RAMSEY/WASHINGTON
RECYCLING & ENERGY
CONNECTING VALUE TO WASTE

Risk Analysis Report

Introduction

The purpose of this report is to provide an analysis of risks associated with undergoing any combination of processing enhancements for the R&E Center facility under consideration by the Ramsey/Washington Recycling and Energy Board. This is one of several reports that provide information to the R&E Board as it considers processing enhancements for the recovery of organics and additional recyclables.

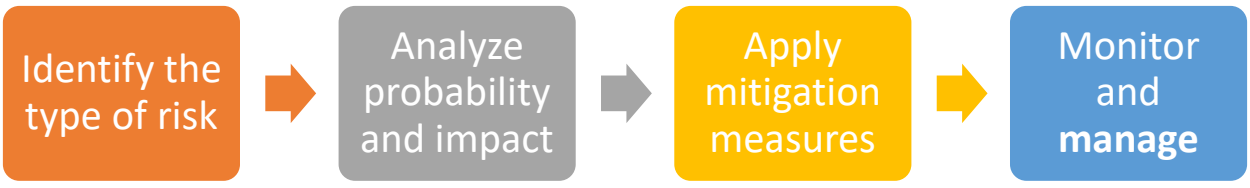
U.S. Government Accountability Office (GAO) defines risk and risk management the following way (Source: Government Accountability Office, Report # GAO-06-91, December 2005). These were the definitions used by the Risk and Legal Team in framing the Risk Impact Assessment.

- **Risk** - An event that has a potentially negative impact and the possibility that such an event will occur and adversely affect an entity's assets, activities, and operations.
- **Risk Management** - The continuous process of assessing risks, reducing the potential that an adverse event will occur, and putting steps in place to deal with any event that does occur. Risk management involves a continuous process of managing—through a series of mitigating actions that permeate an entity's activities—the likelihood of an adverse event and its negative impact. Risk management addresses risk before mitigating an action, as well as the risk that remains after countermeasures have been taken.

Various risks exist as the R&E Board pursues implementation of enhancements in the coming years. The Risk and Legal Work Team, consisting of R&E staff, County staff and consultants, worked on the evaluation and identified a variety of risks in several categories to aid the R&E Board in its decision-making process.

The Risk and Legal Work Team used a Risk Impact Assessment process to develop the results presented in the tables below. This process assesses the probabilities and consequences of various risk events. The results were then used to prioritize risks to establish a most-to-least-critical importance ranking. Ranking risks in terms of their criticality or importance provides insights to the R&E Board on where resources may be needed to manage or mitigate high probability/high consequence risks.

The following graphic illustrates the Risk Impact Assessment Process.



Risk Impact Assessment

The risk impact tool selected by the Risk and Legal Team is called a Risk Impact Assessment. In the assessment, each risk identified is evaluated by the probability of each risk multiplied by the impact of that risk to develop an impact number.

The evaluation uses a scale that ranks risk using the following matrix:

		Probability	
		Low	**High**
Impact	**Low**	***Low impact/Low probability*** Considered low level risks of low importance.	***Low impact/High probability*** Considered of moderate importance. If these things happen, the Project can cope with them and move on. However, the Project should try to reduce the likelihood that they'll occur.
	High	***High impact/Low probability*** Considered of high importance if they do occur, but they're very unlikely to happen. The Project should do what it can to reduce the impact they'll have if they do occur and develop contingency plans in case they do.	***High impact/High probability*** Considered of critical importance. These will be the Project's top priorities and are risks that it must pay close attention to.

The Risk Impact/Probability matrix is based on the principle that a risk has two primary dimensions:

- Probability: A risk is an event that "may" occur. The probability of it occurring can range anywhere from not likely to occur to very probable.
- Impact: A risk, by its very nature, always has a negative impact. However, the size of the impact varies in terms of cost and impact on health, environment, economic base or another critical factor.

This tool allowed the Risk and Legal Team to rank the risk in order of importance and develop possible mitigation strategies to temper or avoid the impacts.

Several categories of risks were analyzed for probability and impact in pursuing processing enhancements for the R&E Center:

1. Construction Risks
2. Engineering Risks
3. Financial Risks
4. Legal Risks
5. Operating Risks
6. Technology Risks
7. Community Acceptance Risks

A score of 1 to 5 was given to each risk for both probability and impact. The following key was used:

Probability	Impact
1: Very low probability - not worth considering	1: Very low impact - not significant to project
2: Low probability - unlikely to occur	2: Low impact - can be managed without mitigation
3: Medium probability - realistic chance of occurrence	3: Medium impact - may require mitigation
4: High probability - likely to occur	4: High impact - significant impact on cost/schedule
5: Very high probability - almost certain to occur	5: Very high impact - can be a "project killer"

Risk Impact Assessment Findings

After identifying the risks (see Table 2 for list of all risks), the Risk and Legal Team went through an exercise to assign a probability level (scored 1 – 5) and an impact level (scored 1 – 5). For each risk, the probability level was multiplied by the impact level to arrive at an overall score, called a Risk Number.

Below are the ten highest ranked risks, ranked from highest to lowest risk (see Table 1). Also included are potential mitigation approaches for each risk. All risks that scored above a 12, or received a 5 for either impact or probability, have a mitigation approach shown.

Risk Impact Assessment Conclusions

Risk management is critical in any scenario of constructing facility enhancements. This report is a broad outline that identifies categories of risk, and relative degree of risk, and general mitigation measures. As the Board proceeds with decisions on changes to the waste management system, implementing specific mitigation measures based on approaches that have been identified will be key. A team approach, with technical, legal and financial evaluation of agreements and management plans is recommended.

The mitigation approaches of the different types of risk vary significantly. For example, education and outreach tactics help to mitigate community acceptance risks. Active market development efforts are a key to an effective mitigation approach for risks associated with market volatility or availability. A primary tool for risk mitigation is using contract terms. Contract mitigation can be useful, but this option could come at a financial cost. Ultimately, risks are inherent in waste management activities and need careful planning and policies to reduce negative impacts if a situation arises.

Highest Ranked Risks and Mitigation Approaches		
Risk Description	**Risk Number**	**Mitigation Approach**
Volatility in materials markets and pricing of materials (or energy prices if AD)	20	Do not depend on revenues from material end-use for budgeting the project. Engage financing consultant for alternative funding mechanisms. Encourage market development and support market development policy. Actively monitor markets.
Unforeseen issues in revenue generation from tipping fees	16	Educate the haulers and residents about why hauling prices may increase - prioritize framing this issue and being prepared to discuss it.
Waste stream composition changes (line technology is no longer effective for the waste composition)	15	Choose equipment that has a flexible design that allows for reprogramming/retooling for changes in processing. Do periodic waste composition analyses to monitor trends and monitor consumption trends. Include technology that can optically evaluate components of waste stream.
Unplanned delays in construction due to weather, unexpected barriers, or other delays	12	Build additional time into construction schedule (flexible schedule). Also include contractual language with penalties to prevent unnecessary delays.
Issues with transfer site DCB line construction	12	Ensure contractual obligations include “date-certain," and include penalties to ensure construction deadlines are met and issues resolved.
Unforeseen issues in revenue generation from CEC	12	Resolve any conflicts that arise regarding the Joint Activities budget. Ensure Counties/administration are continually informed of plans well in advance.
Property damage/liability from errors or delays in construction	12	Include strong contract language to transfer risk to outside contractor or vendor where applicable, including standard requirements of insurance. Review of Certificates of Insurance to make certain third parties are in compliance.
Conflict/disagreement between two counties (present or emerging) in direction of enhancements	12	Develop a protocol for raising concerns and mitigating disagreements between two counties. Ensure frequent updates to Board members. Engage conflict resolution section in JPA as needed.
Contamination in DCBs becomes too high and does not meet end-market specifications	12	Focus education efforts to primarily targets food waste only as acceptable for DCBs. Continuously evaluate markets to ensure accurate information to public. Implement robust monitoring for quality control; processing staff do spot-check of bags.
End market facility becomes unavailable for delivery of DCBs or recyclables from R&E.	12	Ensure market redundancy (Multiple markets will be needed). Continuously evaluate markets and support market development for organics/recyclables.

Below is the list of all risks identified and ranked. While the Risk Number associated with many of these risks did not rank in the top ten previously shown, all risks remain important to manage, and the Board will want to address these in any applicable scenario of implementing processing enhancements. Risk Numbers with an asterisk (*) indicate that either the Impact or Probability were given a score of 5 (requiring that a mitigation approach be identified).

A gray box in the "Mitigation Approach" column indicates that a specific mitigation strategy is not needed due to low impact and/or probability.

All Identified Risks and Risk Number			
Risk Description	**Details**	**Risk Number**	**Mitigation Approach**
Construction Risks			
Unplanned delays in construction	Risks associated with construction delays due to weather, unexpected barriers, or other delays	12	Build additional time into construction schedule (flexible schedule). Also include contractual language with penalties to prevent unnecessary delays.
Delays in transfer site DCB line construction	All transfer stations will also need to construct DCB processing lines with a completion timeline in line with planned DCB program launch.	12	Ensure contractual obligations with transfer stations include "date-certain," and include penalties to ensure construction deadlines are met and issues resolved.
Slow-to-develop permitting process causes delays in construction	Delays or barriers to obtaining permits results in construction delays and increased costs	9	
Poor construction contractor performance	Risk associated with faulty workmanship	8	Include strong contract language and CM oversight. Determine uniform insurance requirements of all contractors based on scope of work.
Engineering Risks			
Poor design by developer, or poor review by R&E engineers	Risks associated with flaws in final design of processing enhancements	10*	Peer review for preliminary design. For final design, use a CM/Agency approach. Include performance standards and "proof of performance" prior to project completion.
Financial Risks			
Volatility in materials markets (energy if AD)	Risks associated with materials markets and pricing for materials, or revenue sharing for energy generation with AD	20	Do not depend on revenues from material end-use for budgeting the project. Engage financing consultant for alternatives. Encourage market development and support market development policy. Actively monitor markets.

All Identified Risks and Risk Number			
Risk Description	**Details**	**Risk Number**	**Mitigation Approach**
Ability to collect revenue (tipping fees)	Risks associated with unforeseen issues in revenue generation from tipping fees	16	Educate the haulers and residents about why hauling prices may increase - prioritize framing this issue and being prepared to discuss it.
Ability to collect revenue (CEC)	Risks associated with unforeseen issues in revenue from CEC	12	Resolve any conflicts that arise regarding the Joint Activities budget. Make sure Counties/administration are continually informed of plans well in advance.
Property damage/liability from errors or delays in construction	Risks from property damage or liability stemming from errors or delays during the building of new projects.	12	Include strong contract language to transfer risk to outside contractor or vendor where applicable, including standard requirements of insurance. Review of Certificates of Insurance to make certain third parties are in compliance.
Governance/ Organizational			
Conflict/disagreement between two counties (present or emerging)	Risk associated with the two counties disagree on future R&E direction during the term of the financing.	12	Develop a protocol for raising concerns and mitigating disagreements between two counties. Ensure frequent updates to Board members. Engage conflict resolution section in JPA as needed.
Legal Risks			
Changes in solid waste policy law	Risk that federal or state law changes will change and affect the financial or operating status of the facility.	8	Include a change of law provision in contracts, which either terminates any provisions affected by the law change or terminates the contract entirely, to avoid risk of unmet R&E obligations impacted by change in law.
Changes in regulatory law	Risk that federal or state law changes will impact permitting including MPCA.	8	Annual check to assure facility is within the scope are meeting/exceeding permit requirements and discuss with permitting agencies any potential changes in regulation.
Contract Disputes	Risk associated with contract disputes (list types of contracts in this category)	6	Contract mitigation - strong contract terms that include dispute resolution and clear communication protocol.
Regulatory Compliance	Risk that end market vendor or transfer station does not comply with laws, rules and permits	6	Have a protocol in place to cancel contract with the non-compliant transfer station and direct haulers to bring to others (same with end market vendor).

All Identified Risks and Risk Number			
Risk Description	**Details**	**Risk Number**	**Mitigation Approach**
Potential for environmental liability for significant air/water/land emissions.	Risks associated with change in environmental and nuisance liability (odor)	6	
Changes in waste assurance law or regulation	Risk that federal or state law changes will impact the facilities' ability to get waste to the facility, i.e. flow control.	4	
Intellectual property risks	Risk associated with trademarks, copyright and other intellectual property issues.		Conduct thorough due-diligence prior to entering into contracts.
Operating Risk			
Contamination in DCBs becomes too high and does not meet end market specifications	Risks associated with users of DCBs placing unacceptable materials into DCBs and its impact on end market accepting contaminated load.	12	Focus education efforts to primarily targets food waste only as acceptable for DCBs. Continuously evaluate markets to ensure accurate information to public. Implement a robust monitoring process for quality control; processing staff do spot-check of bags.
End market facility becomes unavailable for delivery DCBs or recyclables from R&E	Risk associated with disruption of end market accepting DCBs or recyclables (i.e., temporary or permanent closure, rejection of R&E loads)	12	Ensure market redundancy (Multiple markets will be needed). Continuously evaluate markets and support market development for organics/recyclables.
Facility operations do not operate as designed (e.g., safety, labor dispute, schedule risks)	An operations issue occurs that prevents the facility from functioning as intended.	10*	Strong labor agreement, good labor relations, culture of safety comes first.
Uncontrollable circumstances	Risks associated with force majeure circumstances (i.e. “acts of God")	10*	1) Good insurance policies - strong risk management. 2) Have clarity in contracts defining force majeure.

All Identified Risks and Risk Number			
Risk Description	**Details**	**Risk Number**	**Mitigation Approach**
Change in performance of the technology over time	Risk associated with decreased performance of equipment/technology over time.	9	Good preventative maintenance. Flexibility included in system design to replace components.
Loads with DCBs not delivered to correct place at R&E Center	Trucks will need to communicate with R&E which loads are likely to have DCBs in them and which do not to determine if they are processed for DCBs.	8	
Higher than anticipated maintenance costs for facility enhancements	Risk that the maintenance costs exceed expected budget on an ongoing basis.	6	Build a contingency fund. Monitor warranties. Investigate why costs exceed expected to prevent further cost overrun.
Inadequate maintenance	Risk associated with poor performance of maintenance staff/contractors leading to poorly-maintained equipment/technology	5	Prioritize adequate training for equipment, maintain and follow SOPs, ensure good management.
Insufficient employment	Risk that the facility is not able to employ appropriate labor	4	
Technology Risk			
Waste stream composition changes	Line technology is no longer appropriate for the waste composition	15	Choose equipment that has a flexible design that allows for reprogramming/retooling for changes in processing. Do periodic waste composition analyzes to monitor trends and monitor consumption trends. Include technology that can optically evaluate components of waste stream.
Better separation technology emerges after committed to previous technology	Risk associated with approval of technology in which a better version is developed prior to completion of project.	10*	Ensure design includes flexibility of technology improvements (as possible) allowing for upgrades if determined necessary.
Technology not functioning as commissioned/planned	The technology doesn't work, and the vendor cannot meet the service agreement specifications	8	

All Identified Risks and Risk Number			
Risk Description	**Details**	**Risk Number**	**Mitigation Approach**
Community Acceptance Risk			
Questioning appropriate use of public dollars	Risk that public funds are perceived as not efficiently or effectively used.	6	
Pushback from groups/industry advocating alternative waste diversion strategies	Risks associated with pushback from those with positions supporting other waste diversion strategies, opposition to these division strategies, or rejection of facility enhancements on principle (among others).	5*	Clearly communicate project scope and vision to various audiences including focus on 75% recycling goal, increased SSO, diversion of recyclables, and waste as a resource. Engage with haulers, municipalities and interested parties early and often.
Public opposition to use of these technologies (negative community input)	Risks associated with the community accepting the addition of this organics separation process and/or pre-processing of recyclables.	4	
Municipality buy-in/cooperation	Risk associated with local waste program coordinators (particularly cities with organized trash systems) not participating in DCB program and pursuing another organic waste diversion program	4	