans and basemaps that may have been updated during the previous construction season.																	
	17	Conduct any applicable airport planning efforts.																	
Summer Season (Jun/Jul/Aug)																			
	1	Conduct mowing operations after completion of fertilizing at all airports.																	
	2	Conduct routine airfield inspections at all airports.																	
	3	Conduct routine/scheduled maintenance activities at all airports.																	
	4	Conduct any scheduled construction activities at airports.																	
	5	Review and document any construction as-built plans and basemaps that may have been updated during the previous construction season.																	
	6	Conduct any applicable airport planning efforts.																	
Fall Season (Sept/Oct/Nov)																			
	1	Contact FAA and confirm the planned closing schedule of airports (typically November 1).																	
	2	Drain and winterize all water systems.																	
	3	Remove runway edge pavement lights and reflective markers																	
	4	Close all appropriate airports, per the close airports checklist.																	
	5	Write letter to airport caretakers and WPA volunteers thanking them for their summer activities.																	
	6	Report volunteer hours worked.																	
	7	Review and document any construction as-built plans and basemaps that may have been updated during the previous construction season.																	
	8	Conduct any applicable airport planning efforts.																	

✓ = Activity reviewed/completed NA = Activity not applicable to airport

Completed by: _____ Signature: _____

Title: _____ Date: _____

Annual Airport Activities Form

Airport Maintenance Inspection Form

Airport: _____

Inspection Date: _____

Inspector's Name: _____

Item	Inspection Type	Action Required	Action Due Date	Notes
Runway Surface				
Paved Runway *(condition, cracking, damage, sub-surface failures, weeds, debris, etc.)*	Visual			
Turf Runway *(grass length, weeds, debris, damage, erosion, rutting, rodents, etc.)*	Visual			
Gravel Runway *(condition, compaction, damage, erosion, rutting, weeds, etc.)*	Visual			
Additional Notes:				
Runway Obstructions				
Runway Approach Ends (use back of sheet for sketches of conditions)	Visual & Instrument			
Runway Area (use back of sheet for sketches of conditions)	Visual & Instrument			
Runway Sides (use back of sheet for sketches of conditions)	Visual & Instrument			
Additional Notes:				
Runway Critical Areas				
Runway Safety Areas (condition, debris, damage, erosion, rutting, etc.)	Visual			
Runway Object Free Areas (condition, obstructions, debris, etc.)	Visual			
Runway Obstacle Free Areas (condition, obstructions, debris, etc.)	Visual			
Additional Notes:				
Miscellaneous Runway Factors				
Runway Lights (condition, bulbs, damage, etc.)	Visual			
Runway Markers (condition, damage, etc.)	Visual			
Runway Paint Condition (condition, damage, fading, etc.)	Visual			
Additional Notes:				

Airport Maintenance Inspection Form

Airport Maintenance Inspection Form

Airport: _____

Inspection Date: _____

Inspector's Name: _____

Item	Inspection Type	Action Required	Action Due Date	Notes
NAVAIDS				
Secmented Circle *(condition, damage, etc.)*	Visual			
Windsock Indicator *(condition, damage, etc.)*	Visual			
Weather Station *(condition, damage, etc.)*	Visual & Operational			
Aircraft Transceiver (radio) & Antenna	Visual & Operational			
Additional Notes:				
Other Airfield Facilities				
Paved Taxiway *(condition, cracking, damage, sub-surface failures, weeds, debris, etc.)*	Visual			
Turf/Gravel Taxiway *(grass length, compaction, weeds, debris, damage, erosion, rutting, etc.)*	Visual			
Paved Aircraft Parking *(condition, cracking, damage, sub-surface failures, weeds, tiedowns, etc.)*	Visual			
Turf/Gravel Aircraft Parking *(grass length, compaction, weeds, debris, damage, erosion, rutting, etc.)*	Visual			
Aircraft Hangars (condition, damage, etc.)	Visual			
Additional Notes:				
Other Airport Facilities				
Drainage Facilities (culverts, ditches, etc.)	Visual			
Fences, Gates & Guard Rails (condition, damage, etc.)	Visual			
Airport Buildings (condition, damage, etc.)	Visual			
Access Road / Parking Area (condition, damage, etc.)	Visual			
Signage (condition, damage, etc.)	Visual			
Misc Airport Items (cameras, guest books, etc.)	Visual & Operational			
Irragation System (condition, damage, etc.)	Visual & Operational			
Additional Notes:				

Airport Maintenance Inspection Form

Airport Maintenance Inspection Form

Airport: _____

Inspection Date: _____

Inspector's Name: _____

Item	Inspection Type	Action Required	Action Due Date	Notes
Miscellaneous				
Public (potable) Water System *(condition, damage, etc.)*	Visual & Operational			
Public Restrooms *(condition, damage, etc.)*	Visual & Operational			
Campground Facilities (tables, fire pits, bbq stands, etc.) *(condition, damage, etc.)*	Visual & Operational			
Telephone (public and private) *(condition, damage, etc.)*	Visual & Operational			
Miscellaneous Equipment	Visual & Operational			
Projects	Visual			
Additional Notes:				

This completed form is to be submitted to the WSDOT Aviation Airport Manager for review and filing.

Airport Maintenance Inspection Form

Seasonal Airport Opening Procedure Form

(This form is to be filled out and attached to the standard airport inspection form when seasonal airports are opened.)

Airport: _____

Inspection Date: _____

Inspector's Name: _____

Item	Notes
Conduct Standard Airport Maintenance Inspection	
Preform General Airport Area Clean-Up	
Activate Irrigation System (if appropriate)	
Additional Notes:	

This completed form is to be submitted to the WSDOT Aviation Airport Manager for review and filing.

Seasonal Airport Opening Procedure Form

Seasonal Airport Closing Procedure Form

(This form is to be filled out and attached to the standard airport inspection form when seasonal airports are opened.)

Airport: _____

Inspection Date: _____

Inspector's Name: _____

Item	Notes
Conduct Standard Airport Inspection	
Preform General Airport Area Clean-Up	
Store or secure any aircraft tie-down equipment.	
Remove and store runway markers (if appropriate)	
Cover or store any recreational equipment which may be damaged during winter storms.	
Remove any remaining trash from the disposal facilities	
Follow the procedures for the fall-shut down checklist for sprinkler systems (if appropriate)	
Store and secure all airport maintenance equipment.	
Identifiy any replacement materials needed for airport repairs to open the next season.	
Additional Notes:	

This completed form is to be submitted to the WSDOT Aviation Airport Manager for review and filing.

Seasonal Airport Opening Procedure Form