



APPENDIX C

SOLID WASTE AND RECYCLING PLAN

Table of Contents

Appendix C	Solid Waste and Recycling Plan	C-1
C.1.	SUSTAINABILITY REQUIREMENTS RELATING TO WASTE	C-1
C.2.	WHAT IS SUSTAINABILITY?	C-1
C.3.	WHY BE SUSTAINABLE?	C-2
C.4.	HOW DOES SUSTAINABILITY RELATE TO FELTS FIELD?	C-2
C.5.	WASTE AUDIT	C-3
C.6.	ESTABLISHING AIRPORT RECYCLING/WASTE MINIMIZATION	C-5
C.7.	WASTE HIERARCHY	C-5
C.8.	RECYCLING FEASIBILITY	C-6
C.9.	PLAN TO MINIMIZE SOLID WASTE GENERATION	C-7
C.10.	OPERATIONAL AND MAINTENANCE REQUIREMENTS	C-7
C.11.	ENERGY EFFICIENCY	C-9
C.12.	SUSTAINABLE LANDSCAPING	C-9
C.13.	REVIEW OF WASTE MANAGEMENT CONTRACTS	C-10
C.14.	POTENTIAL FOR COST SAVINGS OR REVENUE GENERATION	C-10
C.15.	SUMMARY	C-10

Tables

Table C-1.	Steps to Recycling/Waste Minimization	C-5
Table C-2.	Typical Recyclables Generated at Airports by Source	C-8

Figures

Figure C-1.	Triple Bottom Line	C-1
Figure C-2.	Waste Streams	C-3
Figure C-3.	Waste Hierarchy	C-6
Figure C-4.	Airport Sustainability	C-10

Appendix C Solid Waste and Recycling Plan

This *Solid Waste and Recycling Plan* provides a general overview of sustainability requirements, efforts, and recommendations for Felts Field to encourage recycling and solid waste management at the airport. Chapter 1, “Existing Conditions” includes a complete description of the airport.

C.1. SUSTAINABILITY REQUIREMENTS RELATING TO WASTE

The FAA Modernization and Reform Act of 2012 expanded the definition of airport planning to include “developing a plan for recycling and minimizing the generation of airport solid waste, consistent with applicable State and local recycling laws, including the cost of a waste audit.” The act added a provision requiring airports that have or plan to prepare a master plan—and that receive Airport Improvement Program (AIP) funding for an eligible project—to ensure that a new or updated master plan addresses the following issues relating to solid waste recycling at an airport:

- The feasibility of solid waste recycling at the airport
- Minimizing the generation of solid waste at the airport
- Operation and maintenance requirements
- Review of waste management contracts
- The potential for cost savings or the generation of revenue

C.2. WHAT IS SUSTAINABILITY?

The United Nations convened the Brundtland Commission to address the growing concern about the deterioration of natural resources. In its 1987 report, the commission defined sustainability as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” Based on this definition, airport master plans need to carefully evaluate how programs and initiatives affect existing and future users and to consider the wider impact on the surrounding community and natural environment.

In considering the effects of Felts Field on the quality of the human environment, present and future problems should be addressed from the perspective of the “triple bottom line”—environment, economy, and social equity (i.e., to reduce the environmental impacts, maintain economic growth, and advance social progress that recognizes the

Figure C-1. Triple Bottom Line



needs of all airport stakeholders). Recycling refers to any program, practice, or opportunity to reduce the amount of waste disposed of in a landfill. This includes reuse and waste reduction, as well as the recycling of materials.

C.3. WHY BE SUSTAINABLE?

Along with improving the community and the natural environment, sustainability makes good business sense. Airports that have adopted sustainable practices have experienced tangible benefits including, but not limited to the following:

- Greater utilization of assets
- Reduced operating and maintenance costs
- Improved work environment for employees
- Reduced energy consumption
- Reduced waste
- Reduced emissions
- Improved water quality
- Positive community relationships

C.4. HOW DOES SUSTAINABILITY RELATE TO FELTS FIELD?

Airports large and small can incorporate sustainability into their master plans based on the needs and resources of each individual facility. Sustainability is a strategic investment that can leverage a facility's potential. Existing practices that fall within the sustainability realm include, but are certainly not limited to, using recycled materials for construction, available local materials, and recycled stormwater.

Like any initiative, sustainability measures need to be formally documented and tracked to measure progress. As a core part of this Master Plan, identified sustainability initiatives and activities have been formally documented. Areas of recycling and solid waste management can be split into multiple categories: those over which the airport has direct control, has influence, and has little or no control or influence.

The term solid waste is defined in accordance with the Resource Conservation and Recovery Act of 1976, but is generally, non-soluble, discarded solid materials, which includes sewage sludge, municipal garbage, industrial wastes, agricultural refuse, demolition wastes, and mining residues. Sanitary sewer wastes are not considered solid wastes.

The types of solid waste generated at airports include the following:

- **Municipal Solid Waste:** everyday items that are used and discarded. Recyclable municipal solid waste at airports includes, but is not limited to, aluminum and steel, glass bottles and containers, plastic bottles and containers, packaging, bags, paper products, and cardboard.

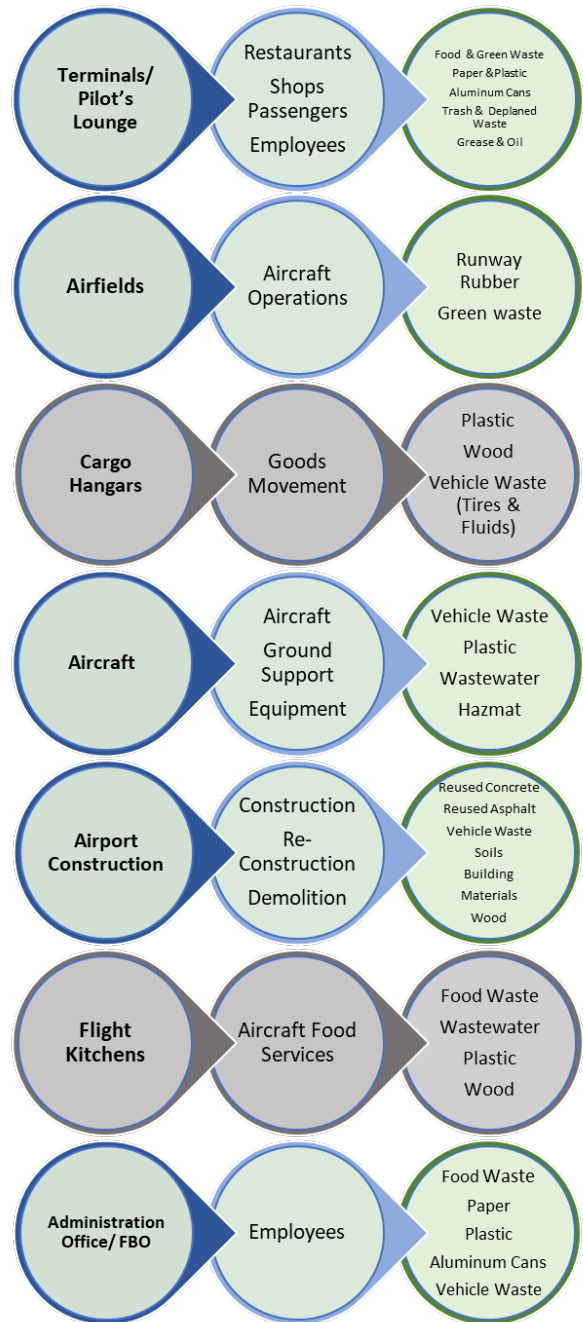
- **Construction and Demolition Waste:** any non-hazardous solid waste that results from land clearing, excavation, or construction, demolition, renovation, or repair of structures, roads, and utilities (i.e., concrete, wood, metals, soil, bricks, asphalt, rock, stone, gravel, roofing materials, drywall, carpet, plastic, pipe, rocks, and earthwork).
- **Compostables:** green waste (i.e., trees, shrubs, grass clippings, leaves, weeds, branches, and similar debris generated by landscaping activities) and food waste (i.e., unconsumed food or items generated during food preparation activities and discarded).
- **Deplaned Waste:** municipal solid waste removed from passenger aircraft (i.e., bottles, cans, newspapers, magazines, plastic cups/utensils).

C.5. WASTE AUDIT

As part of the Master Plan process, consultants are required to conduct a waste audit that considers any applicable federal, state, and local recycling and/or solid waste management laws. The FAA requires analysis to be conducted for three types of waste: solid waste, food and yard waste (compostable waste), and construction and demolition waste. Before recycling and waste minimization plans are developed, an inventory of current waste produced at an airport must be completed. A waste audit is a structured process that identifies what type of waste is generated, where it is created, and how much is collected. For Felts Field, the first step in the waste audit was identifying applicable waste streams, followed by categorizing when each stream peaks in waste production, and finding who is responsible for each stream.

In 2013, the FAA issued *Recycling, Reuse and Waste Reduction at Airports: A Synthesis Document*, which summarizes sources and streams of potential airport waste. Figure C-2 shows the seven identified streams.

Figure C-2. Waste Streams



The grayed out topic streams, flight kitchens and cargo hangars do not apply to Felts Field. The remaining five applicable streams are discussed below:



- Terminals:** Because there is no commercial service at Felts Field, the terminal primarily serves as a pilot’s and passenger lounge and the Skyway Cafe (restaurant in the terminal). Generated waste typically includes food, paper, plastic, aluminum cans, trash, and deplaned waste. The Skyway Cafe uses trash and multi-stream recycle bins maintained by the airport. The bins are collocated adjacent to the apron between the terminal and the Fixed Base Operator (FBO).

- Airfields:** Waste created from the runways and taxiways at Felts Field is typically limited to rubber from aircraft and vehicle tires, and green waste from mowing operations. Airfield wastes are usually solid or compostable and increase sharply in volume during warmer months. The airport disposes of such material on-site. Airfield maintenance vehicles (e.g., snow removal equipment and mowers) are stored and maintained in a central maintenance building on-site and maintained by airport staff. Waste generated from vehicle maintenance (e.g., (fuel or oil) is disposed of off-site by qualified material handlers. The waste audit noted trash and recycle bins at the maintenance building. Airport staff also uses a separate container for metal recycling, which is recycled off-site.



- Aircraft:** Maintaining aircraft- and ground-support equipment produces waste, including oil, grease, chemicals, plastic, wastewater, universal waste, and vehicle waste, such as tires and fluids (brake, transmission, etc.). The party responsible for aircraft- and ground-support equipment waste varies and is typically by whomever owns the vehicle or performs the maintenance. The amount of aircraft waste correlates with the number of operations at the airport.

- Airport Construction:** Construction at Felts Field is sporadic, corresponding with programmed Capital Improvement Program projects and time of year. Construction activities can create a large amount of waste (e.g., concrete, asphalt, wood, soil, and metal). These wastes increase during warmer months, because that is when construction usually occurs. Airport construction wastes are typically solid or comprises construction and demolition debris. Ownership of these wastes typically belongs to the construction company performing the work per contract documents. Some material, such as clean fill

or asphalt grindings, is disposed of on-site at the discretion of the airport. The waste audit noted temporary waste and recycle bins located next to a recently completed hangar.

- **Administrative Office/FBO:** Western Aviation is the FBO located mid-field next to the terminal. It includes a pilot’s lounge, FBO manager’s office, and offices for staff. These facilities produce waste, such as paper, plastic, aluminum cans, food, and universal waste. Office waste is usually solid or compostable and is steady throughout the year. The FBO is responsible for waste stemming from the pilot’s lounge and their operation.

C.6. ESTABLISHING AIRPORT RECYCLING/WASTE MINIMIZATION

The FAA encourages long-term airport recycling programs. To promote such programs, the FAA compiled 10 steps to design and implement an effective recycling/waste minimization program, noting that each airport is unique and faces its own issues (Table C-1). Felts Field should consider these steps as recycling options become available in the area.

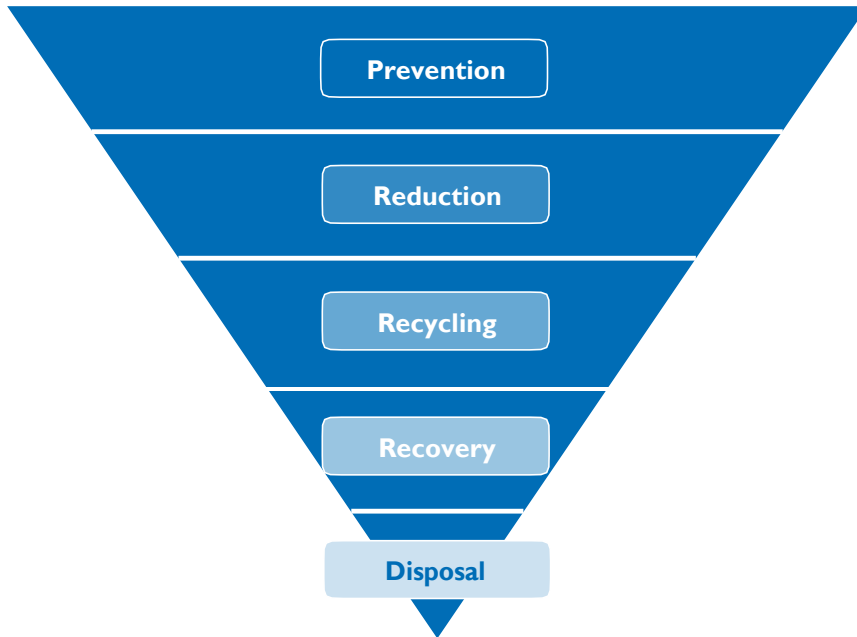
Table C-1. Steps to Recycling/Waste Minimization

STEP	DESCRIPTION
1	Commitment from Management
2	Program Leadership
3	Waste Identification
4	Waste Collection and Hauler
5	Waste Management Plan Development
6	Education and Outreach
7	Monitor and Refine
8	Performance Monitoring
9	Promote Success
10	Continuous Improvements

C.7. WASTE HIERARCHY

The *Airport Council International Policy Handbook* provides a waste decision hierarchy that shows—in order of decreasing priority—what constitutes the best overall waste management choices: to avoid; to reduce; to reuse; to recycle; to recover and finally, to dispose with the ultimate goal of eliminating waste going to landfills (Figure C-3). By this decision hierarchy, the first consideration should be given to minimizing the generation of waste at the airport and include opportunities for cost savings through improved management of waste, the feasibility of waste recycling at the airport, and the potential for generation of revenue from airport waste.

Figure C-3. Waste Hierarchy



C.8. RECYCLING FEASIBILITY

While many airports have implemented solid waste recycling programs, the scope of such programs varies considerably due to the size and location of different airports, the amount of waste being produced, and other external factors such as the following:

- Local markets for recycling commodities
- Cost for transporting and processing recyclables
- Local recycling infrastructure
- Willingness of an airport and its tenants to implement recycling programs
- The nature of an airport's waste stream(s)
- Competition between recycling and landfill firms
- Airport layout and logistics

There are many options for recycling materials in Spokane and Spokane Valley including, Pacific Steel & Recycling, Sunshine Disposal & Recycling, American Recycling Corporation, etc.

The majority of waste produced in the FBO, terminal, and administrative office streams is recyclable. Small recycling bins should be placed in each location, with appropriate signage, to collect recyclable waste. Recyclable waste can then be transported periodically to the larger recycle bins or other proper recycling facilities. The FBO and all private-hangar tenants should be encouraged to recycle all possible recyclable materials.

Tips provided by the U.S. Environmental Protection Agency to increase use of recycling bins include the following:

- Use large, clearly labeled signs to let the public know what materials they can recycle.
- Label signs with both graphics and words to communicate with non-English speakers. Consider posting signs in more than one language.
- Advertise the location of recycling bins and the importance of using them in transit ads, on printed schedules, and on the web.
- Post information and promotional messages throughout terminals.

Table C-2 lists typical recyclables generated at airports with corresponding sources, created and distributed by the FAA. This list should be referenced periodically to ensure that all recyclable materials at Felts Field are being recycled.

C.9. PLAN TO MINIMIZE SOLID WASTE GENERATION

An initiative to minimize solid waste generation should be created. Aspects of the initiative for promoting waste minimization follow:

- Include lease requirements for tenants.
- Require containers and space for recycling.
- Implement purchasing policies.
- Include contract requirements for contractors.

Furthermore, personnel at Felts Field should adopt an approach for tracking and reporting the data needed to review and evaluate on-going sustainability efforts. Simple data collection of weight, type, and frequency of waste recycled would be sufficient.

C.10. OPERATIONAL AND MAINTENANCE REQUIREMENTS

Operational and maintenance activities at Felts Field that produce waste materials are limited to snow plowing, grass mowing, and sweeping. While the snow removed by snow plows is not considered waste, the snow removal process itself can generate waste by accumulating foreign object debris. These items can potentially cause damage to people, aircraft, and airport property. Airport staff is responsible for ensuring proper disposal of such waste. The snow piles are created in strategic location on the field to melt. Airfield grass is cut (mulched) by a mower and left in place or disposed of elsewhere on-site.

Tenant waste resulting from operational and maintenance activities is produced by each hangar tenant, with varied output. Each tenant, including the FBO, is responsible for their own waste.

Table C-2. Typical Recyclables Generated at Airports by Source

		WHERE													
WHAT		Public Terminals	Ticketing	Security Gates	Food Service Area	Concessions, Retailers & Car Rental Facilities	Offices	Loading Docks	Maintenance Areas	Baggage Claim	Information Centers	Taxi Stands	Aircraft	Airfield Ramp Area	Construction and Demolition
		Electronics		X	X	X	X	X				X			
	Food Waste and Cooking Oil				X										
	Pallets							X	X						X
	Construction & Demolition Materials*								X					X	X
	Organics/Green Waste								X					X	
	Tires								X						
	Refrigerant				X	X			X						
	Antifreeze								X						
	Motor Oil								X						
	Scrap Metal								X						
	Batteries						X		X						
	Toner Cartridges		X			X	X	X	X						
	Corrugated Cardboard				X	X		X	X				X		
	Mixed Paper	X	X	X	X	X	X			X	X		X		
	Newspaper	X	X	X	X	X	X			X	X	X	X		
	Glass	X	X	X	X	X	X			X	X	X	X		
	Aluminum Cans	X	X	X	X	X	X			X	X	X	X		
	Plastic Beverage Bottles	X	X	X		X	X			X	X	X	X		

* Includes wood, asphalt, and concrete

Felts Field waste is produced by each construction project, to varying degrees. The construction companies are responsible for all waste collection and disposal produced by the projects. Recycling implementation and availability for Felts Field materials varies with each project.

Engineering Guidance 2013-04, “Standard Handout for Predesign Conference and Design Report” (December 2012, published by the Northwest Mountain Region) states the following:

“The Design Report serves to document the design considerations, engineering analysis and design selections that occur early in the design phase. The report must be an explanation of the engineer's design based on scope of the project, critical aircraft dimensions and weight, and analysis of materials and site conditions.”

Recycling of construction and demolition waste is one of the topics addressed in the design report. For example, planning to reuse millings produced from pavement demolition can significantly reduce the number of truck trips necessary to haul the millings off-site.

C.11. ENERGY EFFICIENCY

The FAA encourages all airports to increase energy efficiency and pursue alternate renewable energy sources. While limited, there are opportunities for increased efficiency at Felts Field. The following measures should be considered by the Sponsor or encouraged for private hangar tenants:

- Replace incandescent light bulbs with light-emitting diodes (LED) or compact fluorescent lamps.
- Install low-flow toilets in bathrooms.
- Install a programmable thermostat, building automation system, or Energy Management Control System.
- Use efficient ENERGY STAR-rated appliances and electronics.
- Apply glazing to windows.

C.12. SUSTAINABLE LANDSCAPING

Landscaping with native plants fosters sustainability. Native plants reduce erosion, increase property values, and prevent introduction of invasive plants. Native plants require less maintenance and fewer pesticide and fertilizer treatments because they are adapted to their environment.

Felts Field practices grasscycling, as recommended by the FAA, for all mowing of native grasses on airport property. Grasscycling is the process of leaving grass clippings in place after mowing, which then quickly decompose and return moisture and nutrients to the soil.

C.13. REVIEW OF WASTE MANAGEMENT CONTRACTS

Existing contracts may encourage or impede the purchase or use of environmentally preferred products (e.g., products with high-recycled content, minimal packaging, environmentally friendly cleaning products, etc.). Tenant leases and service contracts should be reviewed periodically for opportunities to add recycling, reuse, and waste reduction elements.

The airport maintains four dumpsters: two at the terminal and two at the maintenance shop. Recycle bins are collocated with the trash bins. The City of Spokane takes care of the trash, while Waste Management takes care of the recyclables. Containers are collected weekly. Trash is taken to the Waste to Energy Facility operated by the City of Spokane. Recyclables are taken to the Spokane Materials and Recycling Technology Center.

C.14. POTENTIAL FOR COST SAVINGS OR REVENUE GENERATION

Sustainable development requires a stewardship approach (Figure C-4) to ensuring quality of life for individuals and society and to preserving natural and human-made capital. Recommendations for changes to existing initiatives and activities to reduce the amount of waste going to the landfill must also consider the cost to the airport and local users.

Figure C-4. Airport Sustainability



C.15. SUMMARY

Without a doubt, the best way for the airport to move toward positive waste sustainability is to develop a program of awareness. All of the concepts and “plans” for waste sustainability do not help if they are not followed up with action. The airport’s first step is to raise the awareness of the issue with staff and the public, shown through actions the importance of the need by finding specific Felts Field solutions, great and small, to help move the airport and industry toward enhanced sustainability goals.